

MOTION NO. M2012-83
Contract to Design, Procure and Install the Energy Management Storage System for the Light Rail Vehicle Onboard Energy Storage Project

MEETING:	DATE:	TYPE OF ACTION:	STAFF CONTACT:	PHONE:
Capital Committee	11/08/12	Recommendation to Board	Ahmad Fazel, DECM Executive Director	206-398-5389
Board	11/15/12	Final Action	Justin Garrod, Corridor Design Manager	206-398-5384

PROPOSED ACTION

(1) Authorizes the chief executive officer to execute a contract with Kinkisharyo International, LLC to design, procure, and install the Energy Management Storage System for the Light Rail Vehicle Onboard Energy Storage Project in the amount of \$1,473,419, with a 7% contingency of \$99,666, for a total authorized contract amount not to exceed \$1,573,085, and (2) approves Gate 4, 5 and 6 within Sound Transit's Phase Gate process.

KEY FEATURES SUMMARY

- Kinkisharyo International, LLC will design, procure and install Energy Management Storage (EMS) units on three light rail vehicles as part of a pilot project to explore potential reductions in energy consumption and operating costs.
- Sound Transit received a Transit Investments for Greenhouse Gas and Energy Reduction (TIGGER) Program grant in 2011 for the design and installation of the EMS units.
- The EMS system operates independent of the light rail vehicle system so that any electrical fault on the EMS system will not affect the operation of the light rail vehicle.
- Installation of the EMS units is expected to be complete within one year from the award of the contract.
- This action would approve Gate 4: Enter Final Design, Gate 5: Establish Baseline and Gate 6: Proceed to Construction, as part of Sound Transit's Phase Gate process. The Board approved Gate 1 through Resolution No. R2012-06 and established the entire lifetime project budget at that time. The Board also approved an alternate phase gate path for the project because Gate 2: Identify Alternatives and Gate 3: Identify Preferred Alternative did not apply to the project.

BACKGROUND

In 2011, Sound Transit was awarded a \$1,583,085 TIGGER grant for design and installation of energy storage units. EMS units capture energy generated from light rail vehicle braking that would otherwise dissipate as heat if not used immediately. Storing and reusing energy improves efficiency and is intended to lower energy consumption and result in reduced operating costs.

In 2012, the Sound Transit Board created the Light Rail Vehicle Onboard Energy Storage Project and established an annual and full lifetime budget for the project.

The traction power for light rail vehicles is a major source of overall Sound Transit energy use. Traction power accounts for 63% of the agency's electricity use and 7.4% of the agency's overall energy use. Each LRV equipped with energy storage devices could potentially save up to 25% of its annual electrical consumption.

Sound Transit is initiating a pilot program to evaluate the energy saving potential of high capacity capacitors. The program is intended to push the industry towards maximizing the energy efficiency of the regenerative braking system. Energy savings will be weighed against the overall cost of ownership of the system. If the technology proves to be beneficial to the agency we may seek additional grant funds to expand the project.

A Request for Proposal (RFP) for the LRV Energy Management Storage Systems was issued on May 3, 2012. Two proposals were received on July 2, 2012. Following Sound Transit's review and evaluation of the proposals, both Contractor teams were invited to participate in interviews. Based on proposal scores, interviews and price, Kinkisharyo International, LLC was selected as the highest ranked proposer.

FISCAL IMPACT

The Adopted 2012 TIP for the LRV On-Board Energy Storage project is \$1,643,085. Within that amount \$1,503,085 has been set aside for Energy Storage Equipment (P210) in the Vehicles phase. The proposed action would commit \$1,573,085 to this line item, resulting in a shortfall of \$70,000, which will be funded from surplus budget within the Final Design phase.

Transfer of budget funds from the Final Design phase to the Vehicles phase of this project will be included in the Proposed 2013 TIP scheduled for consideration by the Sound Transit Board in December 2012. The proposed action is otherwise within the current adopted project budget, and sufficient monies remain after approval of this action to fund the remaining work in the project as contained in the current cost estimates. The action is affordable within the agency's long-term financial plan and subarea financial capacity, and will have no new revenue impact on Sound Transit.

