

ST3 Light Rail Service and Ridership Demand

*Rider Experience & Operations Committee
03/07/2024*

Why we are here

Today's agenda

- Recap pressures on service and fleet
- Discuss forecast ridership and potential crowding at the end of ST3
- Outline mitigation approaches for Board consideration
- Next steps

- Briefing only, no action required

2023 briefings recap: main takeaways

April: Pressures on service and fleet could result in less initial service to Lynnwood when it opens.

June: Continuation of those pressures through ST3 system expansion, if not addressed, could result in needing more fleet and operations & maintenance facility capacity, or less service

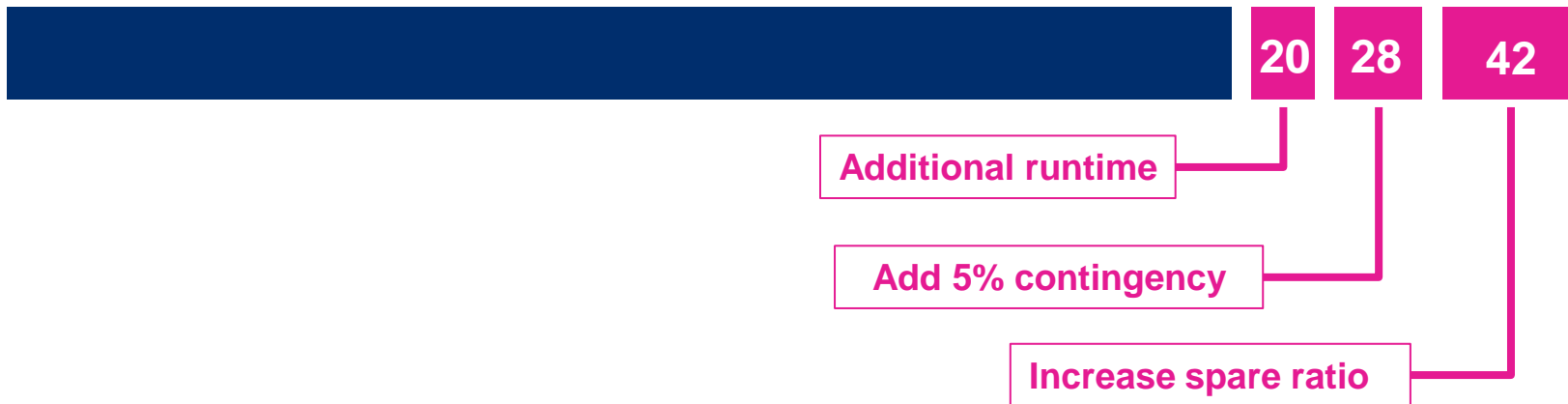
Sep/Oct: Fleet constraints through ST2 program completion could result in crowding; discussed potential mitigations, including advancing some LRV procurement

November: Board authorized negotiations for 10 additional Series 2 LRVs to augment ST2 fleet until ST3 fleet and OMF capacity are available

The big drivers of long-term, ST3 need

460 vehicles assumed in agency finance plan

550 vehicles would be needed to meet planned ST3 service level if pressures not addressed

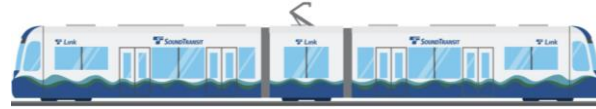


***Forecast ST3 service,
capacity and crowding***

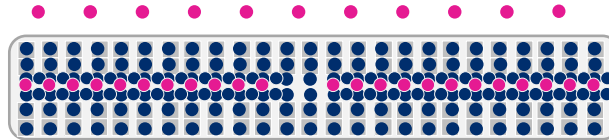
How we think about crowding

At a car-level

● = one rider

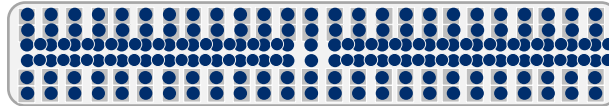


Very crowded, may not be room to board.



