



550 Olive Street  
Santa Barbara, CA 93101  
**805.963.3364**  
[sbmtd.gov](http://sbmtd.gov)

## ***Short Range Transit Plan Request for Proposals (RFP)***

### **SOLICITATION INSTRUCTIONS**

#### **Project Summary Sheet**

**Project Name:** Short Range Transit Plan (SRTP)

**Solicitation Issuance Date:** Wednesday, February 17, 2021

**Project Description:** Consultant services for the development of a SRTP that will layout the necessary resources and priorities to continue to provide quality transit service for the five-year planning horizon

**Project Period:** MTD anticipates plan completion and approval in October 2022.

**Project Location:** MTD Administrative Offices 550 Olive Street Santa Barbara, CA 93101

**Requests & Clarifications Deadline:** Wednesday, March 3, 2021, at 10:00 AM (PST)

**Submittal Due Date/Time:** Wednesday, March 24, 2021, at 10:00 AM (PDT)

**Submittal Location:** Electronic submittals via email to [purchasing@sbmtd.gov](mailto:purchasing@sbmtd.gov)

**Submittal Contents:** Technical Proposal on qualifications, and MTD-Forms: *Price Proposal; Acknowledgement of Addenda; Bidder Information Form; Work References; Non-Collusion Declaration and Compensation Certification; and Lobbying Certification*

**Contract Award Date:** Tuesday, May 18, 2021 (projected)

**Solicitation Contact:** Valerie White, Purchasing Agent, (805) 963-3364 x244, [purchasing@sbmtd.gov](mailto:purchasing@sbmtd.gov)

**Type of Contract:** Firm, fixed fee compensated per task completion as identified in the *Scope of Services*

**Other Requirements:** Subject to Federal Transit Administration Contract Provisions

Offeror's responsibility to check MTD's website at <https://sbmtd.gov/about/doing-business/> for updates



## Short Range Transit Plan Request for Proposals

February 17, 2021

**Contact:**

Valerie White, Purchasing Agent  
Santa Barbara Metropolitan Transit District  
550 Olive Street, Santa Barbara, CA 93101  
(805) 963-3364, extension 244  
[vwhite@sbmtd.gov](mailto:vwhite@sbmtd.gov)

**SANTA BARBARA METROPOLITAN TRANSIT DISTRICT**  
***Short Range Transit Plan Request for Proposals***  
**SOLICITATION INSTRUCTIONS**

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**Attachment 1: Forms & Certifications**

**Attachment 2: Scope of Services**

**Attachment 3: Master Agreement**

**Attachment 4: Federal Transit Administration Contract Provisions**

**Attachment 5: Facilities Master Plan, Executive Summary**

**Attachment 6: MTD's Strategic Plan: 2016-2021**

**Attachment 7: ZEB Power Modeling - Final Report**

**SANTA BARBARA METROPOLITAN TRANSIT DISTRICT**  
***Short Range Transit Plan Request for Proposals***  
**SOLICITATION INSTRUCTIONS**

## **1. INTRODUCTION**

The Santa Barbara Metropolitan Transit District (MTD) is issuing this Request for Proposals (RFP) to engage with a qualified consultant to provide for the development of a Short Range Transit Plan (S RTP) that will analyze the served communities and layout the transit priorities for the five-year planning horizon. The expected deliverables are tied to each task described within the *Scope of Services*.

MTD is a special district transit operator created under Sections 95000, et seq. of the California Public Utilities Code, and serves the cities of Santa Barbara, Carpinteria, and Goleta as well as the unincorporated areas of Montecito, Summerland, and Isla Vista with bus service. The mission of MTD is to enhance the mobility of South Coast residents, commuters, and visitors by offering safe, appealing, equitable, environmentally responsible, and fiscally sound transit service.

Consultants interested in submitting a proposal (Offeror or Bidder) should be certain to read all documents in this RFP in order to prepare proposals correctly and be fully aware of the contractual terms and conditions. Failure of an Offeror to follow instructions may result in rejection or disqualification of its proposal, and lack of knowledge of the contract terms shall not excuse it from its obligations.

## **2. PRE-SUBMITTAL ACTIVITIES**

### **2.1 COMMUNICATIONS, REQUESTS & CLARIFICATIONS**

All communications concerning this solicitation and the project shall be directed to the purchasing agent via email to [purchasing@sbmtd.gov](mailto:purchasing@sbmtd.gov). Unless authorized by the purchasing agent, all Offerors and their representatives shall not communicate or make contact with other MTD employees or consultants in regard to any aspect of this solicitation.

MTD shall only accept questions and consider requests for clarifications or changes by emailing [purchasing@sbmtd.gov](mailto:purchasing@sbmtd.gov) until Wednesday, March 3, 2021, at 10:00 AM (PST). A request for clarification or change may be requested to any aspect or requirement of the RFP or any addenda thereto. MTD's responses will be provided through written addenda.

### **2.2 RFP MODIFICATIONS & ADDENDA**

MTD reserves the right to amend this RFP through written addenda. Other than through written addenda, no other form of communication with any officer, employee, or agent of MTD shall be binding upon MTD. All addenda will be considered part of the RFP and thereby may be incorporated into the *Master Agreement*. Failure of a prospective supplier to receive any addendum shall not relieve it from any obligation under the RFP as clarified or modified. Any addendum will be sent via email to all parties known to have received the solicitation and concurrently posted to MTD's website at <https://sbmtd.gov/about/doing-business/>.

## **3. PROPOSAL PREPARATION & SUBMITTAL**

The proposal to be provided is composed of two types of information: Offeror-prepared documents and Offeror-completed forms provided by MTD. Failure to provide all required information in the proposal, including fully and accurately completed forms, may result in the rejection or disqualification of the proposal.

### 3.1 OFFEROR-PREPARED DOCUMENTS

Offeror-prepared documents will be evaluated as part of the proposal to determine whether an Offeror is responsible. The technical information provided should establish the ability of the Offeror to satisfactorily perform the required work. Offeror-prepared documents to be included with each submittal are listed below.

Letter of Transmittal—Letter shall be signed by an officer authorized to bind the proposal contractually and shall address the following.

- Offeror's interest and willingness to enter into a contract with MTD to carry out the project as described in the attached *Scope of Services*.
- Offeror's willingness to accept the contract terms and conditions included in the attached *Master Agreement* and the *Federal Transit Administration (FTA) Contract Provisions*. The successful Offeror will be required to comply with all terms and conditions prescribed for third party contracts by the FTA.
- Offeror's ability and willingness to obtain insurance meeting the requirements indicated in paragraph 18 of the attached *Master Agreement*. An insurance certificate meeting the requirements will be required prior to execution of the contract.
- An indication that the Offeror is a recognized professional consultant with at least five years of experience providing planning services to transit systems.
- Letter may also include a brief introductory statement describing the Offeror's basic understanding of the project, and overview of its qualifications and/or an expression of interest in accomplishing MTD's goals.

Description of the Firm—Proposal shall include a description of the Offeror, including its line(s) of business, size, location(s), relevant credentials, licenses, or certifications, and the number of years providing similar services particularly to transit operators of similar size and scope of MTD. The location where office work for MTD's project is to be accomplished should be identified. Please limit the narrative to a maximum of one page.

Prior Experience with Similar Projects—Proposal shall include descriptions of three similar projects carried out by the Offeror. Specific details should be cited as to the approach or methodology, as well an explanation of ability to meet the project plan milestones. Each project described should identify the key staff of the Offeror, the contact at the agency/organization, and the service dates. Specific details to successful community outreach strategies should be presented. MTD is interested in engaging with a consultant that demonstrates innovation and/or has proven processes for facilitating community engagement during the COVID-19 pandemic. Offeror's referenced projects shall also be listed as a reference on the attached MTD forms. Please limit the narrative to a maximum of two pages.

- Work Sample: In a separate attachment in the delivery of the Proposal, Offeror shall include one sample plan, or associated task work, similar to that described in the *Scope of Services*. If Offeror worked with another firm, provide a description of Offeror's role in the project.

Key Personnel Résumés – Proposal shall include résumés of key consulting personnel with an emphasis on professional experience with California special district and public transit agency planning. The Offeror's proposed project manager (primary MTD contact) must be identified with a résumé that reflects educational background, training, and qualifications—reflecting at a minimum the last three consecutive years of experience with transit consulting/planning. An introduction by name and background of the principal owners, partners, or officers shall be included by résumé or description of their experience. Please limit each résumé to two pages, and any narrative to a maximum of one page.

Management Plan: An organizational chart should reflect the proposed team - the individuals, including any other party or subcontractor, who may have a significant role in the delivery of the project. The staff proposed to perform the *Scope of Services* should be identified as well as a brief description of how the team will interact to accomplish the project goals. The proposed team must demonstrate planning experience and exemplary project

management that includes coordinating with both subcontractors and stakeholders. Please limit team chart and narrative to one page each.

- Subcontractors: If subconsultants or subcontractors are to be used the Offeror must include in the proposal a description of the qualifications and the work to be done by each subcontractor. The subcontractor's full business name and key contact information should be included. Please limit each subcontractor description to one page each.

Work Plan – Offeror shall provide a narrative that addresses the *Scope of Services* requirements and shows the Offeror's understanding of MTD's needs and requirements. At a minimum, the Work Plan shall:

- Describe the approach or process to execute the project.
- Outline sequentially the activities that would be undertaken in completing the work.
- Specify the community outreach methods to achieve maximum awareness and participation in the SRTP.

### 3.2 MTD FORMS

The MTD Forms that are completed and returned with each proposal are listed below.

Price Proposal—Price proposals shall be provided on the fully completed and signed *Price Proposal* form included in this RFP package showing a fee for the completion of each "task" as described in the *Scope of Services*. The *Price Proposal* form shall also accurately calculate the total compensation for carrying out the entire project under the terms of the Agreement. Failure to include a completed and signed *Price Proposal* form with fee breakdown per task will render a proposal non-responsive and it will be rejected.

Acknowledgement of Addenda—Offeror shall acknowledge either receipt of each Addendum or that there were no addenda by including in its proposal the fully completed and signed *Acknowledgement of Addenda* form.

Bidder Information—Proposals shall include the fully completed *Bidder Information* form included in this RFP.

Credit and Work References – Proposal shall include the *Credit and Work References* form with a minimum of three work references that are California public agencies that consultant and/or planning services were provided to within the last five years. Include on the form the same parties as those in the *Prior Experience with Similar Projects* element of your proposal.

Lobbying Certification— Submittal shall include the fully completed and signed *Lobbying Certification* form which is required only if the bidder's price proposal amount exceeds \$100,000.

Non-Collusion Declaration and Compensation Certification—Submittal shall include the fully completed and signed *Non-Collusion Declaration and Compensation Certification* form. The declaration and certification are required based on the usage of California state funding for the project.

### 3.3 ELECTRONIC SUBMITTAL

One electronic submittal of the offer in .PDF format shall be emailed to [purchasing@sbmtd.gov](mailto:purchasing@sbmtd.gov) with the email subject line stating "RFP–Short Range Transit Plan". Proposals will be accepted by MTD via email only until Wednesday, March 24, 2021, at 10:00 AM (PDT).

It is advisable to submit the proposal in advance of the deadline to allow for the resolution of any email delivery problems. If the file size of the email exceeds server requirements, the email submission may be broken into smaller emails. Unless determined solely by MTD that a proposal was late due to the fault of MTD, submittals received after such time cannot be considered by MTD.

### 3.4 WITHDRAWAL OF PROPOSAL

An Offeror may withdraw their proposal any time prior to the submittal deadline by sending an email request from the Offeror's authorized representative. Any such withdrawal does not prejudice the right to resubmit a proposal by the submittal deadline.

### 3.5 PROPOSAL SUBMITTAL STIPULATIONS

Proposals received by MTD become the property of MTD. Proposals submitted will remain valid for ninety (90) calendar days following the proposal due date. MTD will not pay any cost incurred by the Offeror resulting from the preparation or delivery of its offer. MTD reserves the sole right to review, accept or reject proposals; or to cancel this solicitation in whole or in part if it is in MTD's best interest to do so.

## 4. EVALUATION

### 4.1 PROPOSAL DEFECTS OR COLLUSION

MTD may reject any proposal that includes unacceptable deviations or is not prepared in accordance with the instructions and requirements of this solicitation. MTD reserves the right to waive any defects, or minor informalities or irregularities in any proposal which do not materially affect the proposal or prejudice other Offerors.

If there is any evidence indicating that two or more Offerors are in collusion to restrict competition or otherwise engaged in anti-competitive practices, the proposals of all such Offerors shall be rejected and such evidence may be a cause for disqualification of the participants in any future MTD solicitations.

### 4.2 RESPONSIVENESS

MTD shall examine all proposals for completeness and responsiveness to the provisions of this RFP. MTD may request additional or clarifying information from an Offeror. Proposals that do not contain all required materials, information or forms, or where such materials, information or forms are substantially incomplete, may be considered non-responsive and rejected by MTD.

### 4.3 EVALUATION COMMITTEE

Responsive proposals from Offerors shall be subject to review by an Evaluation Committee. The purpose of the Evaluation Committee is to establish the firm that the committee believes will provide MTD with the best "value." Value for this RFP is determined by the following criteria:

| Category                                                                                            | Qualifications Evaluated                                                                                                                                                                                                                                                                                                                                                                                          | Scoring Criteria |
|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Technical Qualifications of the Firm and Prior Experience with Similar Projects in Planning.</b> | Experience and professional qualifications in performing work comparable to the work described in the <i>Scope of Services</i> ; capacity to accomplish project in the required time; experience working with transit or other public agencies; strength and stability of the firm, including consultant team.                                                                                                    | 25               |
| <b>Execution of Effective Community Outreach</b>                                                    | Qualifications and previous experience of the firm and key personnel in developing and executing effective community outreach that results in meaningful participation from a wide variety of stakeholders and community members, including bilingual and culturally relevant strategies. Experiences include successful outreach conducted during the COVID-19 pandemic, taking the digital divide into account. | 10               |
| <b>Qualifications of Key Personnel and Management Plan</b>                                          | Qualifications and previous experience of personnel; key personnel's level of involvement in performing related work cited in the <i>Scope of Services</i> .                                                                                                                                                                                                                                                      | 20               |

|                       |                                                                                                                                                                                                                                                                                                                              |            |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>Work Plan</b>      | Proven ability and commitment to provide sufficient detail to demonstrate the Offerors' understanding of the work; provides a clear and logical outline of work to be performed and a focus on MTD's desired outcomes; and schedule indicating firms commitment to completing the project in an efficient and timely manner. | 25         |
| <b>Price Proposal</b> | The lowest evaluated total cost, will receive 20 points. Then, remaining proposed costs will be calculated with a cost factor (% of the 20 points) by placing the lowest offer as the numerator and respective Offers' cost as the denominator.                                                                              | 20         |
| <b>Total</b>          |                                                                                                                                                                                                                                                                                                                              | <b>100</b> |

The Evaluation Committee will evaluate and rank proposals to determine the most qualified Offeror(s). Based upon the initial ranking, MTD's staff may either (1) determine "responsibility" (as described below) and transmit to the General Manager and/or MTD Board of Directors a recommendation of contract award to the highest ranked and responsible Offeror; or (2) recommend establishment of a competitive range. The competitive range may include all or a portion of the Offerors.

#### 4.4 RESPONSIBILITY

When MTD determines the highest ranked Offeror or Offerors within the competitive range, MTD shall make an assessment of the Offeror's "responsibility." For purposes of this RFP, responsibility is defined as satisfactory performance in previous contracts and having the financial capacity to undertake the project. Such process will use the reference information provided in the proposal and may involve requesting additional or clarifying information from an Offeror. Proposals from any Offeror not found to be responsible shall be rejected by MTD.

#### 4.5 INTERVIEWS

As part of the evaluation process, MTD may conduct interviews with the highest ranked Offeror or Offerors the Evaluation Committee deems to be in competitive range. Such interviews are for information gathering and clarification for the Evaluation Committee. MTD may conduct interviews in person or by utilizing teleconferencing and electronic means. MTD reserves the right to award a contract without interviews and/or negotiations if deemed unnecessary to determine the most qualified, responsible Offeror with a fair and reasonable price proposal.

#### 4.6 BEST AND FINAL OFFER (BAFO)

MTD may require Offerors in the competitive range to submit BAFOs, which include any modifications to the statements of qualifications, and written responses to any issues, concerns, and questions that were raised during the interviews and/or MTD's written request for BAFOs. MTD reserves the right to require a second round of BAFOs after the initial round has concluded.

#### 4.7 FINAL EVALUATION

If MTD chooses to conduct interviews and/or request BAFO submittals, the Evaluation Committee will conduct a final round of scoring that takes into consideration information collected from interviews and/or BAFOs. Based upon the final scores, MTD staff will determine the highest ranked Offeror and report to the General Manager.

### 5. CONTRACT AWARD

#### 5.1 AWARD PROCESS

Upon determination of the most qualified, responsible Offeror with a fair and reasonable price proposal satisfactorily providing all required items, staff will prepare a recommendation for contract award to be considered by MTD's General Manager and/or the MTD Board of Directors.



Upon approval, MTD will issue such a successful Offeror a “Notification of Contingent Award.” Such notification is a declaration from MTD of its intent to award a project contract once all the required documents are received. The anticipated date of such approval is Tuesday, May 18, 2021.

## **5.2 CONTRACT EXECUTION**

The contract will be executed upon receipt of certificates of insurance. MTD must receive such documents within ten (10) calendar days after written “Notification of Contingent Award.” The successful Offeror shall have its insurance broker/agent provide MTD with certificates of insurance as at the time of contract MTD will not accept such documents from the Offeror or any agent of the Offeror other than a licensed insurance professional.

The contract shall be composed of the *Master Agreement*, *FTA Contract Provisions*, *Scope of Services*, and relevant portions of the Offeror’s proposal. In all cases, the most recent versions of the documents, taking into account any addenda thereto, shall be used in the final and binding agreement. A “Notice to Proceed” will be issued once the contract is signed by both parties.

## **6. PROTEST PROCEDURES**

MTD has established procurement protest procedures to ensure uniform, timely, and fair consideration of complaints received by MTD concerning its procurement activities. Such procedures are available on MTD’s website at <https://sbmtd.gov/about/doing-business/>.

**End of Solicitation Instructions Text (Also See Attachments 1-7)**

**SANTA BARBARA METROPOLITAN TRANSIT DISTRICT**  
**Short Range Transit Plan Request for Proposals**  
**PRICE PROPOSAL**

Provide a firm, fixed price contract for a Short Range Transit Plan as described herein *Scope of Services*.

| Description                                                                         | Price |
|-------------------------------------------------------------------------------------|-------|
| <b><i>TASK 1 Project Initiation</i></b>                                             |       |
| 1.1. Kick-off Meeting                                                               | \$    |
| 1.3. Identify Existing Conditions                                                   | \$    |
| <b><i>TASK 2 Public Outreach &amp; MTD Board Input</i></b>                          |       |
| 2.1. Present Existing Conditions Report                                             | \$    |
| 2.2. Community Workshop, Outreach & Survey                                          | \$    |
| 2.3. Present Preliminary Draft Plan                                                 | \$    |
| 2.4. Present Draft Final Plan                                                       | \$    |
| <b><i>TASK 3 Short Range Transit Plan</i></b>                                       |       |
| 3.1. Develop Preliminary Draft Plan                                                 | \$    |
| 3.2. Identify Potential Funding Sources                                             | \$    |
| 3.3. Develop Final Draft Plan                                                       | \$    |
| 3.4. Board of Directors Plan Adoption                                               | \$    |
| <b>TOTAL Proposed Price for all Tasks and delivery of Short Range Transit Plan:</b> |       |
|                                                                                     | \$    |

The Bidder hereby represents and warrants that:

1. It has sufficiently informed itself in all matters affecting the performance of the work, or the furnishing of the labor, services, software, supplies, material, or equipment called for in carrying out the project.
2. It has reviewed the contract documents including the *MTD Master Agreement*, the *Federal Transit Administration Contract Provisions*, and the *Scope of Services*, and agrees to the terms and conditions thereof.
3. Its bid has been thoroughly checked for errors and omissions and the costs, prices, hours, rates, and any other constituents of this Price Proposal are a complete and correct statement of its price for performing all project work required by the contract documents.
4. Its bid is genuine, not sham or collusive, nor made in the interest of any person not herein named; that it has not in any illegal manner sought to secure for itself any advantage over any other bidder.
5. Its bid, including the complete Proposal, is valid for 90 days following the bid due date and time.

\_\_\_\_\_  
Authorized Official Signature

\_\_\_\_\_  
Date of Signature

\_\_\_\_\_  
Authorized Official Name

\_\_\_\_\_  
Authorized Official Title

\_\_\_\_\_  
Business Name of Bidder

# **SANTA BARBARA METROPOLITAN TRANSIT DISTRICT**

## ***Short Range Transit Plan Request for Proposals***

### **ACKNOWLEDGEMENT OF ADDENDA**

The undersigned acknowledges the Bidder's receipt of the following addenda to this RFP and has incorporated information or changes in said addenda within its submittal (if no addenda were received, write "None" in the first blank):

|              |       |       |       |
|--------------|-------|-------|-------|
| Addendum No. | _____ | dated | _____ |
| Addendum No. | _____ | dated | _____ |
| Addendum No. | _____ | dated | _____ |
| Addendum No. | _____ | dated | _____ |
| Addendum No. | _____ | dated | _____ |
| Addendum No. | _____ | dated | _____ |

Note: It is the Bidder's responsibility to ensure it receives all addenda which are posted on the MTD website at <http://www.sbmtd.gov/about/doing-business/>.

\_\_\_\_\_  
Authorized Official Signature

\_\_\_\_\_  
Date of Signature

\_\_\_\_\_  
Authorized Official Name

\_\_\_\_\_  
Authorized Official Title

\_\_\_\_\_  
Business Name of Bidder

(Signer must match authorized official shown on Bidder Information form)



# SANTA BARBARA METROPOLITAN TRANSIT DISTRICT

## *Short Range Transit Plan Request for Proposals*

### **CREDIT & WORK REFERENCES**

Business Name of Bidder: \_\_\_\_\_

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#### ***Credit References***

**Include your primary bank and a firm that you currently purchase materials or services from on credit.**

Bank Name: \_\_\_\_\_ Contact Name: \_\_\_\_\_

Contact Phone: \_\_\_\_\_ Contact E-Mail: \_\_\_\_\_

-----

Vendor Name: \_\_\_\_\_ Contact Name: \_\_\_\_\_

Contact Phone: \_\_\_\_\_ Contact E-Mail: \_\_\_\_\_

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#### ***Work References***

**Include at least three recent clients for which you provided similar services to the project work:**

Client Name: \_\_\_\_\_ Contact Name: \_\_\_\_\_

Contact Phone: \_\_\_\_\_ Contact E-Mail: \_\_\_\_\_

-----

Client Name: \_\_\_\_\_ Contact Name: \_\_\_\_\_

Contact Phone: \_\_\_\_\_ Contact E-Mail: \_\_\_\_\_

-----

Client Name: \_\_\_\_\_ Contact Name: \_\_\_\_\_

Contact Phone: \_\_\_\_\_ Contact E-Mail: \_\_\_\_\_

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Client Name: \_\_\_\_\_ Contact Name: \_\_\_\_\_

Contact Phone: \_\_\_\_\_ Contact E-Mail: \_\_\_\_\_

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Client Name: \_\_\_\_\_ Contact Name: \_\_\_\_\_

Contact Phone: \_\_\_\_\_ Contact E-Mail: \_\_\_\_\_

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Client Name: \_\_\_\_\_ Contact Name: \_\_\_\_\_

Contact Phone: \_\_\_\_\_ Contact E-Mail: \_\_\_\_\_

**SANTA BARBARA METROPOLITAN TRANSIT DISTRICT**  
***Short Range Transit Plan Request for Proposals***  
**LOBBYING CERTIFICATION**

The undersigned certifies to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, *et seq.*)]

(3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The Contractor certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. A 3801, *et seq.*, apply to this certification and disclosure, if any.

\_\_\_\_\_  
Authorized Official Signature

\_\_\_\_\_  
Date of Signature

\_\_\_\_\_  
Authorized Official Name

\_\_\_\_\_  
Authorized Official Title

\_\_\_\_\_  
Business Name of Vendor

(Signer must match authorized official shown on Bidder Information form)

**SANTA BARBARA METROPOLITAN TRANSIT DISTRICT**

***Short Range Transit Plan Request for Proposals***

**NONCOLLUSION DECLARATION**

The undersigned declares:

I am the \_\_\_\_\_ of \_\_\_\_\_,  
(title) (business name of bidder)  
the party making the included bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on \_\_\_\_\_, at \_\_\_\_\_, \_\_\_\_\_.  
(date) (city) (state)

\_\_\_\_\_  
Authorized Official Signature

\_\_\_\_\_  
Authorized Official Name (printed)

***COMPENSATION CERTIFICATION***

I am aware of the provisions of Section 3700 of the California Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract.

\_\_\_\_\_  
Authorized Official Signature

\_\_\_\_\_  
Date of Signature

\_\_\_\_\_  
Authorized Official Name

\_\_\_\_\_  
Authorized Official Title

# **SANTA BARBARA METROPOLITAN TRANSIT DISTRICT**

## **Short Range Transit Plan**

### ***SCOPE OF SERVICES***

#### **I. INTRODUCTION & BACKGROUND**

##### **A. INTRODUCTION**

This *Scope of Services* specifies the requirements for the contracted Consultant to complete a Short Range Transit Plan (SRTP) on behalf of the Santa Barbara Metropolitan Transit District (MTD). The consulting services consist of performing all of the “tasks” associated with preparing and presenting the SRTP. The Consultant shall provide all necessary resources including, but not limited to, qualified personnel, software, hardware, internet access, licenses, equipment, and supplies necessary to carry out and complete the SRTP per the MTD-provided task schedule. Project completion to be delivered by October 18, 2022, or sooner.

Funding for this project comes from the California Department of Transportation (Caltrans) Sustainable Communities Transportation Grants via the Federal Transit Administration 5304 program with the project being subject to applicable laws, regulations, terms, and conditions of these public agencies.

MTD has a long history of providing robust public transit on the South Coast of Santa Barbara County. Since the inception of the Federal Small Transit Intensive Cities (STIC) program in the early 2000s, MTD has qualified on all six measures, every year. The SRTP will provide a blueprint to ensure that MTD has the necessary resources to continue to provide the quality of transit service that residents of the service area expect as demand continues to grow.

MTD’s service area is 52 square miles and includes the cities of Santa Barbara, Goleta, and Carpinteria; and the unincorporated portions of the County of Santa Barbara between such cities including the areas of Montecito and Summerland. In fiscal year 2018-2019, service was accomplished with 42 routes; 219,861 annual service hours; 2,606,184 annual service miles; and 6,432,190 passenger trips. The impact of the COVID-19 health crisis beginning in March 2020 saw a reduction in that service, a major drop in bus capacity (due to physical distancing) and in ridership. Today, MTD’s Planning Department must constantly iterate and make contingency service plans based on pandemic conditions, school schedules, and bus operator availability. The largest source of uncertainty about service provision is whether or not local K-12, Santa Barbara City College (SBCC), and University of California, Santa Barbara (UCSB) campuses plan to bring students back to campuses. In non-pandemic times, students from these three entities make up approximately 30% of ridership. Future pressures of budget and bus operator availability will also inform the ability to maintain service levels. There are no fixed guideway or Bus Rapid Transit services provided by MTD. ADA paratransit service is provided under contract with a local non-profit agency. The ADA paratransit service is not subject to the SRTP specified herein.

MTD is operating with a fleet of 113 transit buses including 30-, 40-, and 60-foot models powered by renewable diesel, battery-electric, and hybrid diesel-electric engines and motors. MTD’s transit-related facilities include:

- Administrative, Operations, and Maintenance Facility (Terminal 1) located at 550 Olive Street, Santa Barbara, CA, 93101
- The Transit Center, MTD’s primary passenger facility, located at 1020 Chapala Street, Santa Barbara, CA 93101
- A second limited operations facility (Terminal 2) at 5353 Overpass Road, Goleta, CA 93111



MTD recently developed a *Facilities Master Plan* (FMP), which assessed and provided recommendations to address MTD's facility needs and the needs of the agency as MTD moves towards a fully battery-electric fleet by 2030. Also adopted by MTD is the *Strategic Plan 2016-2021* and the *Zero-Emission Bus Feasibility Study: ZEB Power Modeling*. The findings of these three documents should be taken into account in preparing the SRTP update.

MTD has approximately 208 employees. Bus operators, driver supervisors, mechanics, and service workers are represented by the Teamsters Local 186. Other than the General Manager, staff, and management are at-will employees.

