2015 SUSTAINABILITY REPORT

Measuring VTA’s Environmental Progress
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Since 2009, VTA has produced an annual sustainability report to summarize its continual efforts to achieve higher environmental performance and meet or exceed sustainability goals. This report is a continuation of this effort and reflects VTA’s sustainability achievements for the 2015 calendar year.

VTA’s Sustainability Program achieved many accomplishments in 2015. These accomplishments are grouped into eight key areas as shown below. Overall, the accomplishments in 2015 are estimated to save VTA $356,092 per year.

In comparison to the previous reporting year (2014), VTA decreased potable water use by 39% and solid waste by 13%. These savings were achieved by implementing drought response measures and recycling improvements. During this same reporting period, VTA increased fuel use by 6%, grid electricity usage by 5%, and natural gas usage by 17%. These increases are primarily attributed to the continuing restoration of bus and light rail service since it was reduced in 2010, and special events.

Funding for the Sustainability Program is dependent on the two-year budget process. Future funding would enable VTA to continue current efforts in the areas listed above, achieve ISO certification for VTA’s Environmental Management System, quantify GHG emissions to enable preparation of a Climate Action Plan, and provide electricity data for Low Carbon Fuel Standard credits.

<table>
<thead>
<tr>
<th>ACCOMPLISHMENT AREA</th>
<th>SUMMARY</th>
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<tbody>
<tr>
<td>Responding to drought emergency</td>
<td>Reduced potable water use by 21% compared to 2013</td>
</tr>
<tr>
<td>Reducing vehicle emissions</td>
<td>20% of revenue fleet is hybrid diesel-electric, installed 5 electric vehicle charging stations, installed electric bike station</td>
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<tr>
<td>Retrofitting existing facilities</td>
<td>Replaced over 600 light fixtures, saving $24,775 per year</td>
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<tr>
<td>Promoting technology over paper</td>
<td>Reduced imaging devices by 65%, saving $190,437 per year</td>
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<tr>
<td>Incorporating sustainability principles in project design</td>
<td>LED lighting, solar, drought tolerant landscaping, using recycled materials</td>
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<tr>
<td>Reducing solid waste</td>
<td>Installed solar trash and recycling containers, Reuse Center, community partnership to recycle textiles</td>
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<tr>
<td>Improving environmental awareness</td>
<td>New stormwater management trainings, continued outreach and annual events</td>
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<tr>
<td>Environmental Management System</td>
<td>Eliminated 277,000 polystyrene cups, saved $140,880, reduced waste by 66%</td>
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<tr>
<td>Total estimated savings:</td>
<td>$356,092 per year</td>
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</table>
About VTA

The Santa Clara Valley Transportation Authority (VTA) is an independent special district that provides bus, light rail, and paratransit services, as well as participates as a funding partner in regional rail service. VTA serves the municipalities of Campbell, Cupertino, Gilroy, Los Altos, Los Altos Hills, Los Gatos, Milpitas, Monte Sereno, Morgan Hill, Mountain View, Palo Alto, San Jose, Santa Clara, Saratoga and Sunnyvale. As Santa Clara County’s congestion management agency, VTA is responsible for countywide transportation planning, including congestion management, design and construction of specific highway, pedestrian, and bicycle improvement projects, as well as promotion of transit-oriented development.

VTA’s Sustainability Program

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 environmentally preferable procurement strategies, and establishing a means of measuring the progress of the Sustainability Program.

VTA became a signatory to the American Public Transportation Association’s (APTA) Sustainability Commitment in 2009 and achieved Gold Level Recognition in 2016. Through this undertaking, VTA commits to core principles of economic, social, and environmental sustainability and towards a path of continual improvement.
Purpose

The purpose of this report is to measure current and future Sustainability Program initiatives. Annual reporting was adopted as part of VTA’s Sustainability Program in February 2008. The applicable strategy states: “Establish benchmarks to measure the progress and performance of VTA’s Sustainability Program and report back to the VTA Board of Directors on an annual basis. Among other actions, this report will involve reassessing VTA’s fuel, electrical, and water usage on a regular basis.”

Scope

This report measures VTA’s environmental performance in providing bus, light rail, and para-transit 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.

VTA also participates as a funding partner in regional rail service including Caltrain, Capital Corridor, and the Altamont Corridor Express. These services are not included in the scope of this report.
Analyzing VTA’s environmental performance requires large amounts of data from a variety of sources. Since 2014, VTA has used a utility management system to keep track of this data and monitor costs. The system helps identify potential issues and opportunities for improvement. Implementation of this system has been instrumental in preparing the 2015 report.

