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TO: Seaport Planning Advisory Committee

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SUBJECT: **San Francisco Bay Area Seaport Plan: Revised Regional Cargo Forecast and Capacity Study**
(For Committee consideration December 5, 2019)

Staff Report

Introduction

The Seaport Planning Advisory Committee (SPAC or committee) is meeting to review a revised draft of the proposed regional forecast of oceangoing cargo and terminal capacity study (*2019-2050 Bay Area Seaport Forecast, Revised Final Draft,* dated November 14, 2019 (draft Cargo Forecast or forecast); https://www.bcdc.ca.gov/BPA/BPASeaportPlan.html), with a goal of considering the findings of the report for the purposes of updating the *San Francisco Bay Area Seaport Plan* (Seaport Plan or plan) and assessing amendments proposed to the Plan.

The SPAC concluded during its previous meeting of June 27, 2019 to continue its consideration of the draft forecast following further investigation with the Ports and revisions as called for by members of the committee. Based on subsequent discussions with the Ports and staff, the Tioga group has revised the cargo study accordingly.

Additionally, subsequent to the June SPAC meeting, the applicant for Bay Plan Amendment No. 2-19, the Oakland Athletics, commissioned Mercator International to conduct an alternative assessment[1] of the regional capacity to handle three types of cargo identified for potential handling at Howard Terminal: container, roll on-roll off, and dry bulk. This alternative assessment was submitted to BCDC staff October 25, 2019 and is available at the BCDC link above. A summary table comparing the two capacity analyses is included in this staff report.

[1] Mercator International, November 13, 2019. Expected Demand for Howard Terminal as a Cargo Handling Facility. https://www.bcdc.ca.gov/BPA/BPASeaportPlan.html

The staff requests the committee begin to consider and discuss the findings of the revised draft Cargo Forecast as well as those presented by Mercator. As the meeting date and time were established prior to receipt of the second assessment, the staff recognizes today's meeting schedule is insufficient for the SPAC to make a final determination to accept the forecast and a capacity assessment by the meeting's conclusion. The agenda therefore reflects that during the December 5, 2019 meeting, the SPAC will hear presentations of the revised forecast and the Mercator assessment and will initiate a discussion that will be continued during a subsequent meeting to be scheduled by the committee.

Background

The Seaport Plan is an element of the *San Francisco Bay Plan* (Bay Plan) and is used by BCDC in making port-related regulatory decisions on permit applications, consistency determinations, and related matters. A major goal of the Seaport Plan is to reserve sufficient shoreline areas to accommodate future growth in maritime cargo, thereby minimizing the need for new Bay fill for port development. The plan encourages technical and operational improvements at the Bay Area Ports to accomplish this goal.

Under Section 66611 of the McAteer-Petris, BCDC is required to designate within its jurisdiction shoreline areas suitable for uses requiring waterfront access to minimize the risk of such areas being used for non-water-oriented development thus increasing the potential of filling the Bay for the designated uses.[2] As a more specific application of the Bay Plan port policies, the Seaport Plan designates within BCDC's jurisdiction *Port Priority Use Areas*, shoreline areas necessary for future port development, and *Marine Terminals*, areas reserved for specific cargo handling operations. The numbers and types of terminals designated are primarily derived from a forecast of regional cargo activity and the ports' anticipated capabilities to handle the projected cargo. While there is no requirement to update the Seaport Plan on a regular basis, this effort to update the plan is timely as the current plan is reaching the end of its planning horizon, as its cargo projections do not extend beyond the year 2020.

Under the provisions of the Seaport Plan, proposed modifications to the plan's map designations or other policies are reviewed by the SPAC, which relies on the growth and handling capacity information reflected in the plan, in forming its recommendations. The SPAC recommendations are forwarded to BCDC for final consideration by the Commission. Members of the advisory committee include BCDC and MTC/ABAG representatives, the five Bay Area ports, Caltrans, Save the Bay and the San Francisco Marine Exchange.

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[2] Per Section 66602 of the McAteer-Petris Act, "certain water-oriented land uses along the bay shoreline are essential to the public welfare of the bay area, and that these uses include ports, water-related industries, airports, wildlife refuges, water-oriented recreation and public assembly, desalinization plants, upland dredged material disposal sites, and powerplants requiring large amounts of water for cooling purposes; that the San Francisco Bay Plan should make provision for adequate and suitable locations for all these uses, thereby minimizing the necessity for future bay fill to create new sites for these uses…."