The SRTP is under the purview of the General Manager and the MTD Planning & Marketing Department which in turn reports to MTD's Board of Directors (Board). MTD is governed by a Board made up of seven members. Two members are appointed by the County Board of Supervisors, two by the Santa Barbara City Council, one by the Goleta City Council, and one by the Carpinteria City Council. The seventh "at-large" member is appointed by the other six members of the Board. The Board normally meets at 8:30 AM on the first and third Tuesday of each month except during August and December when there are no scheduled meetings.

MTD will work with the Consultant to conduct robust public outreach, including a community listening workshop held on a weekend, pop-up workshops at major transit hubs, online survey, presentations at public meetings of other agencies and organizations, and engagement via traditional and social media. All outreach materials and surveys will be in English and Spanish, and the community workshop will have simultaneous interpretation into Spanish available. Depending on conditions related to the COVID-19 pandemic, outreach may be adapted to a virtual format, in part or in full.

Once the SRTP is complete, it will guide the Board's prioritization of capital and operating projects for the five-year planning horizon.

## **B. KEY GOALS AND OBJECTIVES**

The following list of goals and objectives should be taken into account when developing the SRTP:

- Coordination with the goals, objectives, and strategies of MTD's *FMP*, *Strategic Plan: 2016-2021*, and *ZEB Power Modeling*
- Produce an *Existing Conditions Report* based on both existing pandemic conditions and pre-pandemic conditions
- Understanding and consideration of short and long term opportunities, trends, and challenges of local, regional, and national public transit
- Develop and execute a plan to conduct bilingual community-wide outreach to assess the transit needs of different segments of the population
- Assess pros and cons of ridership service versus cove rage service, recommending any reallocations of service to optimize the system
- Based on existing conditions, the Community Needs Assessment, input from the public, stakeholders, and the Board of Directors, and forecasted future service needs, develop an SRTP that, once implemented, will meet SBMTD's service and business objectives through the five-year planning horizon
- Integrate MTD's planned microtransit projects into an overall service plan
- Analyze and provide recommendations on strategies to prioritize transit in the public right-of-way throughout the region
- Develop a prioritized list of capital and operating projects for implementation over the five-year planning

horizon of the SRTP

## II. COMMUNICATION

### A. PRIMARY POINT OF CONTACT

A project manager for the Consultant team shall be designated to this project and serve as the primary point of contact with MTD. Consultant's project manager shall be responsible for all the coordination and communication within the Consultant team, as well as with the MTD. Any change in Consultant's key personnel after the award of the project must be approved by MTD before the change is made.

Hillary Blackerby, Planning and Marketing Manager will serve as the primary point of contact for the SRTP for MTD. Unless indicated otherwise, all communications and coordination of planning tasks and activities shall be through Ms. Blackerby.

### B. PROGRESS REPORTS & PRESENTATIONS

The project will include project team meetings, frequent phone, and e-mail communication among MTD staff and the selected consultant team. At minimum, a monthly progress report shall be provided via email by the last business day of the month. The progress report will include a recap of key matters, data requests and decisions made at the last meeting with MTD. The California Department of Transportation (Caltrans) staff may be invited by MTD to the project team meetings. MTD will also aggregate the Consultant's progress reports into quarterly reports to Caltrans.

The Consultant shall present project work to MTD staff, committees, and by participating in public meetings with the Board and in the community. At MTD's discretion, presentations may be made via teleconferencing or in person. All public Board meetings must include an accompanying PowerPoint Presentation (.pptx), as well as a written one-page executive summary of the presentation in Word (.docx), submitted to Ms. Blackerby at least ten days prior in order to be reviewed, approved, and placed as a meeting agenda item. All draft version of SRTP shall be delivered in advance of any public meeting to Ms. Blackerby in PDF and Word (.docx) format.

### C. INVOICES

Invoices provided by the Consultant shall contain at minimum the task number completed and delivered to MTD's satisfaction, budget spent to-date, budget remaining, and percentage estimate of completion. Consultant shall ensure the project remains on time and within budget. Invoices are to be delivered to Ms. Blackerby via email for review and approval with a copy simultaneously sent to [AP@sbmtd.gov](mailto:AP@sbmtd.gov).

### D. PUBLIC RECORDS

All deliverables shall become the property of MTD and a matter of public record which may be reproduced, distributed, published or electronically posted without restrictions.

## III. PROJECT INITIATION – TASK 1

| Task #1 | Summary of Deliverables                                            |
|---------|--------------------------------------------------------------------|
| 1.1     | Kick-Off Meeting, Project Management Plan                          |
| 1.3     | Existing Conditions Report, including a Community Needs Assessment |

**TASK 1.1 KICK-OFF MEETING**

Timeline: May 2021

Deliverables: Kick-Off Meeting; Project Management Plan; Progress Report(s); Invoice

Consultant shall hold a kick-off meeting with Ms. Blackerby and MTD staff to discuss the grant procedures and project expectations. The kick-off meeting agenda will include handling internal and external communications, decision-making methodologies, and assumptions (i.e. assumptions about data availability, communication issues, travel, task elements, etc.) as well as outline a work task break-down structure, project schedule, and project budget that details how expenses and time will be allocated, the expectations for invoicing, reporting, and all other relevant project information.

Consultant shall develop a list of data requirements that MTD will work with the Consultant to collect. The Consultant will have ultimate responsibility for the acquisition of key data elements.

Consultant shall document the Kickoff Meeting by submitting a comprehensive Project Management Plan. The Project Management Plan will serve as the dual understanding between the Consultant and MTD of the scope, goals, budget, timeline, and deliverables of a project. As such, MTD shall have the option to review, provide comments, and/or request revisions prior to acceptance.

**TASK 1.2 [RESERVED FOR MTD ACTION]****TASK 1.3 IDENTIFY EXISTING CONDITIONS**

Timeline: May 2021- August 2021

Deliverables: Existing Conditions Report including a Community Needs Assessment, Progress Report(s), Invoice

Consultant shall gather existing conditions and background data by identifying opportunities and constraints that should be used to guide the preparation of the Plan, including existing and planned land uses, population characteristics, and ridership projections within MTD's service area.

Prepare *Existing Conditions Report*, this shall include, but not limited to:

- Key data for all services including current data on overall operations, operating costs, funding, assets, ridership, miles, hours, fare box recovery ratio, and available system capacity (data should be compiled at the route level where possible).
- Gather data on population characteristics, travel behavior, travel patterns, and projections for Santa Barbara MTD's service area communities; include any major changes to student on-campus learning and activities at Santa Barbara City College (SBCC) and University of California, Santa Barbara (UCSB). Identify and describe disadvantaged communities and the impact of transit.
- Evaluate demographic trends to identify growth markets. This shall be used to determine growth patterns/areas that have had the greatest positive impact on transit market share and ridership.
- Review demographic shifts, both residential and commercial, that may impact/attract transit riders.
- Prepare a profile of socio-economic conditions in the service area and summary of current transportation options. The profile shall also include projected population levels and characteristics, and planned developments in Santa Barbara.

- The written summary shall include graphics showing the coverage and intensity of services, current ridership, and productivities by service type plus an inventory of capital assets.
- A COVID-19 impact report will provide narratives, data, or visuals that will assist MTD in understanding the impact of COVID-19 and the recovery effort on MTD's service area population and their travel patterns.
- An area map shall be included showing current or emerging activity centers and large trip generators in Santa Barbara, as well as major destinations.

The Community Needs Assessment will encapsulate the data in the *Existing Conditions Report* that will be used to evaluate current transit operations and identify:

- any route timing and stop location needs;
- any potential efficiency gains that can be realized; and
- any other improvements that will promote transit services on the South Coast.

#### IV. PUBLIC OUTREACH & BOARD INPUT – TASK 2

Major community outreach and presentations and consultation with the Board will take place in this phase. COVID-19 requirements may change the exact strategies for outreach, but it will still be robust and will engage a broad cross-section of the community.

| Task #2 | Summary of Deliverables                                                         |
|---------|---------------------------------------------------------------------------------|
| 2.1     | Present Existing Conditions Report: PowerPoint Presentation                     |
| 2.2     | Community Workshop, Outreach & Survey: PowerPoint, Workshop Materials & Summary |
| 2.3     | Present Preliminary Draft Plan: PowerPoint Presentation                         |
| 2.4     | Present Draft Final Plan: PowerPoint Presentation                               |

##### **TASK 2.1 PRESENT EXISTING CONDITIONS REPORT**

Timeline: August 2021

Deliverables: Board Meeting Presentation, PowerPoint Presentation, Presentation Executive Summary, Progress Report(s), Invoice

MTD and Consultant staff shall present the *Existing Conditions Report* to the Board at a public meeting, which will include the opportunity for public input. Consultant should be prepared to present findings, share insights, answer questions, and discuss next-steps toward the development of a SRTP for MTD.

##### **TASK 2.2 COMMUNITY WORKSHOP, OUTREACH & SURVEY**

Timeline: August 2021 – January 2022

Deliverables: PowerPoint Presentation, Workshop Materials, Workshop Summary, Progress Report(s), Invoice

Consultant shall present existing conditions and a preliminary draft plan to the public in a weekend community listening workshop. The Consultant shall share the PowerPoint Presentation of existing transit services.

The Consultant shall query participants' assessments of the transit service area, operational characteristics (i.e. hours and days of service, scheduling, bus stop placement, accessibility and ridership), fare policy structure, transit operations, transit services, capital equipment, and transit facilities. Interviews collect input on transit

needs, desired transit system enhancements, and feedback on current services. The community's understanding and interest of microtransit should be gauged.

Outreach for this process includes, but is not limited to:

- a community listening workshop held on a weekend;
- pop-up workshops at major transit hubs;
- presentations at public meetings of other agencies and organizations;
- online survey; and
- engagement via traditional and social media.

All outreach materials and surveys will be in English and Spanish, and the community workshop will have simultaneous interpretation into Spanish available. Workshop shall be advertised to reach the most members of the public. Depending on conditions related to the COVID-19 pandemic, some outreach may be adapted to a virtual format.

Consultant shall prepare a summary of findings and provide actionable insights from the data collected during the workshop(s) and other outreach.

### **TASK 2.3 PRESENT PRELIMINARY DRAFT PLAN**

Timeline: February 2022

Deliverables: Board Meeting Presentation, PowerPoint Presentation, Presentation Executive Summary, Progress Report(s), Invoice

Upon development of a Preliminary Draft SRTP in Task 3, MTD and Consultant staff will present the Preliminary Draft SRTP to the Board at a public meeting, which will include the opportunity for public input.

Consultant shall present findings and recommendations of the Preliminary Draft SRTP. Consultant shall solicit feedback from the Board and the community. Consultant shall perform outreach methods to achieve maximum awareness and participation in the Preliminary Draft Plan review.

### **TASK 2.4 PRESENT DRAFT FINAL PLAN**

Timeline: July 2022 (or sooner)

Deliverables: Board Meeting Presentation, PowerPoint Presentation, Presentation Executive Summary, Progress Report(s), Invoice

Upon development of a Draft Final SRTP in Task 3, MTD and Consultant staff shall present the Draft Final Plan to the Board at a public meeting, which will include the opportunity for public input.

Consultant shall present findings and recommendations of the Draft Final SRTP. Consultant shall solicit feedback from the Board and the community. Consultant shall perform outreach methods to achieve maximum awareness and participation in the Draft Final Plan.

## **V. SHORT RANGE TRANSIT PLAN – TASK 3**

This task includes the drafting and finalization of the SRTP, with the identification of potential funding sources for future implementation of Plan identified projects.

| Task #3 | Summary of Deliverables        |
|---------|--------------------------------|
| 3.1     | Develop Preliminary Draft Plan |
| 3.2     | Funding Source Report          |
| 3.3     | Develop Final Draft Plan       |
| 3.4     | Final Plan & Adoption          |

### **TASK 3.1 DEVELOP PRELIMINARY DRAFT PLAN**

Timeline: October 2021-February 2022

Deliverables: Preliminary Draft SRTP, Progress Report(s), Invoice

Based on the Existing Conditions Report and input from the public, stakeholders, MTD staff, and the MTD Board of Directors, the Consultant shall prepare a Preliminary Draft SRTP.

The preliminary draft shall include, but not be limited to updating goals and objectives, presenting analysis and evaluations, updating performance standards, recommending and prioritizing options for more efficient operations, potential expansion, updating the capital improvement program and financial plans.

The SRTP shall EXCLUDE environmental, complex design, and engineering work. Such projects are not eligible with the funding from the Caltrans grant supporting this project.

### **TASK 3.2 IDENTIFY POTENTIAL FUNDING SOURCES**

Timeline: January 2022-May 2022

Deliverables: Funding Source Report, Progress Report(s), Invoice

Consultant shall review and identify potential funding sources for future implementation of the prioritized capital and operating projects identified in the Draft Plan. Based on previous work from earlier tasks, Consultant shall develop a practical *Funding Source Report* that addresses:

- Provisions of Transit
- Fleet and Facilities
- Maintenance, and Safety and Security elements
- Other capital elements (such as passenger amenities, transit equipment, software upgrades etc...)

Based on previous work from earlier tasks, Consultant shall develop recommendations for MTD and include the cost projections to match the suggested enhancements with passenger fares, local and state revenues, federal, state, and other transit grants, Operating Cost projections, Capital Cost projections, and/or present other resources and opportunities.

### **TASK 3.3 DEVELOP FINAL DRAFT PLAN**

Timeline: April 2022-August 2022 (or sooner)

Deliverables: Draft Final Plan, Progress Report(s), Invoice

Consultant shall deliver a Draft Final SRTP that addresses the comments received from the public, stakeholders, MTD staff, and the MTD Board of Directors. The Draft Final SRTP shall be responsive to the outreach and fiscally responsible based on all previous work for this project. Presented plans and initiatives will include project

implementation/next steps and have a projected budget for implementation so that only the Final SRTP feasible options will be put forth for consideration by the Board.

### **TASK 3.4 BOARD OF DIRECTORS PLAN ADOPTION**

Timeline: October 2022 (or sooner)

Deliverables: Final Plan, Invoice

Upon receipt of a Final SRTP, the Board shall either approve or reject the Plan. Rejected plans will require additional work to address the comments/areas of concern and be resubmitted. The SRTP project shall be considered complete when:

- Consultant provides MTD with one (1) electronic copy in PDF format and one (1) copy in Word of Final Plan without any password protected security settings or document restrictions;
- Consultant provides MTD with fifteen (15) separately bound hard copies of the Final Plan;
- The cover of the Short Range Transit Plan credits the financial contribution from the Caltrans Sustainable Communities Transportation Grant; and
- Board Adopts Final Plan.

**End of Scope of Services Text**

**Santa Barbara Metropolitan Transit District**  
***Short Range Transit Plan***

**MASTER AGREEMENT with [insert contractor name in caps]**

THIS AGREEMENT is entered into by and between Santa Barbara Metropolitan Transit District, an incorporated transit district under Sections 95000, et seq. of the California Public Utilities Code ("MTD"), and [insert contractor name], a [insert state name] [insert business type] ("Contractor"), at Santa Barbara, California, as of the later date set forth below the signatures executing this Agreement.

**WHEREAS:**

- A. MTD desires to engage Contractor for the development of MTD's Short Range Transit Plan (the "Project");
- B. Contractor represents that it has the knowledge and experience to carry out the Project, and desires to carry out the Project pursuant to the terms and conditions hereof, and;
- C. Based upon the representations made by Contractor, MTD desires to retain the services of Contractor to carry out the aforesaid Project, upon the within terms and conditions.

NOW, THEREFORE, for valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties do hereby agree as follows:

- 1. Effect of Recitals. The foregoing recitals are hereby made express provisions of this Agreement.
- 2. FTA Provisions. The Project is funded in part by the Federal Transit Administration of the U.S. Department of Transportation and, as such, this Agreement is subject to the terms and conditions contained in *Federal Transit Administration: Contract Provisions* which is attached hereto as Exhibit "A" and incorporated herein by this reference.
- 3. Public Works Provisions. Not applicable to this agreement.
- 4. Scope of Services. MTD has heretofore issued on February 17, 2021, the Scope of Services contained in Request for Proposals for Short Range Transit Plan, a true copy of which is attached hereto as Exhibit "B" and incorporated herein by this reference.
- 5. Proposal. Contractor has heretofore submitted on March 24, 2021, a proposal to carry out the Project, true copies of relevant parts that are attached hereto as Exhibit "C" and incorporated herein by this reference.
- 6. Order of Control. Contractor shall carry out the Project described in Exhibit "B" to this Agreement for the price quoted in Exhibit "C". All work and services shall be performed according to and controlled by the terms and provisions of this Agreement and the exhibits attached hereto. In the event of any conflict between the contract documents, the following order of control shall prevail: MTD Master Agreement, Exhibit "A", Exhibit "B", Exhibit "C".
- 7. Contract Price. Contractor shall carry out the Project for a fixed price of [insert price] which is in accordance with Exhibit "C".
- 8. Payment. Contractor shall submit invoice to MTD upon completion of the Project. Payment from MTD shall be made to Contractor no later than thirty (30) days after acceptance by MTD (see paragraph 15) and receipt of a valid invoice, which shall be sent via email to: Santa Barbara MTD, Attn: Hillary Blackerby at [hblackerby@sbmtd.gov](mailto:hblackerby@sbmtd.gov) with a copy to [AP@sbmtd.gov](mailto:AP@sbmtd.gov).
- 9. Taxes. MTD is exempt from the payment of Federal Excise and Transportation taxes. Unless specified otherwise in the Agreement, MTD is subject to applicable California Sales Tax for Santa Barbara County which shall have been included in the Contractor's proposal price and shall be included on the Contractor's invoice.
- 10. Project Schedule. Performance shall commence within five calendar days of the date of the notice to proceed.
- 11. Delivery & Freight. Unless specified otherwise in the Scope of Services, any item provided under this Agreement shall be delivered FOB Santa Barbara to 550 Olive Street, Santa Barbara, CA 93101. Any Project



freight and delivery charges shall have been already included in the Contractor's proposal price and shall not be paid otherwise by MTD.

12. Title & Risk of Loss. The Contractor shall have title to and bear the risk of any loss of or damage to any item provided hereunder until delivered and, if applicable pursuant to this Agreement or standard industry practice, installed or otherwise set up for usage. Upon such delivery and applicable installation and setup, title shall pass from the Contractor to MTD, and the Contractor's responsibility for loss or damage shall cease, except for loss or damage resulting from the Contractor's negligence. Such passing of title shall not constitute acceptance of an item by MTD. The Contractor shall further warrant that the title to any item provided hereunder is free from all claims, encumbrances and liens.

13. Damages. All losses or damages arising from any unforeseen circumstances, either natural or artificial, which may be encountered by the Contractor during the performance of the Project under this Agreement shall be sustained solely by the Contractor. This provision shall also apply to losses or damages resulting from any act or omission not authorized by this Agreement on the part of the Contractor or any agent or person employed by the Contractor.

14. Defective, Damaged or Noncompliant Work. Any items, services, work or systems acquired pursuant to this Agreement found to be defective, damaged or non-compliant with the Scope of Services at the time of delivery or installation shall be replaced by the Contractor without additional cost to MTD. If the Contractor should fail to promptly comply with any order to replace or repair any defective items, services, work or systems, MTD shall have the authority to deduct the cost of such replacement or repair from any compensation due or to become due to the Contractor. Nothing in this section shall limit or restrict any warranty provisions of this Agreement or any exhibits hereto.

15. Acceptance. All items, services, work or systems to be furnished by the Contractor pursuant to this Agreement shall be subject to acceptance by MTD. MTD shall inspect such deliverables to determine acceptability no later than ten (10) calendar days after said deliverables are received and, if applicable under the Agreement or standard industry practice, installed or otherwise set up for usage. Acceptance shall occur when it is determined by MTD that all items, services, work or systems provided pursuant to this Agreement are in compliance with the Scope of Services or any other applicable contract documents. Upon acceptance, formal notification thereof shall be made by MTD via notice to the Contractor.

16. Warranty. The Contractor shall warrant to MTD that, for five (5) years after MTD's full acceptance of items, services, work or systems, each shall conform with the requirements hereof and be free of defects. In addition to other remedies which may be available, MTD may at its option return any non-conforming or defective items to the Contractor and/or require correction or replacement of said item when the defect is discovered, all at the Contractor's risk and expense. If MTD does not require such correction or replacement of non-conforming or defective items, the Contractor shall repay such portion of the payment specified herein or such additional amount as is equitable under the circumstances. The rights of MTD hereunder are in addition to, and not limited by, the Contractor's standard warranties. Acceptance of items, services, work or systems by MTD, or payment therefor, shall not relieve the Contractor of its obligations thereunder.

17. Changes. Any changes or modifications to this Agreement must be in writing, and agreed to by both parties.

18. Insurance.

a. Contractor's Insurance Representations to MTD.

i. It is expressly understood and agreed that the insurance coverages required herein:

A. represent MTD's minimum requirements and are not to be construed to void or limit Contractor's indemnity obligations as contained in this Agreement nor represent in any manner a determination of the insurance coverages Contractor should or should not maintain for its own protection; and

B. are being, or have been, obtained by Contractor in support of Contractor's liability and indemnity obligations under this Agreement. Irrespective of the requirements as to insurance to be carried as provided for herein, the insolvency, bankruptcy, or failure of any insurance company carrying insurance of Contractor, or the failure of any insurance company to pay claims accruing, shall not be held to affect, negate, or waive any of the provisions of this Agreement.

ii. Failure to obtain and maintain the required insurance shall constitute a material breach of, and default under this Contract. If Contractor shall fail to remedy such breach within five (5) business days after written notice by MTD, Contractor will be liable for any and all costs, liabilities, damages and penalties resulting to MTD from such breach, unless a written waiver of the specific insurance requirement(s) is provided to Contractor by MTD. In the event of any failure to Contractor to comply with the provisions of this portion of the Agreement, MTD may, without in any way compromising or waiving any right or remedy at law or in equity, on notice to Contractor, purchase such insurance, at Contractor's expense, provided that MTD shall have no obligation to do so and if MTD shall do so, Contractor shall not be relieved of or excused from the obligation to obtain and maintain such insurance amounts and coverages.

b. Conditions Affecting All Insurance Required Herein.

i. Cost of Insurance. All insurance coverage shall be provided at Contractor's sole expense.

ii. Maintenance of Insurance. All insurance coverage shall be maintained in effect with limits not less than those set forth below at all times during the term of this Agreement.

iii. Status and Rating of Insurance Company. All insurance coverage shall be written through insurance companies admitted to do business in California and with a Best's Financial Strength Rating of A- or better, as shown in the on-line version of Best's Rating & Criteria Center.

iv. Restrictive, Limiting, or Exclusionary Endorsements. All insurance coverage shall be provided to Contractor Parties in compliance with the requirements herein and shall contain no endorsements that restrict, limit, or exclude coverage in any manner without the prior express written approval of MTD.

v. Limits of Liability. The limits of liability may be provided by a single policy of insurance or by a combination of primary and umbrella policies, but in no event shall the total limits of liability available for any one occurrence or accident be less than the amount required herein.

vi. Notice of Cancellation, Nonrenewal, or Material Reduction in Coverage. In the event of cancellation, nonrenewal, or material reduction in coverage affecting the certificate holder, thirty (30) days prior written notice shall be given to the certificate holder by certified mail, return receipt requested, except in the event of cancellation for nonpayment, in which event fifteen (15) days prior written notice shall be given. If insurer will not include in its coverage such written notifications, it shall be incumbent upon Contractor to comply with such written notification requirements.

vii. Additional Insured Status. Additional insured status shall be provided in favor of MTD and its officers, employees and agents, including consultants, on all liability insurance required herein except workers' compensation/employer's liability and the certificate of insurance shall reflect same. Such additional insured coverage shall be primary to and shall seek no contribution from all insurance available to MTD, with MTD's insurance being excess, secondary, and noncontributing.

viii. Waiver of Subrogation. All insurance coverage carried by Contractor required herein shall provide a waiver of subrogation in favor of MTD for all loss covered by such insurance, and Contractor waives all rights of action against MTD for such loss.

ix. Primary Liability. All insurance coverage required herein shall be primary to and shall seek no contribution from all insurance available to MTD, with MTD's insurance being excess, secondary, and noncontributing. Where necessary, coverage shall be endorsed to provide such primary liability, and the certificate of insurance shall reflect same.

x. Deductible/Retention. All insurance required for this project shall have a maximum deductible or self-insured retention of \$10,000 per policy.

xi. Claims Against Aggregate. MTD must be notified in writing by Contractor at MTD's address set forth herein immediately upon knowledge of possible claims against Contractor that might cause a reduction below seventy-five (75%) of any aggregate limit of any primary policy.

c. Commercial General Liability Insurance.

i. Coverage. Such insurance shall cover liability arising out of all locations and operations of Contractor, including but not limited to liability assumed under this Agreement (including the tort liability of another

assumed in a business contract). Defense shall be provided as an additional benefit and not included within the limit of liability.

ii. Form. Commercial General Liability Occurrence form, at least as broad as an unmodified ISO CG 00 01 10 93 or its equivalent.

iii. Amount of Insurance. Coverage shall be provided with limits of not less than:

|                                                 |             |
|-------------------------------------------------|-------------|
| A. Each Occurrence Limit                        | \$1,000,000 |
| B. General Aggregate Limit                      | \$2,000,000 |
| C. Product-Completed Operations Aggregate Limit | \$2,000,000 |
| D. Personal and Advertising Injury Limits       | \$1,000,000 |
| E. Fire Damage (any one fire)                   | \$50,000    |
| F. Medical Expense (any one person)             | \$5,000     |

iv. Required Endorsements.

A. Additional Insured status as required in 18(b)(vii), above.

B. Notice of Cancellation, Nonrenewal, or Material Reduction in Coverage, as required in 18(b)(vi), above.

C. Personal Injury Liability: The personal injury contractual liability exclusion shall be deleted.

D. Primary Liability, as required in 18(b)(ix), above.

E. Waiver of Subrogation, as required in 18(b)(viii), above.

F. Continuing Commercial General Liability Insurance: Contractor shall maintain such insurance in identical coverage, form, and amount, including required endorsements, for at least three (3) years following the date of acceptance by MTD of the last bus built pursuant to this Agreement.

d. Auto Liability Insurance.

i. Coverage. Such insurance shall cover liability arising out of any auto (including owned, hired, and non-owned).

ii. Form. Business Auto Form (at least as broad as an unmodified ISO CA 0001 or its equivalent).

iii. Amount of Insurance. Coverage shall be provided with a limit of not less than \$1,000,000, combined single limit.

iv. Required Endorsements.

A. Additional Insured status as required in 18(b)(vii), above.

B. Notice of Cancellation, Nonrenewal, or Material Reduction in Coverage, as required in 18(b)(vi), above.

C. Waiver of Subrogation, as required in 18(b)(viii), above.

e. Workers' Compensation/Employer's Liability Insurance.

i. Coverage. Such insurance shall cover liability arising out of Contractor's employment of workers and anyone for whom Contractor may be liable for workers' compensation claims. Workers' compensation insurance is required, and no "alternative" forms of insurance shall be permitted.

ii. Amount of Insurance. Coverage shall be provided with a limit of not less than:

|                           |                                        |
|---------------------------|----------------------------------------|
| A. Workers' Compensation: | Statutory limits                       |
| B. Employer's Liability:  | \$1,000,000 each accident and disease. |

iii. Required Endorsements.

A. Notice of Cancellation, Nonrenewal, or Material Reduction in Coverage, as required in 18(b)(vi), above.

B. Waiver of Subrogation, as required in 18(b)(viii), above.

f. Excess Liability Insurance.

i. Coverage. Such insurance shall be excess over and be no less broad than all coverages described above and shall include a drop-down provision.

ii. Form. This policy shall have the same inception and expiration dates and the commercial general liability insurance required above.

iii. Amount of Insurance. Coverage shall be provided with a limit of not less than \$1,000,000.

g. Professional Errors & Omissions Liability Insurance.

i. Coverage. Such insurance shall cover claims alleged to arise out of the negligent performance of Contractor's professional services.

ii. Amount of Insurance. Coverage shall be provided with a limit of not less than \$1,000,000 annual aggregate.

h. Other Insurance. MTD shall have the right, exercisable in its sole judgment at any time by giving prior written notice thereof to Contractor, to require Contractor to increase the limit and coverage amount of any insurance Contractor is required to maintain pursuant to this Agreement to an amount that MTD may, in its sole judgment, deem reasonably sufficient; and purchase other insurance and/or endorsement in such amounts or types as MTD may reasonably require from time to time.

19. Bonding. Not applicable to this agreement.

20. Termination. For applicable terms, refer to Paragraph 21 (Termination) in *Federal Transit Administration: Contract Provisions* which is attached hereto as Exhibit "A".

