



**THE PORT
OF LOS ANGELES**
Executive Director's
Report to the
Board of Harbor Commissioners

DATE: MARCH 7, 2012

FROM: CLEAN TRUCK PROGRAM

SUBJECT: RESOLUTION NO. _____ - APPROVE CONTRACT BETWEEN THE CITY OF LOS ANGELES HARBOR DEPARTMENT AND BALQON CORPORATION TO UPGRADE FIVE HARBOR DEPARTMENT-OWNED BALQON ELECTRIC YARD TRACTORS

SUMMARY:

Staff requests approval of the Proposed Contract between the City of Los Angeles Harbor Department (Harbor Department) and Balqon Corporation (Balqon) in the amount of \$350,000 to upgrade five Harbor Department-owned Balqon E-20 model electric yard tractors from lead-acid to lithium-ion based batteries. The money will be reimbursable from a grant that has been authorized for the Harbor Department from the United States Department of Energy's (DOE) Energy Efficiency and Conservation Block Grant (EECBG) program. It is anticipated that the proposed battery upgrade would more than triple the operating hours of a yard tractor on a single charge to make them more suitable for port operations. This funding was originally programmed for the retrofit of six Harbor Department-owned Balqon yard tractors with a hydrogen fuel cell system via Contract No. 11-39578 between the Harbor Department and Vision Motor Corp (Vision) in the amount of \$622,000. However, this retrofit has not been successful due to design problems and software integration issues. Vision and the Harbor Department have mutually agreed to not move forward with completing the retrofits. As a result, the Harbor Department will reprogram EECBG funds to allow Balqon to complete the battery upgrades. Engineering design work performed and hardware components procured by Vision are transferrable to Balqon and other technology projects currently being developed for the Harbor Department by Vision.

RECOMMENDATION:

It is recommended that the Board of Harbor Commissioners (Board):

1. Approve the Proposed Contract with Balqon Corporation for \$350,000 to upgrade five Harbor Department-owned electric tractors with lithium-ion batteries and authorize said expenditures;

SUBJECT: CONTRACT WITH BALQON CORPORATION

2. Authorize the Executive Director to execute the Proposed Contract for and on behalf of the Board;
3. Adopt Resolution No. _____.

DISCUSSION:

EECBG Funds/Hydrogen Fuel Cell Retrofits - The City of Los Angeles (City) was awarded \$37 million from the EECBG program in 2009. In March 2010, the Harbor Department was awarded \$1.4 million of these funds from the City. In March 2011, the Board approved Contract No. 11-39578 with Vision to retrofit up to 15 Harbor Department-owned Balqon yard tractors with a hydrogen fuel cell system (Transmittal 1) at a cost of \$622,000 for the first six trucks, with the remaining nine trucks to be retrofitted if future grant funds were secured.

The project with Vision was designed to extend the range of the battery powered yard tractors, which at the time were unable to operate for a complete shift at a terminal on a single charge. The project was also proposed in an effort to provide additional technology choices that could assist the port in accelerating its efforts to bring zero emission trucks into the short haul on-road drayage fleet. The first retrofitted units were scheduled for delivery in October 2011; however, Vision has been unable to integrate its fuel cell system into the existing Balqon yard tractor control software. Harbor Department staff facilitated meetings between Vision and Balqon to try to resolve the software communication issues. Some progress was made, however Vision encountered additional issues when trying to integrate its system with the battery charger software, which is provided by a third party.

Under the grant, all work must be completed by June 30, 2012, to be eligible for reimbursement. Realizing that additional delays would jeopardize the grant deadline, staff had initial discussions with Vision regarding cancelling and re-directing the retrofit work in mid-January 2012. Vision and the Harbor Department have now mutually agreed to not proceed with the fuel cell retrofits. Stopping work on the retrofits allows Vision to focus on other projects and not dedicate any further resources on retrofits that may have subsequent programming and system compatibility issues. The Harbor Department also has one other yard tractor project and two on-road truck projects with Vision. Stopping Vision's work now on this project will also allow the Harbor Department to reprogram the grant funding.