PROJECT TABLE

LRV On-Board Energy Storage

	2012 TIP	Board Approvals	This Action	Board Approved Plus Action	Uncommitted / (Shortfall)
Agency Administration	60	3		3	57
Preliminary Engineering	-	-		-	-
Final Design	80	-		-	80
Right of Way	-	-		-	-
Construction	-	-		-	-
Construction Services	-	-		-	-
Third Party Agreements	-	-		-	-
Vehicles	1,503	-	1,573	1,573	(70)
Total Current Budget	1,643	3	1,573	1,576	67

Phase Detail

Vehicles

Energy Storage Equipment (P210)	1,503	-	1,573	1,573	(70)
Other Vehicles	-	-	-	-	-
Total Phase	1,503	-	1,573	1,573	(70)

Contract Detail
Kinkisharyo, LLC

	Board Approvals to Date	Current Approved Contract Status	Proposed Action	Proposed Total for Board Approval
Contract Amount	-	-	1,473	1,473
Contingency	-	-	100	100
Total	-	-	1,573	1,573
Percent Contingency	0%	0%	7%	7%

Budget Shortfall	70
Surplus Budget Final Design Phase	70
Total Funding	70

Notes:

Amounts are expressed in Year of Expenditure \$000s.

Board Approvals = Committed To-Date + Contingency, and includes pending Board actions.

Project Budget is located on page 37 of the 2012 Transit Improvement Plan (TIP).

SMALL BUSINESS PARTICIPATION

Not applicable to this action.

EQUAL EMPLOYMENT WORKFORCE PROFILE

Not applicable to this action.

PUBLIC INVOLVEMENT

Not applicable to this action.

TIME CONSTRAINTS

A one month delay will not adversely affect this project.

PRIOR BOARD/COMMITTEE ACTIONS

Resolution No. R2012-06: (1) Amended the Adopted 2012 Budget to create the Light Rail Vehicle Onboard Energy Storage Project and approved (a) the 2012 Annual Project Budget of \$1,525,000,

and (b) the Project Lifetime Budget in the amount of \$1,643,085, (2) approved Gate 1 within Sound Transit's Phase Gate process, (3) approved an alternate gate path for the project.

ENVIRONMENTAL COMPLIANCE

JI 10/12/12

LEGAL REVIEW

JW 11/01/12

MOTION NO. M2012-83

A motion of the Board of the Central Puget Sound Regional Transit Authority (1) authorizing the chief executive officer to execute a contract with Kinkisharyo International, LLC to design, procure, and install the Energy Management Storage System for the Light Rail Vehicle Onboard Energy Storage Project in the amount of \$1,473,419, with a 7% contingency of \$99,666, for a total authorized contract amount not to exceed \$1,573,085, and (2) approving Gate 4, 5 and 6 within Sound Transit's Phase Gate process.

BACKGROUND:

In 2011, Sound Transit was awarded a \$1,583,085 Transit Investments for Greenhouse Gas and Energy Reduction (TIGGER) grant for design and installation of energy storage units. Energy Management Storage (EMS) units capture energy generated from light rail vehicle braking that would otherwise dissipate as heat if not used immediately. Storing and reusing energy improves efficiency and is intended to lower energy consumption and result in reduced operating costs.

In 2012, the Sound Transit Board created the Light Rail Vehicle Onboard Energy Storage Project and established an annual and full lifetime budget for the project.

The traction power for light rail vehicles (LRVs) is a major source of overall Sound Transit energy use. Traction power accounts for 63% of the agency's electricity use and 7.4% of the agency's overall energy use. Each LRV equipped with energy storage devices could potentially save up to 25% of its annual electrical consumption.

Sound Transit is initiating a pilot program to evaluate the energy saving potential of high capacity capacitors. The program is intended to push the industry towards maximizing the energy efficiency of the regenerative braking system. Energy savings will be weighed against the overall cost of ownership of the system. If the technology proves to be beneficial to the agency we may seek additional grant funds to expand the project.

A Request for Proposal (RFP) for the LRV Energy Management Storage Systems was issued on May 3, 2012. Two proposals were received on July 2, 2012. Following Sound Transit's review and evaluation of the proposals, both Contractor teams were invited to participate in interviews. Based on proposal scores, interviews and price, Kinkisharyo International, LLC was selected as the highest ranked proposer.

