

San Francisco Bay Area Rapid Transit District

Draft

BART Warm Springs Extension Project

Final SEIR Addendum

Photovoltaic Panels

Prepared by the San Francisco Bay Area Rapid Transit District

October 17, 2012

BART Warm Springs Extension Project Final SEIR Addendum

Photovoltaic Panels

1.0 Summary

Background

The San Francisco Bay Area Rapid Transit District (BART) is constructing a 5.4-mile extension of the BART system in the City of Fremont from the current terminus at the Fremont Station in downtown Fremont to a new station in the Warm Springs district of the city. The Warm Springs Extension (WSX) is comprised of new trackway between the Fremont Station and Warm Springs, the new station at Warm Springs/South Fremont, and ancillary facilities necessary for operation of the system, such as traction power, train control, communications, and subway emergency ventilation and access/egress structures.

The potential environmental effects of the WSX Project were first evaluated in a Final Environmental Impact Report (FEIR) that was certified by the BART Board of Directors on September 15, 1992 for the purposes of evaluating environmental impacts under the California Environmental Quality Act (Public Resources Code Section 21000, et seq., CEQA). The project was not constructed at that time, and the Project was revisited and expanded by a Final Supplemental Environmental Impact Report (FSEIR), which was certified on June 26, 2003, when the WSX Project and a Mitigation Monitoring and Reporting Plan (MMRP) were adopted.¹ The Federal Transit Administration (FTA), acting as the lead agency pursuant to the National Environmental Policy Act (NEPA), published a Final Environmental Impact Statement and Section 4(f)/6(f) Evaluation (FEIS) for the WSX Project in June 2006 and issued a Record of Decision on October 24, 2006.

Purpose of Addendum

Section 15164 of the CEQA Guidelines allows a Lead Agency to prepare an Addendum to a previously certified EIR if some changes or additions are necessary, as long as none of the conditions described in Section 15162 requiring the preparation of a subsequent EIR have occurred. In brief, Section 15162 states that when an EIR has been certified, no subsequent EIR needs to be prepared for the project unless the Lead Agency determines, on the basis of substantial evidence in the light of the whole record, that there are substantial changes proposed in the project which require major revisions of the previous EIR, substantial changes occur with respect to the circumstances under which the project is undertaken, or there is new information of substantial importance regarding new significant effects, more severe effects, or the feasibility or effectiveness of mitigation measures.

Revisions to the Project

As part of BART's sustainability program and as an amenity for parkers, BART is considering placing photovoltaic (PV) panels on several structures at the Warm Springs/South Fremont Station and on the two subway ventilation structures in Fremont Central Park. The proposed project revisions (Revised

¹ The MMRP was revised in October 2006 following publication of the FEIS.

Project) would provide approximately 0.69 megawatt (MW) of photovoltaic energy generating facilities. The photovoltaic panels would be an optional design element that would be implemented at BART's discretion.

Determination

This Addendum revisits the analysis conducted in the 1992 FEIR, 2003 FSEIR and 2006 FEIS and evaluates the potential effects of the photovoltaic units at the Warm Springs/South Fremont Station and ventilation structures in Fremont Central Park. The Revised Project was evaluated for all categories of impact (transportation, land use, visual quality, etc.).

The analysis did not identify any substantial changes to the affected environment and did not identify any new or substantially more severe impacts not already identified in the previous environmental documents. All mitigation measures included in those documents and the MMRP will continue to apply to the Revised Project. Based on the evaluation presented in this Addendum, there is no substantial evidence in the light of the whole record that the conditions outlined in Section 15162 of the CEQA Guidelines requiring a subsequent EIR are met. Therefore, an EIR Addendum is appropriate.

2.0 Revisions to the Project

Background

The San Francisco Bay Area Rapid Transit District (BART) is constructing a 5.4-mile extension of the BART system in the City of Fremont from the current terminus at the Fremont Station in downtown Fremont south to a new station in the Warm Springs district of the city, which has recently been named the Warm Springs/South Fremont Station. The Warm Springs Extension (WSX) is comprised of new trackway between the downtown station and Warm Springs/South Fremont Station, the station itself, and ancillary facilities necessary for operation of the system, such as traction power, train control, communications, and subway emergency ventilation and access/egress structures.

The Warm Springs/South Fremont Station is a 34-acre multi-modal facility with 2,040 parking spaces and seven bus bays. The station plan is designed around an internal circulation system similar to city blocks, so that in the future, the parking area can be redeveloped with transit-oriented development while maintaining the internal street system. (On-site transit-oriented development was not part of the WSX project and was not analyzed in the previous environmental documents.)

Between the Fremont Station and Warm Springs/South Fremont Station, a 1.0-mile length of the new trackway is being constructed in a subway under Fremont Central Park. This includes two structures for subway emergency ventilation and access/egress. While the majority of each structure is subterranean, a portion of each structure would be located on the surface.

