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Message from the General Manager/CEO



As a transportation agency, sustainability is integral to everything we do. By providing sustainable, accessible, community-focused, and innovative transportation solutions, we are improving the air quality and health of our region. By operating our services and designing our projects in an environmentally-friendly way, we are conserving resources and reducing our carbon footprint. This is VTA.

VTA's Sustainability Program is celebrating its 10th anniversary this year. I am proud of the work our employees have accomplished over the past decade from installing solar panels at our bus yards, to greening our fleet, to replacing turf with drought-tolerant landscaping. One of our major accomplishments last year was replacing 198 light fixtures at the Guadalupe Light Rail Division with LEDs. This project will save us over \$10,000 in electricity costs each year and pay for itself in less than 3 years. Every positive action makes a difference.

I am particularly excited about VTA's future as we introduce various additions to public transit to proactively reduce the consumption of natural resources, minimizing the creation of greenhouse gases to help protect the environment for future generations. This spring, we added five all-electric Proterra buses to our fleet with plans to bring five more on line later this year. And VTA's BART Silicon Valley Extension will bring a 30-year dream to Santa Clara County, of extending the heavy rail service to complete the network of rail service around the San Francisco Bay Area, providing an alternative to driving for tens of thousands.

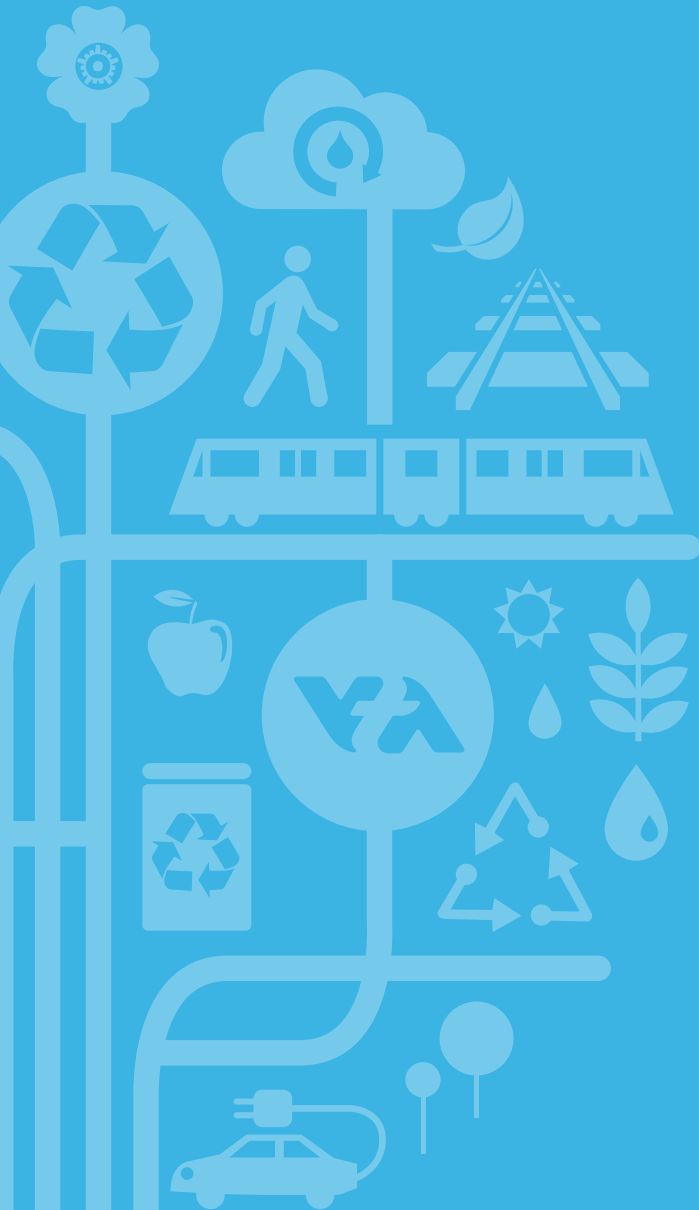
This Sustainability Report presents VTA's environmental progress and performance in 2017. I encourage you to read about all our accomplishments and I hope this report inspires you to make change toward protecting our environment.

A handwritten signature in black ink that reads "Nuria I. Fernandez". The signature is fluid and cursive.

