

## Questions and staff responses regarding Link project sequencing and East Link Starter Line January 11, 2023

At the December 2022 meetings of the System Expansion Committee and full Sound Transit Board, staff asked Boardmembers to provide any questions they had regarding sequencing for Link projects in construction or for the East Link Starter Line being considered. The questions and responses below have been grouped based on their content, not in the order they were asked or sent to staff.

### PROJECT SEQUENCING

Important context for the questions and answers in this subject category is the following: beginning revenue service on the East Link Starter Line would *not* impact potential service levels on the Lynnwood Link Extension.

As Questions 1 and 2 discuss, 1-Line service will be limited until the full East Link alignment is open with service across Lake Washington allowing access to the Operations and Maintenance Facility (OMF) East in Bellevue. Until then, service will be limited to trains operating out of the OMF Central in SODO. The resulting 8-minute service frequency, plus upcoming WSDOT Revive I-5 program, require a concentrated regional effort to identify and implement mitigation measures, work that is beginning this month.

**1. Is there a problem of access from the OMF East to Lynnwood Link with enough vehicles to meet planned headways, regardless of the East Link Starter Line? (Claudia Balducci)**

Yes. Until the full East Link Line opens service across Lake Washington and provides access to OMF East, 1-Line service will be limited to trains operating out of the OMF Central. This results in 8-minute service frequency only.

Opening an East Link Starter Line would *not* delay the time between the opening of Lynnwood and the rest of the East Link line, which is when 4-minute frequencies will become possible.

We are working with our partner agencies (Community Transit, King County Metro, WSDOT and others) and our own Operations and Planning staff to identify potential opportunities to improve on the 8-minute frequency. We will return at least quarterly to update the Board on our progress.

**2. What are the impacts to our partners' transit service, especially Community Transit? (Kent Keel)**

**The agency needs to look at ways to mitigate the delay to East Link, especially with forecasted increased congestion, WSDOT's planned Revive I-5 projects, and Community Transit's planned cancellation of commuter routes and implementation of Lynnwood Station feeder routes.**  
(Dave Somers)

**The agency should work with transit experts on how to best serve North King County and Snohomish County given the delay to East Link. Consider the ridership, service frequency,**

### **limitations on planned link service to handle feeder service from outlying communities and how it compares between Lynnwood Link and East Link. (Christine Frizzell)**

We have grouped these questions and comments, as they're all seeking information about how the proposed changes could impact agency partners, particularly Community Transit.

East Link's delay in opening until 2025 will limit 1-Line service frequencies and capacity, regardless of whether Sound Transit launches an East Link Starter Line in 2024. Given that these impacts will also coincide with WSDOT's upcoming Revive I-5 work, we need to examine mobility challenges in the I-5 north corridor. Sound Transit is coordinating with WSDOT, Community Transit, Everett Transit and King County Metro to discuss impacts to each agency and possible mitigations.

As a part of this effort, Sound Transit staff are developing options to maximize the amount of Link service that could be provided in the North corridor. Once we have landed on a maximized plan, we will be able to work and know what our frequency of service would be, we can then work with our transit partners to establish just how much bus service will be needed to continue to run on I-5 until the 2 Line can open and we can provide all the planned Link service.

This will be an ongoing effort through at least the first quarter of 2023 and will need to be reviewed regularly as project construction advances.

### **PROJECT OPENINGS**

In December, staff presented to the Board potential timeframes for Link openings. Question 3 below addresses the application of a six-month period between project openings.

Questions 4 and 5 pertain to Lynnwood Link's opening. The potential opening timeframe for Lynnwood was shown as Summer/Fall 2024 without the East Link Starter Line, and Fall/Winter with the Starter Line—meaning the project opening could be shifted by as much as three months if the Starter Line were introduced. We continue to work toward greater specificity on these timeframes and will provide updates to the Board in the next quarter.

#### **3. What is the need for six-month timeframes between openings? (Dave Somers)**

Drawing upon lessons learned from our Northgate opening in Fall 2021 and findings from the Programmatic Quantitative Risk Assessment in Fall 2022, Sound Transit staff now recommend a minimum of six-month period between future openings. This comprises two major task windows:

- Two months dedicated to responsive work to fully dial-in performance on the new opening;
- Followed by four months of conducting pre-revenue service for the next project's opening while continuing to monitor performance of the most recent opening.

