HART Board of Directors

STAFF SUMMARY FOR SUBMISSION OF AGENDA ITEM

Board or Committee Action Requested:

☒ Action/Approval ☐ Information ☐ Follow-up

Date: September 20, 2019
Title: CCO 00055, Traction Power Backup Generators
Staff Contact: Steve Grimmer
Summary:

It is recommended that the Board of Directors/Committee approve the pending Contract Change Order 00055 in the amount of $2,368,154.00 for the Core Systems Contractor (CSC) to design, provide, install and test the Medium Voltage (MV) Transfer switch equipment that will switch the power source from the utility (HECO) to the Traction Power Backup Generators (TPBUGEN) to provide power to the Traction Power Substations (TPSSs) when needed at the Systems Sites near West Loch, Pearlridge, Lagoon Drive and Ala Moana passenger stations (i.e., Systems Site 5, 12, 28 and 23 respectively).

The two (2) West Side TPBUGENs (i.e., for System Sites 5 and 12) will be procured under a separate contract between HART and the successful bidder for that contract. The two (2) East Side TPBUGENs (i.e., for System Sites 28 and 23) will be provided under the P3 agreement.

During a significant power outage (i.e., the loss of multiple Traction Power Substations (TPSS) in one or more regions), the current Traction Electrification System (TES) design does not permit train movement on the system and the backup generators are needed to move stranded trains to the nearest station to avoid passengers evacuating onto the guideway during such an event.

It is noted here that the solution for command and control of the generators by the CSC is for an island-wide power outage scenario only. The loss of two adjacent TPSSs requires the TES to revert to recovery mode in accordance with the baseline Contract requirements. Other scenarios, such as the loss of three (3) or more TPSSs as in a regional power outage, are not considered by this change request. The required Standard Operating Procedures (SOPs) for these other scenarios will be developed at a future time.

There will be no time impact due to this change if implemented prior to commencement of Interim Opening #1. To achieve this, the TPBUGEN Contractor for the West Side generators will need to be selected and given NTP prior to September 27, 2019; the design work included in this CCO is dependent upon the generators selected in the separate procurement, and may need to be expedited for implementation for IO#1.

This amendment will increase the Contract Sum. The M4 for the amount of $2,368,154.00 has been approved.

Prepared by:

Reviewed by:

Reference Document(s): 02-02 RFCR 00034 Traction Power Backup Gen SON signed
HART CONTRACT MODIFICATION

SUBMISSION TO THE HART PROJECT OVERSIGHT COMMITTEE FOR REVIEW

Date of Project Oversight Committee (POC) Meeting: October 3, 2019

Name of Contract: Core Systems Design Build O/M CT-HRT-1200106

Amount of Change Request: $2,368,154.00

Checklist of documents

- Contract Information
- Description of Change and Rationale (Summary of the Change)
- Change Control Committee- FOM Approval (Signature Page) – Request for Change Worksheet (Approved)
- Change Order or Contract Amendment Approval as to Form and Legality

Prepared by:

[Signature]