Nuria I. Fernandez
General Manager/CEO

Executive Summary

This annual Sustainability Report provides an update on VTA's environmental performance and achievements. The highlights from 2017 are:



-2%



Reduction in fuel use

-4%



Reduction in traction power energy use

+11.5%



Increase in electricity use for facilities

+11%



Increase in natural gas use

-2%



Decrease in greenhouse gas emissions

+6%



Increase in water use

-13%



Reduction in waste

-23%



Of waste diverted from landfills

198



Light fixtures replaced with LEDs

152



Kilowatts of solar added

54



Electric vehicle charging stations installed



Introduction

About VTA

The Santa Clara Valley Transportation Authority (VTA) is an independent special district responsible for bus and light rail operation, regional commuter and inter-city rail service, Americans with Disabilities Act (ADA) paratransit service, congestion management, specific highway improvement projects, and countywide transportation planning. As such, VTA is both an accessible transit provider and a multi-modal transportation planning and implementation organization involved with transit, roadways, bikeways, and pedestrian facilities. VTA provides transit services to the 326 square mile urbanized portion of Santa Clara County that is composed of 15 cities and towns and unincorporated areas with a total population of more than 1.9 million residents.

Sustainability at VTA

Sustainability refers to meeting the needs of the present without comprising the ability of future generations to meet their own needs. As a founding signatory to the American Public Transportation Association's (APTA) Sustainability Commitment, VTA is committed to economic, social, and environmental sustainability. In 2008, the Sustainability Program was approved by VTA's Board of Directors with the following goal and operating strategies:

- **Goal:** to strengthen VTA's commitment to the environment by reducing the consumption of natural resources, the creation

of greenhouse gases, and the generation of pollution in the provision of public transportation services.

- **Strategies:** educational programs and outreach, transit-oriented development, increasing sustainability at existing facilities, incorporating green building practices in new facilities, developing environmental preferable procurement strategies, and establishing a means of measuring the progress of the Sustainability Program.

Based on a review of environmental performance and improvements over time, VTA achieved gold-level recognition from APTA in 2016. Only three other transit agencies in California have received this level of recognition or higher. VTA is one of only 16 organizations in North America to have reached this level of recognition.

In 2016, VTA adopted a new Strategic Plan that outlines the Mission, Vision, Core Values, Action Values, and Strategic Goals of the agency. Sustainability was included as a Core Value to guide the agency's decision-making and apply to everything VTA does. VTA's six Core Values are:



VTA's Sustainability Program is managed by a diverse team designed to represent VTA's broad array of responsibilities and functions. This annual report and the achievements of the Sustainability Program could not have been done without the tremendous support of VTA's Sustainability Team:

Lorraina Alvarez, *Customer Service*
Chris Augenstein, *Planning and Programming*
Kevin Balak, *Real Estate and Joint Development*
Marshall Ballard, *Transportation Planning*
Hassan Basma, *Engineering and Program Delivery*
Patty Boonlue, *Transportation Planning*
Ann Calnan, *Environmental Programs*
Marc DeLong, *Engineering and Program Delivery*
Casey Emoto, *Engineering and Program Delivery*
Inez Evans, *Operations*
Ron Golem, *Real Estate and Joint Development*
Mel Gonzales, *Facilities Maintenance*

Lani Lee Ho, *Environmental Programs*
Karly Hutchinson, *Environmental Health and Safety*
Christina Jaworski, *Environmental Programs*
Jon Maier, *Technology*
Belle Pannu, *Human Resources*
Kathleen Podrasky, *Community Engagement*
Heidi Samuels, *Operations*
Mehakmeet Saini, *Office of Civil Rights*
Rajwinder Sehdev, *Engineering and Program Delivery*
Jesse Soto, *Facilities Maintenance*
Robert Victor, *Technology*
Kendall Whitson, *Facilities Maintenance*



Purpose and Scope of Report

The purpose of this report is to measure VTA's environmental performance in providing bus, light rail, and paratransit services. Therefore, the scope of this report extends to transit centers, stations, traction power facilities, and operating divisions. VTA has five main operating divisions. These divisions are grouped as follows:

- Cerone, Chaboya, and North Divisions are dedicated to the maintenance, cleaning, and fueling of VTA's bus fleet.
- Guadalupe Division is responsible for all light rail operations and maintenance functions, including major vehicle overhaul, historic trolley maintenance, and light rail operator and maintenance training.
- River Oaks Administration Office includes the Offices of the General Manager, Board Secretary, General Counsel, Government Affairs, Chief of Staff, Planning and Programming, Engineering and Program Delivery, Finance and Budget, Operations, and Business Services.