In the first few weeks that passengers begin riding any new service, unexpected findings are typical. Therefore, a two-month window immediately after an opening allows staff to monitor service performance, troubleshoot any issues with new stations or equipment, and address our passengers' feedback.

Specifically, this time is critical for mitigating emergent risks to performance and reliability (for example, equipment failures or performance issues), and for completing any remaining punch list items or improvements to the system.

During these weeks we also confirm adequate maintenance levels to make sure riders consistently enjoy a reliable, well-informed, accessible, clean and safe service. In addition, all teams will review the documented lessons learned from the project and develop a plan to prevent repeat challenges and issues in the next opening. Ultimately, as an opened project continues to provide a reliable revenue service, staff will begin a smooth transition of resources to pre-revenue service for the next.

**4. What opportunities exist to tighten the timelines for opening East Link Starter Line so that it limits impacts to Lynnwood Link? (Claudia Balducci)**

The schedule for East Link Starter Line has been developed based on input from the project team, its own Quantitative Risk Assessment and the results of the Programmatic Quantitative Risk Assessment.

Following Board direction on whether to continue implementing the East Link Starter Line, staff will explore additional mitigation measures to shorten the schedule between the two openings and implement as appropriate. Staff will report back to the Board in Q2 on overall progress, including any opportunities to shorten the overall timeline.

**5. Is there a cost impact to the one-quarter delay to Lynnwood Link Extension and any other impacts to other work we are doing? (Kent Keel)**

This question is based on the potential Lynnwood Link opening schedule should the East Link Starter Line advance. Current information suggests minimal cost impact from the one-quarter LLE delay to existing budgets or the agency's long-term affordability.

### OPERATIONAL QUESTIONS

This section looks at Link operations-related questions, for both revenue and non-revenue service.

**6. Could a single track across the Lake Washington bridge connect the OMF Central and OMF East to transfer vehicles? If all plinths were replaced on one side first, could that be used to store trains? (Roger Millar)**

This concept would allow moving trains between the OMF East and the 1 Line to Lynnwood. While it is feasible to prioritize completing one track ahead of finishing both tracks at the same time, this option is not recommended because it will likely: create significant safety risks for the construction of the adjacent track due to proximity; cost more for the additional effort; and potentially delay the East Link Extension opening.

However, the question has spurred some creative ideas. One option now being investigated is to move trains from the Eastside under power before completing the pre-revenue phase of the East Link Extension. The other option is to create storage areas on the west side of Lake Washington on the I-90 segment to be available at or near the planned Lynnwood Link opening. We will continue to explore these and additional ideas to help increase the number of trains available at the time of Lynnwood opening.

**7. What is the agency's best estimate of the service frequency (headways) at each step of opening light rail lines? (Claudia Balducci)**

As discussed above, staff are examining what options may be possible as Lynnwood opens and until the 2 Line crosses Lake Washington and can provide full service to Lynnwood. At the current time, given the lack of access to OMF East, we project that we'll have 8-minute peak and 10-minute midday service between Angle Lake and Lynnwood, and 10-minute service all day between South Bellevue and Redmond Technology stations on the Starter Line.

Once we have OMF East connected to the rest of the system and all light rail vehicles in service, the plan is to provide 4-minute peak service and 5-minute midday service from Chinatown/International District (CID) Station to Lynnwood, and 8-minute peak and 10-minute midday service between Downtown Redmond and CID station when the 2 Line is extended across Lake Washington. We will provide 8-minute peak and 10-minute midday service between Angle Lake and Federal Way when the Federal Way Link Extension opens.

**8. Could the agency truncate ST Express Route 550 at the South Bellevue garage and redirect those resources to address operator shortages in other parts of the system? (Claudia Balducci)**

We are reviewing opportunities to partially restructure ST Express bus service to complement the East Link Starter Line. Decisions about changes to bus service in response to the Starter Line, such as Route 550 truncation, would be made by the Board as part of the 2024 Service Plan they will consider in Fall 2023.