21. Liquidated Damages. Not applicable to this agreement.

22. Infringement of Patents. The Contractor agrees that it will, at its own expense, defend all suits and proceedings instituted against MTD and pay any award of damages assessed against MTD in such suits or proceedings, insofar as the same are based upon any claim that the items, services, work, systems, or any part thereof, or any tool, or process used in or for the Project, constitutes an infringement of any legal United States copyright or patent. MTD agrees that it will give the Contractor prompt notice in writing of the institution of the suit or proceeding and permits the Contractor through its counsel to defend the same and gives the Contractor all information, assistance and authority necessary for the Contractor to do so. In case said items, services, work, systems, or any part thereof, or any tool, or process used in or for the Project, is in such suit held to constitute infringement and use of same is enjoined, the Contractor shall, at its own expense and at its option, either procure for the MTD the right to continue using said items, services, work, systems, or any part thereof, or any tool, or process used in or for the Project, or replace same with non-infringing equipment, or modify it so it becomes non-infringing.

23. Rights in Data, Definitions. The term "subject data" used in this clause means recorded information, whether or not copyrighted, that is delivered or specified to be delivered under this Agreement. Subject data includes graphic or pictorial delineation in media such as drawings or photographs; text in specifications or related performance or design-type documents; machine forms such as punched cards, magnetic tape, or computer memory printouts; and information retained in computer memory. Examples include, but are not limited to: computer software (including, but not limited to, source codes), engineering drawings and associated lists, specifications, standards, process sheets, manuals, technical reports, catalog item identifications, and related information. The term "subject data" does not include financial reports, cost analyses, and similar information incidental to contract administration. *MTD Rights.* MTD reserves a royalty-free, non-exclusive and irrevocable license to reproduce, publish, or otherwise use, and to authorize others to use, for MTD purposes, any subject data or copyright. As used in the previous sentence, "for MTD purposes," means use only for the direct purposes of MTD. Without the copyright owner's consent, MTD may not extend its license to any other party. *Public Information.* When MTD awards a contract for experimental, developmental, or research work, it is MTD's general intention to increase transportation knowledge available to the public, rather than to restrict the benefits resulting from the work to participants in that work. Therefore, unless MTD determines otherwise, MTD and the Contractor performing experimental, developmental, or research work required by the contract agrees to permit MTD to make available to the public, either MTD's license in the copyright to any subject data developed in the course of that contract, or a copy of the subject data first produced under the contract for which a copyright has not been obtained. If the experimental, developmental, or research work, which

is the subject of the underlying contract, is not completed for any reason whatsoever, all data developed under that contract shall become subject data and shall be delivered as MTD may direct.

24. Indemnification. The Contractor shall, to the extent permitted by law protect, indemnify, defend, and hold MTD and its officers, employees and agents, including consultants, harmless from and against any and all liabilities, damages, claims, demands, liens, encumbrances, judgments, awards, losses, costs, expenses, and suits or actions or proceedings, including reasonable expenses, costs and attorneys' fees incurred by MTD and its officers, employees and agents, including consultants, in the defense, settlement or satisfaction thereof, for any injury, death, loss or damage to persons or property of any kind whatsoever, arising out of, or resulting from, the acts, errors or omissions of the Contractor, including acts, errors or omissions of its officers, employees, servants, agents, subcontractors and suppliers; and upon receipt of notice and if given authority, shall settle at its own expense or undertake at its own expense the defense of any such suit, action or proceeding, including appeals, against the MTD and its officers, employees and agents, including consultants, relating to such injury, death, loss or damage. Each party shall promptly notify the other in writing of the notice or assertion of any claim, demand, lien, encumbrance, judgment, award, suit, action or other proceeding hereunder. The Contractor shall have sole charge and direction of the defense of such suit, action or proceeding. The MTD shall not make any admission which might be materially prejudicial to the Contractor unless the Contractor has failed to take over the conduct of any negotiations or defense within a reasonable time after receipt of the notice and authority above provided. The MTD shall at the request of the Contractor furnish to the Contractor all reasonable assistance that may be necessary for the purpose of defending such suit, action or proceeding, and shall be repaid all reasonable costs incurred in doing so. The MTD shall have the right to be represented therein by advisory counsel of its own selection at its own expense. The obligations of the Contractor under this clause shall not extend to circumstances where the injury, or death, or damages is caused solely by the negligent acts, errors or omissions of the MTD, its officers, employees, agents or consultants, including negligence in the preparation of the Contract documents, or the giving of directions or instructions with respect to the requirements of the Contract by written order.

25. Notice. Notices in connection with this Agreement shall be made in writing and may be delivered either personally, by governmental postal service (regular, certified or registered), by private delivery service, or by email. Receipt shall be deemed to have occurred when actually made to the party or its designated agent. Such notices shall be properly addressed to the intended party as follows:

MTD:

Jerry Estrada, General Manager  
Santa Barbara Metropolitan Transit District  
550 Olive Street  
Santa Barbara, CA 93101  
Email: [jestrada@sbmtd.gov](mailto:jestrada@sbmtd.gov)

CONTRACTOR:

[insert authorized official name & title]  
[insert contractor name]  
[insert contractor street address]  
[insert contractor street city, state & zip]  
[insert contractor email]

26. Attorney Fees and Costs. In the event of a controversy (including, but not limited to arbitration or an criminal or civil filing in a Federal Court or a court of any of the United States) between the parties with respect to the enforcement or interpretation of this Agreement, the prevailing party in such controversy shall be entitled to receive, in addition to such other award as the court may deem appropriate, full reimbursement for its court costs and reasonable attorney fees incurred therein.

27. Negation of Partnership. This Agreement creates a relationship between two independent contractors and does not, nor may it be interpreted to, create the relationship of joint venturers, partners, employee/employer, or any other business relationship.

28. No Assignment. This Agreement is not assignable by either party, and any attempt by either party to assign its obligations hereunder shall be void ab initio at the election of the other party, which election may be made by written notice within ten (10) days of the non-assigning party's receipt of actual knowledge of such attempted assignment. Notwithstanding the foregoing, however, at the election of the other party, the obligations and burdens of a party shall bind and apply to any permitted successor in interest or assignee of the business and/or operations of a party.

29. Partial Invalidity. In the event that any portion of this Agreement or any provision hereof shall be deemed as invalid as contrary to applicable law, the balance of this Agreement shall be enforced according to its term, and that



portion found unenforceable shall be interpreted and enforced to the extent that it may be within said applicable laws.

30. Disputes. This Agreement shall be construed and all disputes arising therefrom shall be settled in accordance with the laws of the State of California. Venue for any dispute arising under this Agreement shall be in Santa Barbara, California. Any controversy or claim arising out of or relating to this Agreement shall be resolved by binding arbitration before a single arbitrator in accordance with the Commercial Arbitration Rules of the American Arbitration Association (“AAA”) then pertaining (available at [www.adr.org](http://www.adr.org)), except where those rules conflict with this provision, in which case this provision controls. Any court with jurisdiction shall enforce this clause and enter judgment on any award. The arbitrator shall be selected within twenty business days from commencement of the arbitration from the AAA’s National Roster of Arbitrators pursuant to agreement or through selection procedures administered by the AAA. Within 45 days of initiation of arbitration, the Parties shall reach agreement upon and thereafter follow procedures, including reasonable limits on discovery, assuring that the arbitration will be concluded and the award rendered within no more than eight months from selection of the arbitrator or, failing agreement, procedures meeting such time limits will be designed by the AAA and adhered to by the Parties. The arbitration shall be held in Santa Barbara, California and the arbitrator shall apply the substantive law of California, except that the interpretation and enforcement of this arbitration provision shall be governed by the Federal Arbitration Act. Prior to commencement of arbitration, emergency relief is available from any court to avoid irreparable harm. THE ARBITRATOR SHALL NOT AWARD EITHER PARTY PUNITIVE, EXEMPLARY, MULTIPLIED OR CONSEQUENTIAL DAMAGES. Prior to commencement of arbitration, however, the Parties must attempt to mediate their dispute using a professional mediator from AAA, the CPR Institute for Dispute Resolution, or like organization selected by agreement or, absent agreement, through selection procedures administered by the AAA. Within a period of 45 days after the request for mediation, the Parties agree to convene with the mediator, with business representatives present, for at least one session to attempt to resolve the matter. In no event will mediation delay commencement of the arbitration for more than 45 days absent agreement of the Parties or interfere with the availability of emergency relief.

31. Prohibited Interest. The parties hereto covenant and agree that to their knowledge no board member, officer, or employee of MTD, during his/her tenure or for one year thereafter, has any interest, whether contractual, non contractual, financial or otherwise, in this transaction, or in the business of a contracting party other than MTD. If any such interest comes to the knowledge of either party at any time, a full and complete disclosure of all such information will be made in writing to the other parties, even if such interest would not be considered a conflict of interest under Article 4, Chapter 1, Divisions 4 and 4.5, Title I of the Government Code of the State of California.

32. Compliance with Laws and Regulations. Contractor shall warrant that in the performance of work under contract to MTD that they shall comply with all applicable federal, state and local laws and ordinances, and all lawful orders, rules, and regulations thereunder.

33. Audit and Inspection of Records. The Contractor shall agree that all materials supplied and services performed under the Project, facilities used in connection therewith, and records and documentation thereunto appertaining shall be subject to inspection, test, or audit by duly authorized representatives of MTD and the State of California. The Contractor agrees to maintain all required records relating to the Project for at least three years after MTD makes final payment and all other pending matters are closed.

34. Equal Employment Opportunity. For applicable terms, refer to Paragraph 24 (Civil Rights Requirements) in *Federal Transit Administration: Contract Provisions* which is attached hereto as Exhibit "A".

35. Entire Agreement. This Agreement and its attached exhibits constitute the entire agreement between the parties and shall be deemed to supersede and cancel any and all previous representations, understandings, or agreements between MTD and Contractor as to the subject matter hereof. This Agreement may only be amended by an instrument in writing signed by the parties.

36. No Waiver. The failure of either party at any time to require performance by the other party of any provision of this Agreement shall in no way affect that party's right to enforce such provisions, nor shall the waiver by either party of any breach of any provision of this Agreement be taken or held to be a waiver of any further breach of the same provision.

37. Counterparts & Email. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same Agreement. The parties agree that a scanned and emailed signature may substitute for and have the same legal effect as the original signature.

38. Qualifications. Contractor or Contractor's representative (Contractor) certifies that Contractor is qualified to do business and is in good standing in the State of California, and that Contractor has authority to enter into and perform its obligations under this Agreement, which constitutes a valid and binding obligation of Contractor.

IN WITNESS WHEREOF, the undersigned have caused this Agreement to be executed.

SANTA BARBARA MTD

[insert contractor name in caps]

\_\_\_\_\_  
Jerry Estrada, General Manager

\_\_\_\_\_  
[insert authorized official name & title]

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

# FEDERAL TRANSIT ADMINISTRATION

## CONTRACT PROVISIONS

*Short Range Transit Plan - Contractor Name*

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- 1. FLY AMERICA REQUIREMENTS (NOT APPLICABLE TO AGREEMENT)**
- 2. BUY AMERICA REQUIREMENTS (NOT APPLICABLE TO AGREEMENT)**
- 3. CHARTER BUS & SCHOOL BUS REQUIREMENTS (NOT APPLICABLE TO AGREEMENT)**
- 4. CARGO PREFERENCE REQUIREMENTS (NOT APPLICABLE TO AGREEMENT)**
- 5. SEISMIC SAFETY REQUIREMENTS (NOT APPLICABLE TO AGREEMENT)**
- 6. ENERGY CONSERVATION REQUIREMENTS**

The Contractor agrees to comply with mandatory standards and policies relating to energy efficiency, which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act. The Contractor agrees to include the requirements of this section in all subcontracts.

**7. CLEAN WATER REQUIREMENTS**

The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq. The Contractor agrees to report each violation to the Purchaser and understands and agrees that the Purchaser will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office. The Contractor also agrees to include these requirements in each subcontract exceeding \$100,000.

**8. BUS TESTING (NOT APPLICABLE TO AGREEMENT)**

**9. PRE-AWARD & POST-DELIVERY AUDIT REQUIREMENTS (NOT APPLICABLE TO AGREEMENT)**

**10. LOBBYING**

The Contractor certifies, to the best of his or her knowledge and belief, that:

(a) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(b) If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (b) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, et seq.)]

(c) The Contractor shall require that the language of this certification be included in the award documents for all subawards exceeding \$100,000 at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this

transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure. [Note: Pursuant to 31 U.S.C. § 1352(c)(1)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such expenditure or failure.] Contractor certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, Contractor understands and agrees that the provisions of 31 U.S.C. A 3801, et seq., apply to this certification and disclosure.

[Note: The Contractor shall have previously submitted to MTD a separately signed Lobbying Certification containing the above language for itself and any subcontracts exceeding \$100,000 as a condition of contract award.]

## **11. ACCESS TO RECORDS & REPORTS**

(a) The Contractor agrees to provide MTD, the FTA Administrator, the Comptroller General of the United States or any of their authorized representatives access to any books, documents, papers and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts and transcriptions. Contractor also agrees, pursuant to 49 CFR 633.17 to provide the FTA Administrator or his authorized representatives including any PMO Contractor access to Contractor's records and construction sites pertaining to a major capital project, defined at 49 U.S.C. 5302(a)1, which is receiving federal financial assistance through the programs described at 49 U.S.C. 5307, 5309 or 5311.

(b) If contract is for a capital project or improvement (defined at 49 U.S.C. 5302(a)1) through other than competitive bidding, the Contractor shall make available records related to the contract to MTD, the Secretary of Transportation and the Comptroller General or any authorized officer or employee of any of them for the purposes of conducting an audit and inspection.

(c) The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.

(d) The Contractor agrees to maintain all books, records, accounts and reports required under this contract for a period of not less than three years after the date of termination or expiration of this contract, except in the event of litigation or settlement of claims arising from the performance of this contract, in which case Contractor agrees to maintain same until MTD, the FTA Administrator, the Comptroller General, or any of their duly authorized representatives, have disposed of all such litigation, appeals, claims or exceptions related thereto. Reference 49 CFR 18.39(i)(11).

## **12. FEDERAL CHANGES**

The Contractor shall at all times comply with all applicable FTA regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the Master Agreement between MTD and FTA, as they may be amended or promulgated from time to time during the term of this contract. Contractor's failure to so comply shall constitute a material breach of this contract.

## **13. BONDING REQUIREMENTS (NOT APPLICABLE TO AGREEMENT)**

## **14. CLEAN AIR**

The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. §§ 7401 et seq. The Contractor agrees to report each violation to the Purchaser and understands and agrees that the Purchaser will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office. The Contractor also agrees to include these requirements in each subcontract exceeding \$100,000 financed in whole or in part with Federal assistance provided by FTA.

**15. RECYCLED PRODUCTS**

The Contractor agrees to comply with all the requirements of Section 6002 of the Resource Conservation and Recovery Act (RCRA), as amended (42 U.S.C. 6962), including but not limited to the regulatory provisions of 40 CFR Part 247, and Executive Order 12873, as they apply to the procurement of the items designated in Subpart B of 40 CFR Part 247.

**16. DAVIS-BACON & COPELAND ANTI-KICKBACK ACTS (NOT APPLICABLE TO AGREEMENT)****17. CONTRACT WORK HOURS & SAFETY STANDARDS ACT (NOT APPLICABLE TO AGREEMENT)****18. [RESERVED]****19. NO GOVERNMENT OBLIGATIONS TO THIRD PARTIES**

(a) MTD and Contractor acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this contract and shall not be subject to any obligations or liabilities to MTD, Contractor, or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying contract.

(b) The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

**20. PROGRAM FRAUD & FALSE OR FRAUDULENT STATEMENTS & RELATED ACTS**

a) The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § 3801 et seq. and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 CFR Part 31, apply to its actions pertaining to this Project. Upon execution of the underlying contract, the Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying contract or the FTA assisted project for which this contract work is being performed. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Contractor to the extent the Federal Government deems appropriate.

(b) The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under the authority of 49 U.S.C. § 5307, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5307(n)(1) on the Contractor, to the extent the Federal Government deems appropriate.

(c) The Contractor agrees to include the above two clauses in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clauses shall not be modified, except to identify the subcontractor who will be subject to the provisions.

**21. TERMINATION**

(a) Termination for Convenience: MTD, by written notice, may terminate this contract, in whole or in part, when it is in the Government's interest. If this contract is terminated, MTD shall be liable only for payment under the payment provisions of this contract for services rendered before the effective date of termination.

(b) Termination for Default

(1) If the Contractor fails to perform the services, within the time specified in this contract or any extension or if the Contractor fails to comply with any other provisions of this contract, MTD may terminate this contract for default. MTD shall terminate by delivering to the Contractor a Notice of Termination specifying the nature of default. The Contractor will only be paid the contract price for services performed in accordance with the manner of performance set forth in this contract.

(2) If this contract is terminated while the Contractor has possession of MTD goods, the Contractor shall, upon direction of MTD, protect and preserve the goods until surrendered to MTD or its agent. The Contractor and MTD shall agree on payment for the preservation and protection of goods. Failure to agree on an amount will be resolved under the Dispute clause.

(3) If, after termination for failure to fulfill contract obligations, it is determined that the Contractor was not in default, the rights and obligations of parties shall be the same as if the termination had been issued for the convenience of MTD.

(c) Opportunity to Cure: MTD in its sole discretion may, in the case of a termination for breach or default, allow the Contractor ten (10) days in which to cure the defect. In such case, the notice of termination will state the time period in which cure is permitted and other appropriate conditions. If Contractor fails to remedy to MTD's satisfaction the breach or default of any of the terms, covenants, or conditions of this Contract within ten (10) days after receipt by Contractor of written notice from MTD setting forth the nature of said breach or default, MTD shall have the right to terminate the Contract without any further obligation to Contractor. Any such termination for default shall not in any way operate to preclude MTD from also pursuing all available remedies against Contractor and its sureties for said breach or default.

(d) Waiver of Remedies for any Breach: In the event that MTD elects to waive its remedies for any breach by Contractor of any covenant, term or condition of this Contract, such waiver by MTD shall not limit MTD's remedies for any succeeding breach of that or of any other term, covenant, or condition of this Contract.

## **22. GOVERNMENT-WIDE DEBARMENT & SUSPENSION**

This contract is a covered transaction for purposes of 49 CFR Part 29. As such, the Contractor is required to verify that none of the Contractor, its principals, as defined at 49 CFR 29.995, or affiliates, as defined at 49 CFR 29.905, are excluded or disqualified as defined at 49 CFR 29.940 and 29.945. The Contractor is required to comply with 49 CFR 29, Subpart C and must include the requirement to comply with 49 CFR 29, Subpart C in any lower tier covered transaction it enters into. By signing and submitting its bid or proposal, the bidder or proposer certifies as follows: The certification in this clause is a material representation of fact relied upon by MTD. If it is later determined that the bidder or proposer knowingly rendered an erroneous certification, in addition to remedies available to MTD, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The bidder or proposer agrees to comply with the requirements of 49 CFR 29, Subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

## **23. PRIVACY ACT (NOT APPLICABLE TO AGREEMENT)**

## **24. CIVIL RIGHTS REQUIREMENTS**

(a) Nondiscrimination: In accordance with Title VI of the Civil Rights Act, as amended, 42 U.S.C. § 2000d, section 303 of the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6102, section 202 of the Americans with Disabilities Act of 1990, 42 U.S.C. § 12132, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, creed, national origin, sex, age, or disability. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.

(b) Equal Employment Opportunity: The following equal employment opportunity requirements apply to the underlying contract:

(1) Race, Color, Creed, National Origin, Sex: In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e, and Federal transit laws at 49 U.S.C. § 5332, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 CFR Parts 60 et seq., (which implement Executive Order No. 11246, "Equal Employment Opportunity," as amended by Executive Order No. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," 42 U.S.C. § 2000e note), and with any applicable Federal statutes, executive orders, regulations, and Federal policies that may in the future affect construction activities undertaken in the course of the Project. The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, creed, national origin, sex, or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

(2) Age: In accordance with section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. § § 623 and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

(3) Disabilities: In accordance with section 102 of the Americans with Disabilities Act, as amended, 42 U.S.C. § 12112, the Contractor agrees that it will comply with the requirements of U.S. Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 CFR Part 1630, pertaining to employment of persons with disabilities. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

The Contractor agrees to include these requirements in each subcontract financed in whole or in part with Federal assistance provided by FTA, modified only if necessary to identify the affected parties.

## **25. BREACHES & DISPUTE RESOLUTION**

Paragraph 30 of the *MTD Master Agreement* regarding disputes shall be deemed satisfactory to meet the federal requirements for dispute resolution. The Contractor agrees to include the requirements of said Paragraph 30 in all subcontracts.

## **26. PATENT & RIGHTS IN DATA (NOT APPLICABLE TO AGREEMENT)**

## **27. TRANSIT EMPLOYEE PROTECTIVE AGREEMENTS (NOT APPLICABLE TO AGREEMENT)**

## **28. DISADVANTAGED BUSINESS ENTERPRISE (DBE)**

(a) This contract is subject to the requirements of Title 49, Code of Federal Regulations, Part 26, Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs. The national goal for participation of Disadvantaged Business Enterprises (DBE) is 10%. MTD's overall goal for DBE participation is 2.9%. A separate contract goal has not been established for this procurement.

(b) The Contractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of this DOT-assisted contract. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as MTD deems appropriate. Each subcontract the Contractor signs with a subcontractor must include the assurance in this paragraph (see 49 CFR 26.13(b)).

(c) [Reserved]

(d) The Contractor is required to pay its subcontractors performing work related to this contract for satisfactory performance of that work no later than 30 days after the Contractor's receipt of payment for that work from the MTD. In addition, the Contractor may not hold retainage from its subcontractors.

(e) Contractor must promptly notify MTD whenever a DBE subcontractor performing work related to this contract is terminated or fails to complete its work, and must make good faith efforts to engage another DBE subcontractor to perform at least the same amount of work. The Contractor may not terminate any DBE subcontractor and perform that work through its own forces or those of an affiliate without prior written consent of MTD.

## **29. [RESERVED]**

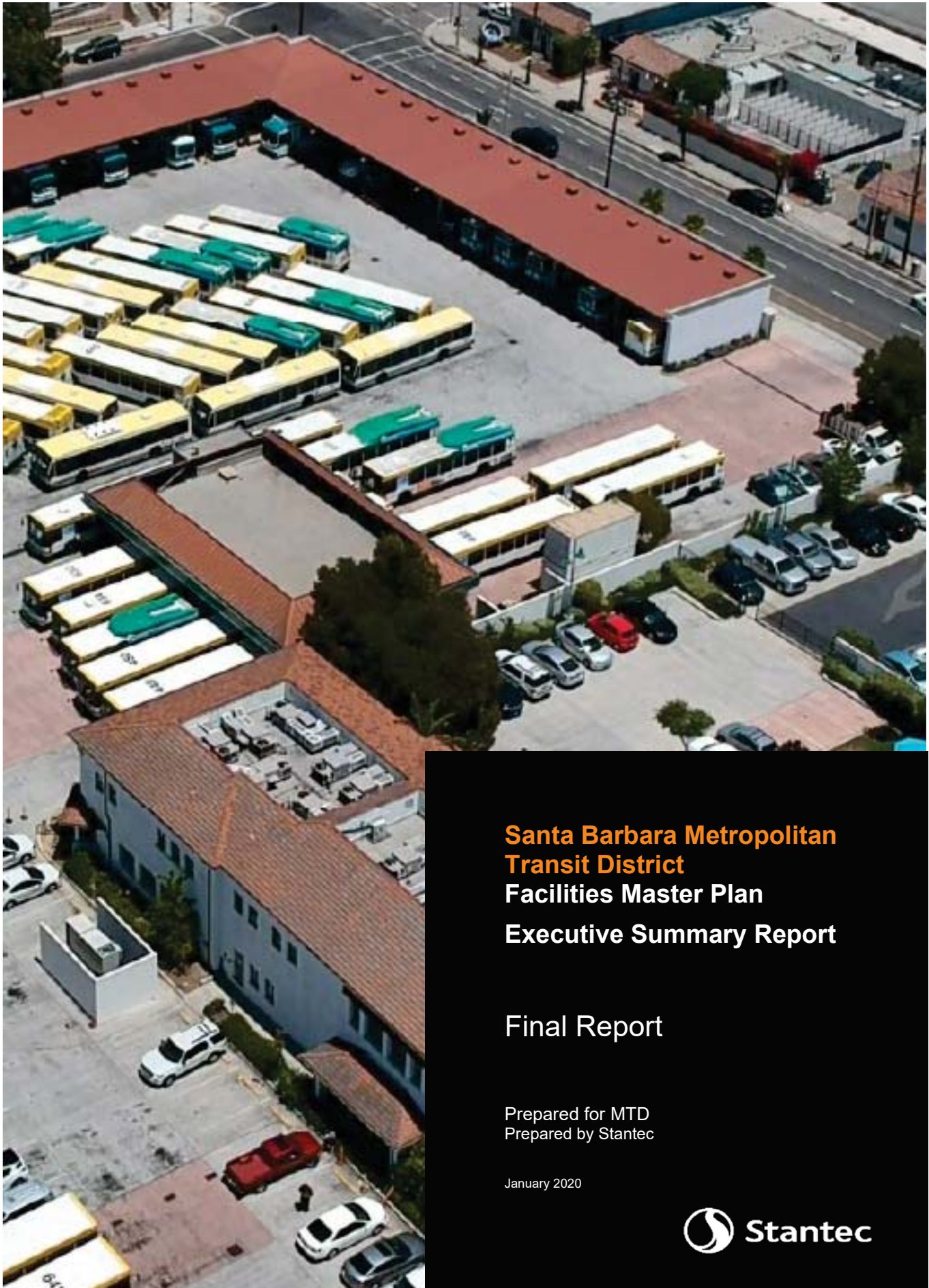
## **30. INCORPORATION OF FEDERAL TRANSIT ADMINISTRATION (FTA) TERMS**

The preceding provisions include, in part, certain Standard Terms and Conditions required by DOT, whether or not expressly set forth in the preceding contract provisions. All contractual provisions required by DOT, as set forth in FTA Circular 4220.1E, are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Agreement. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any MTD requests which would cause MTD to be in violation of the FTA terms and conditions. The Contractor agrees to include the requirements of this section in all subcontracts.

## **31. DRUG & ALCOHOL TESTING (NOT APPLICABLE TO AGREEMENT)**

## **32. INTELLIGENT TRANSPORTATION SYSTEM (ITS) (NOT APPLICABLE TO AGREEMENT)**





**Santa Barbara Metropolitan  
Transit District  
Facilities Master Plan  
Executive Summary Report**

**Final Report**

Prepared for MTD  
Prepared by Stantec

January 2020









## **Executive Summary Report**

January 10, 2020

Prepared for:  
**Santa Barbara Metropolitan Transit  
District**

Prepared by:  
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**Release Version**

| Rev. | Description                | Date       |
|------|----------------------------|------------|
| 0    | Draft Report Issued to MTD | 11/11/2019 |
| 1    | Draft Report Issued to MTD | 11/14/2019 |
| 2    | Final Report Issued to MTD | 1/10/2020  |

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## INTRODUCTION

This Executive Summary Report is intended to succinctly summarize the entire Facilities Master Plan project executed by Stantec Architecture and Transit Advisory Services teams for the Santa Barbara Metropolitan Transit District's use in planning for their future transit operational needs through 2040.

The Facilities Master Plan project which has been executed in three phases:

- Phase 1 – Operations Review and Future Requirements
- Phase 2 – Facilities Assessment
- Phase 3 – Facilities Master Plan Process and Recommendations

The three phases of this report should be considered together as a comprehensive effort to project MTD's needs for future transit operations. The Phase 1 analysis outlines both the internal and external influences on MTD and their respective stakeholders. It is certainly difficult to predict the future of transit and how the nature of our global economy will evolve and transition over the next 20-years and this analysis does not attempt to do so. However, it is fairly certain that the populations of Central and Southern California will continue to grow, constantly increasing the needs for public transportation solutions at the local and regional levels that impact MTD.

Contrary to the Phase 1 analysis, the Phase 2 assessment looks at MTD's operations and facilities at the micro-scale. The Facility Assessment seeks to inventory the conditions, constraints, and opportunities that exist with MTD's two maintenance and operations facilities, Terminals 1 and 2 in Santa Barbara and Goleta respectively. Both facilities have significant challenges in meeting both the current needs and projected future needs for MTD's continued operations. The Phase 2 report does not detail every existing or potential constraint with the existing facilities, but it does identify the major issues and concerns that will need to be addressed by the agency going forward.

The Phase 3 report documents the programmatic needs for a future transit fleet of 160-vehicles and then outlines various options as to how those needs can and cannot be implemented at the two facilities. Phase 3 is the correlation between the Phase 1 and Phase 2 results and recommendations into master plan options for how those results can be synthesized into future, highly functional facilities for MTD.