It is important to note that \$262,000 was paid to Vision as progress payments for completion of the physical engineering design and for components purchased and received by Vision. The \$262,000 paid by the Harbor Department was reimbursed by EECBG funds. While no retrofits were completed, the Harbor Department believes that the design work and components have value moving forward and will attest to the DOE as such. First, the design work product will be provided to Balqon to assist in resolving any remaining system programming issues, and Vision will coordinate with Balqon as needed. Second, the design work has assisted Vision in the development of their yard tractor offering, the Zero Emission Terminal Tractor (ZETT), which was ordered jointly by the Harbor Department and the Port of Long Beach through the Technology Advancement Program (TAP). Additionally, the components can be used in any

SUBJECT: CONTRACT WITH BALQON CORPORATION

upcoming Vision units including the extended-range on-road truck ordered by the Harbor Department to be used to haul the Transporter. The Harbor Department will work with the DOE to obtain concurrence and approval that this was an eligible and appropriate use of funds under the grant. Should the DOE deem the expenditures ineligible, the Harbor Department will work with Vision to repay the DOE a portion or all the \$262,000. Staff will return to the Board for action if repayment or further resolution is required. The mutual understanding with Vision to cease work on the retrofits has preserved the Harbor Department's rights under the Contract and prevented the Harbor Department from spending additional funds on a project that still has challenges.

Proposed Reprogramming - With the early progress payment made to Vision, there is still \$360,000 in EECBG funding authorized to the Harbor Department. In order to make use of the available grant funding, staff proposes to reprogram EECBG funding to upgrade the batteries on five Balqon lead-acid battery yard tractors to lithium-ion technology at a cost of \$70,000 per yard tractor, for a total cost of \$350,000 (Transmittal 2).

The Harbor Department owns a total of fourteen Balqon yard tractors. Of these, nine are considered "first generation", which are equipped with lead-acid batteries. The first generation yard tractors were tested at a marine terminal and had an operational range of approximately two hours per charge. While this was consistent with what they were designed to do, terminal operators expressed concern over the fact that the units would not last an entire shift on a single charge. Balqon then developed the "second generation" yard tractor, equipped with a lithium-ion battery. The second generation units lasted approximately four hours on a single charge, which would still be insufficient for an entire shift. Of the Balqon yard tractors owned by the Harbor Department, two are second generation units. Due to the operating range concerns, none of the first or second generation units were deployed at marine terminals. Balqon then further developed the lithium-ion units to create three "third generation" units. Two of these units have been tested at California Cartage Company since August 2011. The tests have shown that the vehicles can operate approximately 12 hours on a single charge. All three third generation units will be deployed at facilities for in-service operational testing this month. The proposed upgrade retrofit of five first generation yard tractors to third generation power systems will provide a demonstration fleet of eight units which will accelerate the upcoming demonstration phase.

The technology has advanced to a state where staff believes that it is ready for in-use operational demonstration at marine terminals. With the development of the third generation units, staff believes that Balqon has potentially resolved the prior range issues. Staff views reprogramming the grant funds as an opportunity to deploy and test multiple third generation units at different marine terminal environments to gather as many data points as possible to thoroughly evaluate in-service performance.

Need - The 2010 Clean Air Action Plan Update (CAAP), adopted by the Board in November 2010, includes the San Pedro Baywide Standards (Standards) which are the Harbor Department's long-term emission and health risk reduction goals. The Harbor Department's emissions forecasting, which is based on anticipated cargo growth and full implementation of the CAAP, shows that without the emergence of new control strategies and the development of

SUBJECT: CONTRACT WITH BALQON CORPORATION

new technologies, the Harbor Department will not meet the 2020 and 2023 Standards. Additionally, the California Legislature passed Assembly Bill 32, The Global Warming Solutions Act of 2006, which includes a requirement for California to reduce greenhouse gas emissions to the same levels as 1990 by 2020. In its initial research, the state recognizes that while there are emission reduction strategies in the goods movement industry, with growth, these strategies would not produce the required reduction in greenhouse gas emissions. As a result, the port has joined with the California Air Resources Board and the South Coast Air Quality Management District to provide incentives to encourage the development of zero emissions technologies. This development has had challenges and has required the port to be flexible in its efforts to move this technology forward. The shifting of this funding allows the port to focus its efforts on the technology that has been most promising in recent testing, recognizing that the successful demonstration of the Balqon yard tractors would significantly help to move toward the Standards and state greenhouse gas requirements.

Schedule and Payment - Projects funded by the EECBG program are required to be completed by June 30, 2012. The battery upgrades are expected to take less than 60 days to complete following the execution of a purchase order contract. The Proposed Contract includes a term ending date of May 30, 2012. Any work completed after this date will not be eligible for payment from the Harbor Department. The Proposed Contract also contains a provision that stipulates that only one lump sum payment will be made for the work completed through May 30, 2012. The amount of payment will be based on the number of completed units at \$70,000 per unit up to the contract amount of \$350,000. Based on recent discussions with Balqon and the provision that payment will not be provided until work is completed, staff is confident that Balqon will complete the work as requested. No partial payments will be made for labor or parts for incomplete units.