**9. Will the Stride BRT 3 Line opening timeline be impacted? (David Baker)**

The new Link timeframes, including the potential East Link Starter Line, are not expected to impact the Stride schedule.

### POTENTIAL FUTURE PHASED OPENINGS

The questions below consider future openings, both from a project and policy perspective.

**10. Could the agency consider creating a policy for Link extensions that outlines if/how to open portions before the entire extension is ready? When considering early partial openings, one factor should be "readiness" (e.g. there is an operable OMF in Bellevue). (Claudia Balducci)**

Yes, we can. There would be several factors to consider in determining whether to open a portion of a new line and have a phased opening of a larger alignment. These factors include whether there are efficiencies in opening longer segments, being able to combine contracts, and having fewer pre-revenue service periods, as well as other factors. If a segment will be significantly delayed, Sound Transit has evaluated opening segments that may be ready earlier from a construction perspective, changes that would be required to the operation of the line, anticipated changes in utilization, and potential benefits and costs. These factors and others could be put into a policy if the Board so chooses.

**11. Is it possible to open a starter Federal Way Link Extension line from Angle Lake to Kent Des Moines? In other words, could the Kent/Des Moines Station (north of the long-span bridge) be considered for opening ahead of the rest of FWLE? (Nancy Backus)**

While design work on the long-span bridge solution continues, staff are conducting an initial feasibility analysis, including examining if Kent/Des Moines Station has the necessary crossover tracks to operate north of station and if there is enough track to the south for tail tracks and vehicle storage.

Currently, the Federal Way project team is working to better understand the full schedule impact caused by the liquefaction area requiring a long-span bridge. The re-sequenced project schedule is not yet confirmed, which limits our ability to evaluate resourcing risk of overlapped pre-revenue or System Integrated Testing activities with either Lynnwood Link or East Link. This impact needs to be understood to fully evaluate if there are efficiencies to be gained by opening the Federal Way Link Extension in a phased approach.

Other elements that require further study include, but are not limited to:

- Lack of amenities for operators at Kent/Des Moines Station, should that be used as an interim terminus;
- Whether the mainline track south of the KDM Station will require additional work to enable its use temporarily as tail tracks;
- Evaluation of traction power needs and service and fleet needs to extend the 1 Line to KDM station in conjunction with broader light rail service options.

We will continue to evaluate the modifications needed to facilitate this potential starter line, with will allow us to analyze potential cost and schedule impacts.

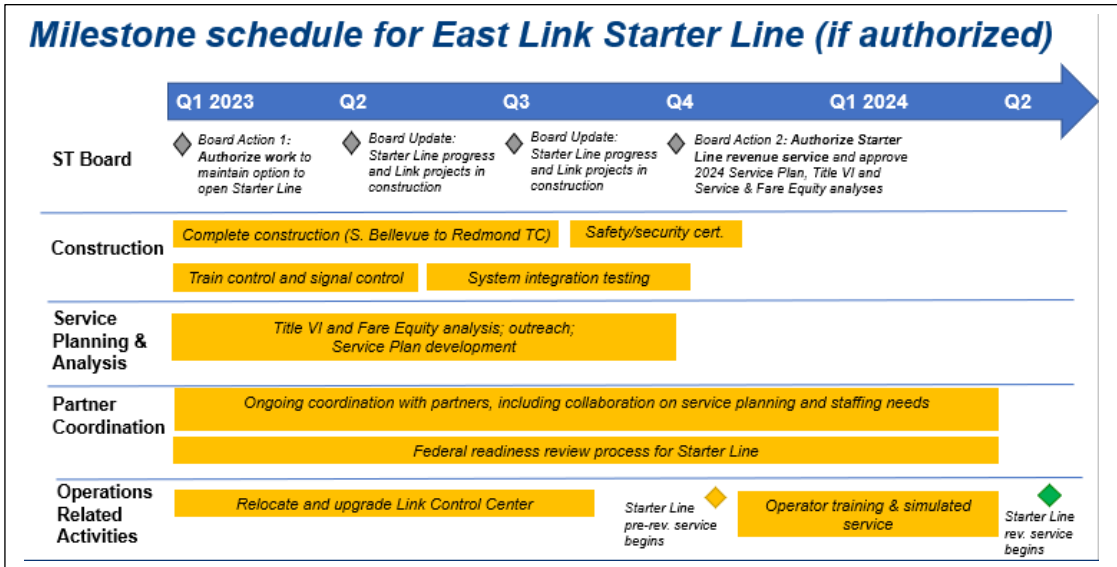
### POTENTIAL EAST LINK STARTER LINE NEXT STEPS