VTA participates as a funding partner in regional rail service including Caltrain, Capital Corridor, and the Altamont Corridor Express. However, these services are not included in the scope of this report.

A Closer Look: Engaging Staff and Our Community

Traffic a pain? Try the train. VTA encourages people to **give public transportation a try**. Public transportation helps the environment by reducing the number of cars on the road and also saves people money on gas and car maintenance.



◀ Through the **Adopt-A-Stop** program, individuals, organizations, and businesses can volunteer to pick up litter and keep VTA's 4,500 bus stops clean.



▲ Each May VTA participates in **Bike to Work Day** to promote biking as a green, safe, and healthy commute option. VTA is a strong proponent of bicycle commuting. All VTA buses and trains are equipped with bike racks and secure bike parking is available at most Park-and-Ride lots and transit centers.



▲ VTA works proactively with local jurisdictions and the public to receive input on its long-range transportation planning efforts. These efforts are part of the regional transportation planning process to **reduce greenhouse gas (GHG)** emissions in accordance with Senate Bill 375.



◀ Employees and the public are reminded to keep **storm drains clear** of trash and pollutants. To learn more about preventing pollution from stormwater runoff, visit the Stormwater Management Program website at www.vta.org/stormwater.



Environmental Performance

2017 Achievements

Each annual report highlights the achievements made in the reporting year. This year's achievements are described below followed by a discussion of VTA's environmental performance in 2017 compared to the previous year.

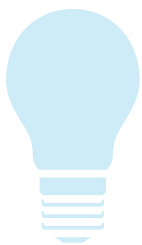
Zero Waste Program

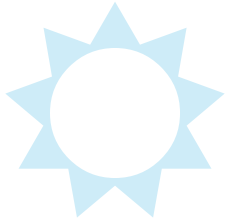
In an effort to reduce waste, increase efficiency, and improve housekeeping, VTA launched a Zero Waste Program at River Oaks. The Program consists of ending desk-to-desk janitorial pick-up and implementing centralized waste stations for employees to empty their own desk side bins. The centralized waste stations include bins for recycle, compost, and landfill. Additionally, existing bins in restrooms were converted to allow paper towels to be composted instead of sent to the landfill. After a successful pilot phase with select departments in 2017, the Program is being expanded throughout the River Oaks campus.



LED Retrofits

In October 2017, PG&E issued a rebate check for \$11,720 for the replacement of 198 high-intensity discharge (HID) fixtures with energy-efficient LED's at the Guadalupe Light Rail Division. These lights are used to illuminate the rail yard at night when most of the maintenance activities take place. PG&E estimated VTA would save 62,374 kWh of electricity and \$10,261 per year in electricity costs by replacing the HID fixtures. The net cost of this project was \$46,289 with a payback of 2.5 years when annual maintenance savings of approximately \$3,250 per year are included. LED's last twice as long as HID fixtures, and therefore, do not have to be replaced as often.





Solar Parking Canopies

Solar canopies were installed at the Berryessa/North San Jose BART Station to provide 152 kilowatts of renewable energy to the parking garage. Solar canopies will also be installed at the Milpitas BART Station in 2018. Solar is just one of the many sustainability features that were included in the design of the stations as part of the VTA's BART Silicon Valley Project. For a closer look, check out page 14.



Irrigation Upgrades

Irrigation controllers were upgraded at 22 park-and-ride lots. These weather-based controllers, originally installed in 2009, utilize a cloud-based platform that adjusts watering schedules based on weather forecast, plant types, and soil data. The updated controllers allow VTA staff to remotely manage irrigation schedules via a mobile device and receive alerts when abnormal flows occur.



Electric Vehicles

Six charging stations were installed at River Oaks in early 2017 for plug-in hybrid and full electric non-revenue vehicles. In addition, 24 charging stations were installed in each of the parking garages of Berryessa/North San Jose and Milpitas BART Stations.