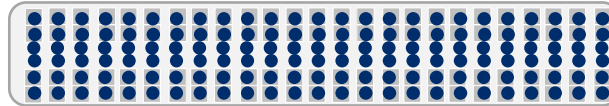
74 seats full + more than 120 riders standing

Challenges getting on and off.



74 seats full + 74 - 120 riders standing

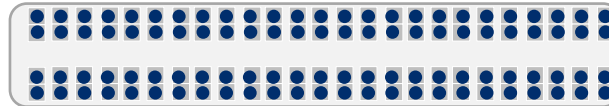
People standing, but you can still get on.



74 seats full + up to 74 riders standing

Board adopted crowding standard

Everyone has a seat.



Less than 74 seats full, few people standing

- ① Ballard–Tacoma
- ② Mariner–Redmond
- ③ Everett–West Seattle
- ④ Kirkland–Issaquah
- OMF



Light rail service in 2048

Uses all **460** LRVs in the Finance Plan

All ST3 light rail extensions open
All ST3 LRVs available
All OMFs in operation

① Ballard to Tacoma Dome

<i>Planned</i>	6 min	4 cars
<i>Now possible</i>	6 min	4 cars

② Mariner to Downtown Redmond

<i>Planned</i>	6 min	4 cars
<i>Now possible</i>	8 min	4 cars

③ Everett to West Seattle

<i>Planned</i>	6 min	4 cars
<i>Now possible</i>	8 min	4 cars

④ South Kirkland to Issaquah

<i>Planned</i>	6 min	* cars
<i>Now possible</i>	10 min	3 cars

2048

Southbound 1 Line*

Service Level Now Possible

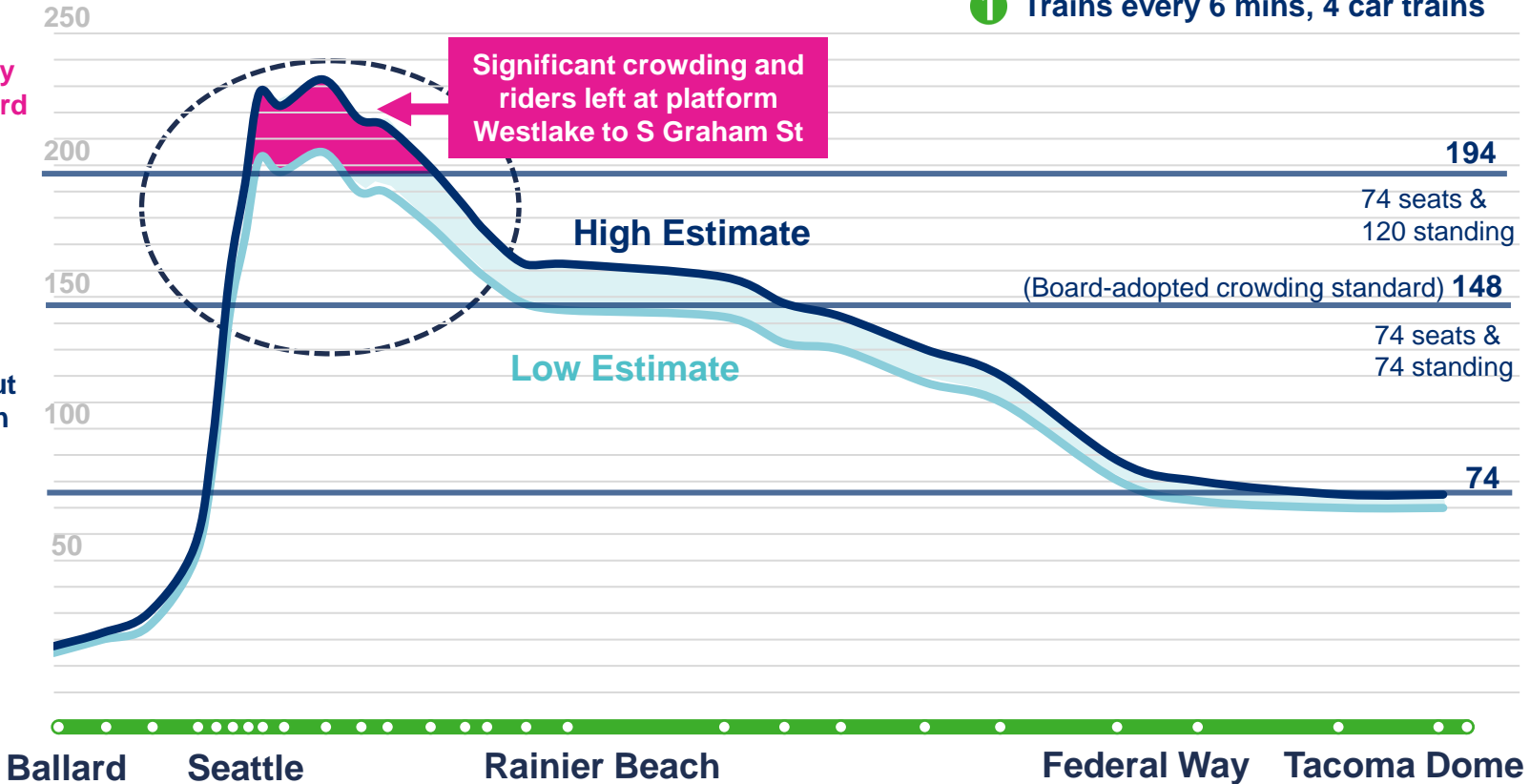
1 Trains every 6 mins, 4 car trains

Very crowded, may not be room to board

Challenges getting on and off

People standing but you can still get on

Everyone has a seat



Mitigation approaches

Common to all approaches: efficiencies

Reduce run times

- Enhance operator training; upgrade signal system; add crossing gates; study future grade-separation of at-grade segments

Reduce fleet spare ratio

- Increase staffing; complete warranty work; expand overnight maintenance window

Accelerate future LRV purchases

- Increase Series 3 order or start future procurements earlier; advance 10 Series 3 LRVs to Series 2; match delivery to OMF availability

Increase LRV capacity

- Relax crowding standard; configure future LRVs for more capacity; ask riders to spread out; remove seats; restrict bikes/luggage



Approach 1: Service Focus

Tailor peak service to demand

- 1 Line: 5-minutes with 4-car trains
- 2 & 3 Lines: 8-minutes with 4-car trains
 - 4-minutes combined from Chinatown/Int'l District to Mariner
- 4 Line: 16-minutes with 2-car trains

Continues to provide frequent service
Addresses most forecast crowding
No increase in fleet or OMFs

- Possible exception: 8-minute service on the 4-Line would require ~12 more LRVS @ \$90 - \$110M, but no OMF expansion