This report measures VTA’s environmental performance in providing bus, light rail, and paratransit services by comparing usage and costs from the previous reporting year (2014) to the current reporting year (2015). Fuel, electricity, natural gas, water, and solid waste are evaluated. Where historical data is available, the report also compares usage to the baseline year which is 2008, unless noted otherwise.

**Fuel**

In 2015, VTA consumed 4.2 million gallons of fuel costing approximately $9,185,000 for the revenue fleet. This is approximately the same as the previous year and 8% higher than the baseline year. The baseline year (2011) was selected based on data available at the time of this report. The revenue fleet breakdown by fuel type is 97% diesel, 3% biodiesel, and less than 1% gasoline.

In 2015, the non-revenue fleet consumed 82,414 gallons of fuel and the paratransit fleet used 360,130 gallons of gasoline. Fuel use by the non-revenue fleet was approximately 6% higher than the previous year and 24% higher than the baseline year. Fuel used by paratransit service was approximately 9% higher than the previous year and 10% lower than the baseline year.

**Electricity, Renewable Energy, and Natural Gas**

VTA’s electricity and natural gas is supplied by Pacific Gas and Electric (PG&E), City of Palo Alto, and Silicon Valley Power (City of Santa Clara). Electricity use includes electricity supplied by solar installations at Cerone, Chaboya, and North Divisions commencing in December 2011. Solar electricity is procured through a power purchase agreement, and excess electricity generated is fed into PG&E’s power grid in exchange for credit. This credit is used to offset the cost of electricity purchased during times when solar energy is less available due to weather.
In 2015, total VTA electricity use was 39.8 million kilowatt hours (kWh), enough to power 3,640 homes for one year. This is approximately 5% higher than the previous year, but 3% lower than the 2008 baseline year. The increase in usage over last year is due to additional traction power usage as a result of more frequent service and special events at Levi’s Stadium. In 2015, VTA spent $6.4 million on electricity, which is approximately 10% higher than the previous year.

Grid electricity use in 2015 was 36.5 million kWh, 5% higher than the previous year, but 11% lower than 2008.

The 2015 electricity use at VTA’s main operating divisions, excluding light rail, is shown in Figure 3. The majority of electricity consumed at all three bus divisions is supplied by solar power. In 2015, as compared to 2014, total electricity use dropped by 1.6% at Cerone, 2.9% at Chaboya, 1.2% at North, and 1.2% at River Oaks.

Figure 4 shows the annual solar electricity generation in kWh from 2012, the first year of production, through 2015. Overall, total VTA solar electricity production was 4% higher in 2015, as compared to 2014, due to more favorable weather conditions.

In 2015, VTA used 127,874 therms and spent $115,708 on natural gas. Natural gas is used primarily at Chaboya, North and Guadalupe Divisions for heating. River Oaks Division uses a small amount of natural gas for heating water.

The natural gas use at VTA’s operating divisions, excluding Cerone Division which uses propane, is shown in Figure 5. Since the 2008 baseline year, natural gas use decreased by 29%. Usage increased by 17% compared to the previous year, resulting in a cost increase of $5,035. This increase was primarily due to cooler weather in November and December 2015 compared to the same months in 2014.
Waste and Recycling

VTA’s solid waste and recycling providers are Republic Services and the City of Mountain View. In 2015, approximately 774 tons of materials (mixed paper, plastic, aluminum, glass, wood, and metal) were recycled and 1,212 tons of waste were collected by VTA’s solid waste providers, representing a waste diversion rate of 39%. Overall, VTA has reduced waste by approximately 2% compared to the previous year and 50% compared to the baseline year.

Hazardous waste is generated at Chaboya, North, Cerone, and Guadalupe Divisions. Waste streams include steam cleaner and bus wash sump interceptor waste and absorbent pads used to remove oil and grease and clean small spills. In comparison to the 2006 baseline year, hazardous waste decreased by 130 tons. In 2015, these divisions generated 179 tons of waste, a 26% reduction compared to the previous year. The reduction in waste results from fluctuations in maintenance activities, improvements in waste management, and increased employee education and awareness.

Water

VTA’s water is supplied by the Great Oaks Water Company, San Jose Water Company, and the cities of San Jose, Santa Clara, Sunnyvale, Milpitas, Morgan Hill, Mountain View, and Palo Alto.