Sole Source Justification - The Harbor Department has sole sourced Balqon to upgrade the batteries of the electric yard tractors. The upgrade of the batteries requires several tasks, some of which can be done by other vendors. However, there are tasks that are better to be performed by Balqon itself. This includes the design of the battery packs to fit into the existing battery boxes, but more importantly the software programming for the batteries to communicate with the battery management system, battery charger system and power controls, parts of which are proprietary to Balqon. Selecting a third party vendor may result in problems in programming and system compatibility similar to what occurred with the hydrogen fuel cell retrofit. A third party vendor would also require additional time to understand the existing programming and write new software to communicate with existing vehicle systems. Selecting Balqon provides the best assurance that the work is performed in a timely matter and that the units will meet the expected performance standards achieved in the testing performed at California Cartage Company.

ECONOMIC BENEFITS:

Spending under this Board action will support the equivalent of 3.1 direct and 3.4 secondary jobs in the five-county region.

SUBJECT: CONTRACT WITH BALQON CORPORATION**FINANCIAL IMPACT:**

The proposed major action is to award the Proposed Contract between the Harbor Department and Balqon in the amount of \$350,000 for a lithium-ion battery upgrade of five Balqon yard tractors. This action would authorize the Harbor Department to retrofit five Harbor Department-owned Balqon E-20 model electric yard tractors from lead-acid to lithium-ion based batteries at a cost of \$350,000. This amount is eligible for grant reimbursement from the DOE's EECBG program. Ongoing operating and maintenance costs are expected to be borne by the terminal operators and Balqon. In terms of sources of funding, the delivery of five retrofitted Harbor Department-owned Balqon E-20 model electric yard tractors is expected within 60 days after the execution of the contract with Balqon; therefore, funding to pay for retrofits/upgrades is available in the Fiscal Year 2011/12 budget through Operating Cost Center 510, Capital Equipment General Ledger Account 13240, Work Order 08290.

Additionally, Contract No. 11-39578 between the Harbor Department and Vision authorized expenses up to \$622,000 for the retrofit of six Harbor Department owned Balqon trucks. To-date, the Harbor Department has paid \$262,000 to Vision for progress payments towards the completion of physical engineering design work and components purchased for the retrofits. Subsequently, the Harbor Department requested full reimbursement of \$262,000 from the DOE. While no retrofits were completed, the Harbor Department believes that the design work and components have value moving forward. The Harbor Department will continue to work with DOE to obtain concurrence and approval that these paid expenses remain eligible under the grant. If DOE deems that a refund for expenses paid to-date is required, then the Harbor Department will (a) work with Vision to repay the DOE a portion or all of the \$262,000; (b) staff will access fund availability for up to \$262,000 throughout the Harbor Department's capital or capital equipment funds that may have resulted from other operating cost savings; and (c) return to the Board for further action, if required.

ENVIRONMENTAL ASSESSMENT:

The proposed action is a purchase order Contract to retrofit five Harbor Department owned Balqon Corporation E-20 electric tractors, which will have environmental benefits and long-term economic advantages to the Harbor Department and the City of Los Angeles. As an administrative activity and an activity involving the addition of environmental protection devices for use in existing mechanical equipment, the Director of Environmental Management has determined that the proposed action is exempt from the requirements of the California Environmental Quality Act (CEQA) under Article II, Section 2(f) and Article III Class 1(6) of the Los Angeles City CEQA Guidelines.

DATE: MARCH 7, 2012

PAGE 6 OF 6

SUBJECT: CONTRACT WITH BALQON CORPORATION

CITY ATTORNEY:

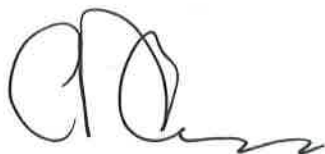
The Office of the City Attorney has reviewed and approved the contract as to form and legality.

TRANSMITTALS:

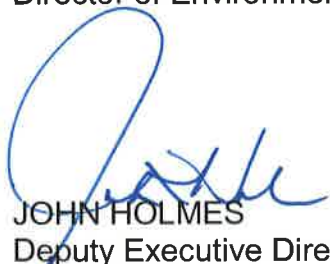
1. Contract No. 11-39578 with Vision Motor Corp.
2. Proposed Contract with Balqon Corporation

FIS Approval: ef (initials)

CA Approval: rn (initials)



CHRISTOPHER CANNON
Director of Environmental Management



JOHN HOLMES
Deputy Executive Director



MICHAEL R. CHRISTENSEN
Deputy Executive Director

APPROVED:



GERALDINE KNATZ, Ph.D.
Executive Director

CO-AUTHORS: F. Campos/K. Maggay
BOARD MEETING: 3/15/2012

FILE: G:\ADMIN\BOARD REPORTS\AIR QUALITY\CTPIEECBG Reobligation from Vision to Balqon\CTP_BALQON VISION - AGENDA SETTING.docx
UPDATED: 3/2/2012