



VTA's BART Silicon Valley Berryessa Extension Project: Sustainable Features

OVERVIEW

Santa Clara Valley Transportation Authority (VTA) is committed to environmental sustainability. As part of the Sustainability Program that the Board of Directors adopted in 2008, VTA has made a concerted effort to reduce its usage of natural resources, reduce pollution and improve the environment.

Sustainability is a key component for VTA's 10-mile BART Silicon Valley Berryessa Extension Project. The Project promotes accessing the stations by sustainable means, such as walking, bicycling, private shuttle, local bus, bus rapid transit, light rail, and carpools. Increasing public transportation use and getting people out of their cars is the most effective way to reduce greenhouse gas emissions.



DESIGN METHODS

VTA is committed to sustainability. The design of the 10-mile Berryessa extension is centered on the premise of saving energy and being environmentally friendly. Public transit projects like VTA's BART Silicon Valley Extension are sustainable by nature because they reduce congestion on existing streets and freeways. The design and operations of VTA's BART Silicon Valley Extension will incorporate sustainable project features that reduce energy, water and waste, and minimize resource consumption and improve indoor environmental quality.

Greenhouse Gas Reductions

Projected daily BART ridership for the Project will reduce regional traffic congestion and greenhouse gas emissions by over **3,400** tons per year.

This is equivalent to over 1,100 full-grown elephants weighing an average of 3 tons each, or 1,700 households' annual municipal garbage.



Renewable Energy and Efficiency New "Fleet of the Future" all-electric BART trains will provide up to seven percent energy efficiency compared to current trains, and over two-thirds of BART's power comes from clean hydro and renewable sources. Parking garages will have solar panels to offset electric power demands and charging stations for electric vehicles.



Water Conservation and Water Quality Strategies to save water include using native and/or drought-tolerant plants, reclaimed water for landscaping, and low-flow fixtures, where available. State water quality standards require storm water runoff from the station areas to flow into shallow open basins or swales to remove oils and other contaminants that accumulate on the station roadways and other paved surfaces. Use of these bio-treatment areas will ensure that the water entering the surrounding creeks and streams will help protect the creek habitats.



Lighting Energy efficient light emitting diodes (LED) are being considered for indoor and outdoor applications. LEDs use approximately **75 percent less energy and lasts 25 times longer** than incandescent lighting. Stations are designed with skylights and other light-permeable surfaces to increase natural light levels and take advantage of daylight, thus reducing electrical power demands.



Multi-Modal Access Stations are designed with amenities such as pedestrian walkways, bike paths, bicycle storage rooms, bus-only lanes, bus transfer centers, private shuttle areas, and a direct connection to the existing Montague Light Rail Station in Milpitas to encourage station access by modes other than single-occupant vehicles.



CONSTRUCTION METHODS

Construction Waste Diverted from Landfills

Construction waste has totaled over **25,500** tons to date, which is equal to the weight of approximately **1,800 VTA buses.**



Of the total construction waste,

98.4%

has been successfully recycled or salvaged.



VTA's is committed to protect the environment across all phases of construction. Project design and construction are based on CALGreen 2013 State Standards that apply to open-air transit projects. This includes both mandatory and voluntary green building measures in energy efficiency, water conservation, sustainable materials sourcing, occupant comfort, and site impact. Aggressive waste diversion goals, potable water reduction, recycled content in concrete, and a project-wide "carbon footprint" analysis are required during construction.

How Soil and Demolition Debris is Handled

Piles of construction

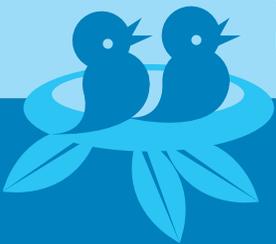
materials, such as wood, steel, and concrete from demolition of old structures on the new station sites, are sorted and hauled to recycling facilities. The contractor stockpiles and re-uses crushed concrete for the Project to meet VTA's sustainability and recycling requirements. Soils that result from excavations are stockpiled and tested, and if suitable, the dirt is used on site or hauled off for reuse on other construction projects in the region.



How Dust is Handled

Dust is part of every construction project. To meet regional air quality

requirements, the contractor actively waters down areas where soil-disturbing construction activities are taking place and also modifies truck access points with rock or gravel to control dust leaving construction sites. Water used for dust control is reused groundwater found within excavations that must be pumped out to keep the work areas dry. High-pressure water hoses are used to spray down dust caused by earthwork or building demolition. The contractor is implementing and adhering to all dust control measures that are required to meet state and federal guidelines. Nearly 15 million gallons of reused groundwater will be used for dust control over the course of the project.



Tree Trimming/Removal and Nesting Birds

Tree trimming and

removal may seem insignificant, but if not done properly, these activities could impact nesting birds. As a result, tree trimming and removal are prioritized during periods of the year when birds are not nesting in trees. If trees must be trimmed or removed during a nesting season, surveys are conducted and if nesting birds are identified, biological monitoring and work exclusion zones are established until the birds have successfully reared their young.

Creek Construction Season

Work in creeks only occurs in the dry season, typically

between April 15 and October 15 of any given year, or June 15 to October 15 in a creek channel that has known sensitive species (such as steelhead trout). Measures have been taken to monitor work in and near creeks to protect sensitive species.



Energy Efficiency from Escalators

7 variable speed escalators are being considered for the Berryessa and Milpitas stations to reduce energy consumption. Escalator speeds could be reduced during non-peak period and result in up to **20%** energy savings.



Upper Penitencia Creek Environmental Features

The Upper Penitencia Creek Improvement Project has enhanced a section of Upper Penitencia Creek that passes through the future Berryessa Station campus. The project fulfills environmental mitigation requirements associated with construction of VTA's BART Silicon Valley Berryessa Extension Project. The newly-improved portion of this creek has a more natural channel with a widened floodplain, fish spawning pools, native riparian habitat, and increased distance from existing and future buildings. The realigned creek channel was reconstructed using a bio-engineered design including rock boulders and tree root stumps to create natural habitats. Non-native plants were removed, and the area was replanted with native wetland and riparian plantings. Upstream of the Berryessa Station site, the Alum Rock Fish Passage Project replaced a large concrete barrier that blocked fish from migrating upstream with an ascending series of natural pools that fish could traverse. Both projects enhance local fish habitat and benefit federal and state-protected Central California Coast Steelhead that live in the creek.



Indoor water use

Water conserving fixtures will be installed in staff and public areas in the stations. These measures would result in a savings of **38%** of daily water use compared to standard fixtures, and an estimated **5.7** million gallons of water will be saved annually.

To learn about other VTA sustainability initiatives, please visit:
vta.org/sustainability



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