Addition of Photovoltaic Panels

As part of BART's sustainability program and as an amenity for parkers, BART is considering placing photovoltaic (PV) panels on several of the structures being constructed for the Warm Springs project. The photovoltaic panels would be an optional design element that could be implemented at BART's discretion. The proposed project revisions would provide approximately 0.69 megawatt (MW) of photovoltaic energy generating facilities, including PV panels, associated electrical wiring, and equipment. Photovoltaic panels would be placed at Warm Springs/South Fremont Station and the ventilation structures in Fremont Central Park. The locations of Warm Springs/South Fremont Station and the two vent structures are presented in Figure A. Solar technology has continued to improve, and BART anticipates that future system improvements may improve the generating output of the proposed PV panels up to 1.0 MW of energy without any increase in the size of the panels.²

Warm Springs/South Fremont Station. PV locations at Warm Springs/South Fremont Station would include the station concourse rooftop, two bus boarding canopy rooftops, and parking lot canopies over

² One megawatt is enough electrical capacity to power 1,000 average California homes. (Based on a loading factor of 0.5 and an average California home having a 2-kilowatt peak capacity.) Source: California Energy Commission Website/Glossary.

the 38 BART staff and 68 patron parking spaces. The station concourse and bus boarding canopy roof structures are already included in the project, and PV panels would lie flat on those rooftops. In addition, new purpose-built canopies would be constructed over the BART staff parking and patron parking spaces. The purpose-built canopy structures would be sloped to optimize exposure to the sun and maximize generating capacity. The canopy structures would be approximately 16 feet high at the highest point and slope down to a minimum of 10 feet. Power generated by PV panels at the station is expected to be approximately 0.62 MW.³ The energy generated by the PV systems is expected to serve all the daytime electrical power needs of the station. At times the generation will exceed the station load, and the excess will be fed back into the local electrical grid as it is generated. Figure B illustrates the location of the PV panels at the Warm Springs/South Fremont Station, and Figure C provides a simulation of the station with canopies and panels installed.

Subway Ventilation Structures. PV panels also would be added on the roofs of the two subway ventilation structures at Fremont Central Park. The two ventilation structures in the park are each approximately 208 feet long, 48 feet wide and 12 feet high. The panels would be entirely within the rooftop parapet wall of each ventilation structure and would cover approximately 50 percent of each rooftop's surface. The panels would be sloped to optimize exposure to the sun and maximize generating capacity. The PV panels on the two vent structures collectively would generate approximately 0.07 MW of power.⁴ Figure D presents a simulation of the PV panel atop the western ventilation structure in Fremont Central Park.

PV Panel Construction. At the Warm Springs/South Fremont Station, PV panel installation would take place as one of the last phases of station construction, as all structures to support panels would need to be constructed first. The panels would be constructed off-site and trucked to the station for installation. Depending on the size of the panels and the height involved, cranes or a boom truck would be needed to lift the panels into rooftop positions, where they would be fastened and connected.

At Fremont Central Park, installation of the panels would follow construction of the ventilation structures. As at the station site, the premade panels would be lifted to the rooftop with a small crane or boom truck. Once the panels were lifted, the rooftop crews could install and connect the panels without any additional heavy equipment.

Third-Party PV Provider. All PV facilities, including canopies, would be installed, owned, and maintained by third party providers under contract to BART. As a tax-exempt entity, BART is unable to take advantage of state and federal rebates designed to provide an incentive for property owners to develop solar energy generation on their property. Therefore, to implement its own policies for use of renewable energy and to assist with regional and state renewable energy objectives, BART contracts with third party investors, who do qualify for various incentives, to install PV facilities on BART property. The contracting mechanism is called a Power Purchase Agreement (PPA) through which BART will allow

³ Roger Avery, P.E., Transit and Railroad Consultant, email on November 22, 2011.

