



Update on Link projects in construction and Programmatic QRA

*Board of Directors Meeting
12/15/2022*



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

Link extension & original opening	Possible new opening timeframe
Lynnwood (mid-2024)	Summer/Fall 2024
East Link (mid-2023) & Downtown Redmond (late 2024)	Spring 2025
Federal Way (late 2024)	Too soon to identify. Contractor negotiations underway.

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.

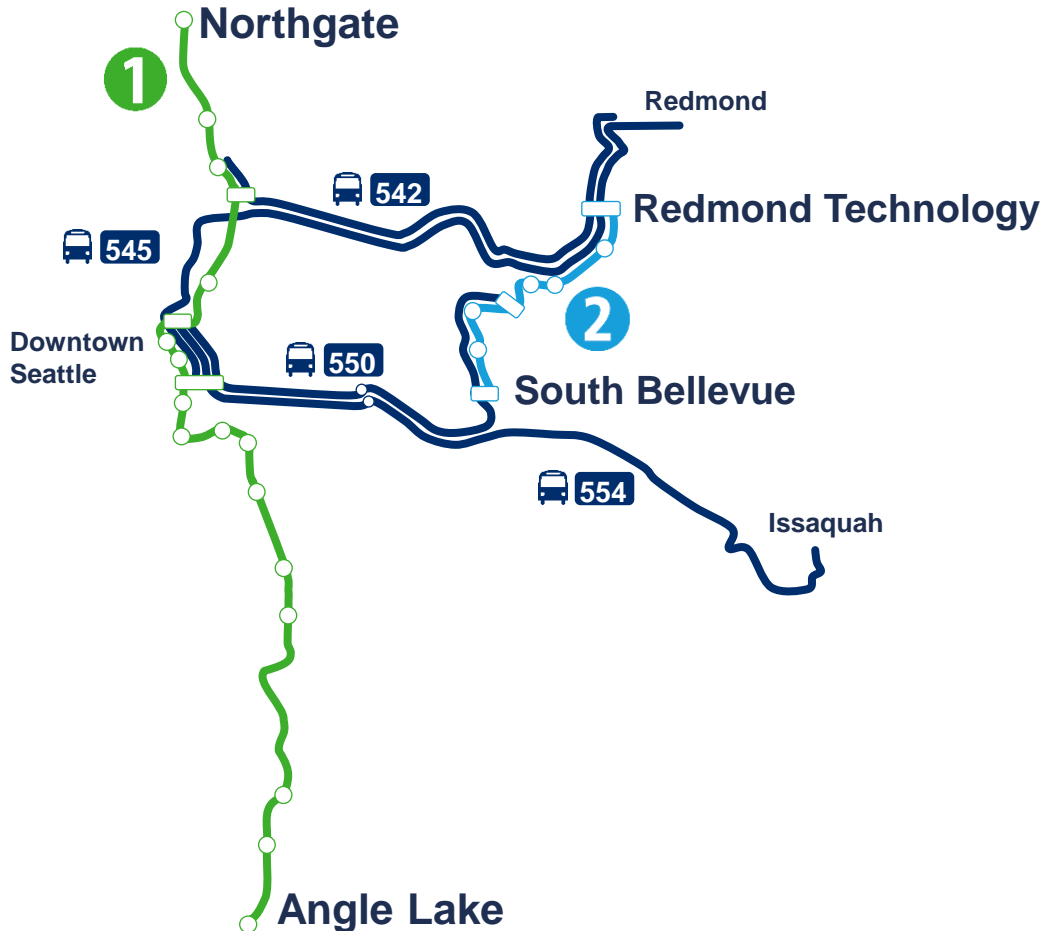
Possible opening timeframes with East Link Starter Line

Link extension & original opening	Possible new opening timeframe
East Link Starter Line (NA)	Spring 2024
Lynnwood (mid-2024)	Fall/Winter 2024
East Link (mid-2023) & Downtown Redmond (late 2024)	Spring 2025
Federal Way (late 2024)	Too soon to identify. Contractor negotiations underway.

East Link Starter Line potential operations

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

Starter 2 Line: Redmond Technology to South Bellevue



Headways	2 Line	1 Line		
Peak Hour	10 min	8 min		
Off-Peak/Weekend	10 min	10 min		
Early/Late	15 min	15 min		
What will it take?	Starter 2 Line	1 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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