On January 17, 2019, BCDC voted to initiate Bay Plan Amendment (BPA) No. 1-19 to review and update the Seaport Plan and to respond to any change request from the Ports. At the same meeting, the Commission initiated BPA No. 2-19 to specifically address a request by the Oakland Athletics to remove the port and marine terminal designations from Howard Terminal at the Port of Oakland to allow a baseball stadium and residential and commercial development to be constructed.

The SPAC held its first meeting on June 27, 2019, when it initiated its review of the first draft Cargo Forecast. Consultants from the Tioga Group and Hackett Associates presented the forecast's findings and responded to questions from the SPAC members. The SPAC voted to continue its discussion of the forecast to a subsequent meeting in order to allow committee members additional time to review a revised document and provide comments. Following the June meeting, the Tioga/Hackett consultant team worked with the ports to more closely reflect available acreage and operating capacity and to respond to comments received. The forecast and a capacity analysis approved by the committee will be used as a basis for potential map and policy revisions to the Seaport Plan.

Differences between Capacity Analyses

There are a few major differences between the two capacity studies in both methodology and assumptions that the committee will hear during the presentations. Table 1, below, presents a summary of the major distinctions. In general, the two reports agree on the basic principles of marine terminal operations and the factors affecting marine terminal capacity. Both reports also utilize the same demand projections of the Tioga forecast. Differences between the two reports lie primarily in assumptions regarding terminal acreages and productivity.

Table 1: Comparison Summary of Cargo Capacity Analyses

Draft Cargo Forecast	*Mercator Report*
Approach to Potential Marine Terminal Acreage	
• Considered only areas currently designated as port priority use in the Seaport Plan. • Acreage estimates verified by ports. • Includes Howard Terminal as an option for meeting capacity shortfalls.	• Considered both port priority and non-port priority use areas that are not presently in use, but which appear to be naturally well-suited to port uses. • Estimates based on aerial imagery and a combination of terminal operator and port authority sources. • Does not include Howard Terminal.
Container Cargo Capacity	
Average Annual Capacity per Acre	
• Estimated an annual sustainable capacity of 7,112 TEU/ac[1] for "high productivity" scenario using benchmarks from terminals in North America and Australia.	• Estimated average annual throughput capacity of 11,414 TEU/ac (60.5% higher than Tioga's benchmark) using a different configuration of available land at the Port of Oakland, higher stacking heights, a specific container dwell time, and additional operating days.
Methodology for Determining Capacity	
• "Maximum capacity" was determined by dividing published capacity of benchmark terminals[2] by number of terminal acres. • Assumed that "sustainable capacity" is 80% of maximum capacity. • Retained non-terminal acreage for ancillary uses. • High productivity scenario allows for productivity improvements but does not assume exactly how higher productivity would be achieved. • Reduced total future acreage at Port of Oakland by 2 acres per terminal to allow for future electrification infrastructure.	• "Maximum static capacity" was determined by calculating the volume of TEUs that could be stacked on available ground slots, assuming a higher density ground slot layout for Port of Oakland terminals in which areas allocated to chassis storage were reduced. • Multiplied maximum static capacity by 80% peaking factor and 65% allowable occupancy factor to determine allowable average inventory. Calculated annual throughput capacity by multiplying by 360 (assumed operating days per year) and dividing by 5 (assumed average dwell time per container). • Assumed the relocation of chassis operations off-site to allow for higher density ground slot layout. Assumed 35% of each terminal as "open" to allow for operations other than container storage. • Does not adjust for electrification.
Acreages and Future Throughput Capacity	
• Estimated 787 total acres of potential container terminal land including Howard	• Estimated 765 total acres of potential container terminal land. Includes an additional 7 ac at Ben Nutter/Berths 33-34; 3 ac at Matson/Roundhouse;

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Terminal; 747 total acres excluding Howard Terminal. • Estimated 2050 throughput of 5.60 million TEU/year with Howard Terminal and 5.31 million TEU/year without Howard Terminal (assuming full efficiency upgrades). • Concluded that the Port of Oakland could accommodate projected Moderate Growth volumes of 5.19 million TEU with and without Howard Terminal (with Berths 20-21) but would have shortfalls in both cases under projected Strong Growth volumes of 7.04 million TEU.	and 2 ac each at OICT,[3] TraPac, and OHT compared to Tioga. Does not include Howard Terminal. • Estimated 2050 throughput of 8.73 million TEU/year (density increases built into calculations). • Concluded that the Port of Oakland can accommodate project volumes with the identified terminal acreage.
Ro-Ro[4] Cargo	
Ro-Ro Terminal Acreage	