## 1.0 PHASE 1 – OPERATIONS REVIEW AND FUTURE REQUIREMENTS SUMMARY

The main focus of the operational review was to understand how MTD operates today, how industry trends and future changes in the region will shape transit demand and thus the number of vehicles MTD should plan to accommodate in future facilities, including the current Terminal 1 and at Terminal 2 in Goleta.

Based on an analysis of available data, discussions with MTD staff, reviews of planning documents and forecasts, and stakeholder outreach, the following outcomes should be considered for the facilities master planning process. A full explanation of the methodology of each model, including inputs, assumptions, and process, can be found in section 7.0 of the Phase 1 report.

- Based on current ridership trends and potential future growth, ridership by 2040 on MTD's fixed-route services could range between 8 to 10 million unlinked passenger trips (Table 16). The base and preferred 2040 ridership projections presented in SBCAG's FF2040 were used.
- Accordingly, to accommodate this ridership based on current operations and patterns of usage and to meet peak vehicle needs, we forecast a fleet size of 140-170 vehicles.
- Additionally, depending on arrangements with other transit services in the area, particularly VCTC's Coastal Express and the SBCAG's Clean Air Express, MTD may need to accommodate 20 to 25 motor coaches, but it is anticipated this will only be in a layover capacity so that these vehicles can be parked and charged during the day at MTD facilities.
- Non-revenue vehicle needs, currently 23 in total, is estimated to grow to a total of 29 to 36 non-revenue vehicles.
- Given the expansion of service and the need for staffing, we estimate a staff complement of 250 to 315 FTEs. This includes a significant growth in bus operators which work in multiple shifts and therefore parking would not need to be provided for all 250 to 315 employees.
- While MTD will soon acquire 3 Ford Transit vehicles for microtransit service, it's difficult to predict the future fleet size, discussions with MTD staff indicate a safe estimate would be 10 vehicles. However, overall, these vehicles may replace unproductive fixed-routes reducing the need for 29-ft or 40-ft buses, offsetting 'additional' space requirement for the microtransit vehicles. Therefore, the facilities design team has proceeded with the assumption that the fleet will range from 30-ft to 60-ft and if smaller vehicles are ultimately implemented by MTD they can easily fit within the space allocated for larger vehicles.



## 1.1 FUTURE REQUIREMENTS

### 1.1.1 Model 1

Model 1 is based mainly on ridership demand, the distribution of ridership across hours of the weekday, and calibrated with an assumed passenger load per vehicle that must be carried to arrive at current vehicle requirements for revenue service. Figure 27 provides a high-level schematic of Model 1. Current vehicle and vehicle projections under this model (including spares) for both base and preferred 2040 ridership scenarios are presented below.

| Vehicle type  | FY2019 - Actual | FY2019 - Predicted | Base 2040  | Preferred 2040 |
|---------------|-----------------|--------------------|------------|----------------|
| 30-ft shuttle | 14              | 14                 | 17         | 21             |
| 29-ft bus     | 14              | 14                 | 17         | 22             |
| 40-ft bus     | 83              | 83                 | 100        | 126            |
| 60-ft bus     | 3               | 3                  | 3          | 5              |
| <b>Total</b>  | <b>114</b>      | <b>114</b>         | <b>137</b> | <b>174</b>     |

### 1.1.2 Model 2

Model 2 is based on the ridership projections from FF2040, but rather than distributing ridership across the day and estimating vehicles as in Model 1, Model 2 considers productivity (ridership by hour and mile) to estimate revenue hours and miles based on a set ridership, and then estimates vehicles based on current average mileage and hours per vehicle. Figure 30 provides a schematic overview of the process in Model 2. Current vehicle and vehicle projections under this model (including spares) for both base and preferred 2040 ridership scenarios are presented below.

| Vehicle type  | FY 2019 – Actual | FY 2019 - Model 2 Estimate | Base 2040  | Preferred 2040 |
|---------------|------------------|----------------------------|------------|----------------|
| 30-ft shuttle | 14               | 12                         | 15         | 18             |
| 29-ft bus     | 14               | 15                         | 18         | 23             |
| 40-ft bus     | 83               | 85                         | 103        | 130            |
| 60-ft bus     | 3                | 5                          | 5          | 6              |
| <b>Total</b>  | <b>114</b>       | <b>117</b>                 | <b>140</b> | <b>177</b>     |

Based on the results of these two models, we recommend the facilities master plan accounts for the needs of 140-170 vehicles for MTD service. Based on conversations and meetings with MTD staff and the Facilities Master Plan Ad-hoc Committee, the Stantec team proceeded with a fleet count of 160 total transit vehicles, which is approximately the average of the results of all four models.





## 2.0 PHASE 2 – FACILITIES ASSESSMENT SUMMARY

*Note: The following sections are inserted directly from Chapter 3 of the Phase 2 Report*

### 2.1 TERMINAL 1 ASSESSMENT SUMMARY

Terminal 1 has a long history at its current location, stretching back to the late 1960s. This downtown area of Santa Barbara has historically been an industrial neighborhood but with population and market growth over the past fifty-plus years, the area has become a blend of industrial facilities, small businesses, local shops, restaurants, and multi-family residential buildings. Just as the neighborhood has evolved, MTD's operations have expanded and evolved beyond the original planning for this facility. The obvious, single biggest issue is that there simply is not adequate space at Terminal 1 to appropriately accommodate all of MTD's fleet, facilities, and employees. The reliance on using fleet parking area for employee parking space, as well as the stacked parking configurations, are not long-term solutions that can continue as MTD will likely expand services in the next 20-years. These current methods of operating at Terminal 1 will also become increasing more difficult, if not impossible, as parking and yard space will inevitably become more constrained as battery-electric bus infrastructure will need to be implemented.

The following is a summary of the most significant conclusions and recommendations from the assessment of the Terminal 1 facility but is not intended to be complete summary of all recommendations. Refer to each section in the report for additional information.

#### **FACILITY ASSESSMENT CONCLUSIONS AND RECOMMENDATIONS:**

- 1.1 Even if a considerable amount of the fleet is moved to Terminal 2, additional parking area is required to separate staff parking from fleet parking. The only viable option to provide additional parking onsite would be to construct an elevated parking structure above fleet parking or above a new building. A parking deck could also serve as a structure for charging infrastructure.
- 1.2 Due to its age, current condition, and location below the historical flood plan elevation, the Maintenance Building either needs to be replaced or needs significant upgrades. In particular, and as noted in the structural assessment (Phase 2 Report, section 2.2.4.2), further detailed assessment is required to determine the long-term integrity of the building.
- 1.3 The other buildings on site are in good condition and significant improvements do not seem necessary for the near future. However, the Administration Building likely needs an extensive interior renovation on the ground floor to meet the current transit operation needs. The service buildings (Fuel Island and Wash Building) may need to eventually be replaced/relocated due to operational and yard constraints.
- 1.4 Only the Administration Building has a fire sprinkler system and even though fire protection systems are not technically required at any of the other existing buildings and canopies, fire protection at any future facility modifications or new structures is strongly advised. The ongoing electrification of the fleet means there will be an exponential growth in electrical infrastructure on the property which will significantly increase safety concerns associated with this equipment.



- 1.5 Significant additional SCE primary service will obviously be required to serve the future electrification of the transit fleet. See Phase 3 Report for expanded analysis.
- 1.6 A detailed accessibility assessment should be performed prior to any future facility modifications as outlined in Section 2.1.2 of this report. Various items such as missing signage could proactively be addressed by MTD if deficiencies are already known. Any future facility improvements will require coordination and review with the City's Building and Safety Department to outline the extent of the required modifications/improvements.
- 1.7 As facilities are considered for replacement or renovation, MTD should consider the long-term State, County, and City energy efficiency goals. The transition to a zero-emission fleet is a massive step towards reducing greenhouse gas emissions, so the same transition should be considered for facilities. This generally equates to eliminating the use of the gas utility and reduction of energy consumption through more efficient building systems (lighting, HVAC, etc.) and improved thermal performance of the building envelope (additional insulation, improved weather barriers, and better doors and windows).
- 1.8 Hazardous material testing is advised for the Maintenance Building. Due to its age, hazardous materials may be present both on the interior and exterior of the building.
- 1.9 Under the City of Santa Barbara's requirements, if any site disturbance greater than 500 sqft occurs on site then stormwater mitigation measures would be required for the entire property. This will prove very challenging and expensive due to the high-water table, challenging soil conditions, known contaminated soils, and the very confined nature of the site.
- 1.10 Due to the known site contamination in the south/east quadrant of the site, additional environmental monitoring will likely be required since improvements and below grade site disturbance in this area seem inevitable. To this end, coordination with the City and any other pertinent stakeholders should be considered very early in any facility modifications that would require work to this part of the site.

## 2.2 TERMINAL 2 ASSESSMENT SUMMARY

Similar to Terminal 1, Terminal 2 has a long history at its location. This area of Goleta is still a light industrial neighborhood as it was when the facility was first constructed, however the area has seen significant growth and development. Overpass Road is no longer a dead-end street and there are more residential and commercial developments happening in the vicinity as the City of Goleta develops. This growth in Goleta's population is one of the reasons MTD's ridership has grown and Terminal 1 is now over capacity. It is apparent that the revitalization of Terminal 2 is now necessary to continue MTD's operations into the future and serve the expanding populations and communities in Santa Barbara County.

The following is a summary of the most significant conclusions and recommendations from the assessment of the Terminal 2 facility but is not intended to be a complete summary of all recommendations. Refer to each section in the report for additional information.



**FACILITY ASSESSMENT CONCLUSIONS AND RECOMMENDATIONS:**

- 2.1 Similar to Terminal 1, the major issue with Terminal 2 is the limited space available for fleet parking, employee parking, and the necessary operations and maintenance facilities. The current footprint of the property simply won't allow for enough expansion of MTD's operations to ease the burden on Terminal 1, so a multi-level solution will be required. Either a partially below-grade or second-level structured parking solution will likely allow for sufficient employee and smaller vehicle parking.
- 2.2 Due to the age and current condition of the facilities at Terminal 2, the consensus is that a new facility would be required to meet the long-term goals of the agency. The existing Maintenance Building maintains little value compared to the high costs that would be required to modernize this facility and bring it back into full operation. It is not recommended to significantly invest in improving the Maintenance Building.
- 2.3 Contrary to the Maintenance Building, the Wash Building and Canopies still retain some value and would not be expected to be cost prohibitive to return them to service. However, all of these structures are likely required to be replaced or demolished due to the operational constraints and limitations of working around these structures.
- 2.4 Additional inspections and detailed assessments will be required to determine the functionality of the existing facilities if MTD chooses to resume operations at Terminal 2 in the near future. If improvements are required, MTD should balance what's necessary to resume minimal operations to avoid code required thresholds that would require the entire building be brought up to code.
- 2.5 Under the City of Goleta's requirements, storm water mitigations would be required if any significant modifications are made to the site. Due to the limited constraints of the property, the only viable solution would likely be expensive structured underground chambers to retain and infiltrate storm water from the site.
- 2.6 If removal of any concrete floor slab is anticipated or planned in the future, additional environmental testing should be performed to further the investigations performed by CEC following the removal of the underground fuel tanks.
- 2.7 Items 1.5 – 1.9 from the Terminal 1 Assessment Summary also apply to Terminal 2.



## 3.0 MASTER PLAN SUMMARY

### 3.1 SUMMARY

After reviewing numerous options and further refinements of those options, the Facilities Design Team and MTD have concluded that the projected 160-vehicle fleet cannot be reasonably accommodated at Terminals 1 and 2, and that an additional property will be necessary to meet MTD's future fleet and facility needs. The exact timing of when that programmatic need will be required is difficult to assess and is contingent on numerous factors that influence MTD's transit operations including population growth, funding opportunities, actualized fleet needs in the future, and the political climate surrounding public transportation.

Following a review session with MTD staff and board members on November 11, 2019, the Stantec team was directed to finalize Option 6-A for Terminal 1 and Option 6-A for Terminal 2 as the final master plan options, with the understanding that the projected 160-vehicle program would not entirely fit on MTD's current properties. The following section outlines those final options in more detail and allocates an opinion of cost to each.

#### 3.1.1 Opinion of Cost Overview

For each Terminal, a high-level Opinion of Cost has been prepared by Jacobus & Yuang, Inc., an independent construction cost consultant based in Southern California with extensive experience in estimating costs for transit facilities. These figures are a good faith estimate of the probable hard costs to renovate and complete the new facilities identified in the Master Plan. The values were initially derived from information developed in the program, MTD record drawing information, the master plans presented in the previous section of this report, and other supplemental information. This information was augmented by the narrative explanations included in this report.

As with any conceptual estimate, an appropriate amount of contingency has been built into the estimate to cover issues that have not been addressed in the very high-level nature of the master plan design process. This contingency will diminish as design documents become more refined and decisions are made

about specific issues that affect cost, allowing the actual price for construction to be more accurately assessed. Methods and values used in determining the construction costs of the facility were based on historical data. Information regarding projects that have been recently constructed in the surrounding region, that are similar in scope and construction methods as assumed in the master plan design, were analyzed in this process. Values in the estimate attempt to include the cost for everything affecting the project including, but not limited to, site work, selective building demolition, materials and labor for new construction, furniture, finishes, and equipment.



For detailed data of the costs estimate prepared by JYI, please refer to **Appendix 4.2** (*forthcoming*) in the Phase 3 Report. It should be noted that the cost information has been based on the following assumptions:

- An annual 6% - 6.25% Escalation Factor was applied to the estimate. An averaged Escalation Factor of 20% (through mid-point of construction) has been included in prorates. This factor is based on an assumed 48-month construction schedule. This factor is an average used in both options.
- An estimate contingency of 12.5% - 15% for all site and new building construction and 15% - 20% for all renovated building construction has been included in prorates due to the conceptual nature of the documentation.
- Other elements included in prorates include General Conditions and Requirements of 12% - 15%.
- Hard Costs also include Bonds & Insurance Fees of 1.75% - 2% and Contractor's Fee of 5% - 6.5%.

As with any estimate, the possibility that market conditions will change exists. In recent years, due to environmental events, economic cycles, and material supply and demand trends, the cost of construction has increased significantly. Accordingly, the escalation factored for the duration of this project is based on schedule estimates.

In addition, MTD should include Soft Costs in any future budget planning to ensure that there are adequate available funds to cover the costs of necessary contingencies, design and engineering services, project construction management, permitting, insurance, materials testing, surveying, environmental testing, and other miscellaneous items. The following soft costs are figured as a percentage of the total construction cost

and have likewise been based on historical data from other projects of similar characteristics but could vary significantly depending on how facilities are ultimately phased and MTD's specific requirements.

- Design Contingency: 10% to 15%
- Architectural & Engineering Fees: 10% to 12%
- Construction Management Fees: 5% to 8%
- Survey, Testing and Inspections; Permits and Fees; Environmental Reports: 3% to 5%

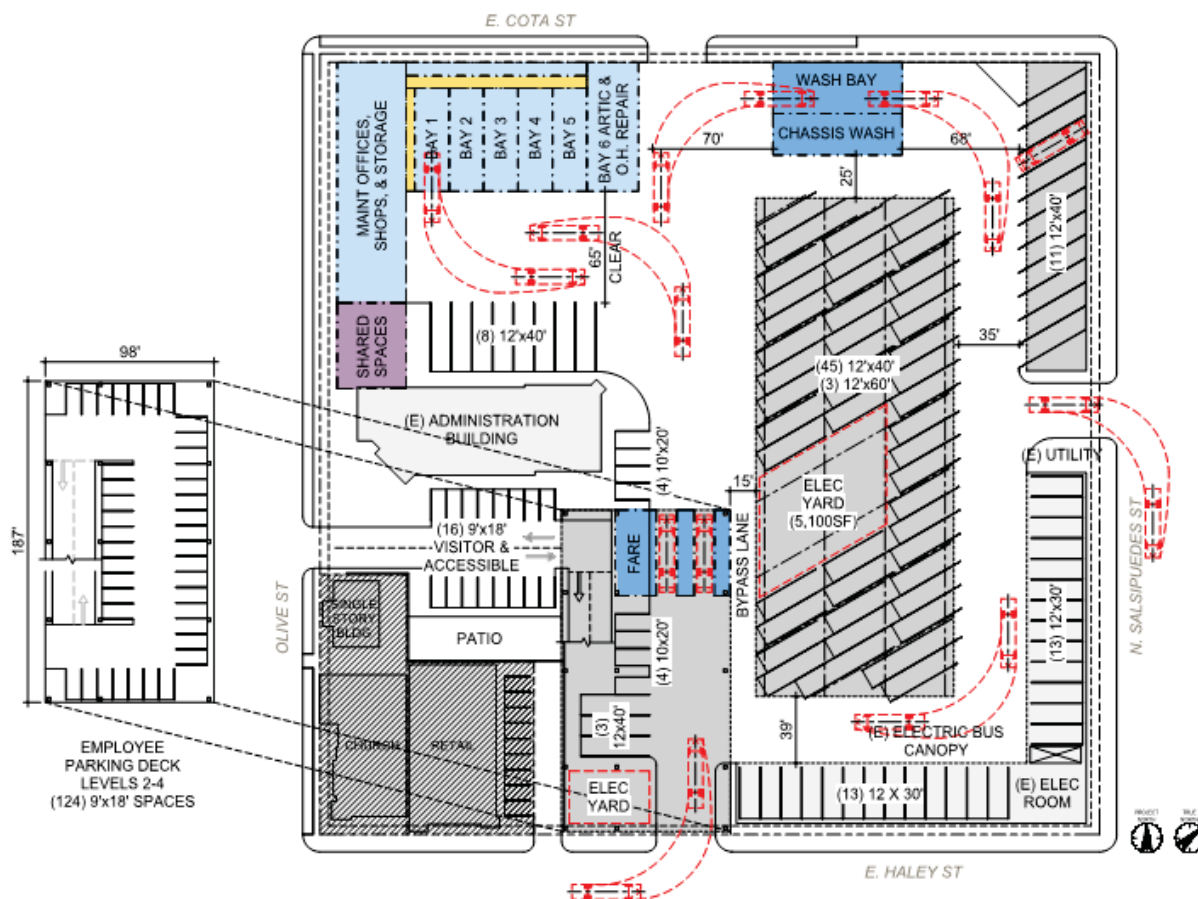


## 3.2 TERMINAL 1 FINAL MASTER PLAN

### 3.2.1 Terminal 1 - Summary

Despite resolving the 90-vehicle program for Terminal 1, the Final Master Plan still presents MTD with some significant challenges. While the current downtown location is optimal for operations and is an easily accessible location, the lack of available onsite parking, the likelihood of flooding, and the existing contaminated soils still make Terminal 1 a challenging site to continue to operate.

The following section outlines the various big-picture components implied in the Final Master Plan for Terminal 1. This summary is not intended to cover every detail necessary to implement the master plan. Appropriate contingency should be included in any planning of facility upgrades.



*Terminal 1 – Master Plan Option 6-A*

- Fleet Parking:** The plan provides for (63) 40' standard buses, (26) 30' buses, and (3) 60' articulated buses. The plan also indicates (8) 10'x20' spaces that could be utilized by either non-revenue or microtransit vehicles.



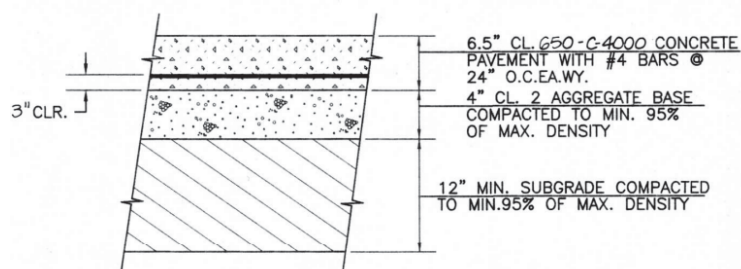
- **Fleet Parking Canopies:** In order to accommodate potential photovoltaic panels and allow for overhead distribution of the electric-vehicle charger dispensers, canopies are indicated over the center yard of parking.
  - **Center Canopy:** 33,000 sqft, steel-framed structure with metal roof, minimum 14' clear.
  - **North/east Canopy:** 6,200 sqft, steel-framed with metal roofing, minimum of 14' clear. This canopy would likely be designed to a similar appearance as the existing Electric Bus Canopy, with solid, stucco plaster exterior walls.
- **Employee, Visitor, and Accessible Parking** would be accommodated in part by the proposed 3-level (~18,000 sf/level) above-grade parking deck. However, this location on the site is unfortunately subject to challenging soil conditions and deep foundations, likely driven piles, would be required. The parking structure should be assumed to be a concrete structure with significant façade treatment to meet the City's design guidelines.
  - The parking structure is limited to 4-stories per the City's zoning. Due to site constraints, this parking structure is not an efficient layout.
  - Per the parking program quantities in Section 2.4.3, providing a total of 140-standard vehicle spaces may be sufficient for employees, but still leaves Terminal 1 with a slight shortage of parking for non-revenue vehicles and potential paratransit staff.
- **New Maintenance Building:** The largest building need onsite is for a modern maintenance facility, sized for the current and future fleet of transit vehicles. A 20,000 sqft, 6-bay building is programmed for Terminal 1. Approximately 10,000 sqft would be required for the double-height space of the bays and connected shops and another 10,000 sqft over two floors for offices and storage spaces.
- A **Shared Space Addition** of about 4,000 sqft on two-floors is also included in the plan to account for additional admin/operations/maintenance needs not accounted for elsewhere. In particular, a shared fitness center and training room have been discussed. This additional space could be connected directly to the existing Admin Bldg. and could serve as the connection to the new maintenance facility.
- **New Wash Bay & Chassis Wash Canopy:** New wash facilities would be essential in reorganizing Terminal 1 into a more efficient configuration. A 75'-long Wash Bay (~2,400 sqft) with associated equipment space would be required for a drive-through or gantry vehicle wash system. In addition, a 24'x75', 1,800 sqft covered chassis washing area is planned.
- **Fare Collection & Vehicle Service** functions could be housed in a new service area of about 1,400 sqft under the employee parking structure. Since liquid-fueling would no longer be required this area would only serve the fare collection and interior cleaning functions.
- **Existing Administration Building:** In the next 10-years, the entire two-story, 13,000 sqft building should be considered for a full interior renovation, exterior improvements, re-roof, and building systems replacement. Most systems are at or nearing the end of their standard lifespan. Investment in the building systems and interior layout should be able to yield operational efficiencies and utility consumption reductions.
- **Existing Electric Bus Canopy:** Only minor improvements would be required to the existing 13,000 sqft canopy area. New vehicle chargers and electric infrastructure would likely be



required in the next 20-years. New lighting, fire-sprinklers, and repainting would also be required. Replacement of the existing pavement under the canopy is not anticipated.

- **Site Improvements:**

- The largest site improvement cost would be the replacement of an extensive amount of concrete pavement throughout the site. It's assumed that all impacted areas would have to be entirely re-paved with a similar concrete pavement section as currently exists. The area of pavement replacement totals about 110,000 sqft.



*Existing Concrete Pavement Section (from record drawings)*

- The new Maintenance Building would also need to be built above the historical flood plain of the site as noted in the Phase 2 Report. Therefore, the height of the finish floor of the building would be approximately two feet about the current grades in the north/west corner of the site. Significant imported fill would be required, and the re-grading of the site is assumed to be required across the entire northern half of the site.
- Perimeter landscaping and fencing would also need to be upgraded and replaced where required. However, the majority of the perimeter would be converted to buildings so only a limited amount of perimeter would remain as fencing or site walls. It's also anticipated that all three vehicle gates would be replaced.
- As part of construction of the Parking Structure and the Center Canopy, pavement will need to be removed for the construction of foundations and inevitable removal of pavement. Additional costs should be planned for environmental testing and monitoring for the work in this Area of Concern in respect to the known contaminated soils.

- **Utility Infrastructure:**

- Significant electrical improvements would be required to support the new BEB fleet as outlined in **Appendix 4.1** in the Phase 3 Report:
  - o A new 400A, 15kV medium-voltage service for the new electrical demand
  - o Min. of (8) 500kW BEB charging power units with approximately (48) dispensers
  - o 1.1MW photovoltaic system mounted to building and canopy roofs
- Significant expense would also be required to meet the City's storm water requirements (refer to Phase 2 Report section 2.2.3.1.). An underground storage tank system with mechanical filtration would likely be required. A system sized for this site would cost approximately \$250,000.



- Domestic water line improvements would be required to meet the needs of the new configuration of the facility. The existing connection is adequate for the current facility, but an upgraded water line connection would be necessary to support a fire protection/sprinkler system that would be required for all buildings and canopies.
- Low-voltage, communication systems would also likely be upgraded during the implementation of the master plan. New fiber, radio, and wireless systems should be planned for, particularly to coordinate operations between the two terminals.

### 3.2.2 Terminal 1 - Opinion of cost

Note: The estimate provided below is a summary of the cost estimate prepared by JYI.

Refer to **Appendix 4.2.1** of the Phase 3 Report for the complete, detailed cost estimate report.

| TERMINAL 1 - COST ESTIMATE SUMMARY                        |         |      |              |                      |
|-----------------------------------------------------------|---------|------|--------------|----------------------|
|                                                           | QTY     | UNIT | UNIT COST \$ | TOTAL COST \$        |
| Sitework                                                  |         |      |              |                      |
| Site Improvements                                         | 127,200 | SF   | 34.17        | \$ 4,346,530         |
| Center Bus Canopy                                         | 33,000  | SF   | 99.77        | \$ 3,292,558         |
| North/East Bus Canopy                                     | 6,200   | SF   | 142.40       | \$ 882,906           |
| Chassis Wash Canopy + Wash Pit                            | 1,800   | SF   | 234.74       | \$ 422,540           |
| Utilities                                                 | 127,200 | SF   | 20.11        | \$ 2,557,440         |
| New Buildings:                                            |         |      |              |                      |
| Maintenance Building                                      | 20,000  | SF   | 320.68       | \$ 6,413,586         |
| Shared Space Addition                                     | 4,000   | SF   | 371.44       | \$ 1,485,750         |
| Wash Building                                             | 2,400   | SF   | 286.01       | \$ 686,415           |
| Fare Building & Service Islands                           | 3,400   | SF   | 176.25       | \$ 599,265           |
| Parking Structure                                         | 54,400  | SF   | 78.38        | \$ 4,263,746         |
| Existing Buildings:                                       |         |      |              |                      |
| Admin Building Renovations                                | 13,000  | SF   | 176.45       | \$ 2,293,830         |
| Electric Bus Canopy                                       | 13,000  | SF   | 23.04        | \$ 299,492           |
| Vehicle Charging Equipment                                |         |      |              |                      |
| 150kV Chargers, including wiring, conduits, footing, etc. | 8       | EA   | 157,870.00   | \$ 1,262,960         |
| Photovoltaic System                                       | 1,100   | kW   | 3,500.00     | \$ 3,850,000         |
| <b>SUBTOTAL</b>                                           |         |      |              | <b>\$ 32,657,018</b> |
| Prorates:                                                 |         |      |              |                      |
| General Conditions/Requirements                           | 15%     |      |              | \$ 4,898,553         |
| Escalation                                                | 33.8%   |      |              | \$ 12,700,892        |
| Phasing Premium                                           | 1.5%    |      |              | \$ 753,847           |
| Geographical Factor                                       | 3%      |      |              | \$ 1,530,309         |
| Estimate/Design Contingency                               | 15%     |      |              | \$ 7,881,093         |
| <b>SUBTOTAL</b>                                           |         |      |              | <b>\$ 60,421,712</b> |
| Bonds and Insurance Fees                                  | 2%      |      |              | \$ 1,208,434         |
| Contractor Fees                                           | 6.5%    |      |              | \$ 4,005,959         |
| <b>SUBTOTAL</b>                                           |         |      |              | <b>\$ 65,636,105</b> |
| Maintenance & Service Equipment                           |         |      |              | \$ 2,000,000         |
| Equipment Installation                                    | 15%     |      |              | \$ 300,000           |
| Prorates on Equipment & Install                           | 101.0%  |      |              | \$ 2,322,683         |
| <b>SUBTOTAL</b>                                           |         |      |              | <b>\$ 4,622,683</b>  |
| <b>TERMINAL 1 GRAND TOTAL</b>                             |         |      |              | <b>\$ 70,258,788</b> |

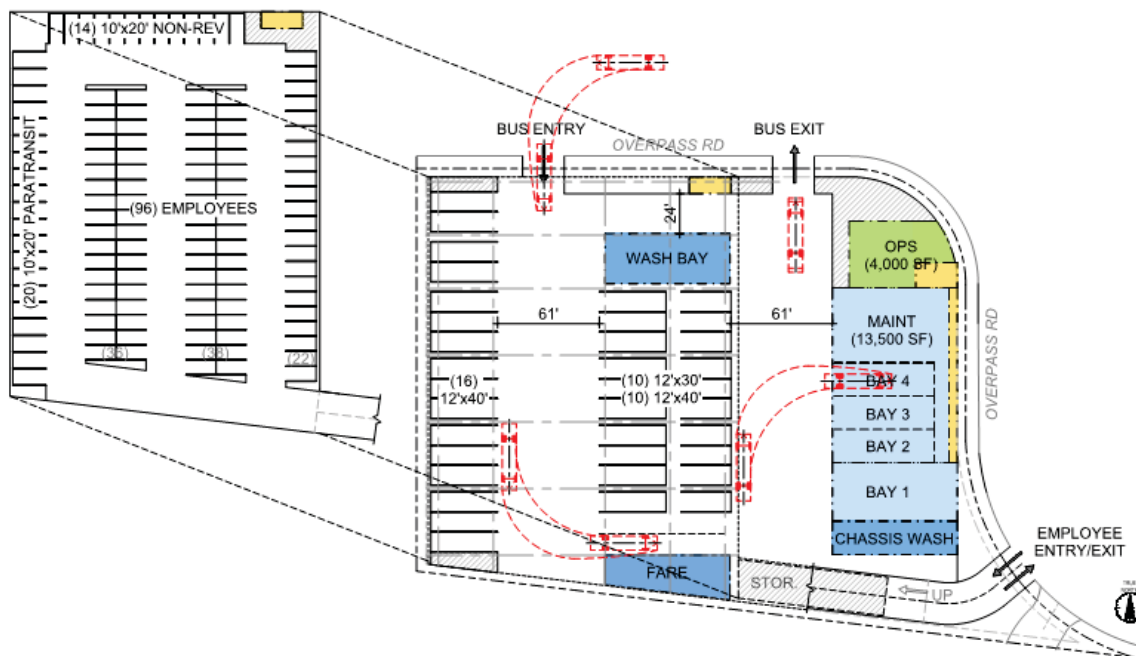


### 3.3 TERMINAL 2 FINAL MASTER PLAN

#### 3.3.1 Terminal 2 - Summary

Like Terminal 1, the master plan for Terminal 2 is not without its significant challenges, primarily the lack of area to accommodate the 70-vehicle fleet remainder of the projected future 160-vehicle fleet. However, there are significantly less development issues with this property – lack of flooding concerns, limited contaminated soils, less existing infrastructure to work around, and less development issues in the City of Goleta – making the future redevelopment of Terminal highly-feasible.