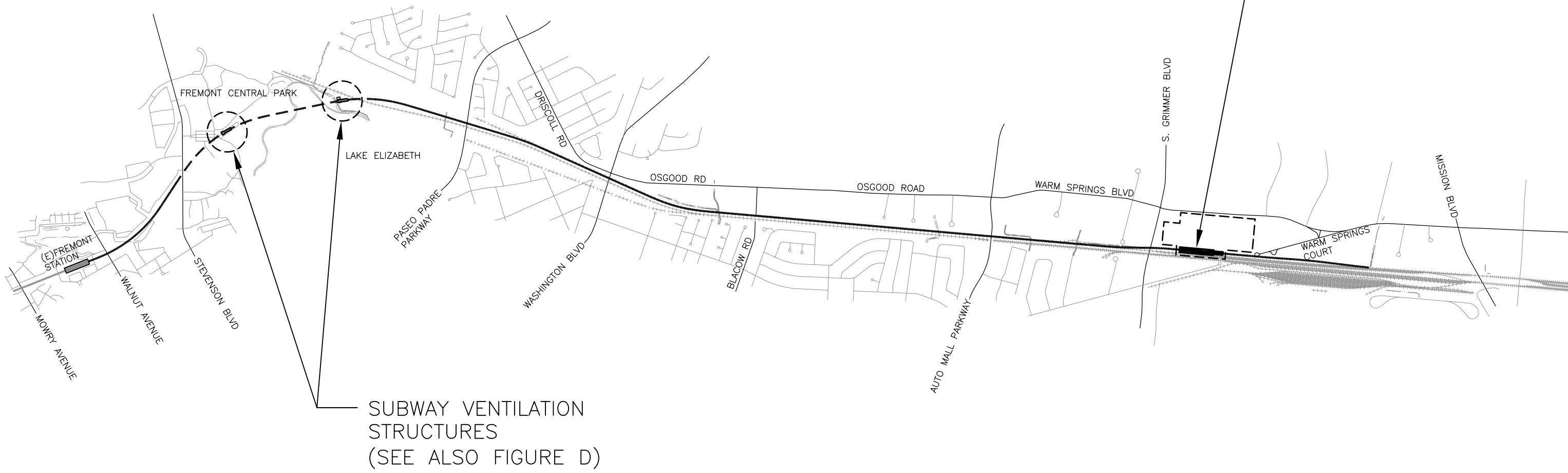
⁴ Roger Avery, P.E., Transit and Railroad Consultant, email on November 22, 2011.

a third-party provider to the install up to 1.0 MW of solar energy within the Warm Springs Extension project corridor.

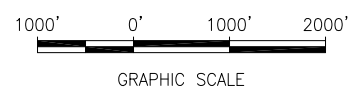
Consistency with BART Policies. The Revised Project would be consistent with the sustainability goals in the BART Strategic Plan.⁵ These include Goal 2-- “Enhance the use of resource-efficient and environmentally friendly access modes (e.g. bikes, walking, etc.) and other sustainable features at BART’s new and existing stations ” and Goal 3-- “Integrate sustainability principles and practices including multimodal access into the planning, design, and construction of new BART stations and related facilities.”

⁵ BART Strategic Plan, Updated 2003, page 15.

WARM SPRINGS STATION SITE
(SEE ALSO FIGURES B & C)



SUBWAY VENTILATION
STRUCTURES
(SEE ALSO FIGURE D)



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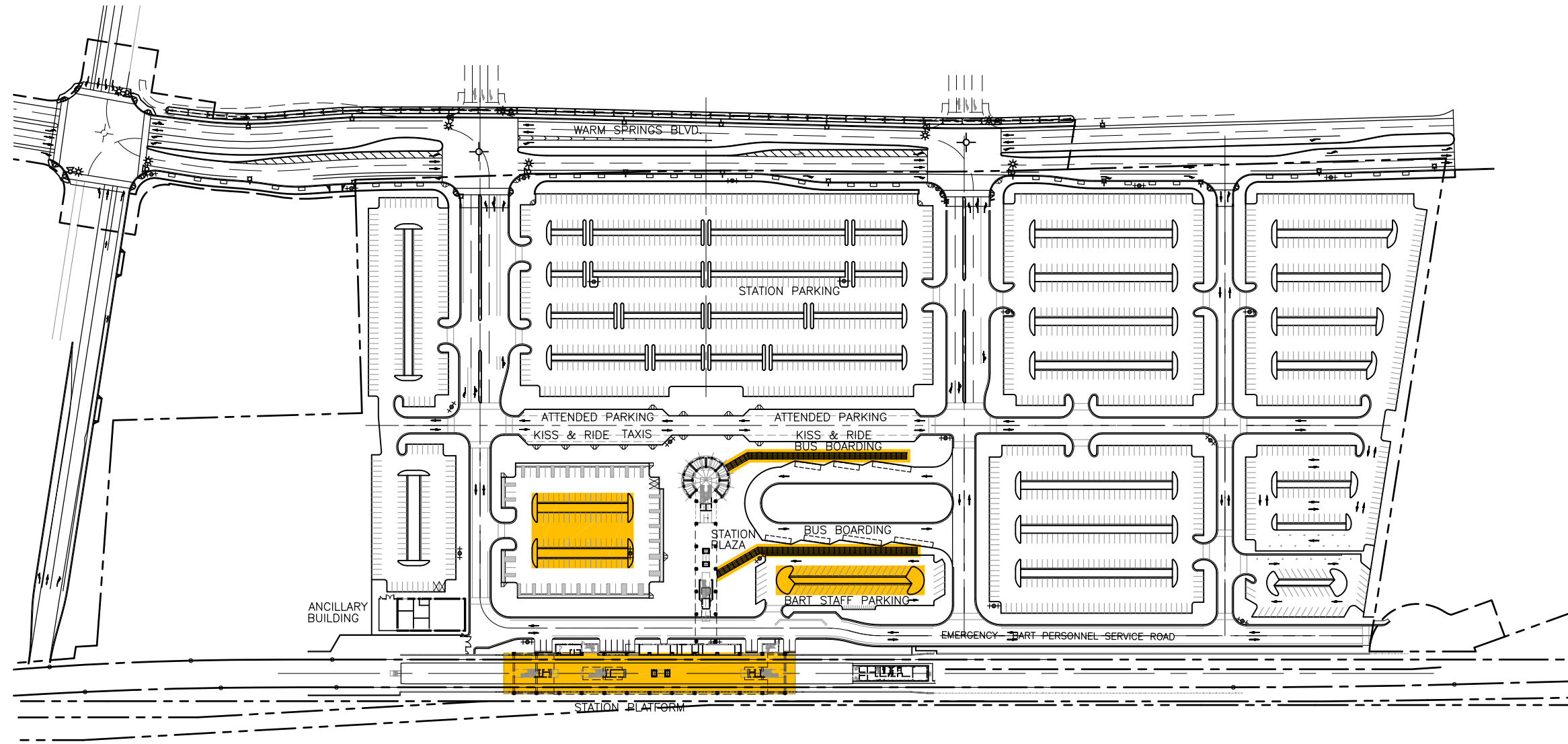
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BART WARM SPRINGS EXTENSION

