



# *Update on Link projects in construction and Programmatic QRA*

*System Expansion Committee  
12/08/22*



# *Why we're here*

## **Update on Link projects in construction:**

- What we learned through Programmatic Quantitative Risk Assessment (QRA)
- What it means for project sequencing and opening timeframes
- Next steps

**Briefing only, no action required today.**

# How we got here

## Original sequence

Mid 2023: East Link

Mid 2024: Lynnwood

Late 2024: Federal Way

Late 2024: Downtown Redmond

## Summer/Fall 2022

Project-level construction risks and delays, project-level QRAs, programmatic QRA.

## Key takeaways

East Link challenges will **delay access to Operations & Maintenance Facility East** and require rethinking project **opening timeframes and sequencing.**





# *Why is OMF East access important?*





# *Pieces of the puzzle*

- Cascading effects of East Link no longer being ready first.
- Lynnwood will now finish construction first.
- Federal Way projected to finish last.
- Activation timelines should avoid using same staff and resources on multiple projects at once.
- Safely and reliably activating high-quality projects requires:
  - Four months of pre-revenue service after construction is completed.
  - Two months of activation close-out after a project opens before beginning pre-revenue service on the next project.

***= A minimum six-month window between project openings***

# ***Finding the best project sequencing***

- Best opportunity for opening projects soonest is **in order of finishing construction**: Lynnwood, East Link, Downtown Redmond, Federal Way.
- Keeping East Link first to wait for OMF East access would mean Lynnwood sitting finished and unused for many months.
- Combining East Link and Downtown Redmond into one opening could create efficiency while allowing enough time to address quality issues.
- Opening Federal Way last allows additional time for new design approach and construction without affecting other projects.

# ***Possible opening timeframes, re-sequenced***

<b>Link extension</b>	<b>Possible opening timeframe</b>
<b>Lynnwood</b>	<b>Summer/Fall 2024</b>
<b>East Link &amp; Downtown Redmond</b>	<b>Spring 2025</b>
<b>Federal Way</b>	<b>Too soon to identify. Contractor negotiations underway.</b>

# *Could part of East Link open earlier?*

- East Link construction issues affect some areas more than others.
- An “East Link Starter Line” service potentially feasible from South Bellevue Station to Redmond Technology Station.
- Why South Bellevue?
  - Proximity of a crossover track.
  - Separation from I-90 construction would reduce any conflict between East Link Starter Line service and ongoing corrective rework.



# *East Link Starter Line benefits & challenges*

## **Benefits**

- More stations open when ready (about one year before East Link).
- Would allow us to open a very complex, long line in two parts.
- Puts OMF East **into** service sooner.

## **Challenges**

- Compared to previous scenario, adds an additional opening sequence to overall program.
- Would push Lynnwood Link opening back by approximately one quarter.