• Estimated 357 total potential acres for use as Ro-Ro terminals, including:
  ○ 215 ac of existing Ro-Ro terminals at Benicia (75 ac), Richmond Port Potrero (80 ac), and SF Pier 80 (60 ac);
  ○ Potential terminals at SF Pier 96 and adjacent areas (67 ac), Benicia short-term lease (35 ac), and Howard Terminal (40 ac).
• Land included at Benicia covers port priority use areas currently used for Ro-Ro import and the short-term lease area. It does not include the eastern portion of port priority use land used for domestic parking, processing, and rail.
• Report discusses Antioch, but does not include it in acreage totals.
	• Estimates 440 total potential acres for use as Ro-Ro terminals, including areas identified by Tioga as well as the following additional acreages:
	  ○ Benicia (90 ac)
	  ○ Antioch (100 ac)
	• Land included at Benicia also includes areas currently used for domestic parking, processing, and rail, some of which is not designated as port priority use.
	• Includes Antioch, which is not port priority use.

Ro-Ro Terminal Capacity	
• Estimated throughput at 1,700 annual units[5]/ac in the "base case" or 2,173 annual units/ac in the "high productivity" case. • Concluded that 357 potential acres of Ro-Ro terminal land could accommodate 606,900 units/year (base case) or 775,679 units/year (high productivity). A total of 373 ac (base case) or 292 ac (high productivity) of Ro-Ro terminal space would be required to handle	• Estimated that feasible throughput could be up to 2,400-2,500 annual units/ac. • Concluded that the identified terminals could have a capacity of between 860,000 to 970,000 vehicles per year by 2021 when Antioch is operational, which would meet projected volumes of 633,739 units in 2050 in the Moderate Growth scenario or 837,312 units in the Strong Growth scenario.

Table 1: Comparison Summary of Cargo Capacity Analyses

projected volumes of 633,739 units in 2050 in the Moderate Growth forecast, and 493 ac (base case) or 385 ac (high productivity) for 837,312 units in the Strong Growth forecast.	
Dry Bulk Cargo	
Methodology	
• Projected 2050 dry bulk volumes of 20.7 million tons (Moderate Growth), 12.0 million tons (Slow Growth), and 33.2 million tons (Strong Growth). • Estimated throughput capacity in metric tons per acre and per berth for each forecast scenario using benchmarks from Bay Area dry bulk terminals. • Determined that a total of 182 ac and 13 berths would be required to meet the Moderate Growth forecast; 166 ac and 12 berths to meet the Slow Growth forecast; and 227 ac and 15 berths to meet the Strong Growth forecast.	• Assessed only the capacity for aggregates, as petroleum coke, scrap metal, gypsum, and bauxite were not considered to be feasible cargoes for Howard Terminal. Focused on Tioga's aggregate projections of 14 million tons in 2050 (Moderate Growth). • Estimated capacity by examining existing aggregate terminal sites and considering existing throughput and potential capacity improvements.
Dry Bulk Terminal Capacity	

• Identified 166 ac and 12 berths at existing dry bulk terminals.
• Concluded that additional acreage and berths would be required moderate and strong growth forecasts. Identified 147 potential additional dry bulk terminal acres in port priority use areas:
  ○ San Francisco Pier 96 and adjacent area (67 ac);
  ○ Richmond Terminal 3 (20 ac);
  ○ Oakland Berths 20-21 (20 ac);
  ○ Howard Terminal (40 ac).
	• Stated that current capacity in the Bay Area is 4-5 million tons. Determined that three existing terminals could add at least 1-1.5 million tons of capacity for 5-6.5 million tons of capacity:
	  ○ Richmond Eagle Rock Aggregates could handle 2.1 million tons per year;
	  ○ Port of San Francisco could add backland at Piers 90-96 to increase throughput;
	  ○ Port of Redwood City Cemex USA could increase throughput above 1.5 million tons per year.
	• Identified opportunities to convert existing terminals or develop new terminals to achieve 18-20 million tons of additional capacity:
	  ○ Port of Richmond Levin-Richmond could be converted to aggregates for 1.5-2 million tons of capacity;
	  ○ Richmond Terminal 3 could support a facility capable of 1.5-2 million tons per year;