Potable and recycled water use throughout the entire VTA system is shown in Figure 6. Since the 2008 baseline year, total water use has decreased by 9 million gallons, or 17%, which is enough water to fill 14 Olympic-size swimming pools. Since 2014, potable water use has decreased by 39%. This decrease is due to efforts to respond to mandatory drought restrictions.

Potable water use at VTA’s operating divisions is shown in Figure 7. All divisions worked diligently to reduce potable water consumption to meet drought restrictions. The largest decrease, which occurred at Chaboya, is due to the recycled water connection installed in December 2014.
VTA’s Sustainability Program achieved many accomplishments in 2015. Each accomplishment is a validation of VTA’s commitment to increasing environmental performance and efficiency. Eight key accomplishment areas for 2015 are summarized in this section. A summary table of past accomplishments is also provided.

Sustainability initiatives are identified by VTA’s Sustainability Team and funded through the Sustainability Program. The Team is comprised of employee representatives from across the agency. Since 2007, the Team has met monthly to identify initiatives and report on progress. In addition, approximately five employees allocate a portion of their time to support the Program.

Accomplishment Area 1: Responding to Drought Emergency

California is currently in its fifth year of severe drought. On April 1, 2015, Governor Brown called for mandatory water reductions averaging 25% throughout the state. In response to local water conditions, the Santa Clara Valley Water District set a water use reduction target of 30% relative to water use in 2013 and placed a restriction on irrigating outdoor landscapes and lawns with potable water to two days per week.

In response to water reduction requirements, VTA formed a Water Working Group to develop and implement water conservation strategies. As a result, VTA reduced potable water use by 21% compared to 2013 by taking the following actions:

- Bus washing was reduced from two times per week to one time per week, if needed.
- Irrigation use was cut back by 10 to 20% (or completely shut off in some locations) and schedules were adjusted to meet local restrictions.
- Monthly reporting was conducted to identify high and abnormal use. Leaks were identified and repaired at several light rail stations and park-and-ride lots.
- Grass at the River Oaks Division was replaced with drought tolerant landscaping. The project was completed in early 2016 and included water wise plants, a drip irrigation system, and mulch. A rebate from the Santa Clara Valley Water District covered approximately half the project cost.
- Trees that were overly stressed by the drought were replaced with native trees at the River Oaks Division. Cuttings from the felled trees were reused on-site and repurposed as benches or mulch.
- The bus wash at Chaboya Division was connected to recycled water, reducing potable water consumption by 90%.
Accomplishment Area 2: Reducing Vehicle Emissions

Greenhouse gas (GHG) emissions are emitted, in part, through the burning of fossil fuel. Approximately 79% of VTA’s GHG emissions during 2015 were related to the operation of the revenue fleet. VTA seeks to reduce GHG emissions that contribute to climate change by greening the agency’s fleet, adding electric vehicle charging stations, and promoting bicycling.

Accomplishments for this reporting year include:

• In 2015, diesel-electric hybrids made up 20% of VTA’s revenue fleet. Currently, VTA is applying for funding to purchase electric buses as part of a pilot program. When a revenue or non-revenue vehicle exceeds its useful lifespan, VTA replaces it with a fuel efficient vehicle according to the agency’s Sustainable Fleet Policy.

• Five electric vehicle charging stations were installed at the Eastridge Transit Center. Funding for the charging stations was provided by a grant from the Bay Area Air Quality Management District.

• VTA purchased and installed four electric bicycles for use by VTA employees around the River Oaks campus. The chargers are connected to small solar panels, and the bikes carry enough energy to travel approximately 20 miles per charge.

Accomplishment Area 3: Retrofitting Existing Facilities

VTA continues to replace fluorescent and high pressure sodium light fixtures with LED fixtures. The benefits of LED lighting include: lower wattage and energy use, better quality lighting, and lower maintenance costs. Achievements for this reporting year include:

• A total of 140 light fixtures were replaced at eight light rail station platforms (Baypointe, Gish, Great America, Lick Mill, Metro, Mountain View, Old Ironsides, and Tasman). These retrofits are estimated to save $9,400 per year with return on investment period of 3.4 years.

• A total of 506 light fixtures were replaced at six light rail station platforms in the downtown transit mall (northbound and southbound Santa Clara, St. James, and San Antonio). The retrofits included replacing 46250-watt high pressure sodium lights with 65-watt LED fixtures and 406 21-watt fluorescent bulbs with 7-watt LED bulbs. These retrofits are estimated to save $15,400 per year with return on investment period of 2.4 years.