The following section outlines the various big-picture components implied in the Final Master Plan for Terminal 2. This summary is not intended to cover every detail necessary to implement the master plan. Appropriate contingency should be included in any planning of facility upgrades.



*Terminal 2 – Master Plan Option 6-A*

- **Fleet Parking:** The plan provides for (26) 40' standard buses and (10) 30' buses. The plan also indicates (34) 10'x20' spaces on the upper level that could be utilized by either non-revenue or microtransit vehicles.
  - The upper level parking deck can serve as the overhead distribution structure for the electric-vehicle charger dispensers.
- **Upper Level Parking Deck:** A 46,000 sqft (includes ramp) concrete parking deck is shown to accommodate all of the non-bus parking required onsite. This would account for about (96) employees and the (34) non-rev/paratransit spaces.
  - Approximately 40,000 sqft could be used for potential solar canopy installed above the employee parking deck.

- The new **Maintenance & Operations Building** is planned to be about 18,000 sqft total on two-levels. About 4,000 sqft for Operations and 14,000 sqft for Maintenance, of which about 7,500 sqft would be for the four maintenance bays.
- The **Chassis Wash Canopy** is planned as a 24'x75', 1,800 sqft canopy off of the south end of the building.
- A 75'-long **Wash Bay** (~2,4000 sqft) with associated equipment space would be required for a drive-through or gantry vehicle wash system. The location under the parking structure would entail that the bay be walled off and would likely need some form of mechanical ventilation.
- **Fare Collection & Vehicle Service** functions would be located underneath the parking structure as well. This 1,200 sqft area would service the fare collection and interior cleaning functions.
- **Site Improvements:**
  - It's assumed that the entire site would need to be repaved to meet the current design criteria and traffic index for the new design, minimum of 6" thick concrete pavement. The paved area is equal to about 63,000 sqft, including the service and wash function areas.
  - Perimeter landscaping and fencing would also need to be replaced. The entire perimeter wall should be replaced with a more appropriate security fence/wall. It's also anticipated that vehicle gates would be provided at all three curb-cuts.
- **Utility Infrastructure:**
  - Significant electrical improvements would be required to support the new BEB fleet as outlined in **Appendix 4.1** in the Phase 3 Report. However, the tech memo outlines what would be required for a 70-vehicle fleet, so the following is assumed necessary for a 36-vehicle fleet:
    - o A new 3000A, 480V service to support the new electrical demand
    - o Min. of (4) 500kW BEB charging power units with approximately (18) dispensers
    - o 1.1MW photovoltaic system mounted to building and canopy roofs
  - Significant expense would also be required to meet the City's storm water requirements (refer to Phase 2 Report section 2.3.3.1.). An underground storage tank system with mechanical filtration would likely be required. A system sized for this site would cost approximately \$250,000.
  - Domestic water line improvements would be required to meet the needs of the new configuration of the facility. The existing connection is adequate for the current facility, but an upgraded water line connection would be necessary to support the larger facility and fire protection/sprinkler system that would be required for the building and covered parking/canopies.
  - Low-voltage, communication systems would also likely be upgraded during the implementation of the master plan. New fiber, radio, and wireless systems should be planned for, particularly to coordinate operations between the two terminals.



### 3.3.2 Terminal 2 - Opinion of cost

Note: The estimate provided below is a summary of the cost estimate prepared by JYI.

Refer to **Appendix 4.2.2** of the Phase 3 Report for the complete, detailed cost estimate report.

| TERMINAL 2 - COST ESTIMATE SUMMARY                        |        |      |              |                      |
|-----------------------------------------------------------|--------|------|--------------|----------------------|
|                                                           | QTY    | UNIT | UNIT COST \$ | TOTAL COST \$        |
| Sitework                                                  |        |      |              |                      |
| Site Improvements                                         | 70,300 | SF   | 33.86        | \$ 2,380,048         |
| Chassis Wash Canopy + Wash Pit                            | 1,800  | SF   | 234.74       | \$ 422,540           |
| West Canopy above parking deck                            | 8,000  | SF   | 117.00       | \$ 936,000           |
| Utilities                                                 | 70,300 | SF   | 19.96        | \$ 1,403,500         |
| New Buildings:                                            |        |      |              |                      |
| Maintenance Building                                      | 14,000 | SF   | 315.23       | \$ 4,413,200         |
| Operations Building                                       | 4,000  | SF   | 431.27       | \$ 1,725,070         |
| Wash Building                                             | 2,400  | SF   | 286.01       | \$ 686,415           |
| Fare Building                                             | 1,200  | SF   | 377.78       | \$ 453,333           |
| Parking Deck                                              | 46,000 | SF   | 81.09        | \$ 3,729,968         |
| Vehicle Charging Equipment                                |        |      |              |                      |
| 150kV Chargers, including wiring, conduits, footing, etc. | 4      | EA   | 141,082.50   | \$ 564,330           |
| Photovoltaic System                                       | 1,100  | kW   | 3,500.00     | \$ 3,850,000         |
| <b>SUBTOTAL</b>                                           |        |      |              | <b>\$ 20,564,404</b> |
| Prorates:                                                 |        |      |              |                      |
| General Conditions/Requirements                           | 15%    |      |              | \$ 3,084,661         |
| Escalation                                                | 24.4%  |      |              | \$ 5,775,996         |
| Market Factor                                             | 3%     |      |              | \$ 882,752           |
| Estimate/Design Contingency                               | 15%    |      |              | \$ 4,546,172         |
| <b>SUBTOTAL</b>                                           |        |      |              | <b>\$ 34,853,985</b> |
| Bonds and Insurance Fees                                  | 2%     |      |              | \$ 697,080           |
| Contractor Fees                                           | 6.5%   |      |              | \$ 2,310,819         |
| <b>SUBTOTAL</b>                                           |        |      |              | <b>\$ 37,861,884</b> |
| Maintenance & Service Equipment                           |        |      |              | \$ 1,500,000         |
| Equipment Installation                                    | 15%    |      |              | \$ 225,000           |
| Prorates on Equipment & Install                           | 84.1%  |      |              | \$ 1,450,961         |
| <b>SUBTOTAL</b>                                           |        |      |              | <b>\$ 3,175,961</b>  |
| <b>TERMINAL 1 GRAND TOTAL</b>                             |        |      |              | <b>\$ 41,037,845</b> |



## 3.4 IMPLEMENTATION PLAN

### 3.4.1 Introduction

The MTD's facilities are a key element to Santa Barbara County's public transportation system and the continued operation and functionality of these facilities are critical to MTD's responsibility for delivering high-quality public transportation. Therefore, proper sequencing and phasing will be critical to implementing the Facilities Master Plan recommendations in the coming years.

It is vital to keep the facilities operating at the highest capacity possible during implementation of the Master Plan. Proper sequencing and planning must take place for the implementation plan to work properly. Taking the cause and effect of the sequencing, the Master Plan was carefully studied by the Facilities Design Team. A multi-phased sequencing plan was developed to achieve the Master Plan. Keeping the facilities as fully functional as possible is a major consideration of each phase. Each phase will have several interim steps to reach its respective goal.

Multiple steps are shown in the phasing plan allowing for design and construction to be accomplished. The phasing plan also allows for work to overlap. Once design and bidding are complete, the first phase of construction may begin. This process would repeat through the end of all Phases.

The drawings in sections 2.4.2. and 2.5.2. depict the current conditions at both sites. These drawings will help illustrate the whole process from beginning to end. Refer to phasing plan for impacts to bus operations of each phase.

### 3.4.2 Phase 1: Terminal 2 Reactivation

The first, critical step in initiating the Facilities Master Plan for both terminals, is reactivating Terminal 2 for vehicle operations and storage. The existing facilities have not been used for about 20-years and are in need of significant refurbishment. At a bare minimum the following should be considered for operating transit vehicles out of this location. It is only suggested that vehicles be serviced and operated out of this facility and full reuse or occupancy of the facility is not considered at this time without further, more detailed analysis on the integrity of the existing building.

- The entire site needs to be secured and the existing site wall leaves the site easily accessible. A new 8-foot tall perimeter fence, even if just a temporary chain-link fence, is suggested for the entire perimeter.
  - There existing damaged sections of the wall should be removed in part to prevent additional damage to the existing wall. In particular, refer to Section 2.3.2.2. in the Phase 2 Report for specific areas.
- The existing bus wash equipment should be replaced in kind or removed entirely in favor of manually washing vehicles. If the latter is the desired approach, lighting will need to be installed within the Wash Bay.



- To fuel vehicles, a temporary 12,000 gallon, UL listed above-ground fuel tank with integral dispenser per Phase 2 Report section 2.3.3.4. should be installed at a cost of about \$180,000.
- MTD will have to further assess what's required for their short-term operational goals but it is recommended that lighting repairs/replacement and new security cameras be installed throughout the yard to further secure the property.
- Similarly, the building may need minor improvements at a minimum to use the facility for storage or for use of the restrooms by staff onsite. Alternatively, temporary trailer restrooms and office space could also be leased and located on site to fulfill any specific programmatic needs.
- Minimal pavement repairs are also suggested. In particular around existing storm drain catch basins where pavement was noted as deteriorating in Section 2.3.3.1. in the Phase 2 Report.

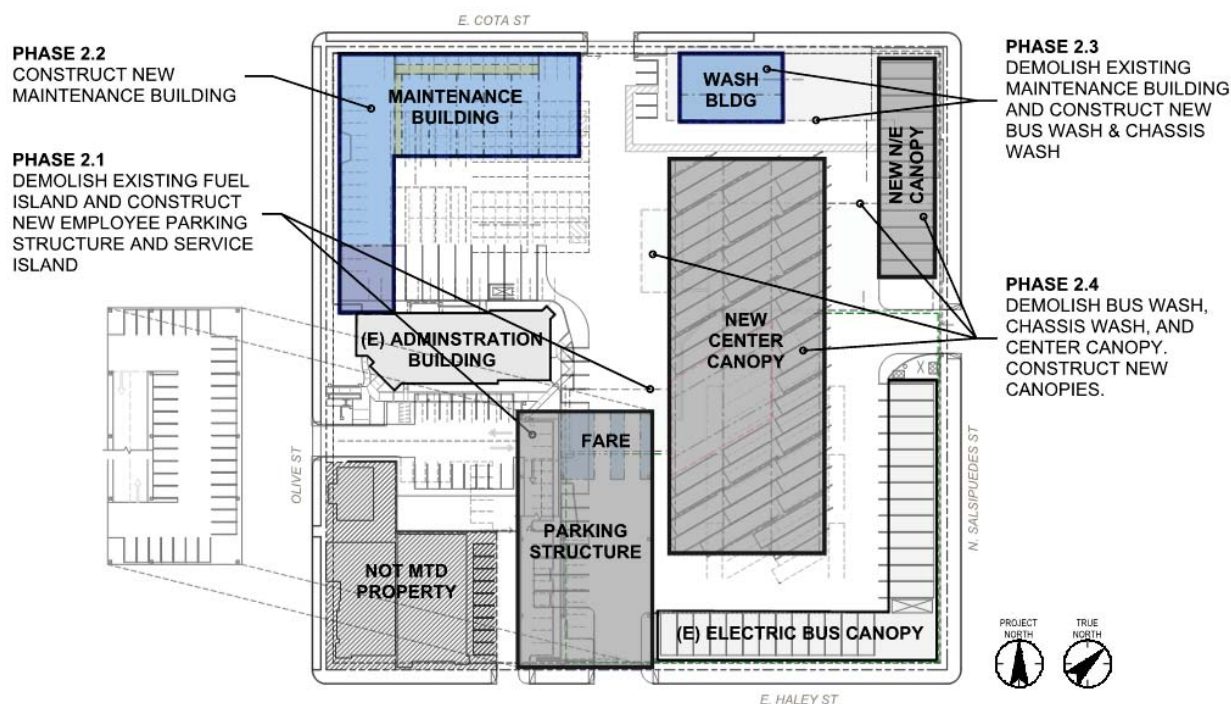
MTD can realistically expect to store 20 to 25 buses (depending on size) at the existing facility. MTD should also expect to park 20 – 30 staff at this location as well which should be achievable with 20 – 25 buses. This relief of staff and buses from Terminal 1 is the critical step in initiating facility improvements at Terminal 1.

A conceptual Reactivation Plan and preliminary cost estimate were further developed for MTD to better understand the potential needs associated with the near-term reactivation of Terminal 2. This plan is included in this report as **Appendix 4.3** of the Phase 3 Report.

### 3.4.3 Phase 2.1: Terminal 1 Employee Parking / Service Island

Phase 2 encompasses all of the proposed improvements at Terminal 1 to execute the full Master Plan. The phasing plan below graphically outlines the new facilities overlaid on the existing. Vehicle staging and movements would need to be closely considered for each phase to ensure sufficient site capacity for transit vehicles, but with the understanding that significant vehicles would be moved to Terminal 2, this plan should be feasible without relying on third-party facilities.





*Terminal 1 – Phasing Plan*

The first phase at Terminal 1 will be to construct the employee parking structure in order to free up the side yard for the construction of the new Maintenance Building. Phase 2.1 is outlined as follows:

- 1.1 MTD will need to find an offsite solution for employee parking for the duration of Phase 2.1.
- 1.2 Create temporary Fuel Island in the current Side Yard. A temporary AST and canopies could be setup for fare retrieval, interior cleaning, and fueling.
- 1.3 Demolish existing Fuel Island including UST.
- 1.4 Construct new Employee Parking Structure with ground-level service island. Modify existing employee/visitor parking area for structure entry/exit.
- 1.5 Remove temporary service functions. Relocate existing AST to temporary location at new service lane (AST will eventually be removed when the entire fleet is converted to EV's).

### 3.4.4 Phase 2.2: Terminal 1 New Maintenance Building

Phase 2.2 encompasses the full construction of the Maintenance Building and the Shared Spaces Annex to the Administration Building. Fortunately, no permanent structures would need to be relocated or demolished as part of this phase, but the new electric service being installed for the fourteen non-revenue vehicles would eventually need to be relocated. Phase 2.2 is outlined as follows:

- 2.1 Demolish existing paving and any site feature obstructions.
- 2.2 Construct new Maintenance Building.



- 2.3 Regrade transition areas as required for temporary vehicle movements until completion of subsequent phases.
- 2.4 Relocate all maintenance and storage functions into the new building.

Following the completion of the new Maintenance Building and Shared Space annex, the Administration Building could be renovated given that some flexible space in the annex and maintenance facility could potentially be used by MTD staff as the interior renovations are phased through the building. This interior renovation could happen at any time but following the completion of the Maintenance Building would be the most logical. The interior renovation in and of itself will likely take numerous small phases depending on the level of renovation.

### **3.4.5 Phase 2.3: Terminal 1 New Bus Wash & Chassis Wash**

Following the temporary re-grading of the areas impacted by the new Maintenance Building, the existing maintenance facility would be demolished to make way for the new Bus Wash.

- 3.1 Demolish existing Maintenance Building and surrounding pavement areas. The Bus Wash building will likely be at a lower grade to ensure the Cota St. curb cut is still usable, therefore less fill will be required.
- 3.2 Construct new Wash Building with Chassis Wash Canopy.
- 3.3 Regrade adjacent areas and repave areas around the Wash Building to ensure facility can be fully functional. Alternatively, a drive-in/back-out gantry style washer could be installed so that only one side of the building needs to be accessed.

### **3.4.6 Phase 2.4: Terminal 1 New Center Canopy & North/East Canopy**

Phase 2.4, the final subphase for Terminal 1 would likely be one of the more complicated due to the significant construction in the Area of Concern. Pile foundations could be used, and minimal site disturbance could be planned as much as possible, but it's very likely that the entire area would need to be repaved and significant monitoring and testing would need to happen during this phase. It's also likely going to be necessary to phase these canopy areas just to provide sufficient vehicle parking on site during the construction of this phase.

- 4.1 Demolish existing Center Canopy, Bus Wash, and Chassis Wash areas.
- 4.2 Construct North/East Bus Canopy along Salsipuedes St.
- 4.3 Construct new Center Canopy in phases as required.
- 4.4 Replace site pavement as required.
- 4.5 Full build-out of BEB charging infrastructure would eventually take place after the canopies are complete, but depending on the timing of the canopy construction, this may not occur for several years after the canopy is built.





### **3.4.7 Phase 3: Terminal 2**

Following the completion of Phase 2, the full renovation of Terminal 1, MTD can turn its focus on building-out Terminal 2 to meet the future needs of the agency at this location. It is possible that MTD could pursue reconstruction efforts at Terminal 2 simultaneous with facility modifications underway at Terminal 1, but this would not be recommended. It is very likely that MTD will need the flexibility of a second terminal while Terminal 1 is undergoing modifications. Additional fleet may need to be staged or serviced at Terminal 2 during the entire duration of Phase 2.

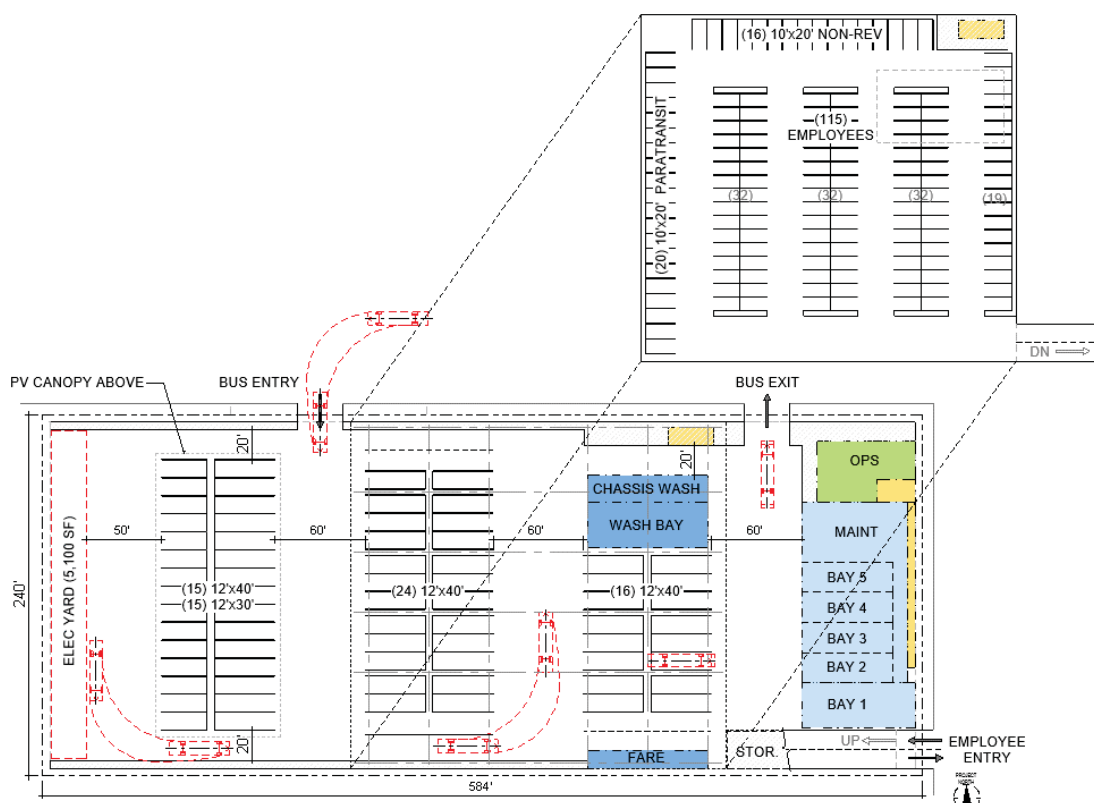
#### **3.4.7.1 Terminal 2 Reconstruction**

The reconstruction of Terminal 2, per Option 6-A above would realistically need to happen in one phase due to the small size of the site and the two-level nature of the facility. The contractor would need lay-down area and have access to the entire parcel in order to construct the parking deck and the building. However, it is possible that the parking deck and service functions could be built first and the building second. Allowing MTD to take possession of the parking deck as soon as it's complete in order to resume bus staging and limited operations at this facility. Multiple phases will obviously increase cost and inefficiency of the construction process but may ultimately be the only means for MTD to continue to operate the necessary number of vehicles.

#### **3.4.7.2 Terminal 2 Replacement**

The alternative to building a new facility at the existing Terminal 2 property, is to construct an entirely new facility on a separate, larger parcel that will adequately house the 70-buses and 100+ employees that will be staffed at a facility of this size.

The Stantec team explored several options to determine a minimal size for a non-site-specific facility with similar tight constraints. Option 7, as outlined earlier in this report, achieves the desired program with a similar stacked parking requirement as Option 6-A. This option could be made only slightly more efficient if stacked parking were implemented, reducing some of the intermediate drive-aisles. This is, however, very restricting to bus operations and not an ideal configuration for a new facility.



*Terminal 2: Option 7 – Non-Site Specific Layout for 70-Vehicle Fleet*

This facility layout requires a minimal parcel size about 3.22 acres, about 1.25 acres more than the footprint of Terminal 2. Ideally a significantly larger parcel would be pursued so that the building could be one-story, a parking deck isn't required, additional setbacks can be provided, storm water mitigations could happen at grade, and additional space could be planned for future growth.

If MTD pursues this approach, then the existing Terminal 2 could continue to operate as a temporary facility until a new facility were constructed. Furthermore, a new terminal could be constructed prior to any facility modifications at Terminal 1, effectively eliminating any need for constrained phasing at Terminal 1.

### 3.5 CONCLUSION

In summary, MTD's current facilities cannot be reasonably planned to accommodate the projected future fleet growth of 160-buses. In combination, the two preferred Master Plan options, Option 6-A for both terminals, can only provide space for approximately 128 buses: (26) 30' buses, (89) 40' buses, and (3) 60' articulated buses. Accommodations for employees, non-revenue vehicles, and potential paratransit operations can be reasonably accounted for at both terminals, but there simply isn't enough ground-level real estate to accommodate maintenance/service functions and bus parking at the two facilities.

## **4.0 APPENDICES**

The following reports are listed as appendices to this Executive Summary Report:

- 4.1 PHASE 1 – OPERATIONS REVIEW AND FUTURE REQUIREMENTS REPORT**
- 4.2 PHASE 2 – FACILITIES ASSESSMENT REPORT**
- 4.3 PHASE 3 – FACILITIES MASTER PLAN PROCESS AND RECOMMENDATIONS REPORT**







# STRATEGIC PLAN: 2016 - 2021

VISION & MISSION

The vision of MTD is that public transit within the District should be so available and attractive that use of an automobile is a choice, not a necessity.

The mission of MTD is to enhance the mobility of South Coast residents, commuters, and visitors by offering safe, appealing, equitable, environmentally responsible, and fiscally sound transit service.

VALUES

- Well-Run & Respected
- Professional Employees
- Responsible With Public Funds
- Pleasant Customer Experience
- Technical Expertise
- Community & Local Agency Support

STRATEGIC PRIORITIES

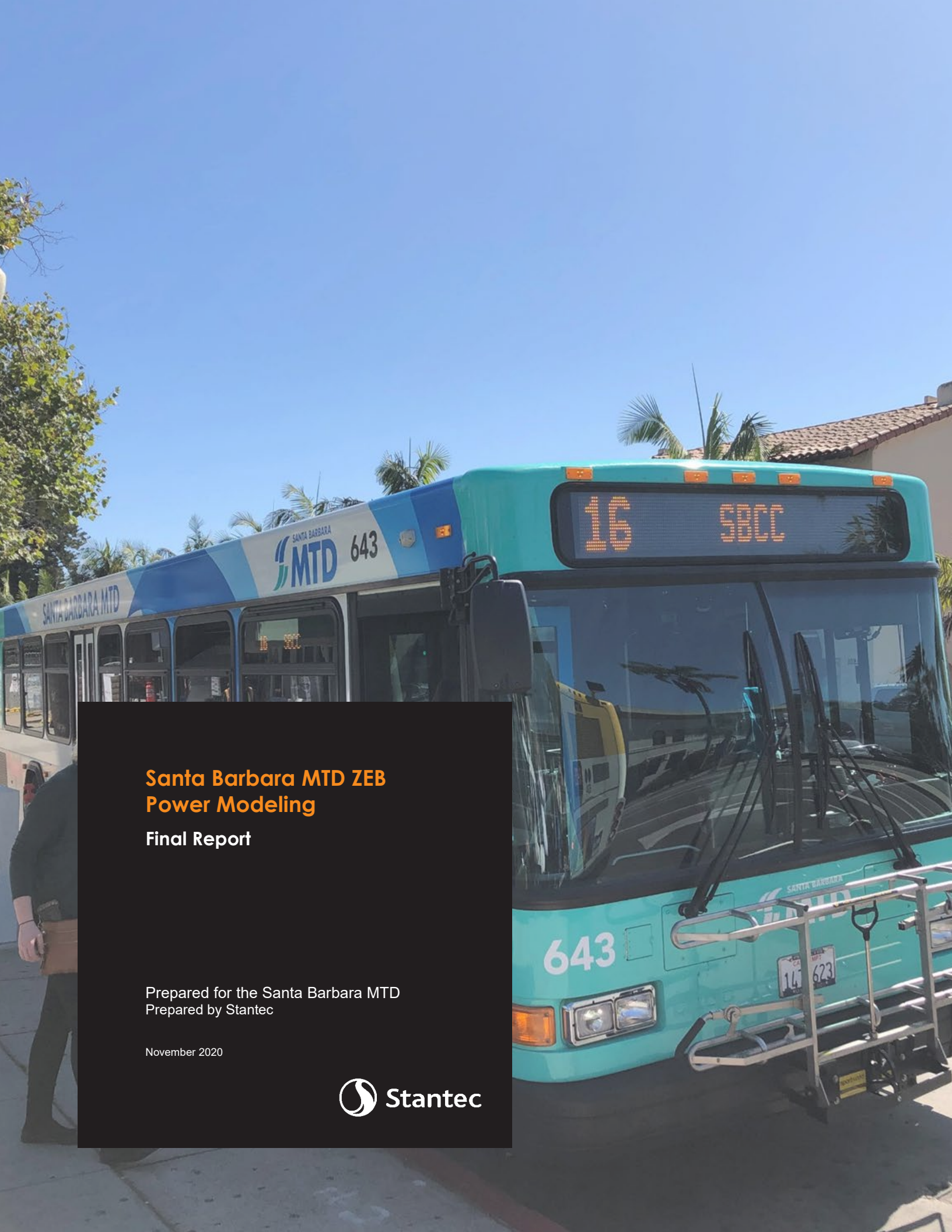
ACTION ITEMS

| On-Time Performance*                                                                                                                                                                                                                                                                                                                                                                                                                 | Facility Improvements*                                                                                                                                      | Long-Term Service Planning*                                                                                                                                                                                                                                                                                                                                                                      | Customer Satisfaction*                                                                                                                                                                                                                                                                                                                                                                            | Balanced Fare Structure                                                       | Financial Stability                                                                                                                                                              | Workforce Recruitment                                                                                                                                                                                                                                                                                                                                                                                                                           | Future Fuel Path                                                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Deploy new tech tools for operations and customer service</p> <p>Set schedules that take into account changing road conditions</p> <p>Work with partner agencies to ensure adequate traffic management</p> <p>Support mode shift to reduce traffic congestion</p> <p>Establish new operational positions within MTD</p> <p>Expand service as feasible</p> <p>Recognize that on-time performance affects customer satisfaction</p> | <p>Increase space for bus storage, offices and maintenance facilities</p> <p>Replace or expand MTD Transit Center</p> <p>Develop a facility master plan</p> | <p>Analyze South Coast build-out potential based on general and specific plans</p> <p>Flesh out a long-term (30 year) plan for MTD service</p> <p>Work with agency partners to coordinate plans and services</p> <p>Increase MTD's participation in policy discussions</p> <p>Define levels of service (coverage vs. ridership)</p> <p>Analyze the expected effects of changing demographics</p> | <p>Implement an MTD communications plan</p> <p>Improve bus stops</p> <p>Promote employee transit incentive programs</p> <p>Expand service as feasible</p> <p>Enhance employee customer service training &amp; practices</p> <p>Enhance the passenger experience (e.g., A/C, Wi-Fi)</p> <p>Implement "smart card" technology</p> <p>Implement security camera and real-time information system</p> | <p>Maintain special pass program fees consistent with general fare policy</p> | <p>Develop new revenue streams (e.g., Calle Real property)</p> <p>Continue to work in partnership with employee labor groups</p> <p>Update and enhance 5-year financial plan</p> | <p>Address housing needs</p> <p>Expand participation in activities such as job fairs, etc.</p> <p>Align training needs with community college course offerings</p> <p>Offer competitive compensation</p> <p>Promote MTD reputation as a great place to work</p> <p>Encourage &amp; support employee professional &amp; leadership development</p> <p>Enhance employee health &amp; wellness programs</p> <p>Enhance employee communications</p> | <p>Participate in proof-of-concept demonstrations for electric buses</p> <p>Implement renewable energy systems where feasible and cost-effective</p> |

\*These are the top four strategic priorities, as determined by the MTD Board of Directors.