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BART WARM SPRINGS EXTENSION

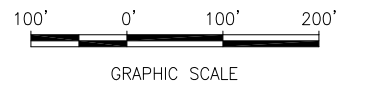
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**FIGURE A
WARM SPRINGS EXTENSION
PROPOSED PV LOCATION PLAN**

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 PROPOSED PV SYSTEM LOCATIONS




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FIGURE B
PROPOSED PV LOCATIONS AT
WARM SPRINGS STATION

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FIGURE C
PROPOSED TYPICAL PV CANOPY

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**FIGURE D
TYPICAL SUBWAY
VENT STRUCTURE**

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3.0 Environmental Analysis

Aesthetics

The Aesthetics section of the SEIR and FEIS described the visual characteristics in the project area, analyzed the nature and extent of the physical changes resulting from the WSX Project, the visibility of the changes and their effects on the viewing public. The Warm Springs/South Fremont Station and Fremont Central Park, location of the subway ventilation structures, are in two visually distinct areas of Fremont and are discussed separately below.

BART developed thresholds of significance that are based on CEQA Guidelines and commonly accepted urban planning and design principles that use best professional judgment. Standards for determining the significance of visual impacts include the following criteria.

- Visual impact is measured by the degree of visual change either positively or negatively affecting an area's perceived aesthetic value. A highly visible change from a public viewpoint resulting from a project that is incompatible with the setting or is not pleasing to look at would constitute a significant adverse visual impact.
- The elimination of existing features that contribute to a well-defined streetscape, including vegetation originally intended to enhance the appearance of the built environment.
- Obstruction of an important view or scenic vista from any location where people gather.
- Creation of new sources of substantial light or glare that would adversely affect day or nighttime views.

Viewer sensitivity is based on the visibility of resources in the landscape, the proximity of viewers to the visual resource, the relative elevation of viewers to the visual resource, the frequency and duration of views, the number of viewers, and the types and expectations of individuals and viewer groups.

Fremont Central Park. Fremont Central Park is a focal point of community life and is heavily used by a broad base of the citizenry. Viewers who would be affected by the Revised Project include a wide variety of park visitors including passive and active recreational users, sports-team participants, joggers, and bicyclists. Except for construction of the WSX Project itself, visual conditions in the park are largely unchanged since preparation of the 2003 FSEIR and 2006 FEIS. Lake Elizabeth occupies a large portion of the park and is its main focal point.

The *Fremont General Plan* regards both Fremont Central Park and Lake Elizabeth as unique visual features. The landscape character of the park can be described as related to rural green fields, with winding curvilinear pathways leading to activity areas for sports recreation. Trees range from young newly planted deciduous species to mature eucalyptus and evergreens on the southern periphery of the park, which combine to form background view features.

The East Bay hills and Mission Peak provide the major elements of the background view from the park's sports complex. The easternmost portion of the park is bounded by Mission Creek, hidden from view by thick foliage of the mature tree plantings around Lake Elizabeth, and the former SP railroad tracks. The character of the built environment includes elements related to sports and recreational facilities. The

foreground and middle ground views from Stevenson Boulevard are dominated by tall steel poles supporting floodlights, high fencing surrounding softball fields, and the park's parking areas.

The two major streets bordering the park, Stevenson Boulevard and Paseo Padre Parkway, are designated as scenic routes and remain fairly unchanged since 2003. Landscaping has matured and new areas of landscaping have been installed, but otherwise the built environment remains similar. The city's grade separations project altered Paseo Padre Parkway east of the park by creating an underpass where the street used to cross the railroad right-of-way at grade.

East and outside the park, but within the Central Fremont and Fremont Central Park visual analysis area, are the former SP tracks and former WP railroad tracks. The 700-foot-by-1,000-foot area just east of the park's nature area between the two railroad tracks has no structures in it.