Paper Reduction and Reuse

VTA is committed to reducing paper and reusing materials when possible. Here are a few actions we have taken in 2017 to reduce waste:

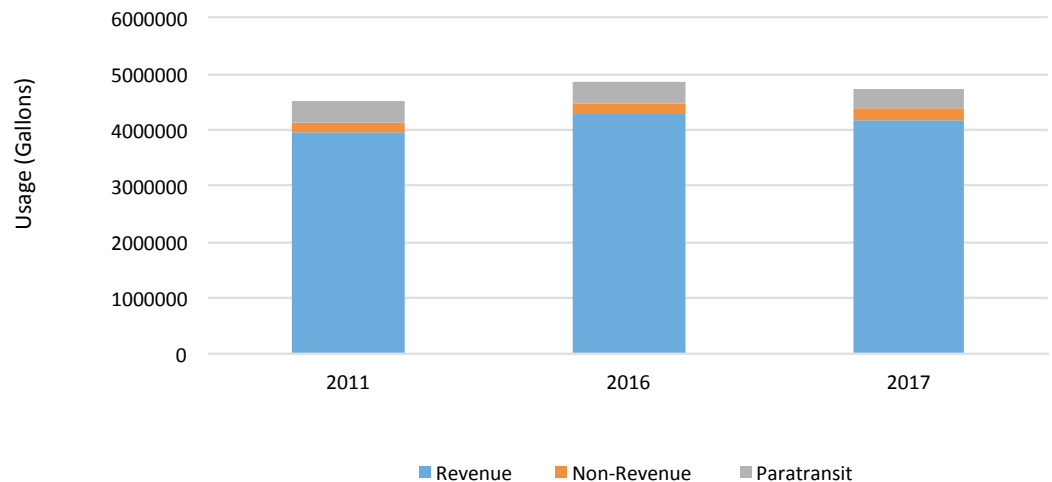
- Added collection bins for scratch paper. VTA's in-house copy center turns the scratch paper into note pads for employees to use.
- Converted request forms for benefits, such as the Family and Medical Leave Act (FMLA), from hard copy to electronic.
- Launched the Contract Center, a central, electronic repository for inter-agency agreements and construction, procurement, and professional services contracts.
- Introduced durable, weather resistant media for large-format printing. Unlike previous products, the new media can be recycled at the end-of-life.
- Began using digital signature capture in the VTA mail room and warehouse. This allows employees to sign for deliveries electronically.
- Improved the River Oaks Reuse Center for employees to share unwanted or surplus office supplies.

Performance Assessment

Fuel

In 2017, VTA consumed 4.7 million gallons of fuel for the revenue, non-revenue, and paratransit fleets. This is 2% less than the previous year (2016) and 5% higher than the baseline year (2011). The baseline year was selected based on data available at the time of this report. Figure 1 shows the fuel usage by fleet type. The differences in fuel use from year-to-year are described below.

Figure 1: Fuel Use



Revenue Fleet

In 2017, the revenue fleet consumed approximately 4.2 million gallons of fuel, a decrease of 2% from the previous year, but an increase of 6% from the baseline year. The increase from the baseline year can be attributed to service changes including additional routes and frequency of service.

Non-Revenue Fleet

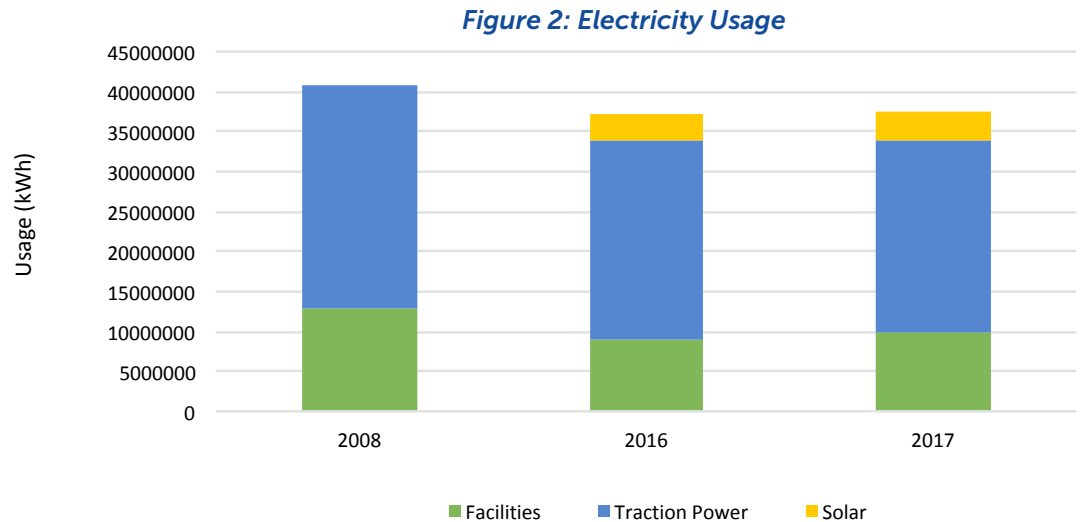
In 2017, the non-revenue fleet consumed 194,811 gallons of gasoline. Fuel use by the non-revenue fleet was approximately 2% lower than the previous year and 16% higher than the baseline year. The difference in fuel use is attributed to a variance of construction and project activities that fluctuate each year.