Kinkisharyo International, LLC will design, procure and install EMS units on three light rail vehicles as part of a pilot project to explore potential reductions in energy consumption and operating costs. Installation of the EMS units is expected to be complete within one year from the award of the contract.

This action would approve Gate 4: Enter Final Design, Gate 5: Establish Baseline and Gate 6: Proceed to Construction, as part of Sound Transit's Phase Gate process. The Board approved Gate 1 through Resolution No. R2012-06 and established the entire lifetime project budget at that time. The Board also approved an alternate phase gate path for the project because Gate 2: Identify Alternatives and Gate 3: Identify Preferred Alternative did not apply to the project.

MOTION:


It is hereby moved by the Board of the Central Puget Sound Regional Transit Authority that (1) the chief executive officer is authorized to execute a contract with Kinkisharyo International, LLC to design, procure, and install the Energy Management Storage System for the Light Rail Vehicle Onboard Energy Storage Project in the amount of \$1,473,419, with a 7% contingency of \$99,666, for a total authorized contract amount not to exceed \$1,573,085, and (2) Gate 4, 5 and 6 are approved within Sound Transit's Phase Gate process.

APPROVED by the Board of the Central Puget Sound Regional Transit Authority at a regular meeting thereof held on November 15, 2012.



Pat McCarthy
Board Chair

ATTEST:



Marcia Walker
Board Administrator



PHASE GATE ACTION
Light Rail Vehicle Onboard Energy Storage Project

MEETING	DATE	STAFF CONTACT	PHONE
Capital Committee	11/8/2012	Ahmad Fazel, Executive Director of Design, Engineering and Construction Management	(206) 398-5389
Board	11/15/2012	Justin Garrod, Senior Systems Engineer	(206) 398-5384

GATE 1	GATE 2	GATE 3	GATE 4	GATE 5	GATE 6	GATE 7	GATE 8
Enter Project Development	Identify Alternatives	ID Preferred Alternative	Enter Final Design	Establish Baseline	Proceed to Construction	Transition to Operations	Close Out Project

ACTION REQUESTED

Authorize the Light Rail Vehicle Onboard Energy Storage Project to enter into final design, and adopt the Baseline Scope, Schedule and Project Budget for the project to proceed to construction.

BUDGET

Current Lifetime Budget: \$1,643,085
 Baseline Budget: \$1,643,085

SCHEDULE

Project Schedule assumed in ST2: N/A
 Baseline Schedule: January 2014

PROJECT DESCRIPTION

This project will install energy storage units on three light rail vehicles as part of a pilot project to reduce energy consumption and operating costs. The energy storage units will capture and store energy generated by vehicle braking to power light rail vehicles. The traction power for light rail vehicles is a major source of overall Sound Transit energy use. Traction power accounts for 63% of the agency's electricity use and 7.4% of the agency's overall energy use. Each LRV equipped with energy storage could potentially save up to 25% of its annual electrical consumption.

In 2011, Sound Transit received \$1,583,085 in Transit Investments for Greenhouse Gas and Energy Reduction (TIGGER) Program grant funds to reclaim unused energy generated by vehicle braking. The Adopted 2012 TIP for the Light Rail Vehicle Onboard Energy Storage Project is \$1,643,085.

Sound Transit is initiating this pilot program to evaluate the energy saving potential of high capacity capacitors. The program is intended to push the industry towards maximizing the energy efficiency of the regenerative braking system. Energy savings will be weighed against the overall cost of ownership of the system. If the technology proves to be beneficial to the agency we may seek additional grant funds to expand the project.

Kinkisharyo International, LLC was selected as the contractor to design, procure and install the energy storage units for the project. The contract also includes integrated testing of the equipment.

This action would approve Gate 4: Enter Final Design, Gate 5: Establish Baseline and Gate 6: Proceed to Construction, as part of Sound Transit's Phase Gate process. The Board approved Gate 1 through Resolution No. R2012-06 and established the entire lifetime project budget at that time. The Board also approved an alternate phase gate path for the project because Gate 2: Identify Alternatives and Gate 3: Identify Preferred Alternative did not apply to the project.

ACTION APPROVED


 Pat McCarthy, Board Chair

November 15, 2012
 Date