Two subway ventilation structures for the WSX Project are currently being constructed in Fremont Central Park; one is near the sports field complex toward the west side of the park, and the second is east of Lake Elizabeth closer to the former railroad alignments. The subway ventilation structures are large, approximately 242 feet long (including enclosed parking area), 49 feet wide, and 12 feet high. The proposed PV panels would be placed on the rooftop of each ventilation structure. The modular panels would be placed on metal frames sloped to provide maximize exposure to the sun. The PV panels themselves will be dark colored and non-reflective. The mounting frames for the panels are usually aluminum or a similar unpainted metal, which tends to oxidize and lose any sheen and reflectivity over time. The panel frames typically stand about 3 feet high. The PV panels would be within the rooftop parapet wall, but may extend slightly above the 2-foot high parapet wall. Figure E presents photos of panels similar to those being considered for the subway ventilation structures.

Views of the western ventilation structure are primarily from the active sports fields and parking areas closest to it. Views of the lower 2 feet+/- of the panels would be blocked by the rooftop parapet. The upper portion of the panels would be visible to park patrons; however, given the large size of the subway ventilation structures, the panels would be a negligible visual addition to the structures and would not be incompatible with the structure or the surrounding park area. The panels are not tall enough to block views of the surrounding hills and would not generate any light. The low angle of the panels (20 to 40 degrees to horizontal) and the generally non-reflective material would minimize the potential for glare. Therefore, no additional visual impacts are anticipated.

Views of the eastern ventilation structure are primarily from the pathway around Lake Elizabeth and the nature area east of the old railroad embankment, though landscaping around the structure will eventually grow to block views from Lake Elizabeth and views from the west. As with the western ventilation structure discussed above, given the large size of the subway ventilation structures, the panels would be a minor visual addition to the structures and would not be incompatible with the structure or the surrounding park area. The panels are not tall enough to block views of the surrounding hills and would not generate any new light or glare as explained above. Therefore, no additional visual impacts are anticipated.



Figure E: Photos of typical photovoltaic system (BART Richmond Shop rooftop, 2012)

Warm Springs/South Fremont Station. The Warm Springs/South Fremont Station is located in an industrial area, which has changed little since preparation of the 2003 SEIR. The landscape is basically flat and open. A number of parcels once used for agriculture are primarily vacant. Older farm buildings either remain as residences surrounded by large areas of open space or, in the case of the building located at the corner of Warm Springs Boulevard/Osgood Road and Grimmer Boulevard, the former house is used as a commercial flower stand.

The industrial character of the built environment is dominated by the horizontal lines of the railroad tracks that extend into the distance, the light-colored crushed rock of the slightly elevated rail beds, and the steel towers supporting electric transmission lines alongside the corridor between Auto Mall Parkway and the Tesla Motors auto manufacturing plant (formerly New United Motor Manufacturing, Inc.). The area along both sides of the rail corridor is a mix of large vacant parcels and new industrial and warehouse buildings, most notably the Tesla Motors plant. Over the last 10 years, additional industrial buildings have been constructed along the corridor. In this area, buildings adjacent to the project corridor are generally one or two stories, approximately 30 to 40 feet in height.

The rail alignment passes over Grimmer Boulevard on two bridges. Views of the hills to the east and to the mountains west across the Bay are prominent from the more open portions of the corridor along Warm Springs Boulevard. The views of the hills dominate the scene and play a central role in defining this area's visual character. Fremont Boulevard, I-680, and Mission Boulevard are designated as scenic routes by both Alameda County and the City of Fremont. Viewers who would be affected by the Proposed Project primarily consist of persons traveling through the area by car and to a smaller extent, those working at local industrial businesses.

The PV panels would be placed on new structures whose construction is already included in the WSX Project (station concourse roof, two bus boarding canopy rooftops) and on two purpose-built canopies over the 38 BART staff parking spaces and 68 patron parking spaces (Figure B and Figure C). The panels placed on the planned structures would follow the contours of the structures without increasing their size, shape, or height. The panels would simply be added to the rooftop. For the structures to be constructed over parking spaces, the structures would be a simple design of post and beams to hold the PV panels at the correct angle to the sun (approximately 22 degrees). The height of the structures (10 feet minimum, 16 feet maximum) would be comparable with other station structures. In each case, the design of the panel structures would be consistent with the industrial/institutional nature of the area and the station site.