Source: Santa Barbara Metropolitan Transit District ([www.sbmtd.gov](http://www.sbmtd.gov))

Adopted December 15, 2015



## **Santa Barbara MTD ZEB Power Modeling**

### **Final Report**

Prepared for the Santa Barbara MTD  
Prepared by Stantec

November 2020





**Santa Barbara MTD ZEB Power  
Modeling**

Final Report

November 5, 2020

Prepared for:

Santa Barbara MTD

Prepared by:

Stantec Consulting Services Inc.

## SANTA BARBARA MTD ZEB POWER MODELING

### Release Version

| Rev. | Description                   | Date       |
|------|-------------------------------|------------|
| 0    | Draft Report Issued to Agency | 10/20/2020 |
| 1    | Final Report Issued to Agency | 11/05/2020 |

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## Executive Summary

This document serves to outline the power demand and energy needs for the MTD's future all battery-electric fleet. Specifically, this report outlines Stantec's methodology to determine future power and energy requirements at MTD's facilities under an all-electric fleet. This modeling process, called ZEBDecide, utilizes a route-based and block-based approach to determining fuel efficiency and energy use of zero-emission buses under MTD's current operations and schedules<sup>1</sup>. ZEBDecide involves a suite of inputs and parameters to accurately determine how battery-electric buses will perform using the MTD's current schedules and within the MTD's operating environment. This document includes:

- A review of existing conditions and MTD operational data to determine operation and scheduling conditions under which modeling will be performed.
- Route- and block-based modeling to determine power requirements for an all-electric fleet, using inputs including bus specifications, representative driving cycles, passenger loads, ambient temperatures and HVAC, and route elevation and topography.
- Presentation and discussion of modeling results, which show the current percentage of daily blocks and vehicles that can successfully complete scheduled service under the conditions laid out in the modeling.
- An additional sensitivity analysis to further understand the differences in energy efficiency and power consumption under more significant variations in topography and HVAC use.
- Developing charging profiles at the MTD's two facilities (assuming that Terminal 2 at Goleta will eventually become operational) to simulate daily charging schedules and power requirements for vehicles housed at each facility. This exercise was also used to determine an estimated number of chargers at each facility as well as high-level fuel cost estimate (cost per kWh) to meet daily charging requirements.
- Recommendations for fleet configurations and power requirements for MTD's future electric fleet.

---

<sup>1</sup> Unless otherwise noted, "current" refers to pre-Coronavirus operating conditions



## Abbreviations

|      |                                         |
|------|-----------------------------------------|
| BEB  | Battery electric bus                    |
| CARB | California Air Resources Board          |
| ICT  | Innovative Clean Transit                |
| MTD  | Metropolitan Transit District           |
| NREL | National Renewable Resources Laboratory |
| ZEB  | Zero-emission bus                       |



### 1.0 PROJECT OVERVIEW AND INTRODUCTION

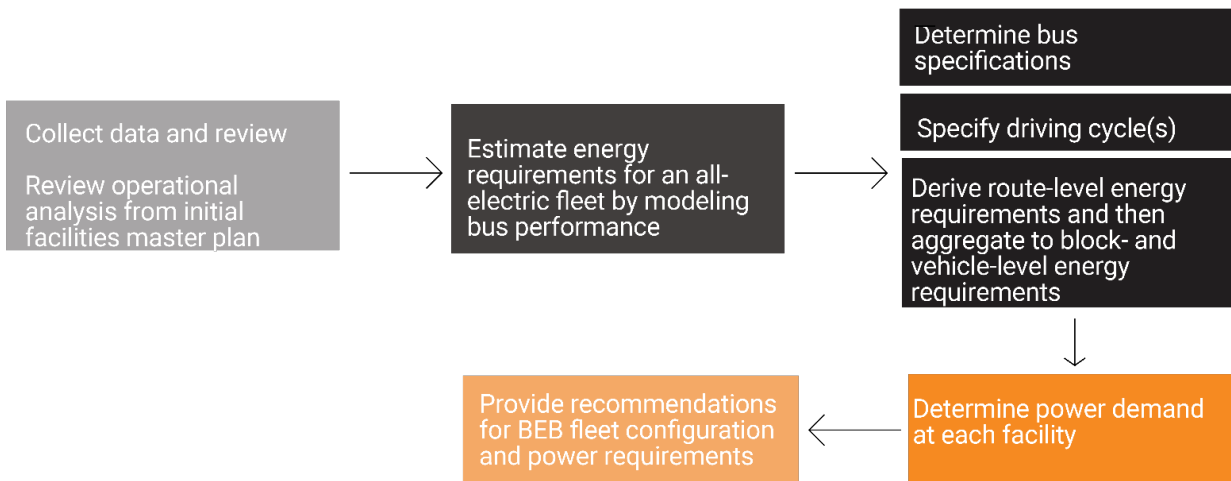
The California Air Resources Board (CARB) adopted the Innovative Clean Transit (ICT) regulation in December 2018, which establishes the goal that all public bus transit agencies in California gradually transition to a completely zero-emission bus (ZEB) fleet by 2040. The Santa Barbara Metropolitan Transit District (MTD) is a pioneer in zero-emission technologies, operating ZEBs since 1991 and currently operating the second-largest public zero-emission fleet in the state. Further, the MTD has committed to a goal of operating a completely zero-emission fleet by 2030, accelerating the timeline laid out by CARB by ten years.

Stantec recently completed the MTD's Facilities Master Plan, which provided the groundwork for future space and operating fleet requirements at MTD's facilities to accommodate fleet growth as well as the transition to fully ZEB operations. To help support this zero-emission future, the MTD has retained Stantec to perform energy and power modeling simulation analyses to determine the amount of energy required at MTD's facilities to sufficiently power a fleet of battery electric buses (BEBs). This detailed determination of power and energy needs involved the following steps:

- Collect and review additional data beyond the datasets provided in the Facilities Master Planning process
- Review of operational analysis from the Facilities Master Plan to consider operating conditions which impact power and energy requirements for a bus fleet
- Route- and block-based modeling to determine power requirements for an all-electric fleet, based on the following inputs:
  - Bus specifications
  - Representative driving cycles
  - Passenger load
  - Ambient temperatures and HVAC
  - Route elevation and topography
- Developing charging profiles at the MTD's two facilities (assuming that Terminal 2 at Goleta will eventually become operational) to simulate daily charging schedules and power requirements for vehicles housed at each facility. This exercise was also used to determine an estimated number of chargers at each facility as well as high-level fuel cost estimate (cost per kWh) to meet daily charging requirements.

Finally, the report concludes with recommendations for fleet configuration and power requirements based on the results of the modeling and MTD's current operating conditions.

The project scope and process is outlined in Figure 1 below.



**Figure 1: MTD power modeling project process**

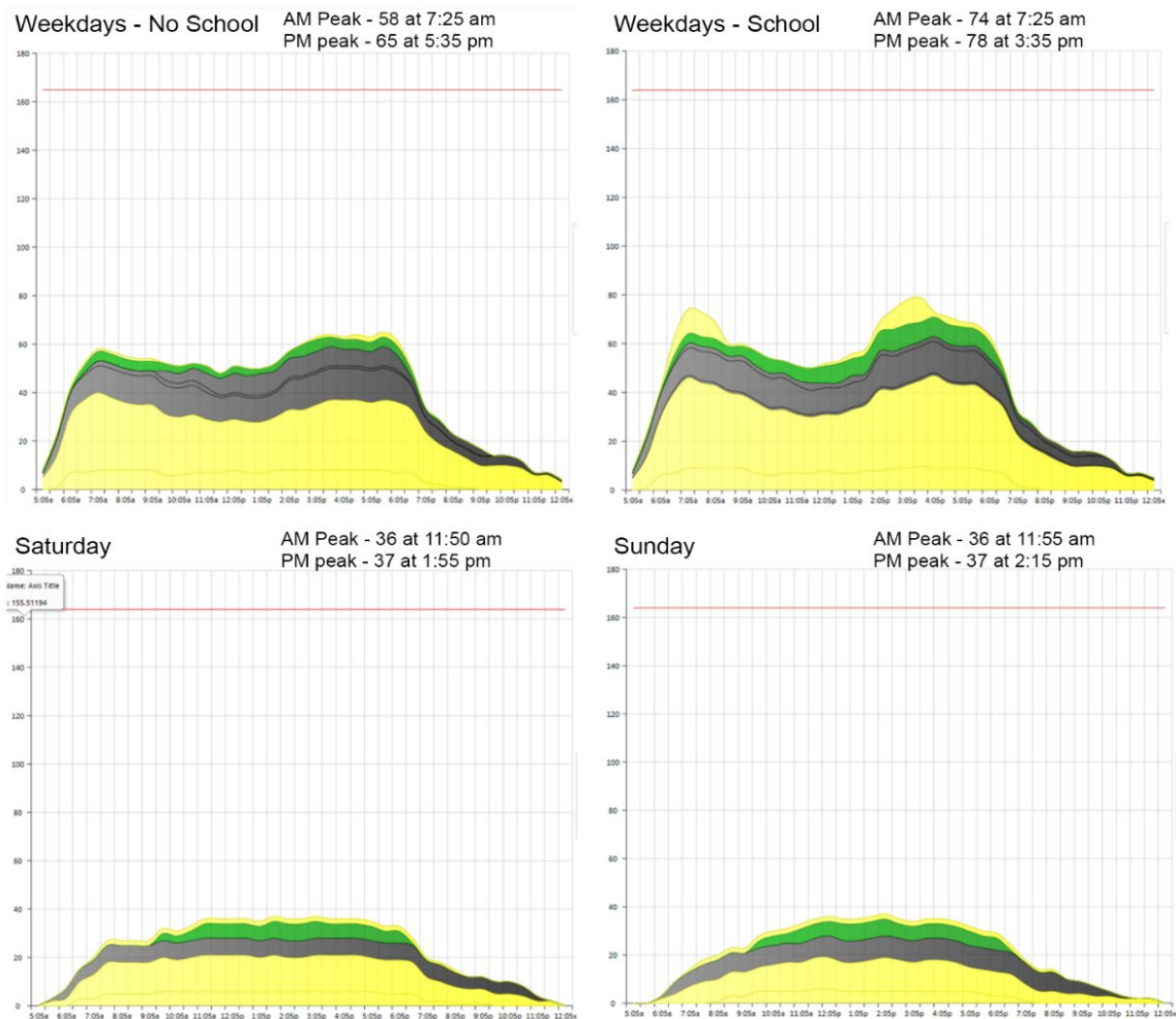
## 2.0 EXISTING CONDITIONS AND DATA REVIEW

The project began with a review of the operational analysis from the previously completed Facilities Master Plan. A full understanding of the MTD's current operations is imperative to ensure that the modeling captures (as closely as possible) actual operating conditions so that power and energy requirements are accurate and represent operating conditions on a high-demand day. The major findings that helped to shape the modeling parameters are summarized below.

Because MTD operates different services on different days and different times of the year, the vehicle types scheduled and the total number of vehicles dispatched will vary depending on the needs and thus the day type. Figure 2 reveals the variety in vehicle types by day type (weekday no school, weekday with school, Saturday, and Sunday); in the graphs, yellow shaded areas represent 40-ft. buses, larger gray shaded areas represent 29-ft buses, thin gray shaded areas represent 60-ft buses, and green shaded areas represent shuttles. Moreover, the yellow 'peaks' on the graph for a school weekday (top-right) represent additional vehicles dispatched for school trippers.

To plan conservatively for maximum energy and power requirements as well as a "high-demand" scenario, Stantec modeled for scheduled service for a "typical" weekday during the school year when school trippers are in operation to capture a "peak" service day with the maximum number of vehicles in operation (top-right scenario in Figure 2). To capture a representative day, Stantec used data (transit schedules, operational data, etc.) from October 14, 2019 to represent peak demand and vehicle use that includes school trippers. The scope, however, excludes the modeling of MTD's electric shuttle services that are already battery electric vehicles.

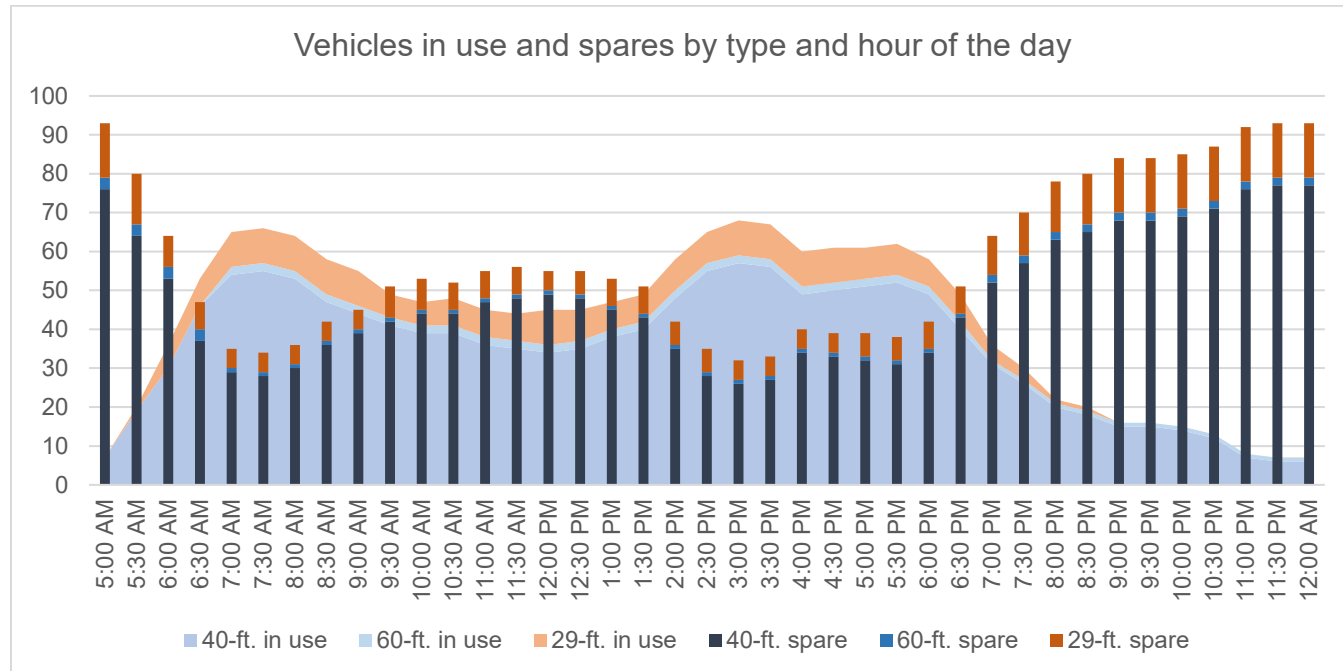
## SANTA BARBARA MTD ZEB POWER MODELING



**Figure 2: Vehicle usage across various service days**

In addition to different levels of service, the MTD also operates several different vehicle lengths to match demand and service, including 60-ft., 40-ft., and 29-ft. vehicles. Vehicles in use (area graph) and spares (bar graph) by time and hour of day for October 14, 2019 are shown in Figure 3.

## SANTA BARBARA MTD ZEB POWER MODELING



**Figure 3: Vehicles in use and spares by type and hour of day**

As seen in Figure 3, peak vehicle requirement is in the afternoon, specifically between 2PM and 4PM.

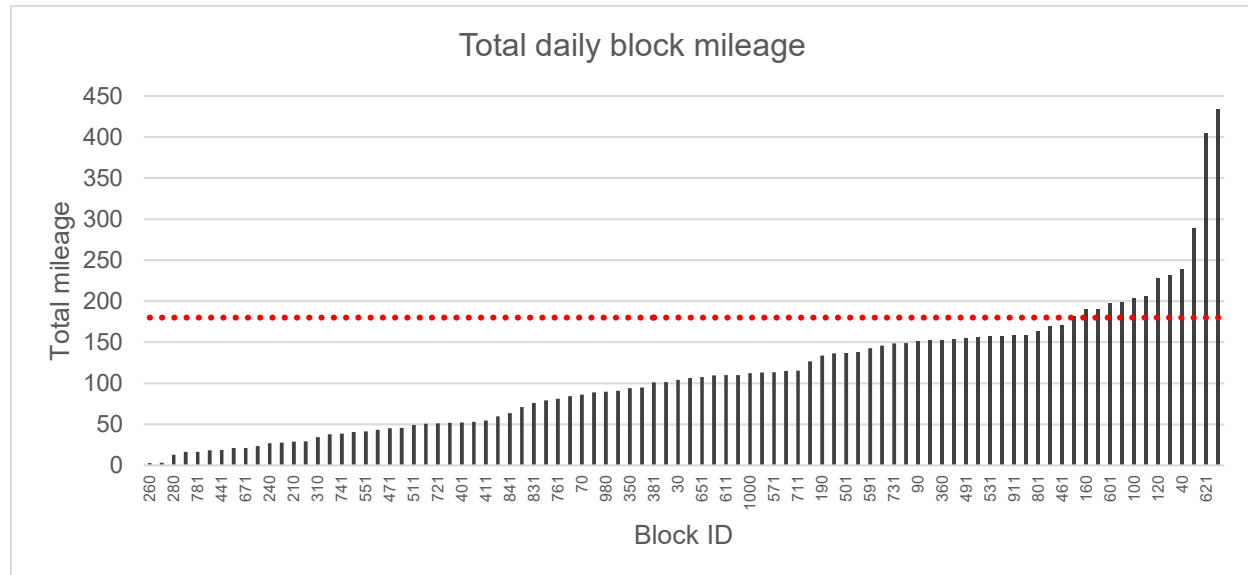
Another challenge identified in the analysis completed during the Facilities Master Plan is that the current facility in Santa Barbara (Terminal 1) is very constrained and will be increasingly constrained with additional charging infrastructure and future fleet growth. However, the MTD is planning to reopen its currently dormant facility in Goleta (Terminal 2), which will be used to help spread the vehicles out and accommodate fleet growth. Importantly, operating select service out of Goleta and help reduce vehicle deadheading for certain routes. Stantec worked with the MTD to identify which blocks and vehicles would likely be moved to operate out of the Goleta facility, and this was integrated into the modeling to determine power demand at both yards.

Another important step in the operational analysis is to determine the daily block mileage for the representative service day, as it helps to determine preliminary feasibility of BEBs that are depot-only charging.<sup>2</sup> Because the current range of BEBs is approximately 180 miles<sup>3</sup>, blocks that accumulate less mileage than this threshold could theoretically be completed by a depot-only charging BEB (however, there are many other parameters that affect range that are discussed in detail in the following sections outlining the modeling process and inputs). Total daily block mileage for a representative service day is shown in Figure 4.

<sup>2</sup> For several reasons including community preferences, on-street bus charging is not a potential strategy.

<sup>3</sup> For a 524 kWh BEB, assuming 80% utilization and a fuel efficiency of 2.33 kWh/mi.





**Figure 4: MTD total daily block mileage**

Figure 4 shows that most blocks are designed for less than 180 miles in length (denoted by the red dotted line), suggesting most service could be electrified with depot-only charging BEBs. However, many of the MTD's vehicles are assigned to complete multiple blocks in one day, meaning when blocks are combined and served by a single vehicle over the course of the day, this combined daily block mileage may exceed the current feasible range of a BEB.

This operational review reveals a few key points that will help to shape the modeling and overall power demand and energy requirements.

- The MTD operates several varying service patterns depending on the day of week and season. To provide an estimate of power and energy needs, Stantec used a "typical" heavy day, which is a school day service in the fall. In reality, the modeling will therefore represent more strenuous operations and the MTD can adjust accordingly for other service days, such as weekends or summer periods.
- The new facility in Goleta will help to offset space constraints at the current yard in Santa Barbara. Assigning vehicles to this facility and determining power and energy requirements for both facilities will be outlined in this report.

### 3.0 BUS MODELING AND ROUTE SIMULATION

ZEBDecide is a tool designed by Stantec to support transit agencies in transitioning to zero-emission fleets, and ultimately helps to answer the question: what is the ideal configuration of ZEBs for my fleet? Because the MTD has determined their fleet will be entirely comprised of BEBs and have provided vehicle specifications, the ZEBDecide tool is being used to model the blocks outlined above under the provided specifications. This will help determine how much of the MTD's current service can successfully

be transitioned to depot-only charging BEBs, what the daily power and energy requirements are, and begin to provide strategies on blocks that cannot be successfully converted to BEBs to help the MTD transition to an all-BEB fleet.

### 3.1 ZEBDECIDE PROCESS

Figure 5 provides an overview of the modeling process, which takes a two-pronged approach to understanding power and energy usage. The goal of the modeling is to provide an understanding of how we expect a ZEB to perform in MTD's environment to inform fuel economy, operating range, and ultimately, the energy and power requirements for MTD's future BEB fleet.

The approach first examines route-level operations, and then aggregates the results to provide block/vehicle level fuel and energy requirements. The predictive ZEB performance modeling depends on several inputs, such as actual passenger loads, driving dynamics, topography, vehicle specifications, and ambient conditions in which the agency operates. In this way, a more realistic estimate of operating range and energy consumption can be provided.

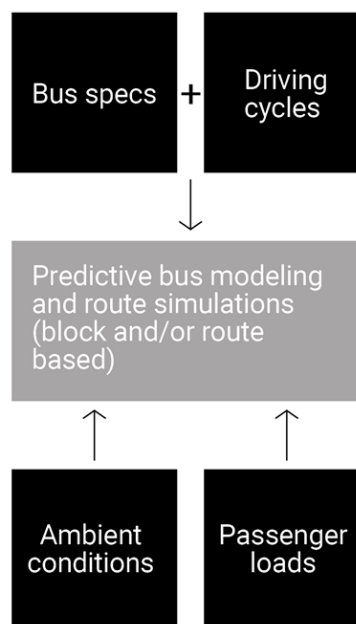


Figure 5: ZEBDecide process

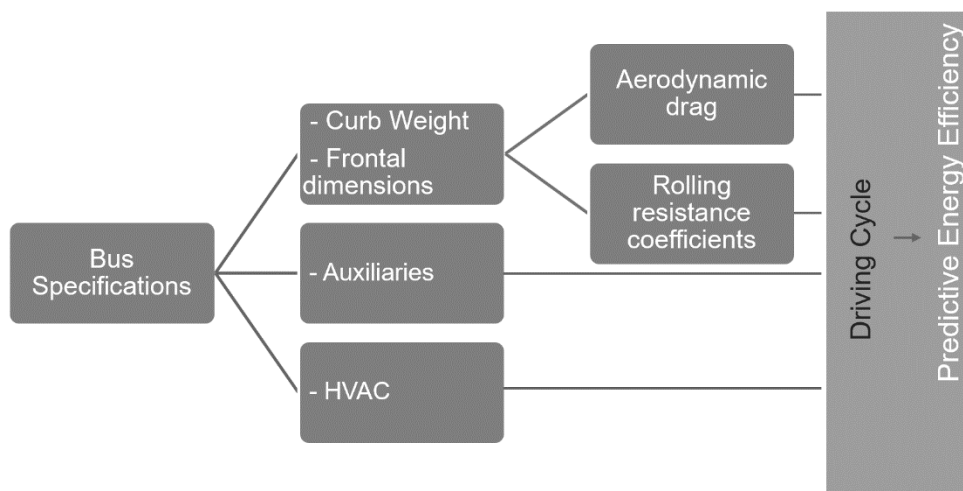
### 3.2 MODELING INPUTS

#### 3.2.1 Bus Specifications

ZEBDecide's energy modeling process predicts ZEB drivetrain power requirements specific to given acceleration profiles. One key component to the modeling is the bus design or specification that includes

## SANTA BARBARA MTD ZEB POWER MODELING

curb weight and frontal dimensions (factors needed to account for aerodynamic drag and rolling resistance coefficients), auxiliary, and HVAC (Figure 6).



**Figure 6: Detailed bus specification inputs**

For the MTD, the New Flyer Xcelsior CHARGE vehicle (40-ft.) with a 524-kWh battery and curb weight of 30,500 pounds was used in the modeling.<sup>4</sup>

### 3.2.2 Representative Driving Cycles

Assigning representative driving cycles, also called acceleration profiles, is the other major step in the energy modeling. A driving cycle is a speed versus time profile that is used to simulate a vehicle's expected performance, and consequently, the energy use. Representative driving cycles were assigned to all routes based on the MTD's operations, observed driving conditions, and input from the MTD.

The driving cycles have been created from data collection of real-world operations or from chassis dynamometer tests and have been convened by the National Renewable Energy Laboratory (NREL) in a drive cycle data called DriveCAT<sup>5</sup>. Additionally, Stantec considered a driving cycle created from real-world operations of the Anteater Express fleet at the University of California, Irvine.

To assign driving cycles to the MTD's routes, we evaluated each route in terms of average speed, route length, the number of stops, and traffic levels. The suite of driving cycles chosen to represent the MDs routes are shown in Table 1.

<sup>4</sup> While MTD operates a mix for 29-ft, 40-ft, and 60-ft., the modeling was based on 40-ft buses only.

<sup>5</sup> NREL DriveCAT - Chassis Dynamometer Drive Cycles. (2019). National Renewable Energy Laboratory. [www.nrel.gov/transportation/drive-cycle-tool](http://www.nrel.gov/transportation/drive-cycle-tool)

## SANTA BARBARA MTD ZEB POWER MODELING

**Table 1: Driving cycles technical specifications (source: NREL)**

| Cycle Name                                                               | Main characteristic                       | Max Speed (mph) | Avg. Speed (mph) | Avg. Driving Speed (mph) | Stops per min |
|--------------------------------------------------------------------------|-------------------------------------------|-----------------|------------------|--------------------------|---------------|
| <b>Orange County Transit Bus Cycle (OCTA)</b>                            | Medium traffic + Boulevards               | 40.63           | 12.33            | 15.67                    | 0.97          |
| <b>Manhattan Bus Cycle</b>                                               | City medium traffic, lower driving speeds | 25.4            | 6.83             | 10.67                    | 1.1           |
| <b>New York Bus Cycle (NY Bus)</b>                                       | High traffic                              | 30.8            | 3.7              | 10.7                     | 1.1           |
| <b>Arterial Segment of the Transit Coach Operating Duty Cycle</b>        | Highway                                   | 40              | 26               | 29.7                     | 0.89          |
| <b>Urban Dynamometer Driving Schedule for Heavy-Duty Vehicles (UDDS)</b> | Freeway                                   | 58              | 18.84            | 28.23                    | 0.79          |
| <b>University of California Irvine (UCI)</b>                             | Confidential                              |                 |                  |                          |               |

Each of MTD's routes was individually analyzed and then categorized into up to two representative driving cycles for route modeling. To obtain route information to assess routes, route lengths were obtained from MTD GTFS data, and it was supplemented by information provided by the MTD. Average speed was also provided by MTD.