Southbound 1 Line*

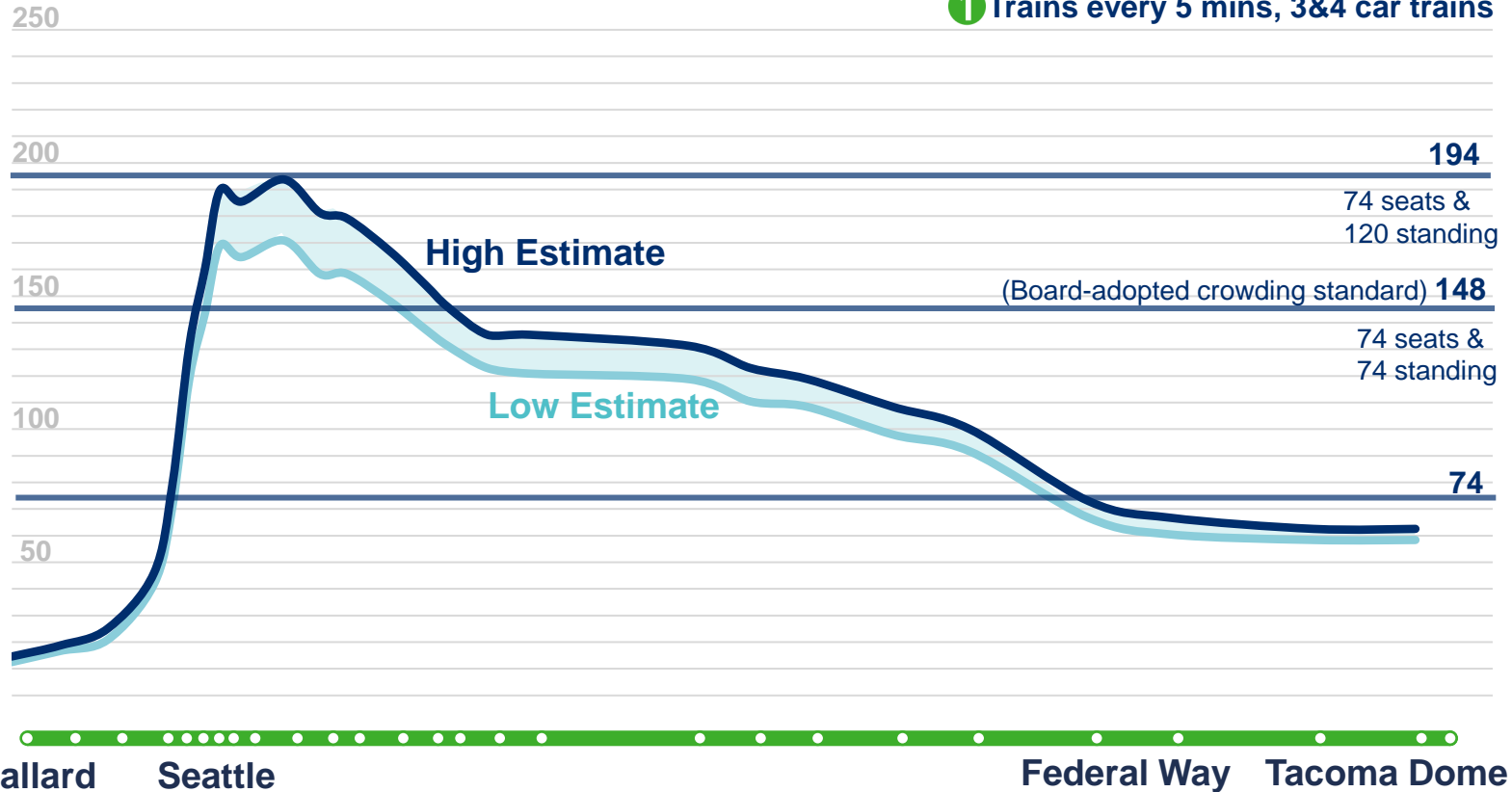
① Trains every 5 mins, 3&4 car trains

Very crowded, may not be room to board

Challenges getting on and off

People standing but you can still get on

Everyone has a seat



Approach 2: Capital Focus

Buy more LRVs and increase OMF capacity to achieve 6-minute peak service on all lines assumed in ST3

Cost element	Rough Cost (2024\$)
90 additional LRVs	~\$900M
OMF expansion for 50-60 LRVs	~ \$1B
Added O&M cost through 2046	\$300 - \$350
Total	\$2B +

- Planned ST3 service would now require 550 LRVs and additional OMF capacity
- Financial Plan includes funding for 460 LRVs and OMFs to accommodate 496

Recommendation: Hybrid Approach

Pursue the most promising efficiencies

Tailor planned peak service to demand

- 1 Line @ 5-minutes, 2 & 3 Lines @ 8-minutes with 4-car trains
 - 4-minutes combined from Chinatown/Int'l District to Mariner
- 4 Line @ 16-minutes with 2-car trains

Remain flexible as new extensions open

- Monitor demand
- Include options for additional vehicles in Series 3 procurement
- Include option for additional capacity at OMF-South in procurement
- Assess expansion options at other OMF locations
- Explore alternate service patterns that might reduce vehicle needs

Schedule & Next Steps

2023

- April: vehicle storage shortage & Lynnwood service
 - June: long-term light rail fleet & storage challenges
 - Sep/Oct: ST2 light rail service & passenger experience
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2024

- March: ST3 light rail service and ridership demand
- April: seek Board concurrence or revision to staff recommendation
- Following Board direction
 - Codify planned ST3 service in the annual Service Implementation Plan, approved by the Board each year
 - Update the FTA-required Rail Fleet Management Plan
 - Highlight capital project choices that affect fleet and service
 - Provide progress updates at least annually

Thank you.



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