Paratransit

In 2017, the paratransit fleet consumed 345,859 gallons of gasoline. Fuel use by the paratransit fleet was 1% lower than the previous year and 13% lower than the baseline year. The decline in fuel usage is due to the procurement of more fuel efficient vehicles, such as hybrids, over the years.

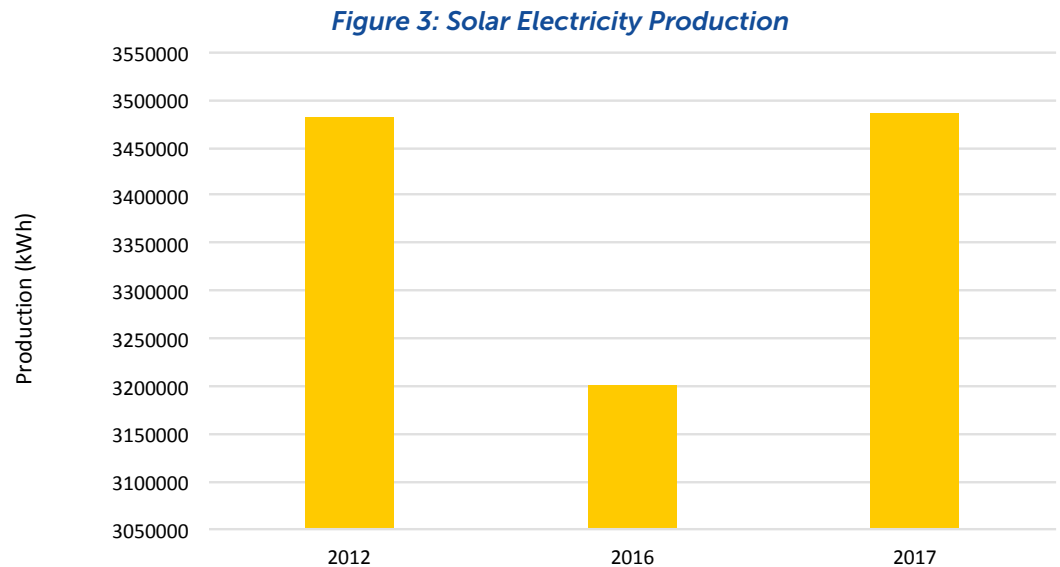
Electricity

In 2017, total VTA electricity use, including traction power for light rail, was 33.9 million kilowatt hours (kWh), enough to power 3,151 homes for one year. This is approximately 0.1% lower than the previous year. Figure 2 shows the total electricity use by type.



Solar Energy

Figure 3 shows the annual solar energy generation in kWh for 2012 (the first year of production), 2016, and 2017. The solar electricity production for 2017 was 3,486,097 kWh, an increase of 8%, as compared to 3,200,926 kWh for 2016. This increase was due to the connection of VTA's solar photovoltaic system at the new BART Berryessa/North San Jose Station parking garage in 2017 and sunnier weather throughout the year.



Light Rail Traction Power

The light rail traction power had usage of 23.9 million kWh in 2017 and 24.9 million kWh in the previous year. This is a decrease in usage of 4%, but an increase in cost by \$144,718. The decrease in traction

power usage is attributed to fewer special light rail service events at Levi's Stadium and a return to a normal operating year in the absence of a Superbowl game, which took place at the Levi's Stadium in 2016.