All the PV structures would be located near the western side of the station site and away from the public views of the station from Warm Springs Boulevard. As discussed in the FSEIR and FEIS (and illustrated in photo simulations for Viewpoint 6), the station structure and appurtenant structures are set sufficiently back from Warm Springs Boulevard that they will not substantially affect the existing views by workers, residents, and motorists. However, the evaluation notes that the WSX Project could introduce new elements into the area that could have a significant adverse effect on visual quality and character. Mitigation Measure A4 was required to "ensure design of [the] proposed Warm Springs Station is consistent with existing environment." The first element of Mitigation Measure A4 requires BART to "Design the proposed Warm Springs Station so that it is compatible with the scale and massing of other buildings in the surrounding environment, including the commercial facilities to the north and the light industrial uses to the north and south." The majority of the PV panels would be on planned station structures, which have already been designed to be consistent with the surrounding environment. The

two independent panel structures over the parking spaces are of a size and scale that are compatible with the station and the surrounding environment. The PV panels themselves will be dark colored and non-reflective and do not generate any light. The panel mounting frames, where necessary, are usually aluminum or a similar unpainted metal, which tends to oxidize and lose any sheen and reflectivity over time. The slope of the panels, ranging from approximately 9.5 to 22 degrees from horizontal, combined with the low reflectivity, reduces the potential for glare to less than significant. Therefore, there would be no new or additional visual impacts.

Construction of the PV panels would take place off-site and they would be delivered to the site for installation as one of the last phases of construction. Installation would take a relatively short time, without the extended use of heavy equipment or construction stockpiling. Construction is not expected to create any visual impacts.

Agriculture and Forestry Resources

Neither the BART alignment nor adjacent properties are used for agricultural purposes, nor would farmland be converted to non-agricultural use. The entire WSX Project is within an urban corridor. The location of the PV panels would be in the Warm Springs/South Fremont Station and at the subway ventilation structures in Fremont Central Park. There would be no impact to agricultural resources.

Air Quality

The FSEIR conducted a full analysis of air quality impacts related to the WSX project, including ozone precursors, local CO and PM10 emissions, greenhouse gas emissions, toxic air contaminants, and construction-related emissions. Where potentially significant impacts were identified, mitigation measures were required.

The installation of PV panels would generate up to 0.69 MW of electricity. Conversion of solar energy to electrical energy would reduce the need to produce electricity from fossil fuel sources. Over the course of their 20-year life, if PV facilities replaced fossil fuel sources, 0.69 MW of solar facilities would keep a substantial amount of pollutants from entering the atmosphere, including approximately 25.8 million pounds of CO₂ (a leading cause of global climate change), 17,800 pounds of NO_x (a leading cause of smog), and 4,500 pounds of SO₂ (a leading cause of acid rain).⁶ Installation of the PV panels would not require any grading or extended use of heavy equipment that would generate large scale dust or construction emissions. The Revised Project would provide an air quality benefit.

Biological Resources

The FSEIR evaluated the biological resources along the project corridor and the potential for the WSX Project to disturb sensitive biological species and habitat, including wetland and riparian habitats. Potential impacts to California red-legged frogs, California tiger salamanders, western burrowing owls, and nesting cliff swallows and barn swallows were identified. A series of mitigation measures have been implemented to protect these species.

⁶ John-Michael Miller, Energy Consultant, Solar City, email of January 28, 2012.

The PV panels at the Warm Springs/South Fremont Station and Fremont Central Park would be placed on planned structures or over paved areas. All PV-related facilities would be made within the existing project footprint. Installation of the PV panels would be the final phase of construction and would not require use of any ground not already paved or disturbed as part of the larger construction effort. The Revised Project would not create any new or more severe biological impacts not already identified in the previous environmental documents.

Cultural Resources

The FSEIR and FEIS evaluated the operational and construction effects of the Project on archaeological and historic resources in the project corridor. A number of cultural resources were identified, including the William Y. Horner House, the Gallegos Winery in Irvington, and an archaeological resource in the Tule Pond area south of Walnut Avenue. The project also had the potential to damage previously unknown cultural deposits or human remains during ground disturbance. A series of mitigation measures were implemented to reduce potential impacts.

The PV panels at the Warm Springs/South Fremont Station and Fremont Central Park would be placed on planned structures, except for the two new PV structures that would be placed over a paved parking lot at the Warm Springs/South Fremont Station. There would be no new ground disturbance not previously analyzed in the FSEIR and FEIS. Installation of the panels would be the last phase of construction and would not require any subsurface ground disturbance. Therefore, the PV panels would not create any new or more severe impacts from those already identified in previous environmental documents.

Geology and Soils

The FEIR and FEIS assessed the geologic, soil, and seismic hazards along the project corridor and identified a number of potential issues. These include the Hayward Fault, which crosses the WSX alignment in two locations, expansive soils, and potential paleontological resources in the project corridor. Mitigation measures were adopted to reduce potential impacts to less than significant levels.

The PV panels at the Warm Springs/South Fremont Station and Fremont Central Park would be placed on planned structures, except for the two new PV structures, which would be placed over a paved parking lot at the Warm Springs/South Fremont Station. All the structures would be within the Project footprint analyzed in the FEIR and FEIS. Installation of the panels would take place after construction of the supporting structures, and there are no local geological and soil conditions would not affect panel installation. Therefore, the Revised Project would not create any new or more severe impacts not already identified in the environmental analyses.

