

Resolution No. R2023-35

Amend LRV Fleet Expansion Project Baseline Budget, Project Completion Milestone, and Name

Meeting:	Date:	Type of action:	Staff contact:
System Expansion Committee	11/09/2023	Recommend to Board	Brooke Belman, Deputy CEO, Chief Expansion Delivery Officer
Board	11/16/2023	Final action	Joe Gildner, Acting DECM Executive Director Shankar Rajaram, Executive Project Director – Revenue Vehicles

Proposed action

(1) Amends the Light Rail Vehicle Fleet Expansion project baseline budget by increasing the allocated project baseline budget by \$96,156,000 from \$740,718,000 to \$836,874,000 to allow for the purchase of 10 additional light rail vehicles, additional spare parts, and to replenish contingency for the remainder of commissioning Sound Transit's existing 152 vehicle order, (2) revises the Project Completion Milestone from September 2024 to two distinct Completion Milestones -- Q4 2025 for Conditional Acceptance of the existing order of 152 light rail vehicles, and Q1 2028 for Conditional Acceptance of the additional 10 light rail vehicles, and (3) changes the project name from "Light Rail Vehicle Fleet Expansion" to "Series 2 Light Rail Vehicle Fleet Expansion."

Key features summary

- The proposed action amends the baseline budget to fund the purchase of 10 additional light rail vehicles (LRVs). The increase will provide capacity to fund project management, manufacturing, delivery, assembly, inspection, and testing of 10 additional Series 2 LRVs. The addition of 10 LRVs to the previously baselined quantity of 152 LRVs will bring the total number of cars in this project scope for delivery to 162 LRVs.
- The amendment will also replenish the project contingency for completing delivery of the previously baselined 152 LRVs. Delays experienced during the commissioning phase of the project since 2020 due to COVID, later than planned mainline access to the Link OMF East facility, and other challenges have resulted in a longer project duration and additional resources needed to complete the delivery of 152 LRVs. In addition, the fleet performance characteristics and emerging industry recommendations for obsolescence management of technology indicate a need for investing in higher than originally planned spares for key components such as trucks, communication systems, and brake components.
- The Conditional Acceptance of vehicles allows the entry of vehicles into revenue service and is considered to be the most significant project milestone in support of the Link system expansion program and service delivery. Therefore, this action redefines the project completion milestones to be Conditional Acceptance of the 152nd and 162nd vehicles instead of Final Acceptance.
- The proposed action would establish two new project completion milestones: Conditional Acceptance of the 152nd LRV by end of Q4 2025, and Conditional Acceptance of the 162nd LRV by end of Q1 2028. Each milestone includes approximately 6 months of schedule float.

- If negotiations are successful with the Series 2 car-builder and the price of the cars is determined to be reasonable, a separate action will be brought for Board approval in Q1 2024 to exercise a sole source change order with Siemens Industry, Inc. for the additional 10 LRVs.
- Another separate action to amend Sound Transit's contract with Hatch Associates Consultants Inc. for LRV Engineering and Inspection services will also be brought to the Board for approval in Q1 2024 to accommodate the longer than planned duration of the project.

Background

Delays in onsite commissioning during the qualification phase of the LRV Fleet Expansion Project between 2020 and 2021 resulted in approximately one and a half (1.5) year schedule slip to the Conditional Acceptance milestone and two (2) year schedule slip to the Final Acceptance milestone for the 152 LRV fleet. These delays have resulted in the need for two additional years of support resources for the commissioning effort. Also, the commissioning support during COVID years between 2020 and mid-2022 required higher than planned resources such as field inspectors to ensure reliable coverage. As a result, additional time and funds are needed to complete the delivery of 152 LRVs. In addition, the fleet performance characteristics and the industry recommendations for obsolescence management indicate the need for investing in higher than originally planned spares for key components such as trucks, communication systems, and brake components.

Longer run times and the need for higher spare ratio for Link light rail than that modeled in the 2016 ST2 plan are showing a lower than planned actual service level when all 214 LRVs (Series 1 and Series 2 LRVs combined) will be available for revenue service in 2025. This LRV Fleet Expansion Project baseline scope and budget revisions will provide authorization and funding to procure 10 additional Siemens S700 LRVs and introduce them into revenue service, approximately five (5) years ahead of the expected delivery of Series 3 LRVs. These additional vehicles will afford flexibility to have more 4-car trains, more often, and will help Link light rail to alleviate the projected service capacity shortages by bringing the service levels closer to the original 2016 ST2 plan.

