



November 8, 2018

To: Transit Committee

From: Darrell E. Johnson, Chief Executive Officer

Subject: OC Streetcar Vehicle Delivery Update

Overview

An update on the OC Streetcar vehicle delivery activities is provided for Board of Directors' review. The update includes an overview of the feedback received from the public and the industry on the exterior vehicle design concepts as presented to the Board of Directors in August 2018. In order to advance the vehicle manufacturing process, a vehicle design concept must be approved and submitted to Siemens Industries, Inc.

Recommendation

Direct staff to submit OC Streetcar vehicle design option C to Siemens Industries, Inc., in order to advance the OC Streetcar vehicle design process.

Background

On July 31, 2018, the Orange County Transportation Authority (OCTA) executed an agreement with Siemens Industries, Inc. (Siemens) to provide eight streetcar vehicles, spare parts, and tools for the OC Streetcar. Since contract execution, staff has been coordinating with Siemens in the development of the initial project management processes required to support the design, manufacturing, and delivery of the eight S70 streetcar vehicles needed for the OC Streetcar service. One of the key items needed from OCTA to initiate the design process includes the selection of the vehicle exterior color scheme. To meet the vehicle delivery schedule, OCTA must submit to Siemens by late November 2018 the conceptual vehicle exterior design for incorporation into the overall vehicle design process.

A comprehensive effort took place to develop a design concept, with the main goal of creating a branded identity for the OC Streetcar as a new transportation mode within OCTA's family of services. To help guide the process, staff reviewed vehicle designs of peer agencies and used existing OCTA branding practices as a baseline to ensure consistency. On August 27, 2018, staff received Board of

Directors' (Board) approval to share vehicle exterior design concepts with the public and seek feedback for incorporation into the recommendation of the final design (Attachment A).

Discussion

OCTA is working with Siemens in the development of a number of documents that will assist in the management and documentation of the vehicle design and manufacturing process, including the Project Management Plan, Quality Assurance Plan, Master Schedule, and document control process. Additionally, OCTA is working with Siemens to prepare initial versions of the Design Review Plan, First Article Inspection (FAI) program, and the Master Test Plan, which provide an overview of the activities which will occur during the vehicle design development, manufacturing, and testing stages.

The vehicle design review is the critical first step in the manufacturing process. The design review process spans approximately 16 months, with the submittal and review of hundreds of documents as defined by the technical provisions within the contract covering all the major systems of the vehicle. For OC Streetcar, there are approximately 15 design areas that will have multiple packages of design documentation submitted for review. Design review package examples include: carbody, trucks, doors, cab layout and controls, HVAC, propulsion, auxiliary power, couplers, energy absorbing bumpers, braking, lighting, operator manuals, maintenance manuals, and training materials.

Design review is a multi-step process, typically consisting of preliminary, intermediate, and final design review stages, each of which may have several submittals before the design is deemed satisfactory. However, given the proven nature of the core vehicle design being offered by Siemens, this process could be compressed. The design review process culminates with a comprehensive validation testing program, including FAI tests for any new component designs.

A critical decision in the design review process is the selection of a vehicle exterior design concept that provides a highly visible vehicle front, incorporates a clean and uncluttered look to support both advertising, and OCTA's branding, while also providing for ease and low-cost maintenance. Following Board direction, staff initiated a comprehensive design review and public outreach process. This design review and outreach process provided the three Board-approved concepts to be reviewed with consideration for the factors noted above, vehicle visibility being the highest priority. During this public review period, staff also received feedback from the vehicle manufacturing industry and peer agencies as discussed below.

Public Feedback

During a one-month period from mid-August to mid-September 2018, staff conducted outreach to key stakeholder groups, the general public, OC Bus and Metrolink riders, and OCTA employees. A non-scientific, online, and printed questionnaire was utilized for collecting feedback. In addition, the concepts were discussed at several committee and key stakeholder meetings, including the OC Streetcar Stakeholder Working Group (SWG).

Feedback was encouraged through a campaign utilizing social media posts and advertising, emails, digital and printed questionnaire, press releases, multi-language print advertising, and news articles which yielded a high-engagement response of more than 4,300 participants. With feedback from cities, OCTA's advisory committee members, residents, commuters, students, seniors, and youth, the input reflects the diverse makeup of Orange County and the potential ridership of the OC Streetcar.