The two questions below have been grouped together as they address potential next steps on the East Link Starter Line.

- 12. What is the decision the Board has to make (if any) regarding this? Specify any Board actions necessary to direct staff to further develop and/or implement scenarios under consideration.**  
*(Kent Keel)*

**What is are the next steps regarding East Link Starter Link scope and timeline and what is the Board process needed to keep us on schedule?** *(Claudia Balducci)*

The graphic on the following page is designed to help explain both Board actions and staff and contractor work that would be underway to advance an East Link Starter Line.



Activities in this graphic are summarized, approximate, and subject to change

Below we have described each of the milestone items you see in the table:

**ST Board:** Construction delays on East Link have pushed back the opening of the entire project from June 2023 to approximately Spring 2025. At the request of Board members, staff examined options to open a portion of East Link not impacted by the construction delay before opening the full alignment.

The East Link Extension baseline budget includes sufficient funding to perform this proposed work. However, the project budget did not allocate a portion to be used for the work necessary to maintain the option to open the East Link Starter Line. To allow this option to move forward, staff will need to present a Board action which would clearly authorize the work necessary to maintain the option to open the East Link Starter Line in 2024. This vote would require a supermajority of the Board.

This action would also authorize up to \$6 million dollars to complete activities to maintain the option to open the East Link Starter Line. This action would not increase the overall East Link baselined project budget, and all of this would be paid for by the East King subarea.

East Link Starter Line-related scope that would be covered under this authorization is listed below:

- Service planning: Analysis required to make this part of the 2024 Service Plan, including Title VI equity analysis and public outreach associated with a major service change
- Train control and signal control revision to support the Starter Line
- Software revisions to support train schedule information to third-party applications
- Passenger Information Management Signage revisions
- Systems Construction Management Consultant costs to oversee additional work
- Safety and security certification
- Pre-revenue service activities including operating and staff training
- Passenger information and outreach
- Passenger and operational signage
- Potential environmental review

If this action is approved, the Board would then later be asked to approve opening passenger service on the East Link Starter Line, following the completion of analysis required for a major service change, including completion of Title VI analysis. This approval would also require a supermajority vote of the Board. This action would be alongside the typical approval process for the 2024 Service Plan in October, so it is coordinated with other changes in service across the system.

**Construction:** This schedule shows when construction on the portion east of Lake Washington is anticipated to be substantially complete, making the start of Starter Line service possible. This work would happen regardless of the Board's direction on the Starter Line, as this must happen to complete the East Link extension. As shown in the graphic above, the construction phase would also include advancing substantial items such as train control and signal control revision to support the Starter Line and completing final safety and security certification.

**Service Planning & Analysis:** If the first Board action is approved, the Starter Line will be analyzed as part of the 2024 Service Plan. This will include conducting Title VI and Fare Equity Analysis, and overall service plan development.

**Partner Coordination:** Coordination with ST partners needs to continue. This would include coordination with transit partners through the service development process described above and to continue to tackle the hiring needed to operate and maintain the Starter Line. This coordination also will require ongoing work with the FTA to complete the federal readiness review for the East Link Starter Line as well as the entire East Link segment. The FTA additionally will be reviewing the Title VI analysis slated to be completed with our major service change work described above.

**Operations Related Activities:** If the second Board action to begin Starter Line revenue service is approved at the start of Q4 2023, required activities before revenue service would continue, with pre-revenue service starting shortly thereafter. This would include conducting the necessary activation, service change, and passenger experience elements so that the Starter Line can open in Spring 2024.