Contract Change Manager

Print Name:
<table>
<thead>
<tr>
<th>CPP No.:</th>
<th>DBOM-920</th>
<th>Date: 3/18/2015</th>
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<tbody>
<tr>
<td>Contract No.:</td>
<td>CT-HRT-1200106</td>
<td>RFC#: 00034</td>
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<tr>
<td>Contract Name:</td>
<td>Core Systems Design Build O/M</td>
<td>Issue #: 00112</td>
</tr>
<tr>
<td>Contractor:</td>
<td>Ansaldo Honolulu Joint Venture</td>
<td></td>
</tr>
<tr>
<td>Title of Change:</td>
<td>Traction Power Backup Generators</td>
<td></td>
</tr>
<tr>
<td>This Change Is:</td>
<td>Discretionary ☐ Non-Discretionary ☒</td>
<td></td>
</tr>
<tr>
<td>Reason for Change:</td>
<td>Owner Request ☒ Design Change/Potential E&amp;O ☐ Differing Site Conditions ☐ 3rd Party - Other ☐ 3rd Party - Utility ☐</td>
<td></td>
</tr>
<tr>
<td>Is this an In-Scope Change?</td>
<td>(Cardinal changes are prohibited.)</td>
<td>YES ☐ NO ☒</td>
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<tr>
<td>Potential Impact to Critical Path?</td>
<td>YES ☐ NO ☒</td>
<td></td>
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<tr>
<td>RFCs Routed via CMS to:</td>
<td>Dir. Of Quality Assurance ☐ mm/dd/yyyy</td>
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<tr>
<td></td>
<td>Dir. Of Safety ☐ mm/dd/yyyy</td>
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<tr>
<td></td>
<td>Dir. Of Readiness &amp; Activation ☐ mm/dd/yyyy</td>
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<tr>
<td>Summary Log of Prior Change Orders:</td>
<td>(See attached)</td>
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<td>NTP:</td>
<td>01/13/2012</td>
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<tr>
<td>Original Substantial Completion Date:</td>
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<td>Revised Substantial Completion Date:</td>
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<td>Original Contract Amount:</td>
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<td>Revised Contract Amount:</td>
<td>$1,601,811,401.84</td>
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<tr>
<td>Requested Change Amount in this FOM (ROM):</td>
<td>$2,368,154.00</td>
<td></td>
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</table>
HART will procure four (4) Traction Power Backup Generators (referred to herein as “generators”) to be located at the Systems Sites near West Loch, Pearlridge, Lagoon Drive and Ala Moana passenger stations (i.e., Systems Site Numbers 5, 12, 28 and 23 respectively). The generators will provide the means for moving stranded trains into the HRTP passenger stations in case of an island-wide or regional power outage event.


HART will procure the generators under a separate contract with a Traction Power Backup Generator Contractor (herein “generator contractor”). The generator contractor will be responsible for the design, provision, installation, and testing of the power connections, power transfer switches, all circuit breakers and monitoring equipment as required for transferring from the power normally provided from HECO to the generators during power outages. The transfer of power may be accomplished both remotely and locally. The Core Systems Contractor (CSC) must coordinate with HECO and the generator contractor regarding all power connections, metering, SCADA interface, and grounding requirements.

During the procurement phase of the generator contract, the Core Systems Contractor (CSC) shall:

a) Develop and submit to HART for review and acceptance all system operational procedures, including generator connection and control, that will address island-wide or regional power outage events and revise the related procedure documents.

b) Confirm and validate the generator locations, quantities, sizes, and other technical parameters.

c) Define any requirements on generator output performance including power factor, harmonics, and voltage regulation.

d) Confirm and validate Automatic Transfer Switch (ATS) configuration and coordination logic on transferring power between HECO and the generators (and revise related design documents).

e) Define the generator alarm and control interface with CSC’s SCADA (and revise related design documents).

f) Define and identify grounding requirements and generator circuit breaker sizing and setting requirements.

g) Define wiring, conduits, electrical connector and TPSS penetration requirements, including any control power required from the TPSS to the ATS/Generator (and revise related design documents).

h) Define SCADA communication interface requirements including ATS and generator control and monitoring (and revise related design documents).

i) Confirm notification requirements under the island-wide or regional power outage event (and revise related design documents).

j) Define requirements for generator site intrusion detection and CCTV coverage (and revise related design documents).

k) Review the final design provided by the generator contractor.

l) Review procurement documents developed by HART.

m) Develop and submit a Safety Analysis describing any safety related impacts of operating the system under generator power.

The CSC must coordinate with the generator contractor and provide and install all SCADA interfaces and all associated wiring required to remotely control and monitor all generators. The CSC shall provide SCADA connections to the generator contractor-provided interface panel that provides monitoring and
Honolulu Rail Transit Project
REQUEST FOR CHANGE WORKSHEET

control input/output points. The CSC must coordinate with the generator contractor for the routing of all wires from the generator interface panel to the CSC's SCADA equipment. The CSC's SCADA subsystem shall control and monitor the generator circuit breakers and automatic transfer switches. The CSC shall define the Automatic Transfer Switch coordination logic for transferring power between HECO power supply and the generators.