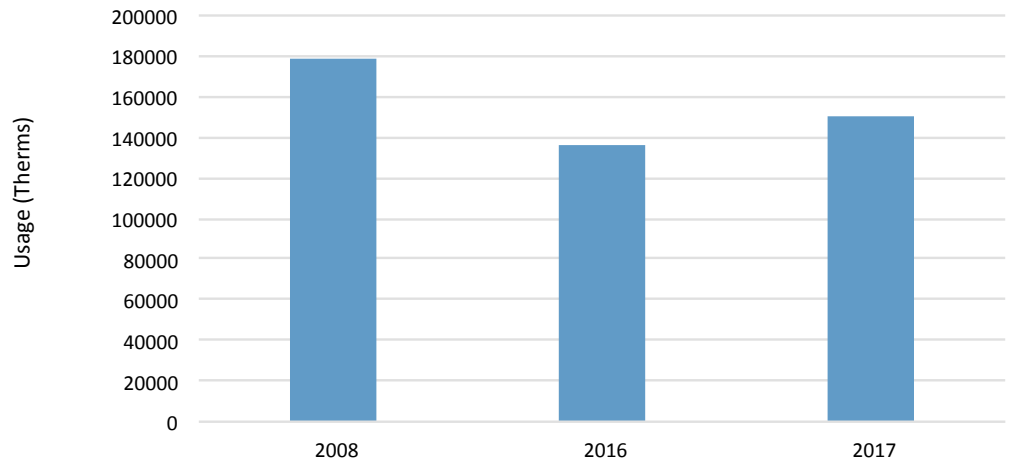
Facility Energy Use

In 2017, electricity use was 9.9 million kWh compared to 8.9 million kWh in 2016. This is an increase of 11.5% in usage and a cost increase of \$116,645. The increase in usage over last year is due to housing staff for the operation of paratransit service 7 days per week at River Oaks from late 2016 to September 2017 and increased energy use associated with operations at North Division, Chaboya Division, Milpitas BART Station, and VTA's new Bus Rapid Transit stations.

Natural Gas

Figure 4 shows the natural gas usage and the associated cost in 2008, 2016, and 2017. Natural gas use increased by 11% compared to the previous year and decreased by 16% compared to the baseline year. The higher use in 2017 resulted in a cost increase of \$35,320. This increase was primarily at the River Oaks Administrative Offices for heating due to cooler weather and additional operating hours for paratransit service.

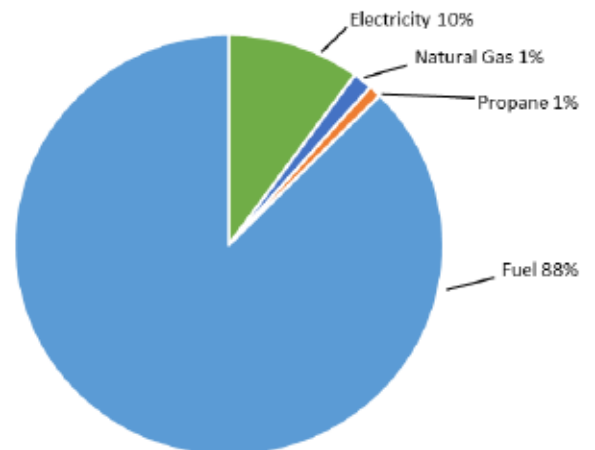
Figure 4: Natural Gas Use



Greenhouse Gas Emissions

In 2017, GHG emissions were 54,488 metric tons of CO₂e. This is an increase of 3% or 1,474 metric tons of CO₂e from 2011 and 2% decrease or 1,372 metric tons of CO₂e from 2016. Figure 5 illustrates the percentage of GHG emissions by source for 2017.