Up to two cycles were assigned to each route to better reflect the different driving conditions encountered along different portions of a route. Routes were assigned a primary driving cycle (constituting two-thirds of the route in the modeling) and a secondary driving cycle (making up the remaining one-third of the route in the modeling). The complete classification of all routes is presented in Table 2.

**Table 2: Categorization of service routes to representative driving cycles**

| Line | Line Name       | Distance Inbound | Distance Outbound | Avg Speed (mph) | Drive Cycle 1 (2/3 of route) | Drive Cycle 2 (1/3 of route) |
|------|-----------------|------------------|-------------------|-----------------|------------------------------|------------------------------|
| 7    | Goleta Old Town | 11.01            | 10.95             | 10.55           | Manhattan                    | Arterial                     |
| 12x  | Goleta Express  | 10.51            | 10.45             | 17.37           | Manhattan                    | Arterial                     |
| 20   | Carpinteria     | 15.4             | 14.37             | 14.7            | Manhattan                    | OCTA                         |
| 6    | Goleta          | 10.44            | 10.24             | 10.53           | Manhattan                    | N/A                          |
| 11   | UCSB            | 13.66            | 13.25             | 10.57           | Manhattan                    | N/A                          |
| 14   | Montecito       | 8.1              | 9.54              | 11.19           | Manhattan                    | N/A                          |

# SANTA BARBARA MTD ZEB POWER MODELING

| Line | Line Name                 | Distance Inbound | Distance Outbound | Avg Speed (mph) | Drive Cycle 1 (2/3 of route) | Drive Cycle 2 (1/3 of route) |
|------|---------------------------|------------------|-------------------|-----------------|------------------------------|------------------------------|
| 5    | Mesa/La Cumbre            | 8.35             | 8.54              | 11.51           | NY Bus                       | UCI                          |
| 16   | SBCC                      | 1.83             | 2.18              | 4.97            | NY Bus                       | N/A                          |
| 4    | Mesa/SBCC                 | 3.26             | 3.58              | 8.34            | OCTA                         | NY Bus                       |
| 10   | Cathedral Heights         | 11.25            | 10.67             | 17.98           | OCTA                         | Manhattan                    |
| 24x  | UCSB Express              | 12.52            | 12.6              | 19.79           | OCTA                         | UDDS                         |
| 3    | Oak Park                  | 5.78             | 6.13              | 8.54            | OCTA                         | N/A                          |
| 1    | West Santa Barbara        | 2.15             | 2.14              | 7.5             | UCI                          | Manhattan                    |
| 2    | East Santa Barbara        | 3.12             | 3.24              | 8.9             | UCI                          | Manhattan                    |
| 23   | El Encanto Heights        | 2.07             | 2.6               | 11.08           | UCI                          | OCTA                         |
| 25   | Ellwood/Winchester Canyon | 2.48             | 3.74              | 13.43           | UCI                          | OCTA                         |
| 27   | Isla Vista Shuttle        | 3.29             | 3.12              | 9.56            | UCI                          | OCTA                         |
| 28   | UCSB Shuttle              | 2.62             | 2.56              | 8.28            | UCI                          | OCTA                         |
| 17   | Lower West SB/SBCC        | 1.64             | 2.2               | 5.31            | UCI                          | N/A                          |
| 15x  | SBCC/UCSB Express         | 11.12            | 14.2              | 22.91           | UDDS                         | OCTA                         |
| 90   | Amtrak Goleta West        | 3.31             | -                 | 12.05           | Manhattan                    | N/A                          |
| 91   | Amtrak Goleta East        | 4.65             | -                 | 9.07            | Manhattan                    | N/A                          |
| 92   | Amtrak Santa Barbara      | 2.61             | -                 | 6.93            | Manhattan                    | N/A                          |
| 2010 | Alpha Resource Center     | 5.74             | -                 | 13.52           | Manhattan                    | N/A                          |
| 2110 | Santa Barbara Jr. High    | 1.31             | -                 | 13.52           | Manhattan                    | N/A                          |
| 2410 | La Colina Jr. High        | 5.44             | -                 | 13.52           | Manhattan                    | N/A                          |
| 2420 | La Colina Jr. High        | 5.13             | -                 | 13.52           | Manhattan                    | N/A                          |
| 2430 | La Colina Jr. High        | 4.16             | -                 | 13.52           | Manhattan                    | N/A                          |
| 2510 | San Marcos High School    | 6.41             | -                 | 13.52           | Manhattan                    | N/A                          |
| 2520 | San Marcos High School    | 5.91             | -                 | 13.52           | Manhattan                    | N/A                          |
| 2530 | San Marcos High School    | 6.41             | -                 | 13.52           | Manhattan                    | N/A                          |
| 2540 | San Marcos High School    | 8.92             | -                 | 13.52           | Manhattan                    | N/A                          |
| 2610 | Goleta Valley Jr. High    | 2.2              | -                 | 13.52           | Manhattan                    | N/A                          |
| 2620 | Goleta Valley Jr. High    | 5.68             | -                 | 13.52           | Manhattan                    | N/A                          |
| 2630 | Goleta Valley Jr. High    | 6.4              | -                 | 13.52           | Manhattan                    | N/A                          |
| 2650 | Goleta Valley Jr. High    | 5.41             | -                 | 13.52           | Manhattan                    | N/A                          |
| 2660 | Goleta Valley Jr. High    | 10.82            | -                 | 13.52           | Manhattan                    | N/A                          |
| 2710 | Dos Pueblos High School   | 3.16             | -                 | 13.52           | Manhattan                    | N/A                          |
| 2720 | Dos Pueblos High School   | 5.31             | -                 | 13.52           | Manhattan                    | N/A                          |
| 2730 | Dos Pueblos High School   | 8.74             | -                 | 13.52           | Manhattan                    | N/A                          |
| 2740 | Dos Pueblos High School   | 4.34             | -                 | 13.52           | Manhattan                    | N/A                          |

### 3.2.3 Passenger Loading

As the total weight of a ZEB impacts performance, it is important to understand and capture passenger loads in the modeling process. This is especially important for the MTD, whose service is highly seasonal and may experience difference fuel efficiencies at different times of the year under different passenger loads. For modeling purposes, loading capacity refers to the assumed maximum number of 42 passengers in a 40-ft bus, both seated and legal standees.

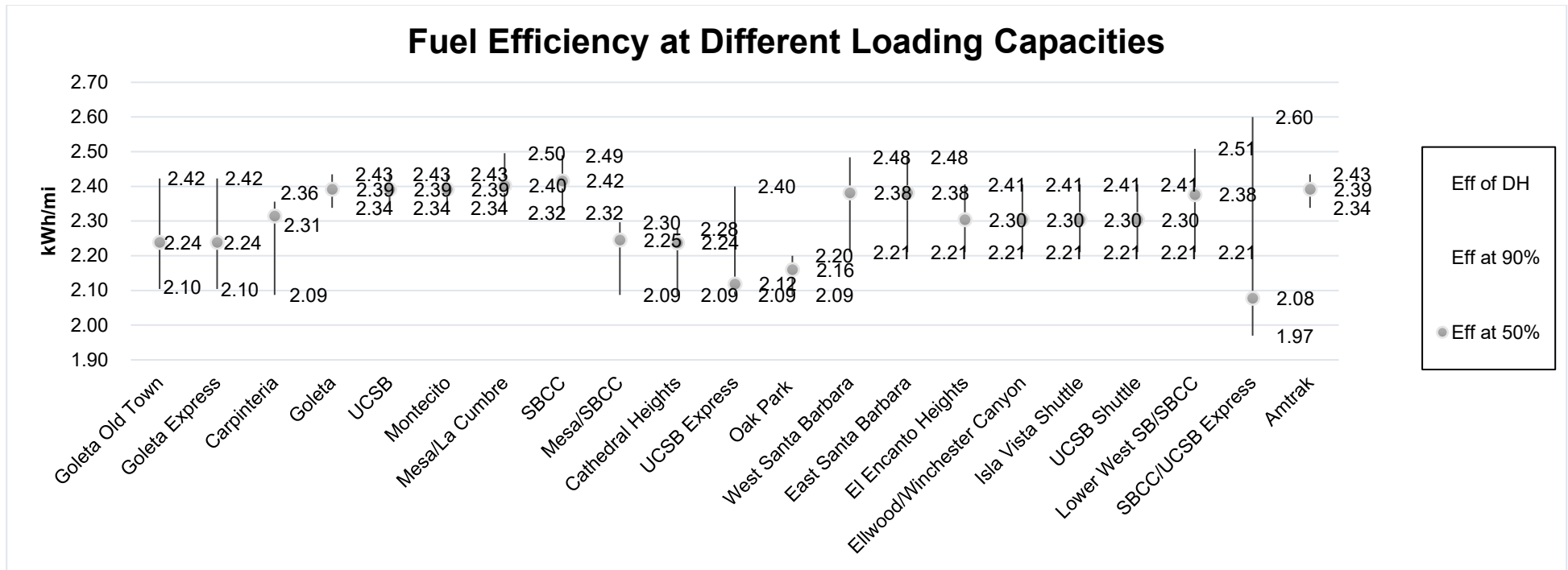
To examine the impacts of passenger loads, we compiled route-level (by direction) load statistics to determine different passenger loads to be used in the modeling.

We modeled MTD routes under three conditions to determine the fuel efficiencies under different passenger loads (fuel efficiency ranges for each route at different passenger loads are shown in Figure 7):

- A deadheading condition, which assumes no passengers onboard
- A moderate, typical condition with passengers at 50% of loading capacity to represent passenger conditions on an average, non-peak day and time
- A more strenuous, extreme condition with passengers at 90% of loading capacity to represent peak service on a busy day

One of the three conditions described above was assigned to each trip based on their observed passenger load and then aggregated to the block level. For example, if a trip from La Cumbre to County Health along the Goleta Old Town route had a recorded load of 40% (that is, 16 passengers on average, based on the information provided by MTD), then the fuel efficiency for that trip was assigned to be 2.24 kWh/mi, which corresponds to a 50% load. Additionally, the efficiency for the deadhead trip for the Goleta Old Town route was set at 2.10 kWh/mi.

# SANTA BARBARA MTD ZEB POWER MODELING



**Figure 7: Fuel efficiency at different loading capacities for MTD routes**

## SANTA BARBARA MTD ZEB POWER MODELING

### 3.2.4 Ambient Temperatures

The ambient temperature has a significant impact on the fuel economy of ZEBs, as it is directly related to the power output from the batteries required for the heating, ventilation, and air conditioning (HVAC) system. Stantec developed a correlation between ambient temperature and power requirements from the HVAC system. For example, moderate daily temperatures (between 55 °F and 65 °F) can have a nominal power demand on the HVAC system, of up to 4 kW. Colder temperatures (below 45 °F) or hotter temperatures (above 70 °F) can represent more strenuous loads of up to 12 kW. The power requirements for modeling purposes were set based on an average high temperature for Santa Barbara between July and October at 73 °F, representing strenuous loads of up to 12 kW.

To further explore the effect that HVAC and weather conditions have on BEB performance, the HVAC utilization factor was increased by 40% to develop a range of energy efficiencies under different weather and HVAC conditions to further allow the MTD to prepare for the “extreme case” scenario of vehicle performance. This exercise is described in Section 4.2.2.

### 3.2.5 Route Elevation

Varied topography can be seen across the MTD’s service area, and these elevation gains will undoubtedly influence BEB performance and energy efficiency and need to be captured in the modeling.

The first step in the route elevation analysis is to determine the elevation gains and losses seen across the MTD’s routes. Furthermore, the total elevation gains will inform the maximum average grades across each route.

MTD’s routes were analyzed to understand similarities in length (inbound and outbound), alignment, origin, and destination to create representative categories for the route elevation analysis. Routes were grouped into 11 different categories, with one route acting as a representative of all routes in that route category. The representative route for each category was chosen to proceed with analysis and modeling as that route experiences the most significant changes in elevation of all routes within that route category. These are outlined in Table 3<sup>6</sup>.

**Table 3: Route categorization for elevation analysis**

| Route category             | Representative route | MTD routes |
|----------------------------|----------------------|------------|
| Carpinteria                | 20                   | 20         |
| Cathedral Oaks             | 10                   | 10         |
| Downtown                   | 2                    | 1, 2       |
| Ellwood/El Encanto Heights | 23                   | 23, 25     |
| Goleta 101                 | 7                    | 7, 12X     |

<sup>6</sup> Because school booster trips are a small set of all daily trips, it is assumed topography will have a nominal effect on performance for school booster routes and they are thus excluded from the elevation analysis.



## SANTA BARBARA MTD ZEB POWER MODELING

| Route category   | Representative route | MTD routes   |
|------------------|----------------------|--------------|
| Goleta Hollister | 6                    | 6            |
| Isla Vista       | 27                   | 27, 28       |
| Mesa/SBCC        | 5                    | 4, 5, 16, 17 |
| Montecito        | 14                   | 14           |
| Oak Park         | 3                    | 3            |
| UCSB             | 24X                  | 11, 15X, 24X |

Each representative route alignment was drawn in Google Earth to create an elevation profile and to understand the total elevation gains/losses seen for each major route category (Figure 8). Additionally, the average and maximum grades for each route were similarly determined using these elevation profiles, which were used as the inputs for the topography analysis.



**Figure 8: Elevation profile example (Route 20)**

The specific effects and penalties to energy efficiency and power consumption for BEBs operating in MTD's service area are detailed in Section 4.2.1.

### 3.3 MODELING PROCESS

The energy profile process is described in Figure 9. The first three steps of the process yield the predictive fuel efficiency of a BEB on MTD's routes, under the loading capacity expected during regular service. The subsequent two steps of the ZEBDecide Energy Profile process define 1) the energy consumption at the block level – using data from each individual trip – and 2) the energy consumption for each vehicle assignment<sup>7</sup>. The modeling results for these two steps of the process are presented in the sections below.

<sup>7</sup> For MTD, blocks are constant, but how blocks are assigned to a given vehicle ("vehicle assignment") is not, i.e., blocks can be assigned to certain vehicles on one day and change on the next. To complete this analysis, Stantec worked with MTD to determine that October 14, 2019 represents a 'typical' service day.

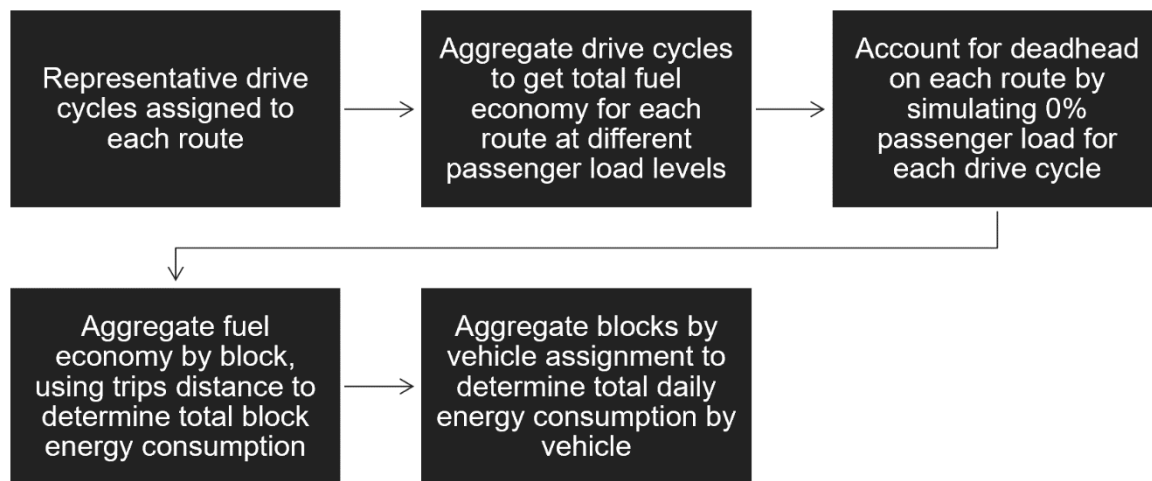


Figure 9: ZEBDecide route-level modeling steps

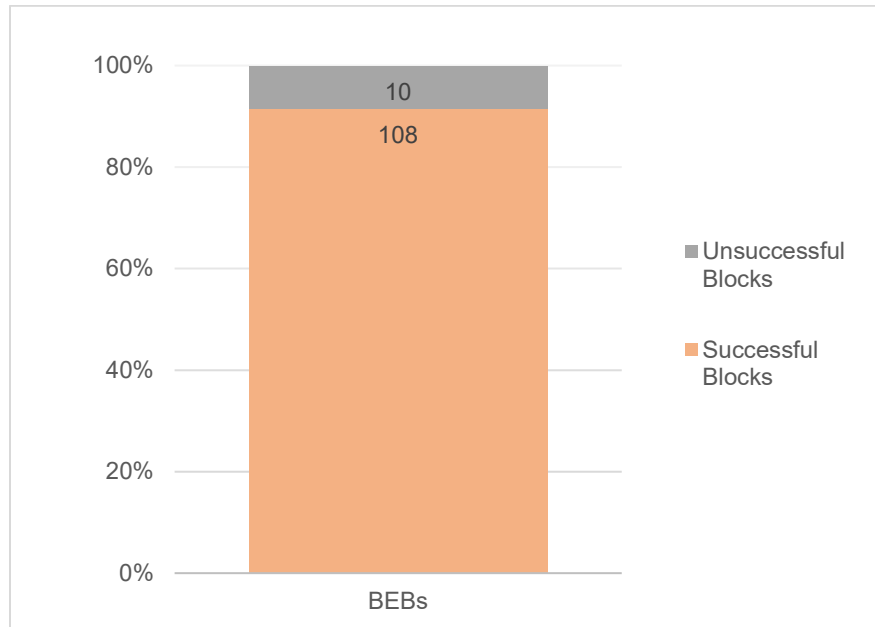
## 4.0 MODELING RESULTS

### 4.1 ENERGY CONSUMPTION AND ELECTRIFICATION SUCCESS RATE

The overall energy demand per block was obtained by aggregating the fuel consumption from each trip. The threshold to determine whether a block can be successfully served by a BEB is if the state of charge (SOC) of the battery is equal to or greater than 20% after completing all the trips in a block.

Results of the block-level modeling for BEBs are shown in Figure 10. The results indicate that of the 118 modeled blocks, 92% can be successfully converted to 40-ft BEBs with only overnight charging. The charging times range from one to five hours, with 60% of the blocks requiring less than three hours for a full charge.

## SANTA BARBARA MTD ZEB POWER MODELING



**Figure 10: Successful rate for blocks operated by BEBs**

Table 4 shows the average fuel economy of the BEBs operating MTD's blocks, as well as the minimum and maximum predicted fuel economy of all blocks under regular operations.

**Table 4: Average, minimum, and maximum fuel economy of Blocks**

| Fuel Economy of blocks<br>kWh/mi |      |
|----------------------------------|------|
| Minimum                          | 2.08 |
| Average                          | 2.33 |
| Maximum                          | 2.43 |

Furthermore, the total energy required to operate the 118 blocks is 22,300 kWh. Details regarding the total energy consumption are shown in Table 5.

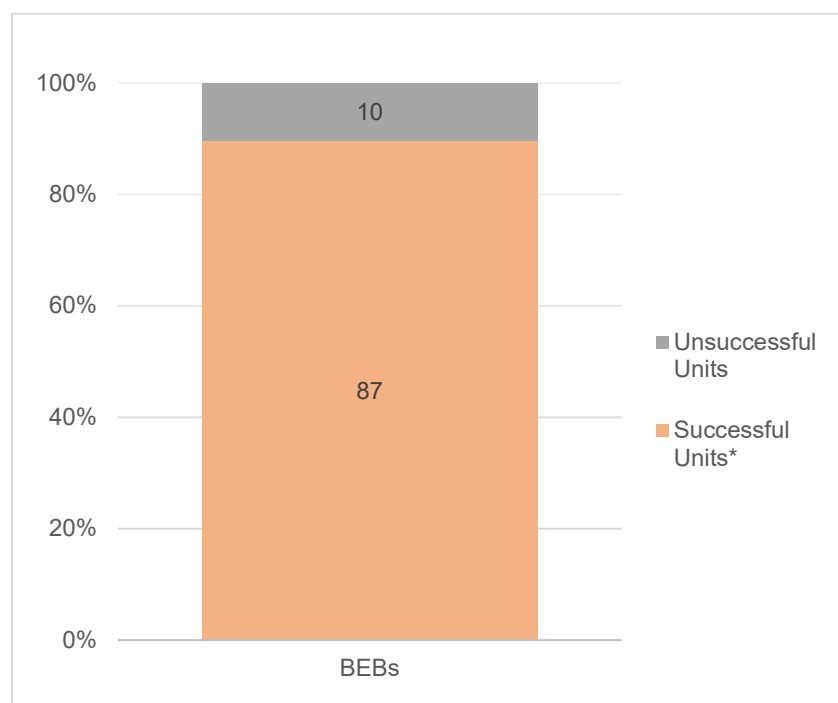
## SANTA BARBARA MTD ZEB POWER MODELING

**Table 5: Energy consumption of BEBs**

|                                 | Number of Blocks | Energy Consumption (MWh) |
|---------------------------------|------------------|--------------------------|
| Consumption at T1               | 69               | 13.6                     |
| Consumption at T2               | 49               | 8.7                      |
| <b>Total Energy Consumption</b> | <b>118</b>       | <b>22.3</b>              |

When pivoting from the block-level to the vehicle-level (since vehicles can be assigned more than a single block), the success rate drops; the percentage of vehicle assignments that are successful as BEBs with only overnight in-depot charging drops from 92% to 90%. The ten unsuccessful vehicle assignments are due to long blocks that do not have layover times at the depot, so midday charging is not an option.

Figure 11 shows the successful rate conversion to BEBs for the vehicle assignment and Table 6 shows details of the unsuccessful vehicle assignments.



**Figure 11: Successful rate for vehicle assignments operated by BEBs**

**Table 6: List of unsuccessful electrification of vehicle assignments**

| Unsuccessful Assignment | Block | Mileage |
|-------------------------|-------|---------|
| 626                     | 44932 | 417     |
| 628                     | 44964 | 204     |
| 629                     | 44931 | 415     |
| 631                     | 44905 | 357     |
| 632                     | 44629 | 190     |
| 638                     | 44902 | 231     |
| 643                     | 44906 | 355     |
| 644                     | 44631 | 290     |
| 651                     | 44967 | 239     |
| 1003                    | 45013 | 189     |

For the purposes of modeling the power requirements in the subsequent sections, the blocks assigned to the unsuccessful vehicle assignments were split into two separate blocks with shorter mileage. Creating new blocks (or subblocks) increases the vehicle requirement to provide the same level of service. However, this does not necessarily translate into a growth in the total fleet size since MTD could conceivably redesign the vehicle assignment (re-block) or reduce spare ratio during non-peak hours.

## 4.2 SENSITIVITY ANALYSIS

To account for variations in topography and temperature that would impact power requirements, fuel economy, and operating range, Stantec conducted a sensitivity analysis by varying these inputs. The outputs of the sensitivity analysis can help the MTD during service and operations planning for the BEB fleet.

### 4.2.1 Effects of Topography

As discussed in Section 3.2.5, the first step in the route elevation analysis is to determine the elevation gains and losses seen across MTD's routes to identify the maximum and average grades of each route. Each route was then categorized into representative categories and each category was assigned the average of the maximum grade or slope experienced by a representative route. While this approach provides the energy requirements of the "maximum slope", there are routes that will operate in areas with grades higher than the modeled ones.

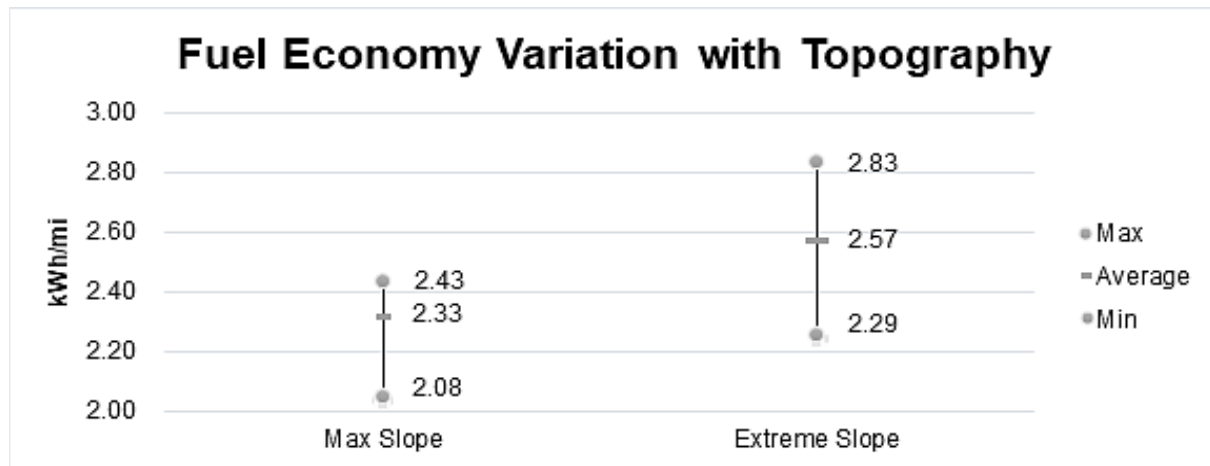
To account for instances when routes surpass the representative "maximum slope", the sensitivity analysis evaluated the expected fuel economy if all routes were to operate in the "extreme slope" of each category. Table 7 presents the categories for the topography analysis, as well as the maximum and extreme slopes.

## SANTA BARBARA MTD ZEB POWER MODELING

**Table 7: Max and extreme slope for topography categories**

| Route Categories<br>(main route) | MTD Routes   | Max slope <sup>8</sup> | Extreme Slope |
|----------------------------------|--------------|------------------------|---------------|
| Carpinteria                      | 20           | 1.10                   | 3.73          |
| Cathedral Oaks                   | 10           | 2.20                   | 5.98          |
| Downtown                         | 1, 2         | 1.80                   | 5.90          |
| Ellwood/El Encanto Heights       | 23, 25       | 2.00                   | 5.07          |
| Goleta 101                       | 7, 12X       | 1.60                   | 4.17          |
| Goleta Hollister                 | 6            | 1.40                   | 3.03          |
| Isla Vista                       | 27, 28       | 1.10                   | 2.40          |
| Mesa/SBCC                        | 4, 5, 16, 17 | 2.30                   | 6.61          |
| Montecito                        | 14           | 2.40                   | 7.36          |
| Oak Park                         | 3            | 2.60                   | 7.13          |
| UCSB                             | 11, 15X, 24X | 1.20                   | 5.08          |

Figure 12 shows how the predicted fuel economy changes when considering the “extreme slope” versus the “maximum slope”.

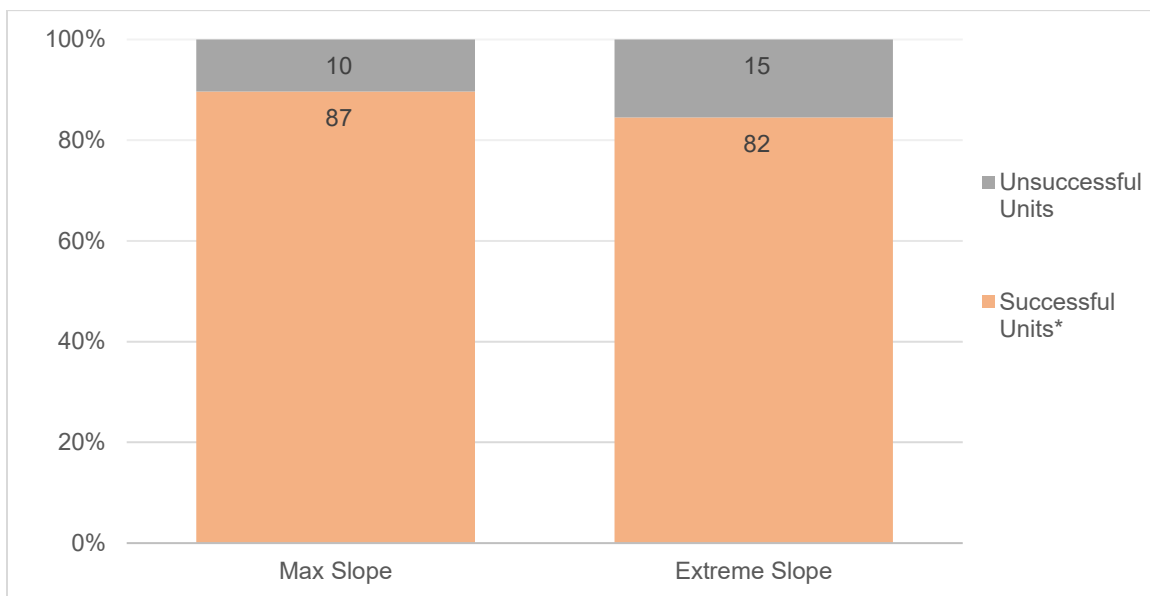


**Figure 12: Fuel economy variations at different slopes**

<sup>8</sup> Maximum slope is the average of the maximum grade encountered along the main route and extreme slope is the peak slope along the main route.