Greenhouse Gas Emissions

The earth's climate is changing because human activities, primarily the combustion of fossil fuels, which are altering the chemical composition of the atmosphere through the buildup of greenhouse gases (GHG). As a result, global temperatures are predicted to increase over the century. In particular, global warming is predicted to increase statewide annual temperatures between 3 to 10 degrees Fahrenheit, depending on the assumed increase in GHG. Global warming could directly affect human health and

well being by degrading air quality, decreasing water supplies through reduced snowpack, decreasing agricultural production, increasing the potential for wildfires, creating higher sea levels and a greater potential for flooding.

The installation of PV panels would generate up to 0.69 MW of electricity. As noted in Air Quality above, conversion of solar energy to electrical energy would reduce the need to produce electricity from fossil fuel sources. Over the course of their 20-year life, if 0.69 MW of PV generated power replaced energy generated by fossil fuels, approximately 25.8 million pounds of CO₂, a leading cause of global climate change, could be kept from entering the atmosphere. Installation of the PV panels would require the limited use of trucks and cranes, whose engines could result in the generation of small amounts of GHG for a limited time. However, on balance the installation of PV panels would provide an environmental benefit by reducing the regional production of GHG.

Hazards and Hazardous Materials

The FSEIR and FEIS identified existing hazards and hazardous materials in the project corridor, analyzed the potential for project construction activities to disturb hazardous materials, and identified mitigation measures to address construction-related impacts.

The proposed PV panels do not contain any hazardous materials, and conventional construction methods would be used for installation of the panels. The panels would be located within the existing project footprint so that there would be no ground disturbance that was not previously analyzed. Therefore, there would be no new hazardous material impacts related to the panels not already addressed in the previous environmental documents.

Hydrology and Water Quality

The FSEIR and FEIS described the existing hydrology and water quality conditions along the project corridor, and examined potential Project impacts on surface water quality, groundwater, flood storage capacity, and stormwater runoff.

The PV panels would not increase the amount of impervious surface or add any materials or features that would affect water quality. The PV panels would be installed using conventional construction techniques and would not create any new ground disturbance. Mitigation measures implemented for the WSX Project would mitigate any water quality and hydrology impacts related to the Revised Project panels. Therefore, the Revised Project would not create any new or more severe impacts not already identified in the previous environmental analyses.

Land Use and Planning

The FSEIR described existing land uses in the project corridor, evaluated the WSX Project's consistency with relevant plans, policies, and programs, and analyzed the Project's compatibility with existing land uses.

At the Warm Springs/South Fremont Station, installation of the panels would be over planned station structures or parking spaces closest to the station concourse. This location is in the westernmost portion of the station, away from commercial land uses along Warm Springs Boulevard and adjacent to the BART and Union Pacific Railroad tracks, where the station parking lot separates them from surrounding land uses. There would be no interaction with adjacent land uses. The PV panels are passive structures that do not generate any noise, light, or glare. Accordingly, none of the station activities (station access, bus parking, auto parking) would be affected by their presence. Auto parkers would derive a benefit from the panel's shade in the summer and rain protection in the winter. The Revised Project would not affect BART's plans for future transit-oriented development at the Warm Springs/South Fremont Station, which is designated for the easternmost blocks of the station parking lot along Warm Sprigs Boulevard. Therefore, the Revised Project would be compatible with existing and planned land uses at the Warm Springs/South Fremont Station.

In Fremont Central Park, the PV panels would be located on the two ventilation structures. See the section on Recreation below for a discussion of the Revised Project's compatibility with recreation use.

Mineral Resources

Previous environmental studies examined the geology and soils of the Project corridor. There are no known mineral resources of local or statewide importance in the WSX Project corridor. Therefore, the Revised Project would not affect any mineral resources.

Noise

The FSEIR and FEIS evaluated the noise and vibration associated with BART vehicles, BART operations, and the WSX Project's construction. Noise and vibration impacts were identified and mitigation measures provided. The evaluation determined that although construction impacts would be temporary, construction vibration could have potentially significant impact on sensitive receptors along the project corridor and construction vibration could be significant and unavoidable, even with mitigation measures in place.

The PV panels do not move and do not generate any noise or vibration. Some construction would be required to install the panels, but the small number of trucks, cranes, and workers required would be minor compared to the major construction required to build the WSX Project (station concourse, subway ventilation structures, etc.) that would support the panels. In addition, any panel-related construction would take place in the westernmost portion of the station area near the BART and Union Pacific tracks, and would be furthest from any receptors. The construction at the ventilation structures in Fremont Central Park would consist of lifting the PV panels and frames to the rooftop, where they would be fastened in place. The location of the ventilation structures in the center of the park is more than 1,000 feet from any residential areas. Adopted measures would mitigate any construction noise impacts to the greatest degree feasible.

Population and Housing

The Population and Housing evaluation in the FSEIR and FEIS provided an overview of the population, housing, and economic characteristics of the local community, analyzed the Project's potential impacts

on housing supply and population, including displacement of residential and business uses, and identified mitigation measures to avoid or reduce adverse impacts.