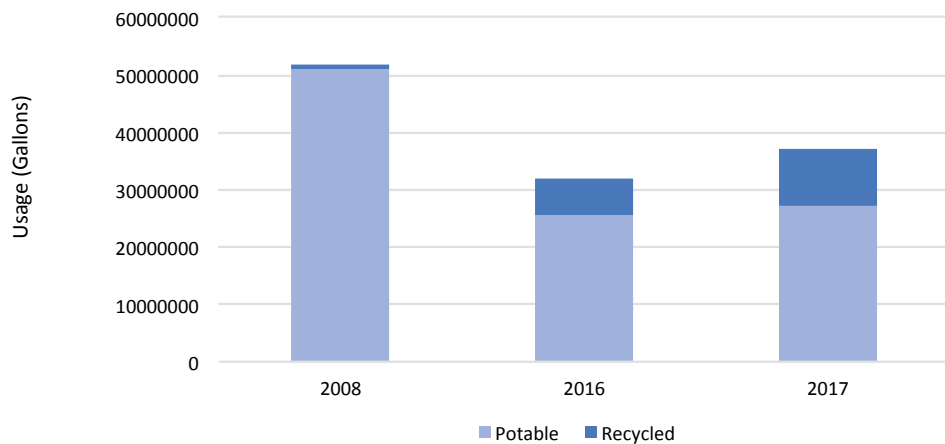
Figure 5: GHG Emissions by Source



Water

Potable and recycled water usage is shown in Figure 6. Potable water usage was approximately 27 million gallons in 2017, representing a 6% increase from the previous year and a 47% decrease from the baseline year. The increase in usage resulted in a cost increase of \$59,628 between 2016 and 2017. Construction of the new Eastridge Paratransit Center and installation of new irrigation and landscaping at the BART stations are the primary causes for the increase in potable water use. Recycled water usage in 2017 was 10,228,238 gallons, representing an increase of over 1000% from the baseline year, in which no recycled water was used, and a 54% increase from the previous year. The increase in recycled water use resulted in a cost increase of \$21,618 between 2016 and 2017. The reason for the increase is most likely due to broken lines that were discovered and repaired at North Division and Great Mall Transit Center.

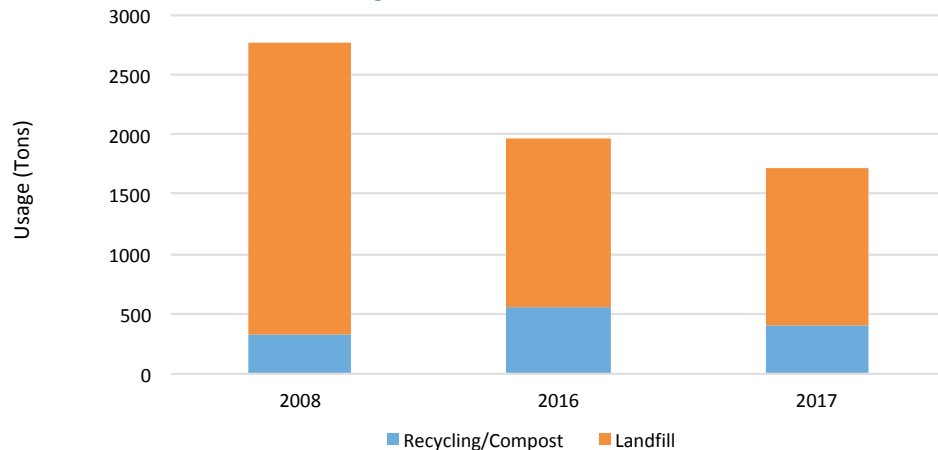
Figure 6: Water Use



Waste

In 2017, approximately 397 tons of material was recycled or composted and 1,314 tons of waste was sent to the landfill. As shown in Figure 7, VTA has reduced waste by approximately 13% compared to the previous year and 38% compared to the baseline year. In 2008, the overall waste diversion rate (representing the amount of waste diverted from the landfill) was 12%. In 2017, the waste diversion rate was 23% which is 5% lower than the previous year.

Figure 7: Waste Reduction

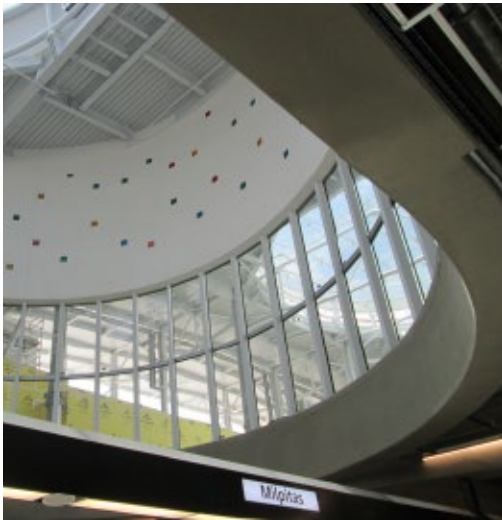


A Closer Look: VTA's Silicon Valley BART Extension

Multi-modal amenities include pedestrian walkways, bike paths, bicycle storage rooms, bus transfer centers, private shuttle areas, and a direct connection to the existing Montague Light Rail Station in Milpitas. By providing greater access to alternative modes of transportation and supporting transit-oriented development, VTA plays a key role in reducing regional GHG emissions.