In addition, several improvements were made to the River Oaks Division. The cafeteria was remodeled with flooring certified by the SCS Global Services, gently used chairs purchased
from Yahoo! Inc., and coffee and side tables built from wood pallets. Piping and other necessary components were installed on the roofs to allow for the use of natural gas for heating. HVAC units were replaced with more energy efficient models that allow more flexibility to control temperature. LED lighting and ceiling tiles, made with recycled content, continue to be installed as needed.

Accomplishment Area 4:
Promoting Technology over Paper

Over the last few years, VTA has been working towards reducing the consumption of office paper and implementing paperless technologies. In 2010, VTA performed an assessment of 673 imaging devices. The assessment led to the decision to consolidate outdated stand-alone fax machines, printers, scanners, and copiers into energy efficient multi-functional devices. In 2014, VTA initiated the Managed Document Services Project to promote the use multi-functional devices, scanning, and other technologies over printing and copying. As a result, the total device count was reduced by 65% which equates to an estimated cost savings in consumables and electricity of $190,400 per year.

To further promote the use of technology in lieu of printing or copying, VTA took the following actions in 2015:

- A Print-Copy-Scan Policy was approved to reduce the consumption of paper and promote the use of technology in lieu of printing or copying. Pursuant to this Policy, black and white duplex was set to the agency-wide default print and copy setting. Duplex usage has increased by 10-15% as a result.
- Select departments within VTA converted to electronic timekeeping system. The eTime system automates timekeeping workflow, thereby eliminating printed time cards, leave request forms, and timekeeper reports. The estimated paper savings includes 134,920 sheets or 1,349 pounds per year.
- The Copy Center improved their online ordering system, and held an employee lunch-and-learn to promote the use of Copy Center services and increase efficient, smart printing. The Copy Center continues to accept scrap paper which it turns into notepads.
- Maps of conference rooms with audio-visual resources were developed and posted on the employee intranet. These resources enable paperless meetings by displaying documents on-screen.
- Human Resources reduced paper by updating forms to be more concise, eliminating triplicate forms, sending offer letters and announcement memos electronically, and conducting application and open enrollment processes electronically.
Accomplishment Area 5: Incorporating Sustainability Principles in Project Design

Sustainability principles are integrated into the design of capital projects when feasible. Sustainable design features for VTA’s BART Silicon Valley Berryessa Extension Project include LED lighting, skylights, photovoltaic parking structures, variable speed escalators, drought-tolerant landscaping, and water efficient fixtures. Tire derived aggregate (made out of shredded tires) is being installed under the BART tracks to reduce vibration.

Sustainable design features for the Santa Clara-Alum Rock Bus Rapid Transit Project include the use of LED lighting, rubberized asphalt, reclaimed asphalt pavement for subbase material, and Cold In-Place Recycling (CIPR) for pavement rehabilitation. CIPR is an on-site method of applying recycled asphalt. It consists of grinding the existing asphalt, mixing the ground material with a recycling agent on-site, and applying it to the roadway. The process eliminates the need to transport old asphalt from the site to a recycling plant and back again for use on the job site, thereby reducing emissions.

Accomplishment Area 6: Reducing Waste

A pilot program to replace traditional open-air trash cans with solar-powered trash and recycling containers was initiated in 2014. The high-tech units hold five times the amount of waste due to solar powered compaction. Staff is notified electronically when the units need to be emptied. Additional Big Belly units were installed at Mountain View and Tasman Light Rail Stations in October 2015.

A space for VTA employees to freely exchange office supplies was created in 2015. The Reuse Center is a simple, sustainable way to share and reuse supplies. Before discarding perfectly usable items, employees are encouraged to bring them to the Reuse Center. Before buying new, employees can check for existing supplies at the Reuse Center. This cycle reduces waste at VTA by reusing what we have.

VTA partners with agencies like the Green Education Foundation (GEF) and Goodwill to provide a convenient way for people to recycle their used household items and textiles. In 2015, VTA partnered with GEF to install Neighborhood Donation Recycling Stations at three park-and-ride-lots. The stations are made from recycled shipping containers, which have been painted and retrofitted with solar to power LED lights, a wireless monitoring system, and touchscreen display. Proceeds from textile recycling are used to provide environmental curriculum and resources to K-12 students and teachers.