The PV panels would not require any human operators, and there would be no permanent employment related to the panels. Construction employment to install the panels would be minimal and short-term. Therefore, there would be no changes to population, employment, or housing.

Public Services

The Revised Project's effect on police and fire services was evaluated in the FEIR. The PV panels would be a very small increase to the WSX infrastructure at the Warm Springs/South Fremont Station and Fremont Central Park, would not introduce any fire-related hazards, and would not affect ridership or other activities that could draw people to the station. BART and the contractor are responsible for site security during construction. Therefore, the need for police or fire service would not be increased, there would be no need for new facilities, and the Revised Project would not create any additional impacts.

Recreation

An analysis of recreation impacts was provided in the 1992 EIR and revisited as part of the Section 4(f)/Section 6(f) evaluation in the FEIS. There are no recreation uses at the Warm Springs/South Fremont Station, so the addition of the PV panels would have no impact there.

At Fremont Central Park, the western subway ventilation structure is in the vicinity of active recreation facilities, and the eastern ventilation structure is close to walking trails and a passive recreation area. Recreation uses around the western structure include four baseball fields to the west, two baseball fields to the north, and auto parking to the northwest and immediately adjacent to the structure on the south. The playing fields are self-contained, and the distances are great enough (approximately 100 feet to closest ball field) that there is no real interaction between the recreation uses and the ventilation structure. The PV panels would be mounted on the roof of the structure and within the rooftop parapet wall. The panels would not be visually intrusive, and would not interfere with any of the recreation activities around the structure. At the eastern ventilation structure, walking trails come within a few feet of the structure. The most prominent trail is around the perimeter of Lake Elizabeth west of the structure, but a riparian forest occupies the intervening ground and will block most views of the structure, including the PV panels atop the structure. A second walking trail on the east side of the structure follows the same route as the vent structure service road and comes within a few feet of the structure. As with the western ventilation structure, even if the PV panels were visible to walkers nearby, they would not have any impact on walking trails or recreational use in the area.

Installation of the PV panels on the ventilation structures would consist of lifting the premade panels onto the structure rooftops and fastening them into panel support frames. Trucks and perhaps a small crane would be necessary to deliver the panels and lift them to the roof. For both the east and west ventilation structures, truck access is available immediately adjacent to the structures. Small crews working on the roof then would install and connect the panels. Neither of these activities, the lifting or

the rooftop installation, would interfere with the recreational activities taking place around the ventilation structures. For these reasons, the additional of the PV panels to the ventilation structures would not adversely affect any recreational use of Fremont Central Park.

Transportation

The transportation analysis in the FSEIR and FEIS evaluated potential WSX Project ridership and Project impacts to local streets, intersections, transit operations, parking availability, pedestrian and bicycle circulation, and construction impacts.

The proposed PV panels would not affect any aspects of the ridership or access to or from the station. The panels would be placed on existing structures or over parking spaces. No parking spaces would be lost. The photovoltaic panels would be fabricated off-site and transported to the site to be installed. Delivery of the panels and on-site construction of the panel structures over parking would be a very small portion of the overall construction effort for the station and construction within the project corridor, which includes the ventilation structures in Fremont Central Park. There would be no transportation-related impacts related to the PV facilities.

Utilities and Service Systems

The FEIS described the location of existing utility lines and evaluated how construction and operation of the WSX Project could interrupt or damage the proper functioning of these lines. In addition, the FEIS considered whether the existing water and wastewater treatment systems serving the project corridor could accommodate the increased load created by the Project.

The PV panels and related electrical connections would be located on BART property. The panels generate DC power that would be converted to AC power on the BART side of a metered connection to PG&E. The energy generated by the PV systems would provide the daytime electrical power needed for the station. At times the generation will exceed the station load and the excess would be fed back into the local grid as it is generated. These two-way utility connections are becoming common place as energy is increasingly generated at dispersed locations by solar facilities. Installation of the PV panels would not require any ground disturbance that could affect existing underground utilities. The PV panels would not affect existing utility lines or operations.

Energy

The FSEIR and FEIS considered the energy required for both the construction and operation of the WSX Project, as well as the energy savings associated with the WSX Project's reduction in vehicle miles traveled. BART is a major consumer of electric power. BART electrical power currently comes from both renewable and non-renewable sources.

The PV panels would allow the WSX project to become an energy producer. The project would generate a total of approximately 0.69 MW. The energy generated by the PV systems would provide the daytime electrical power need of the station. At times the generation will exceed the station load and the excess would be fed back into the local grid as it is generated. Any energy produced by the WSX system would reduce BART reliance on other energy providers and reduce the overall demand on the electric grid.

One megawatt is equivalent to powering 10,000 100-watt light bulbs and is roughly enough power for 1,000 California households. Over the course of their 20-year life, a 0.69 MW PV facility would save the energy equivalent to driving 28.2 million vehicle miles.⁷ Installation of the PV panels would be an energy benefit.

⁷ John-Michael Miller, Energy Consultant, Solar City, email of January 28, 2012.