Energy-efficient intermittent escalators run with infrared motion sensors on each end. When a rider approaches the escalator it speeds up to a normal speed, but when no one is riding the escalator, it slows down to save energy. ▶



Approximately 3,008 tons of recycled Tire Derived Aggregate (TDA) was installed beneath the tracks in four locations along the BART Silicon Valley corridor to help reduce vibration from passing BART trains. That is equivalent to 300,800 California tires diverted from the waste stream by the project. ▶

▲ Parking structures include solar photovoltaic panels and twenty-four, 220-volt electric vehicle charging stations.



▲ 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.



◀ Bioswales, designed to filter and clean rain as it leaves the project site, and drought-tolerant landscaping, featuring many California native plants, are located throughout station areas. Irrigation is provided by recycled water at both stations.



Current and Planned Projects

Green Fleet and Electric Vehicles

VTA's light rail is powered by electricity and, starting this year, buses will move in that direction too. Electricity is a greener choice over diesel because it is produced mainly from domestic sources. Electric vehicles also produce fewer tailpipe emissions that contribute to climate change and smog. Six charging stations and associated infrastructure were installed at the Cerone Bus Division in early 2018. These chargers provide power for VTA's new fleet of zero emission battery-electric buses. Five electric buses are expected to enter revenue service in the spring 2018, with another five to arrive later in the year.

To reduce the impact on the state's electricity grid due to the rise in electric vehicle use, VTA is partnering with Prospect Silicon Valley to launch a pilot project to manage the degree of electricity needed to charge buses using vehicle-to-grid technology. The project is funded by the California Energy Commission and will serve as a case study for other transit agencies.

Greenhouse Gas Emissions and Climate Change

VTA is committed to measuring and managing its GHG emissions by preparing an annual GHG inventory report. Approximately 88% of VTA's emissions are attributed to fuel use. The remainder of emissions comes from the use of electricity, natural gas, and propane for VTA's light rail and facilities. Moving towards an electric fleet, and away from fossil fuels, will help VTA reduce emissions.

To better understand climate vulnerability and risk, VTA has partnered with Adapting to Rising Tides (ART), a program of the San Francisco Bay Conservation and Development Commission. Together, VTA

and ART are studying transportation vulnerabilities and developing adaptation responses that can be integrated into local and regional planning and decision making.

Renewable Energy and Energy Conservation

As VTA grows as an agency, electricity use is expected to increase. Increases in electricity as a result of paratransit service was already noted above. Additional increases are anticipated with the opening of BART Silicon Valley. Staff will continue to closely monitor and manage VTA's utilities and identify areas for improvement. To conserve energy, VTA will continue to replace lighting with LEDs and install solar photovoltaic panels where financially feasible. Currently, VTA is in the process of procuring bus shelters equipped with solar power for lighting and advertising. These shelters will be installed at high ridership stations in 2018 and 2019.

Additionally, VTA will consider upgrading the source of its electricity to 100% renewable under the City of San Jose's Community Choice Energy program. VTA has already done this for utility accounts located in communities governed by Silicon Valley Clean Energy. San Jose's Clean Energy program is expected to launch later this year.

Waste Reduction and Recycling

VTA will continue to operate its reuse center for employees to reuse office supplies, look for new ways to reduce waste and reuse products, and expand its Zero Waste Program. In addition, VTA will work towards adopting policies to support waste reduction. In 2018, VTA adopted an Environmental Preferable Procurement Policy to ensure that environmental criteria are considered when purchasing goods and services. VTA is currently drafting a policy to incorporate green building principles into the planning, design, construction, renovation, and operation of all new and existing facilities.

Water Conservation

The 2012 through 2016 drought included the driest statewide precipitation and snowpack on record. Although the drought emergency was declared over in 2017, conservation remains a way of life in California. At VTA, water conservation means decreasing the amount of potable water used for operations and maintenance such as bus and train washing, irrigation, and cleaning facilities. VTA is constantly monitoring water consumption to identify abnormal use, report leaks, and identify improvements. One major improvement is the replacement of VTA's train wash system. This replacement is being planned for the near future.



Solutions that move you

3331 North First Street
San Jose, CA 95134-1927

Administration 408-321-5555
Customer Service 408-321-2300

www.vta.org/sustainability

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