Purchasing additional LRVs via the existing Siemens Industry, Inc. contract has the advantage of utilizing an approved design verified by successful qualification tests, and enables Siemens to reuse the existing manufacturing jigs and expedite delivery of the additional cars to Seattle for commissioning and acceptance at least four (4) years earlier than would otherwise be feasible through the future Series 3 LRV delivery; hence creating a cost efficiency in the longer run.

Two constraints were factored in determining the optimal number of additional LRVs to be procured at this time:

- The OMF Central and OMF East facilities are designed to support a total LRV fleet size of 214 vehicles comprised of 152 Series 2 LRVs in revenue service alongside the 62 Series 1 LRV assuming some overnight storage at end of the line and siding tracks. Until OMF South is built, Link light rail would have to explore multiple options for maximizing use of existing infrastructure on the mainline and/or within the boundaries of the two existing OMFs.
- Sound Transit will have to pursue and meet the requirements of a sole source procurement for the 10 additional cars because ST had previously executed all options for additional cars established at the time of notice to proceed on the Siemens contract.

The budget increase includes funds for (1) the purchase of an additional 10 LRVs, (2) support resources for delivery of these additional vehicles, (3) purchase additional spare parts and special tools, and (4) to replenish the project contingency for the remainder of commissioning Sound Transit's existing 152 vehicle order.

The Project was originally baselined in August 2015 and supported by a draft Rail Fleet Management Plan that demonstrated a need for procurement of 122 LRVs to support operation of the Northgate Link, Lynnwood Link and East Link Extension projects funded by the ST2 Plan. Notice to Proceed (NTP) on the LRV Fleet Expansion Contract with Siemens Industry, Inc. was issued on September 27, 2016 for a base order of 122 LRVs and a total amount not to exceed \$553,854,725. The Contract included Options for delivery of up to an additional thirty (30) LRVs and additional spare parts.

The Option for delivery of the thirty (30) additional LRVs was exercised in April 2017 via a Board Resolution No. R2017-15 that increased the project baseline budget from \$733,006,000 to \$740,718,000 to account for the additional cost. The optional LRVs are meant to provide sufficient fleet availability to operate the Federal Way Link and downtown Redmond Link Extensions authorized via the ST3 Plan. At the time the options were executed, it was noted that the thirty (30) optional cars weren't likely to meet all load factor standards nor completely address future needs for increased fleet size to accommodate ridership growth and system expansion between 2025 and 2032.

Project status

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Project Identification	Project Refinements	Conceptual Engineering/ Environmental Review	Preliminary Engineering	Final Design	Construction

The LRV Manufacturer's approved contract schedule will be extended by 21 months for (revised milestone) Conditional Acceptance of the 152nd LRV.

Delivery of the ten (10) additional vehicles will immediately follow the delivery of the 152nd vehicle. The LRV Manufacturer's approved contract schedule may be extended up to 27 months to accommodate delivery of the additional 10 LRVs after the Conditional Acceptance milestone for 152 LRVs.

Fiscal information

This action increases the baseline budget for the Series 2 LRV Fleet Expansion project. The authorized project allocation is increased by \$96,156,000 from \$740,718,000 to \$836,874,000. The 2023 annual project budget is unchanged at \$121,574,046.

The amended baseline budget will fund the project through revenue service by amending the authorized project allocation in the following phases: agency administration, construction services and vehicles.

LRV Fleet Expansion

(in thousands)	Authorized Project Allocation		
Phase	Authorized Project Allocation (Current)	Allocation Change	Authorized Project Allocation (New)
Agency Administration	\$10,829	\$5,691	\$16,520
Construction Services	17,838	9,347	27,185
Vehicles	712,051	81,118	793,169
Total	\$740,718	\$96,156	\$836,874

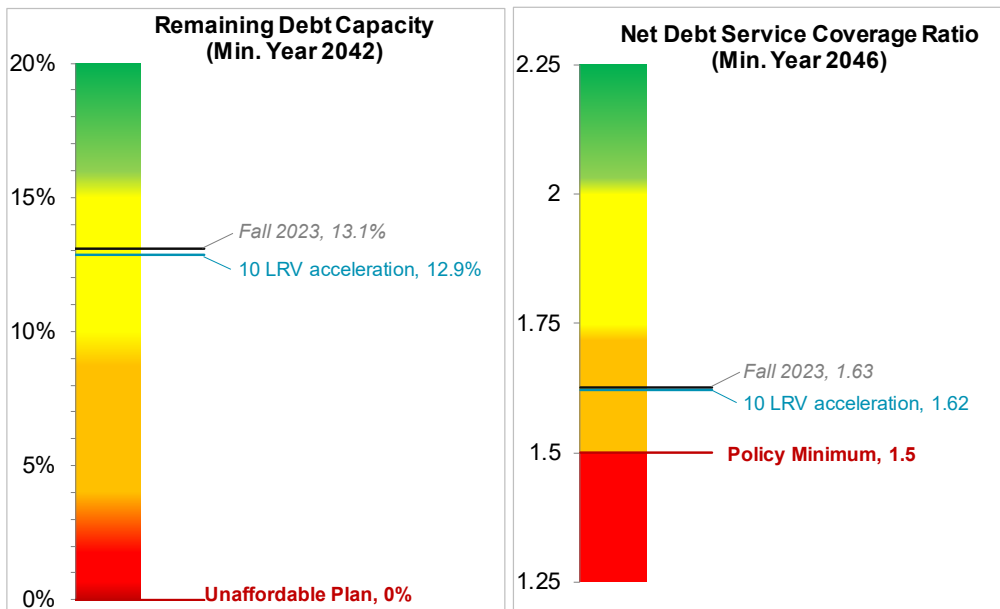
Notes:

Amounts are expressed in Year of Expenditure \$000s.
 System Testing and Start-up are combined with Vehicles.
 For detailed project information, see page 100 in the 2023 Financial Plan and Adopted Budget.

Affordability and Impact on Financial Plan

The affordability analysis reflects the impact of accelerating 10 LRVs from the Series 3 LRV project to the existing contract with Siemens in the Board-approved Series 2 LRV Fleet Expansion Project, resulting in no net increase in costs in constant dollars within the Financial Plan. However, purchasing these LRVs ahead of schedule has associated operating and maintenance (O&M) and debt service costs. This analysis also includes an increase in contingency to complete the project. This amount is additive to the Financial Plan.

The acceleration of the 10 LRVs (including additional cost to operate) would decrease the remaining debt capacity by a projected 0.2% and net debt service coverage ratio by 0.01; the resulting debt capacity and coverage ratio would be 12.9% and 1.62x, respectively.



Change to Series 3 LRV Financial Plan Cost Estimate

The cost to purchase the 10 additional LRVs will be funded through the Series 3 LRV cost estimate. As a result, the Series 3 LRV cost estimate maintained in the Financial Plan will be decreased to reflect this change. Costs for pre-baselined projects are maintained and tracked on a constant dollar basis in the Financial Plan. The cost to purchase 10 LRVs in 2023\$ is \$74,165,656 using the Fall 2023 inflation indices. The fall 2023 cost estimate of the Series 3 LRV project is \$2,038,178,642 and will be reduced to \$1,964,012,987 following this action.

All Costs in Thousands

Fall 2023 Series 3 LRV Cost Est (2023\$)	Cost of 10 LRVs Converted to 2023\$	Updated Series 3 LRV Cost Estimate (2023\$)
\$ 2,038,179	\$ 74,166	\$ 1,964,013

Disadvantaged and small business participation

Participation by small businesses and disadvantaged business enterprises (DBEs)

Not applicable to this action.

Public involvement

Not applicable to this action.

Time constraints

Timely action on this item is required to support negotiation on the pricing for the additional LRVs. After February 15, 2024, higher unit prices and escalation will apply.

Prior Board/Committee actions

Resolution No. R2017-15: (1) Amended the ST2 Light Rail Vehicle Fleet Expansion project baseline budget to allow for the procurement of 30 additional light rail vehicles by: (a) increasing the baseline budget by \$7,712,000 from \$733,006,000 to \$740,718,000; and; (b) increasing the 2017 Annual Budget by \$12,400,000 from \$59,534,335 to \$71,934,335; and (2) adopted Light Rail Vehicle Fleet Expansion as the new project name.

Motion No. M2016-101: Authorized the chief executive officer to execute a contract with Siemens Industry, Inc. to provide 122 light rail vehicles for the ST2 light rail expansion projects, including Northgate Link, East Link, and Lynnwood Link Extensions, in an amount not to exceed \$517,621,239, with a 7% contingency of \$36,233,486, for a total authorized amount not to exceed \$553,854,725.

Resolution R2015-24: (1) Adopted the ST2 Light Rail Vehicle Fleet Expansion project baseline schedule and budget by (a) adopting September 2024 as the project completion milestone, (b) adopting the Project Lifetime Budget of \$733,006,000 and (c) adopting the 2015 Annual Budget of \$1,036,750; and (2) approved Gates 1 through 6 within Sound Transit's Phase Gate process.