The NFPA 110 Level 1 alarms to be monitored include, but are not limited to, over crank shutdown, coolant low alarm, low fuel alarm, control switch not in auto position, battery-charger malfunction alarm, battery low-voltage alarm, coolant high temperature alarm, generator running indication and ground fault alarm.

The CSC shall provide intrusion detection and CCTV coverage for the generator sites that communicates with the OCC and is part of, and integral with, the Core Systems intrusion detection and CCTV subsystems.

The generators and all appurtenant equipment and spare parts shall be part of, and integral with, the CSC's MMIS subsystem.

All design information shall be submitted to HART for review and acceptance.

The CSC shall coordinate with the generator contractor and confirm the generator circuit breaker sizing and grounding requirement as well as the wiring, conduits, electrical connectors, handholds, and TPSS penetration requirements, including any control power required from the TPSS to the ATS/Generator.

The CSC shall coordinate with the generator contractor for all generator post-installation tests and system integration tests. The CSC shall perform TPSS power transfer tests to ensure compatibility between the generators and all TPSS equipment and shall perform system integration testing to ensure operational compatibility between the generators and all other subsystems.

The CSC shall coordinate with the generator contractor to define preventative maintenance requirements and procedures, such as regular exercise of the generator.

The CSC shall provide training to the OCC operators and HART personnel on the monitoring and operations of the generators.

Justification:

HART has concerns regarding power system stability on Oahu resulting in island-wide or regional power outages. A complete power outage could strand trains on the guideway for an extended period of time. In this case, HART desires to contain the passengers within the vehicles and move them to the nearest station to disembark. HART will procure Traction Power Backup Generators to accomplish this objective.

Attachments:

ROM Schedule Estimate:
No schedule impact anticipated.

ROM Cost Estimate:
$752,000

Effect on Quality:
N/A

Effect on Configuration Management:
New design documents and or drawings will be developed by the CSC for review and acceptance by HART.

Effect on Environment:
Honolulu Rail Transit Project
REQUEST FOR CHANGE WORKSHEET

N/A

Effect on Safety: N/A

Submitted By: [Signature]  
Steve Beebe, CSOC Change and Claims Engineer  
Date: 3/18/2015

Approved By: [Signature]  
Huy Huynh, CSOC Project Manager  
Date: 3/18/2015
Request Approval for CCO 55
Contract No. CT-HRT-1200106
CSDBOM Contract
Traction Power Backup Generators

October 3, 2019
Purpose

- This change order requests funds to design, provide, install, and test the equipment that will be a manual switch of the power source from HECO to the Traction Power Backup Generators if power fails island-wide.

- The cost is $2,368,154.00 and the Design Build portion of the contract will increase from $778,147,664.30 to $777,629,472.30. This is a fixed fee contract and the costs will be incurred 2019 Q4 through 2022 Q4.

- These additional funds will come out of budgeted allocated contingency for the contract, and the total cost of the Project without finance costs remains at $8.165 billion.
Scope of Work

- HART is procuring, under separate contracts, four Traction Power Backup Generators for the entire 20-mile alignment.
- In the event of an island-wide power outage, the Generators will power the trains to the next station so passengers can disembark.
- This Change Order will compensate the CSC to design, provide, install, and test the equipment that will switch the power source from HECO to the Generators when needed.
- The power transfer can be switched remotely from the OCC or locally at the Generator.
Requested Action

- Approve Contract Change Order 55 in the amount of $2,368,154.00 to provide the switch equipment and command/control interface for the Backup Generators.

- HART previously forecasted this cost and allocated a budget line item for it. Sufficient funding is available in the Project budget. Unallocated contingency is not required to be used for this change.

- There is no change in the Project Budget of $8.165 billion.

- Affirmation: This change order has been reviewed and approved in accordance with HART’s procedures and is fully documented.
THE DESIGN BUILD CONTRACT

- Original Price (w/o O&M) $573,782,793.00
- Previous Change Orders $204,364,871.30
- Current Contract Price $778,147,664.30
- This Change Order $2,368,154.00 (Alloc. Contingency)
- New Contract Price $780,515,818.30