## SANTA BARBARA MTD ZEB POWER MODELING

When calculating the expected fuel economy using the “maximum slope” for each route category, the resultant fuel economy ranges between 2.08-2.43 kWh/mi. Comparatively, when calculating the expected fuel economy using the “extreme slope” for each route category, the resultant fuel economy ranges between 2.29-2.83 kWh/mi. This change represents a 10% decrease in average fuel economy. The outcome of a worse fuel economy due to extreme slopes is a decrease in the number of successful units that can be operated by BEBs (Figure 13); the successful units drop from 87 to 82. Even though this is an extreme scenario that does not represent the typical operations of MTD, it nonetheless provides information for contingency planning.



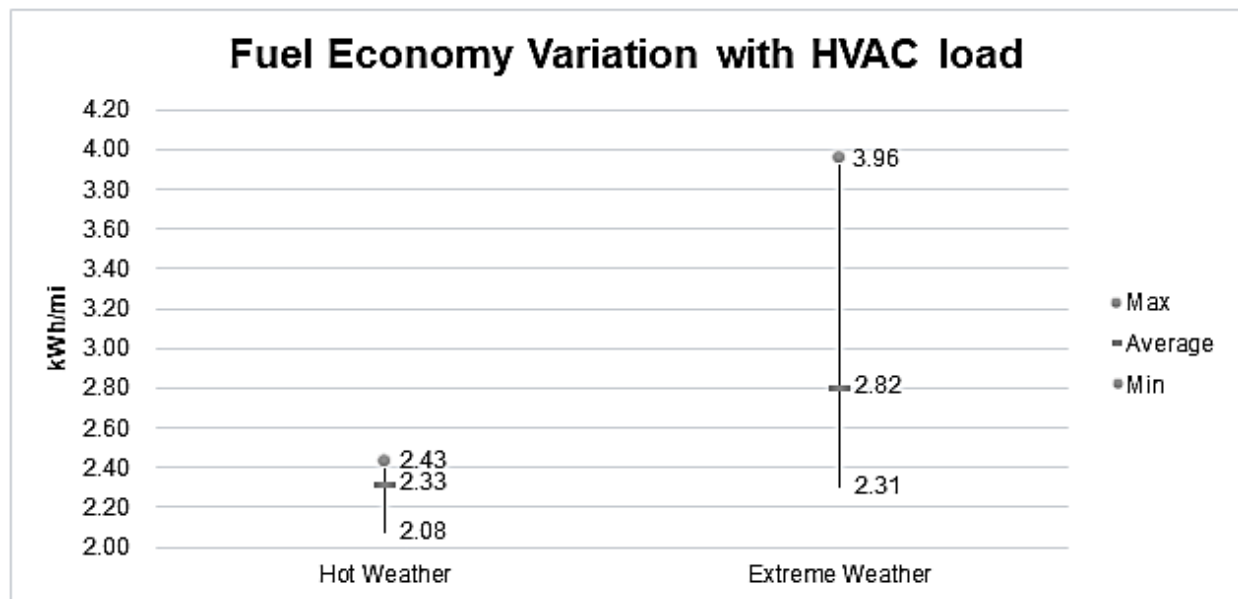
**Figure 13: Changes in success rate of BEBs for extreme topography conditions**

### 4.2.2 Effects of HVAC System

The modeling approach considers a correlation between power requirements of the HVAC system and external temperatures. The base case that yielded the modeling results presented in Section 4.1 was based on an average high temperature for Santa Barbara between July and October at 73 °F (“Hot Weather”), representing strenuous loads of up to 12 kW.

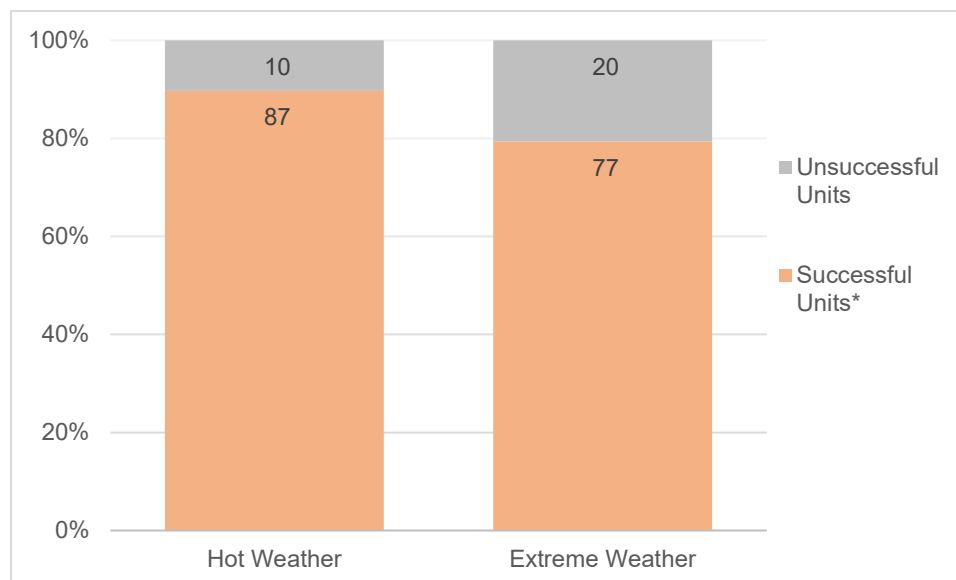
To evaluate the effects that weather conditions – which implies greater utilization of the HVAC system – have in the overall performance of the BEBs, all modeling variables were held constant and only the HVAC utilization factor was increased by 40%. The 40% increase in the sensitivity analysis was applied to the 12-kW load and is labeled as “Extreme Weather” in the discussion that follows since these conditions will likely be encountered seldomly.

Figure 14 shows the variation in fuel economy for hot and extreme weather conditions. The average, minimum, and maximum are based on the fuel economy of all the blocks in the MTD’s system. The average bus efficiency under hot temperatures is 2.33 kWh/mi, while for extreme conditions is 2.82 kWh/mi.



**Figure 14: Fuel economy variations at different HVAC loads**

The outcome of a greater utilization of the HVAC system due to higher or lower temperatures is a decrease in the number of successful units that can be operated by BEBs (Figure 15); the successful units drops from 87 to 77. Even though this an extreme scenario that does not represent the typical operations of MTD, the sensitivity analysis provides information for contingency planning.



**Figure 15: Changes in success rate of BEBs for extreme weather conditions**



## 5.0 POWER DEMAND MODEL AND CHARGING PROFILE

### 5.1 POWER DEMAND METHODOLOGY

After calculating the energy demand necessary to operate MTD's routes and blocks, energy demand needs to be translated into the power capacity for the depot in order to accommodate BEB charging.

Several operational factors were incorporated as constraints for the modeling work. The first factor is the recharging window. Stantec assumed that all buses start charging overnight and can charge during the day at times that they are not out of the depot according to the service schedules and vehicle assignment. The second factor is charger specifications. Technical specifications of the onboard chargers installed in the New Flyer BEBs allow for charge inputs between 50-175 kW and are compatible plug-in chargers from ABB, ChargePoint, Siemens, and Efacec. Giving the flexibility in charger equipment, key assumptions were made to estimate the power demand. Table 8 presents a summary of the technical aspects that were used as assumptions for the power demand calculations.

**Table 8: Charging Equipment Assumptions**

| Charger Max Output (kW) | Available Brands <sup>9</sup> | Charger Efficiency (Eff.) | Charge Rate Contingency |
|-------------------------|-------------------------------|---------------------------|-------------------------|
| 150                     | ABB, Siemens, Efacec          | 0.91                      | 0.20                    |
| 80                      | BYD                           | 0.91                      | 0.20                    |

The max output for each charger was obtained from the “New Flyer Infrastructure Solutions – Charger Catalog” brochure<sup>10</sup>. The charger efficiency was obtained from confidentiality agreements with BEBs manufacturers and set to 91%. A charge rate contingency was established to account for the limits onboard charging equipment that limits the maximum power capacity from the chargers; the value was set to 20%. Additionally, the charger specifications and efficiency factors for the BYD buses were considered.

Using the technical specifications and assumptions from the charging equipment, the charging hours that are required based on a daily energy demand were calculated using Equation 1.

#### Equation 1 – Hours Charging Needed to Serve a Daily Energy Demand

$$Hrs. Charging = \left[ \left( \frac{kWh}{day} * \frac{1}{Charger Output kW} \right) * \frac{1}{eff.} \right] * (1 + Contingency)$$

<sup>9</sup> ChargePoint can provide 125kW as max power output which will imply lower max power but longer periods of time

<sup>10</sup> <https://www.newflyer.com/site-content/uploads/2020/03/Xcelsior-CHARGE%E2%84%A2-Charger-Catalog-min.pdf>

## SANTA BARBARA MTD ZEB POWER MODELING

Equation 1 was applied to the daily energy demand calculated for all vehicle assignments. The total time needed to charge per vehicle were then used to develop a charging schedule, i.e., hours during the day that each bus needs to charge in order to have enough energy to go into service at the time specified by the service or dispatching schedule.

The number of hours each charger needs to be online provides a power requirement, and the addition of connected chargers at a specific hour represents the total power throughout the day. For example, if 10 chargers with a maximum capacity of 150 kW are connected at the same time for one hour, the power demand during this hour is 1,500 kW (10 chargers × 150 kW).

The key aspect of calculating the power demand for each hour of the day is assigning the correct charging schedule to every bus serving a specific block. Assigning a charging start time to a vehicle was based on the following parameters:

- Maximizing charging during off-peak hours as established by SoCal Edison TOU-EV-9
- Maintaining the maximum power demand below 2 MW
- Charging buses as soon as possible when they return to base
- Charging during hours that the bus is not in service based on block schedules
- Charging during midday hours when the bus is not in service if the bus is scheduled to more than one block

The power modeling provides the following outputs:

- The maximum number of chargers that can be connected at a time
- Charging schedule
- Maximum power requirement at the facility
- And, ultimately, the power demand profile throughout the day.

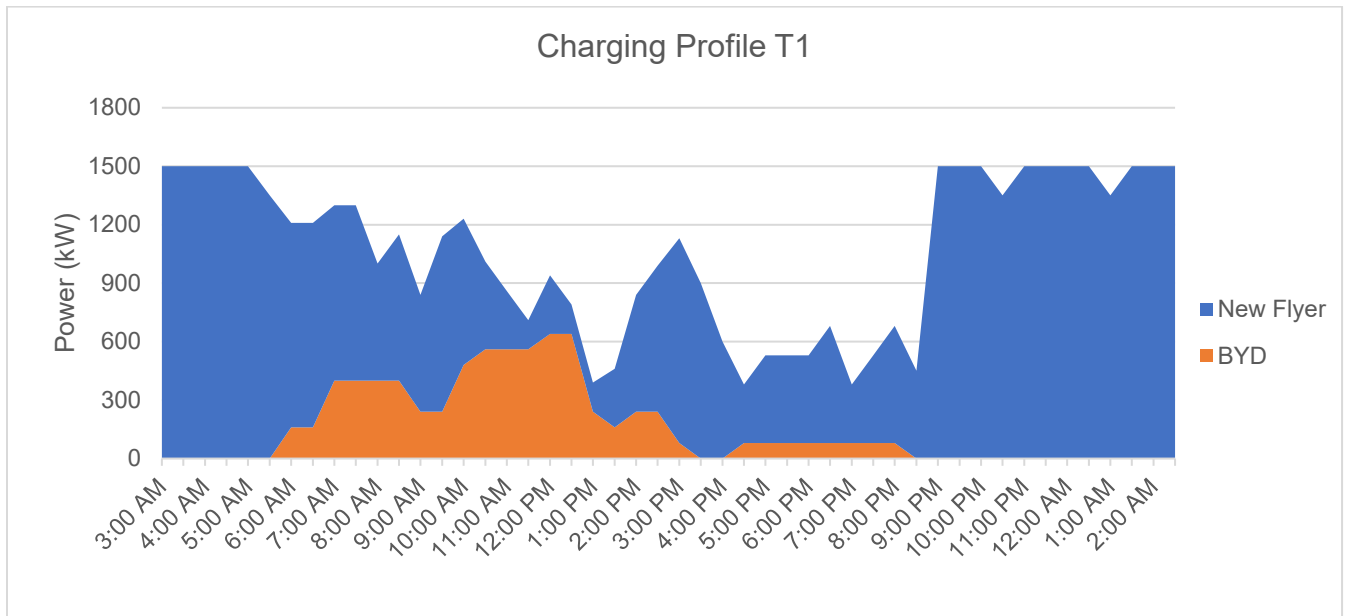
The results for the power modeling were divided by terminal (Terminal 1 and Terminal 2), and an additional scenario is presented which assumes that all BEBs will be operating from Terminal 1<sup>11</sup>.

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<sup>11</sup> The power requirements and charging schedule includes the 10 unsuccessful blocks.

## 5.2 POWER REQUIREMENTS AT TERMINAL 1

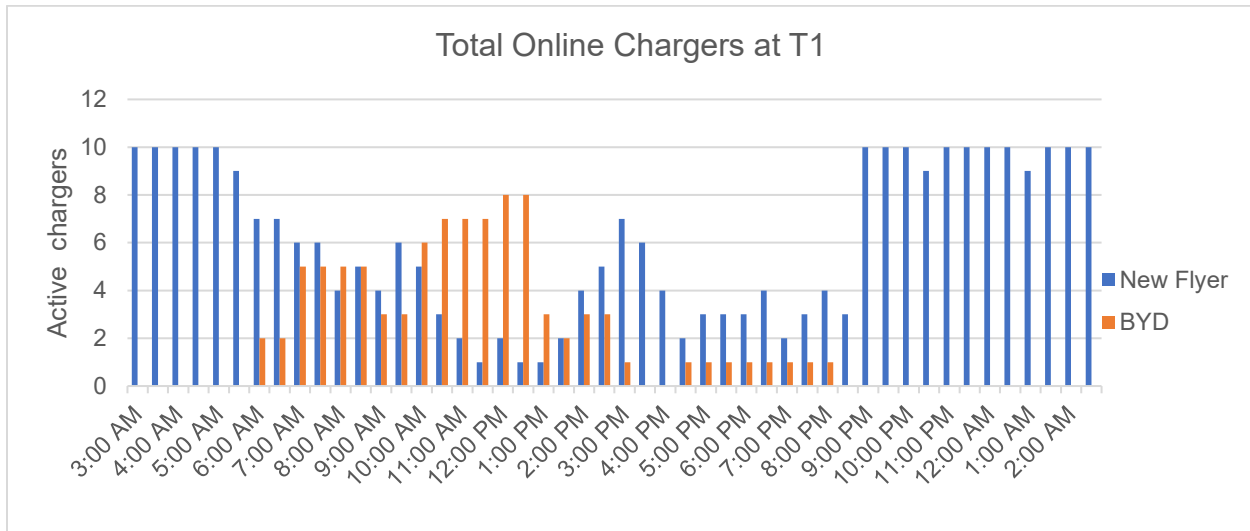
A charging schedule developed for Terminal 1 is presented in Figure 16 and was designed for up to 67 in-service vehicles, including BYD electric vehicles and assumes that 31 BEBs will be relocated to Terminal 2. The maximum power demand remains below 1.5 MW and aims to minimize the charging hours during on-peak times (4 pm - 9 pm).



**Figure 16: Charging profile for Terminal 1**

Figure 17 presents the detailed schedule of the number of active chargers can be connected simultaneously to keep the power demand at 1.5 MW while providing charge to all buses for the scheduled service. The chargers for New Flyer buses have a maximum power of 150 kW and the MTD's current BYD chargers have power output of 80 kW. It is important to note this charging profile and total number of online chargers will vary if using a charging management software, but this modeling exercise ensures that a high demand day of service for MTD can be fulfilled under a maximum power demand of 1.5 MW.

## SANTA BARBARA MTD ZEB POWER MODELING



**Figure 17: Schedule of online chargers for Terminal 1**

Stantec also created a power profile for Terminal 1 under that assumption that no vehicles would be redistributed to Terminal 2, resulting in 98 active vehicles in one location. Although space considerations might not allow for an all-electric fleet in Terminal 1, this scenario explores the power requirements for an extended transition period to Terminal 2.

Figure 18 presents the charging profile for this scenario, showing that the power requirements remain below 2 MW. However, capping the maximum power demand at this level requires challenging logistics that could impact scheduling flexibility. For example, a busy charging schedule involves less than 30 minutes between end-of-charge and bus pull-out, partially charging a bus in the morning and then again before service, and immediately connecting buses to chargers when returning from service. In other words, there would be little room for error, like a delay in plugging in a bus. The total number of peak active chargers is 13 for New Flyer buses and 8 for BYD buses.

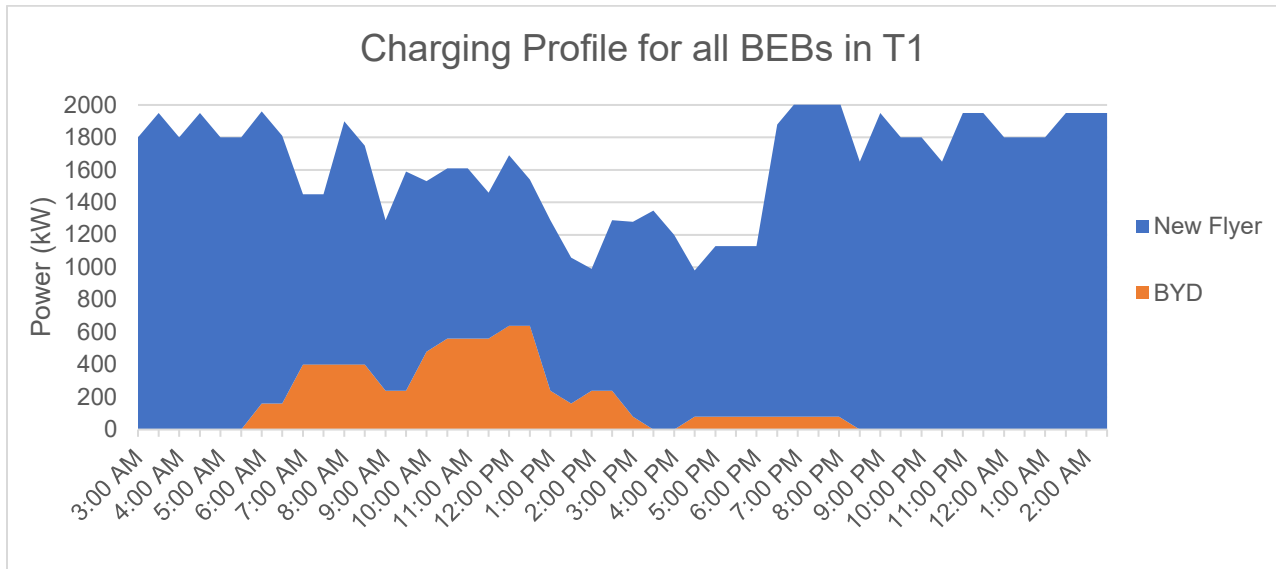


Figure 18: Charging profile for all BEBs in Terminal 1

### 5.3 POWER REQUIREMENTS AT TERMINAL 2

The same methodology was followed for the buses that are planned to be allocated to Terminal 2. Figure 19 presents the charging profile for Terminal 2 and it was designed for up to 31 BEBs. The maximum power demand will also remain below 1.5 MW while minimizing charging during on-peak hours.

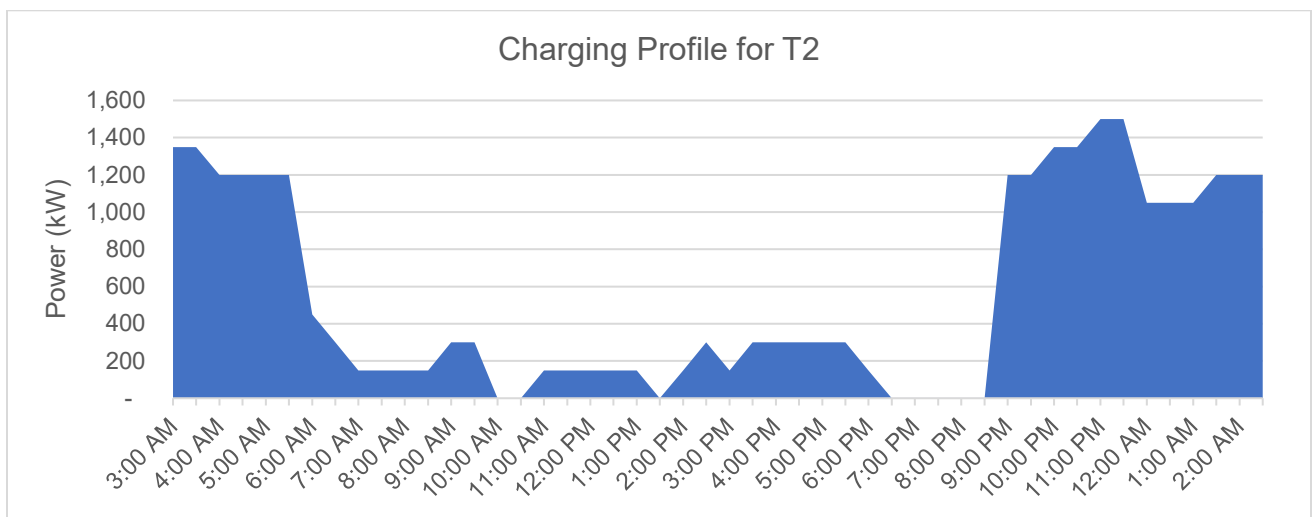
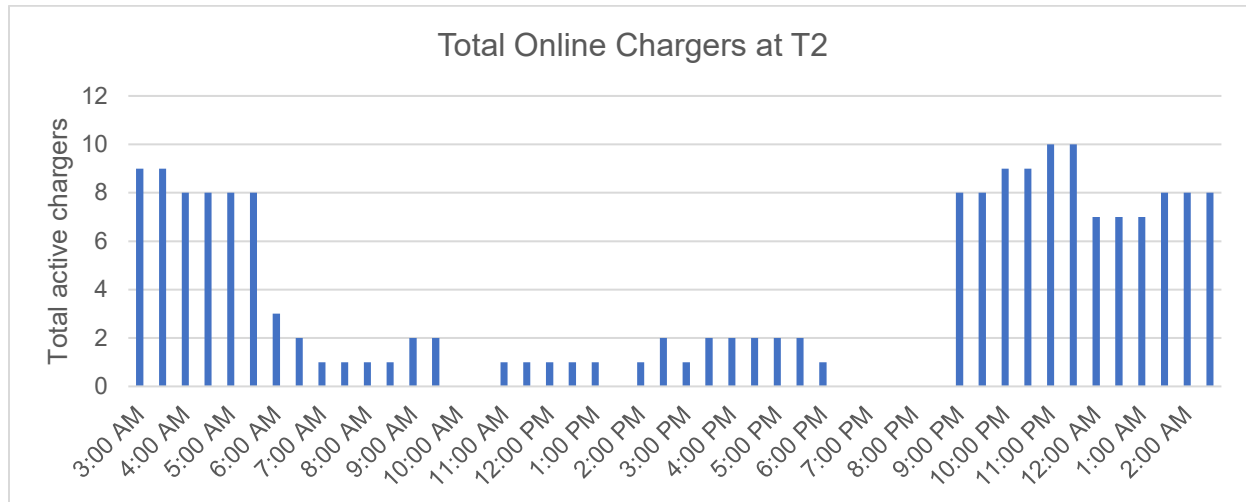


Figure 19: Charging profile for Terminal 2

Figure 20 shows the number of active chargers that can be connected simultaneously to keep the power demand below 1.5 MW.

## SANTA BARBARA MTD ZEB POWER MODELING



**Figure 20: Schedule of online chargers for Terminal 2**

## 5.4 PROJECTED ELECTRICITY COST

Based on the power demands, Terminal 1 would fall under the SoCal Edison rate schedule EV-9 for service above 2 KV but below 50 KV. Using this rate schedule, Stantec estimated the total energy costs for Terminal 1 and presented in Table 9. The resultant fuel price is \$0.131 per kWh in the summer and \$0.107 per kWh during the winter.

**Table 9: Energy cost under TOU-EV-9 for Terminal 1**

| Edison<br>TOU-EV-9<br>2-KV to 50-KV |                |                          |                    |                |                          |                    |
|-------------------------------------|----------------|--------------------------|--------------------|----------------|--------------------------|--------------------|
| <b>Customer Charge<sup>12</sup></b> | \$ 9.64        |                          |                    | \$9.64         |                          |                    |
| <b>Energy Charge</b>                |                |                          |                    |                |                          |                    |
|                                     | <b>kWh/day</b> | <b>Summer<br/>\$/kWh</b> | <b>Daily Total</b> | <b>kWh/day</b> | <b>Winter<br/>\$/kWh</b> | <b>Daily Total</b> |
| On-Peak                             | 1,653          | \$ 0.41                  | \$ 676             | 1,653          | \$ 0.24                  | \$ 390             |
| Mid-Peak                            |                | \$ 0.20                  |                    | 9,866          | \$ 0.10                  | \$ 1,019           |
| Off-Peak                            | 14,359         | \$ 0.10                  | \$ 1,416           | 4,494          | \$ 0.07                  | \$ 292             |
| Total                               | 16,013         |                          | \$ 2,102           | 16,013         |                          | \$ 1,711           |
| <b>\$/kWh</b>                       |                | <b>\$ 0.131 per kWh</b>  |                    |                | <b>\$ 0.107 per kWh</b>  |                    |

<sup>12</sup> Monthly charge of \$231.24 divide by 24 days of operation

## SANTA BARBARA MTD ZEB POWER MODELING

The energy cost calculations for Terminal 2 are presented in Table 10. The price per kWh is lower at this location during the summertime at \$0.115 per kWh when compared to the price from Terminal 1. The electricity cost during the winter is coincidentally the same at both terminals, \$0.107 per kWh.

**Table 10: Energy cost under TOU-EV-9 for Terminal 2**

| <b>Edison<br/>TOU-EV-9<br/>2-KV to 50-KV</b> |                        |               |                    |                        |               |                    |
|----------------------------------------------|------------------------|---------------|--------------------|------------------------|---------------|--------------------|
| <b>Customer Charge</b>                       | \$ 9.64                |               |                    | \$9.64                 |               |                    |
| <b>Energy Charge</b>                         | <b>Summer</b>          |               |                    | <b>Winter</b>          |               |                    |
|                                              | <b>kWh/day</b>         | <b>\$/kWh</b> | <b>Daily Total</b> | <b>kWh/day</b>         | <b>\$/kWh</b> | <b>Daily Total</b> |
| On-Peak                                      | 439                    | \$0.41        | \$179              | 439                    | \$0.24        | \$104              |
| Mid-Peak                                     |                        | \$0.20        | \$-                | 7,605                  | \$0.10        | \$786              |
| Off-Peak                                     | 8,434                  | \$0.10        | \$832              | 829                    | \$0.06        | \$54               |
| Total                                        | 8,873                  |               | \$1,021            | 8,873                  |               | \$953              |
| <b>\$/kWh</b>                                | <b>\$0.115 per kWh</b> |               |                    | <b>\$0.107 per kWh</b> |               |                    |

## 6.0 CONCLUSION

Stantec was retained by MTD to (1) provide block-based modeling to inform performance of BEBs, and (2) provide a charging power requirement at MTD's terminals based on MTD's current schedules.

Stantec's approach was to utilize its modeling tool called ZEBDecide to calculate the energy and power demand for the electrification of MTD's fleet. Two final estimations were obtained for the energy demand, one based on the daily distance requirements per block schedule and the second based on vehicle assignments.

The energy demand calculated considering blocks' daily mileage was 13.6 MWh per day at Terminal 1 and 8.7 MWh per day at Terminal 2. From the 118 analyzed and modeled blocks, ten are unable to be served by BEBs with 524-kWh battery capacity. Stantec assumed that these blocks will be restructured, and spare buses will be used to complete the service so that the total fleet size remains unchanged.

The final modeling results show that MTD can serve all its current blocks and vehicle assignments with a maximum power demand of 1.5 MW in both terminals. The fuel cost at Terminal 1 will vary between \$0.131-0.107 per kWh, for summer and winter rates, respectively. At Terminal 2, the electricity cost will vary between \$0.115-0.107 per kWh.