All three design options received support. While the online and paper surveys ranked Design B as the first choice, at committee meetings and other presentations where the participants had the opportunity for questions and discussion, Design C was the first choice. In addition, Design C was the first choice of the SWG, a group well informed on the project with wide-ranging engagement within the community. Comments during the discussions focused on Design C having a highly visible vehicle front design as an important safety feature, a cleaner and more classic look, a less cluttered appearance when advertising is present and easier maintenance.

Advertising Compatibility/Revenue Opportunities

Consultation with experts within the transit advertising industry indicated that Design C would be the best option to accommodate advertising without degradation of the OCTA brand or the advertising message. Furthermore, Design C would enhance, rather than compete, with the advertising, giving the OC Streetcar greater potential to attract advertising/revenue.

Industry Input

The vehicle manufacturer has reviewed the concepts and advised the more complex the design and paint scheme that crosses multiple components of the vehicle, the more costly and labor intensive it is to align during ongoing maintenance and repair. When a component needs to be repaired due to damage or during regular maintenance, the vehicle needs to be taken out of service. The component is removed, repaired, re-painted to match the

components around it, and re-assembled. When a component, like the doors, have detailed graphics that are unique to each location on the car, the process of re-assembling is more time consuming and expensive given the importance of matching and aligning the graphics with the rest of the vehicle design.

Having pre-painted spares available for components, like the doors, that are interchangeable throughout the vehicle reduces the labor time, storage of excessive inventory, repair costs, and the time associated with having that vehicle out of service. The vehicle manufacturer also noted that white paint on the bottom of a vehicle is difficult to keep clean.

In addition, staff also consulted the Strategic Advisory Review Team (START) for its recommendations based upon lessons learned from their respective systems' vehicle designs, including the Siemens S70 vehicle. The START team is comprised of streetcar technical experts from Dallas Area Rapid Transit, City of Kansas City, and the Utah Transit Authority, and it has been consulted on the development of the OC Streetcar since 2014. Staff also consulted with a representative from the Metropolitan Atlanta Rapid Transit Authority. The peer agencies shared similar input as the vehicle manufacturer and advised that white paint is difficult to keep clean, and a paint scheme which allows for interchangeable doors minimizes costs and replacement delays.

Overall, the industry considered Design C to be the most cost effective given its simple design and predominant use of a single color.

Recommendation

Staff has considered public and key stakeholder feedback, advertising compatibility/revenue opportunities and industry input, and is recommending Design C (Attachment B) based on the following:

- The paint scheme of the front of the vehicle is highly visible and distinguishable which enhances overall safety while operating in mixed-traffic.
- The simple design is classic and would not become outdated.
- Design accommodates rather than competes with advertising, which could enhance revenue opportunities.
- The paint scheme is the most simplistic in its design, making it more cost effective for maintenance and repair.
- The doors are a single color, with minimal use of decals, making them interchangeable for replacement, minimizing cost, replacement delays, and reducing inventory. Also reduces having to remove the vehicle from service for an extended period of time.
- The minimal use of white paint is easier to keep the vehicle clean.

Design C outweighed the other options when considering cost effectiveness, ease of maintenance, and advertising compatibility as advised by the vehicle manufacturer and technical experts. It also ranked the first choice among the stakeholders and second choice with the general public. Design C portrays an aesthetically appealing design while meeting OCTA's operational and branding needs.

Next Steps

Upon Board approval, staff will submit design option C to Siemens for additional design refinement. Other upcoming activities for the vehicle delivery include finalizing the master project schedule, the project management plan, and continuation of the vehicle design process. Production of the first vehicle is anticipated to begin in December 2019.

Summary

An update on the OC Streetcar vehicle delivery activities is provided for Board of Directors' review. The update focuses on the input received on the exterior vehicle design options and a recommendation for Board of Directors' approval of a design option to submit to Siemens for additional design refinement.

Attachments

- A. OC Streetcar Vehicle Design Options
- B. OC Streetcar Final Vehicle Design Concept

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