Environmental review – KH 10/25/23

Legal review – AJP 11/1/23

Resolution No. R2023-35

A RESOLUTION of the Board of the Central Puget Sound Regional Transit Authority (1) Amending the Light Rail Vehicle Fleet Expansion project baseline budget by increasing the allocated project baseline budget by \$96,156,000 from \$740,718,000 to \$836,874,000 to allow for the purchase of 10 additional light rail vehicles, additional spare parts, and to replenish contingency for the remainder of commissioning Sound Transit's existing 152 vehicle order, (2) revising the Project Completion Milestone from September 2024 to two distinct Completion Milestones -- Q4 2025 for Conditional Acceptance of the existing order of 152 light rail vehicles, and Q1 2028 for Conditional Acceptance of the additional 10 light rail vehicles, and (3) changing the project name from "Light Rail Vehicle Fleet Expansion" to "Series 2 Light Rail Vehicle Fleet Expansion."

WHEREAS, the Central Puget Sound Regional Transit Authority, commonly known as Sound Transit, was formed under chapters 81.104 and 81.112 of the Revised Code of Washington (RCW) for the Pierce, King, and Snohomish Counties region by action of their respective county councils pursuant to RCW 81.112.030; and

WHEREAS, Sound Transit is authorized to plan, construct, and permanently operate a high-capacity system of transportation infrastructure and services to meet regional public transportation needs in the Central Puget Sound region; and

WHEREAS, in general elections held within the Sound Transit district on November 5, 1996, November 4, 2008, and November 8, 2016, voters approved local funding to implement a regional high-capacity transportation system for the Central Puget Sound region; and

WHEREAS, the Sound Transit 2 plan approved light rail extensions to Northgate, Lynnwood, and East to Overlake Transit Center, and the Sound Transit 3 plan approved extensions to Redmond and Federal Way as well as the light rail vehicle fleet necessary to operate these extensions; and

WHEREAS, a baseline budget was previously established for the procurement of 122 light rail vehicles in Resolution No. R2015-24; and

WHEREAS, the baseline budget was subsequently amended to allow for the purchase of 30 additional light rail vehicles in Resolution No. R2017-15; and

WHEREAS, longer run times and the need for a higher spare ratio for Link light rail than that modeled in the 2016 ST2 Plan are showing a lower than planned actual service level when the currently planned 214 light rail vehicles are available for revenue service in 2025, and

WHEREAS, purchasing 10 additional light rail vehicles from the Series 2 car-builder and shifting the purchase of those vehicles from the future Series 3 project order has the benefit of utilizing an already approved design and would allow for those 10 vehicles to enter revenue service at least four years earlier, creating a cost efficiency in the long run; and

WHEREAS, an increase to the baseline budget of \$96,156,000 is needed to provide for the manufacturing, delivery, assembly, inspection, and testing of the 10 additional light rail vehicles to support revenue service of the ST2 light rail expansion projects, as well as to purchase additional spare parts and replenish the contingency related to the current 152 light rail vehicle order; and

WHEREAS, the 10 additional light rail vehicles would be expected to enter revenue service in Q1 2028; and

WHEREAS, following adoption of this budget amendment, Sound Transit staff will negotiate the final cost of purchasing and commissioning the 10 additional light rail vehicles with the car-builder and the Engineering & Inspection contractor and, if deemed fair and reasonable, will return to the Board to amend the relevant contracts; and

WHEREAS, a two-thirds affirmative vote of the entire membership of the Sound Transit Board is required to revise the project's baseline budget.

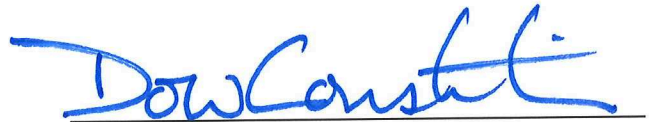
NOW, THEREFORE, BE IT RESOLVED by the Board of the Central Puget Sound Regional Transit Authority that:

Section 1: The Light Rail Vehicle Fleet Expansion project baseline budget is amended to allow for the purchase of 10 additional light rail vehicles, additional spare parts, and to replenish contingency for the remainder of commissioning Sound Transit's existing 152 vehicle order by increasing the allocated project baseline budget by \$96,156,000 from \$740,718,000 to \$836,874,000.

Section 2: The project completion milestone is revised from September 2024 to two distinct completion milestones – Q4 2025 for Conditional Acceptance of the existing order of 152 light rail vehicles, and Q1 2028 for Conditional Acceptance of the additional 10 light rail vehicles.

Section 3: Series 2 Light Rail Vehicle Fleet Expansion is adopted as the new project name.

ADOPTED by the Board of the Central Puget Sound Regional Transit Authority at a regular meeting thereof held on November 16, 2023.



Dow Constantine
Board Chair

Attest:



Kathryn Flores
Board Administrator