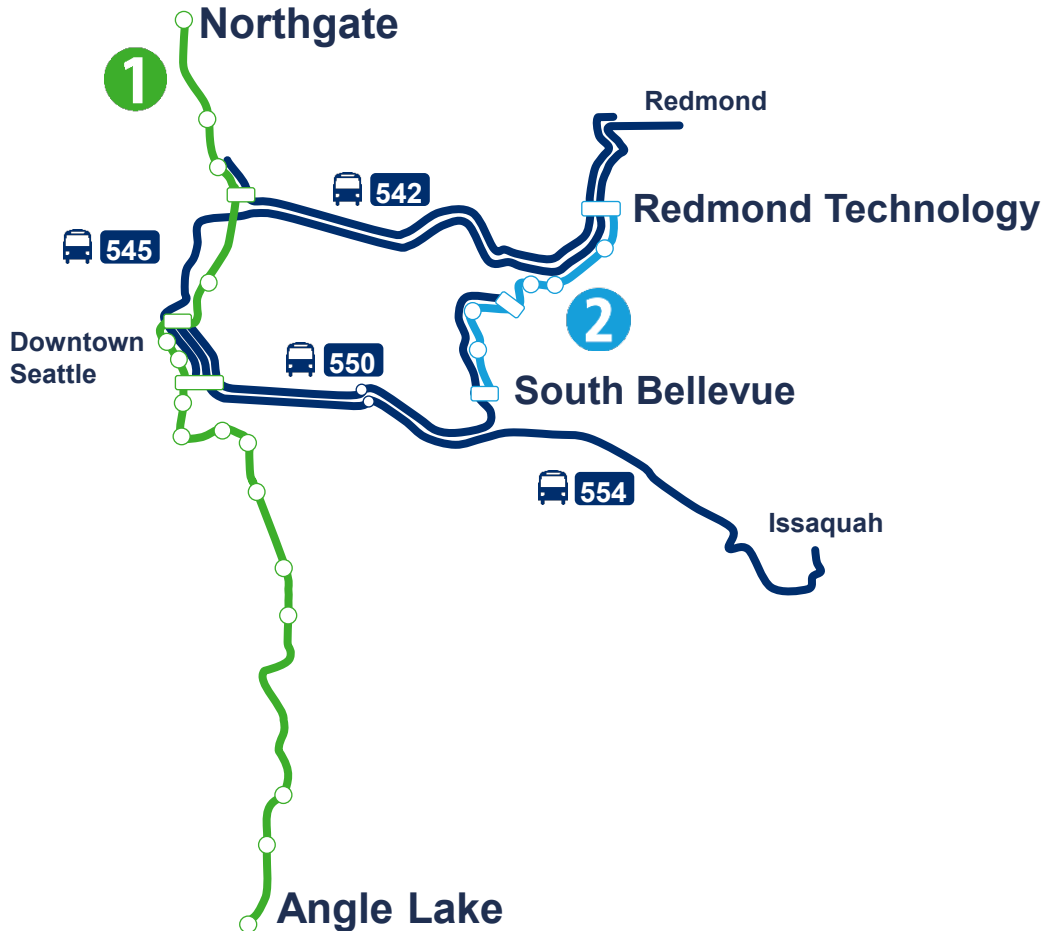
# ***Possible opening timeframes with East Link Starter Line***

<b>Link extension</b>	<b>Possible opening timeframe</b>
<b>East Link Starter Line</b>	<b>Spring 2024</b>
<b>Lynnwood</b>	<b>Fall/Winter 2024</b>
<b>East Link &amp; Downtown Redmond</b>	<b>Spring 2025</b>
<b>Federal Way</b>	<b>Too soon to identify. Contractor negotiations underway.</b>

# East Link Starter Line potential operations

Existing **1** Line: Northgate to Angle Lake

**Starter 2** Line: Redmond Technology to South Bellevue



Headways	<b>2</b> Line	<b>1</b> Line		
Peak Hour	<b>10</b> min	<b>8</b> min		
Off-Peak/Weekend	<b>10</b> min	<b>10</b> min		
Early/Late	<b>15</b> min	<b>15</b> min		
What will it take?	Starter <b>2</b> Line	<b>1</b> Line	Total	
Vehicles	16-24	87	103-111	
Operators	33	77	110	
Platform hours	50,000	115,000	165,000	

*No bus service changes assumed*



# ***Challenges, risks for both opening scenarios***

## **Opening Lynnwood Link without access to OMF East**

- Must find overnight storage for about 16 vehicles along main line.
- Potential overcrowding on the 1 Line until full East Link line opens.
- New rail cars commissioning slower rate than expected.

## **Project-level construction risks**

- East Link plinth reconstruction schedule.
- Federal Way Link design and construction of the long-span bridge structure.

# ***Most significant programmatic risk for openings***

## **Skilled labor, operator and maintenance worker shortages**

- Need to double current hiring rate to meet system needs.
- Sector-wide and regionwide concern.
- Could add up to six months to each opening if not resolved.

# *Next steps*

- Monitor projects for risks that could affect schedule.
- Refine project timeframes and provide updates as construction advances, coordinating with regional and federal partners.
- Actively engage with partners at all levels to address hiring challenges.
- Update the Board again in January and seek Board direction on whether to advance the East Link Starter Line.

*What questions do we need to answer?*



*Thank you.*



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