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	○ OBOT[6] could handle 8-9 million tons per year (not port priority use); ○ San Francisco Piers 94-96 backland could support facility that handles 6-8 million tons (includes 45 ac of non-port priority use). • Suggested that lightering could allow aggregates to be handled at smaller facilities such as Sacramento, Stockton, Antioch, Rio Vista, Vallejo, Petaluma, and Alameda. • Concluded that sufficient potential for aggregate capacity exists and additional acreage at Howard Terminal would not be needed.
Commercial Viability of Howard Terminal	
• Does not view Howard Terminal as an attractive container terminal location and considers it best suited for niche operators with small vessels.	• Consistent analysis but concluded that it would be highly unlikely to be profitable at this level of throughput.
Notes: 1. TEU = Twenty-foot Equivalent Unit; ac = acre 2. Benchmark terminals included VIG Portsmouth, TraPac Los Angeles, Sydney Auto-strad, and Brisbane Auto-strad. 3. OICT = Oakland International Container Terminal 4. Ro-Ro cargo = Roll-on/roll-off cargo 5. Ro-ro units generally represent vehicles. 6. OBOT = Oakland Bulk and Oversize Terminal	

Policy Implications Suggested by Alternative Capacity Analysis

Land Area. An important distinction in the calculations presented in the two reports is the application of future cargo handling capacity assigned to sites not included in port priority use designation. Historically, the 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. Such assurance is at risk absent a priority use designation. This distinction is highlighted in the alternative dry bulk and ro-ro capacity analyses in which the reports include as potential future port sites land that is not designated for port priority use, and may not be located in BCDC's jurisdiction.

The above issue arises at a site near the Bay Bridge (OBOT) that previously was removed from port priority designation at the request of the City of Oakland following the closure and transfer of different portions of a former army base to the Port and to the City. While potentially available for handling dry bulk cargo per an agreement with the City (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.

Another location not designated for port priority use and also not in BCDC's jurisdiction is the 107-acre Antioch site identified in both reports. The draft Tioga 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 currently are used to store vehicles previously imported through another terminal. 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 once a terminal would be operational. Although the Antioch location is outside BCDC's jurisdiction and is not and could not be designated for port priority use, there is nothing in the McAteer-Petris Act or the *San Francisco 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, the potential supplemental capacity at this site is speculative in light of the improvements and permits that will 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 once the site is developed and operational.

Container Terminal Capacity. The methodologies reflected in the reports differ in how container terminal capacity is addressed, and thereby present a question for the committee relative to the approach of the Seaport Plan in estimating future terminal capability. Estimated throughput to meet future cargo demand is a foundation of the plan land use designations.

Committee Discussion

Following the presentations and comments from the public, the SPAC will begin its consideration of the findings of the cargo forecast as well as the two capacity analyses. Note that no individual amendment requests to the Seaport Plan are being considered at this time. The staff requests committee members include the following topics in their discussion in addition to others they wish to consider:

1. Have the revisions requested by the committee on June 27, 2019 been addressed in the draft Cargo Forecast and do you find the outcomes of the revised analysis are consistent with these changes?
2. The Seaport Plan addresses port areas designated for port priority use. Does the SPAC believe that other potential sites should be considered in estimating available marine terminal acreage, including a) areas within port priority use but not currently planned for port operations, such as the property leased to a railroad in Benicia; b) areas outside of port priority use areas but within BCDC's jurisdiction, such as OBOT; or c) areas outside of port priority use areas and beyond BCDC's jurisdiction, such as at Antioch? How would the SPAC and BCDC ensure future availability of areas currently not in port

priority use for dry bulk and ro-ro terminals? Would the SPAC recommend BCDC add port priority use designations at other locations?

3. Do committee members find the 80% sustainable container terminal capacity applied by Tioga to be appropriate or does its use risk underestimating terminal handling capability?
    - Should the SPAC and BCDC plan for container cargo capability based on more conservative productivity assumptions that are benchmarked to capacity at high-performing terminals, or more optimistic assumptions derived from what is estimated to be possible at Oakland and elsewhere?
4. The staff requests guidance as to any additional information or clarification the committee may require for its continued deliberation during the next meeting, including as related to the forecast and approaches to capacity.

Next Steps

At a subsequent meeting scheduled by the committee, the SPAC will continue and conclude its deliberation of the forecast and capacity findings. The staff subsequently will rely on the information as directed by the committee in reviewing the Seaport Plan's designations and policies and to assess plan amendment requests. At the same time, the staff will work with the ports to explore the implications of rising sea level and to consider potential approaches for incorporating environmental justice into the planning process. Additionally, staff will develop preliminary land use and policy alternatives as warranted. Future SPAC meetings will be planned to review staff's findings on sea level rise and environmental justice, and to review potential land use and policy alternatives. With the committee's input on the alternatives, staff will prepare a draft of the revised Seaport Plan for SPAC review.