Accomplishment Area 7: Improving Environmental Awareness

VTA implemented a stormwater management program to comply with Municipal Separate Storm Sewer System (MS4s) permit requirements. The focus of the program is to increase awareness of Best Management Practices to prevent pollution from stormwater runoff. Stormwater runoff occurs when excessive water from irrigation, car washing and other sources carries litter, pesticides, oil, and other pollutants into the storm drain system, which then flow directly to local
waterways. Employee trainings were conducted agency wide. Other outreach efforts included posters, surveys, and posting on VTA’s website. Drain inlets on VTA property were identified, mapped, and labeled with permanent medallions.

In addition, VTA continued its efforts to share knowledge and build awareness of environmental issues. Ongoing outreach efforts include presentations at New Employee Orientations, distribution of Spare the Air Alert messages, posting articles on the employee intranet, and planning events like Earth Day and Bike to Work Day.

VTA began implementing a pilot EMS program at the Cerone Division in 2013. An EMS Core Team was established to manage the documentation and implementation of the program. The EMS relies on a “Plan-Do-Check-Act” model, as follows:

- **Plan**: The EMS Core Team evaluated 77 activities at Cerone that may impact the environment and created action plans to address four impacts that they identified as significant. These impacts were diesel fuel, greenhouse gas emissions, polystyrene, and solid waste absorbents.

- **Do**: Action plans included tasks and responsibilities assigned to Cerone staff for meeting EMS goals. Work instructions identified best practices for each of the significant impacts identified in the planning stage. Training was provided to 140 maintenance employees.

- **Check**: Maintenance activities, such as waste disposal, were monitored and measured by the EMS Core Team. Internal and external auditors were tasked with ensuring that procedures were followed according to ISO 14001:2004. Quarterly management review meetings provided opportunities for senior management to ask questions to determine the progress and success of the program.

- **Act**: Accomplishments from the past year include 277,000 polystyrene cups eliminated, $140,880 avoided as a result of an in-house diesel particulate filter cleaning program, and 66% reduction in disposal of solid waste absorbents. As the EMS addresses a specific set of impacts at a given time, the EMS Core Team is evaluating new significant impacts to address in the future.

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**Accomplishment Area 8:**

**Environmental Management System**

VTA graduated from the Federal Transit Administration (FTA) Environmental Management System Institute and received an overall score of 99% on its final audit. This 18-month program is designed to help public transportation agencies develop and implement an Environmental Management System (EMS), in accordance with the 14001 Standard of the International Organization for Standardization (ISO). VTA was one of ten agencies across the country selected by FTA to participate.
## Past Accomplishments

Past accomplishments since the adoption of VTA’s Sustainability Program are listed in this table:

<table>
<thead>
<tr>
<th>PAST ACCOMPLISHMENT</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>Adopted a Sustainable Landscaping Policy</td>
<td>Requires use of native and/or drought-tolerant planting on VTA property</td>
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<tr>
<td>Installed 2.1 megawatts of solar at Cerone, Chaboya, and North Divisions</td>
<td>Power Purchase Agreement. Estimated to save $2.7 million over 20 years</td>
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<tr>
<td>Turned off auxiliary power for parked trains</td>
<td>Estimated to save $723,000 per year</td>
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<tr>
<td>Installed sub meter at Guadalupe Division</td>
<td>Identified $107,000 overcharges in PG&amp;E billing</td>
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<tr>
<td>Participate in PG&amp;E Automated Demand Response Program (ongoing)</td>
<td>Voluntarily reduce electricity usage during periods of high demand</td>
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<tr>
<td>Participated in pilot solar project at Cerone Division</td>
<td>Partnered with local technology company to install pilot solar project at no cost</td>
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<tr>
<td>Completed energy audits of facilities</td>
<td>PG&amp;E provided audits at no cost</td>
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<tr>
<td>Replaced florescent and metal halide light fixtures and installed occupancy sensors</td>
<td>Over 3,000 indoor light fixtures replaced. Occupancy sensors installed in conference rooms, break rooms, and warehouse</td>
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<tr>
<td>Replaced bottled water units</td>
<td>Switched from standing bottled water coolers to filtration units</td>
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<tr>
<td>Completed indoor and outdoor water use surveys</td>
<td>Santa Clara Valley Water District provided water audits at no cost</td>
</tr>
<tr>
<td>Replaced bathroom fixtures with low-flow equipment</td>
<td>Installed high efficiency toilets, low flow shower heads, and aerators in operating divisions</td>
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<tr>
<td>Installed automatic shut-off flow sensors at five park &amp; ride lots</td>
<td>Sensors automatically shut off flow to avoid high water usage. Installed at Great Mall/Main, Penitencia Creek, I-880/Milpitas, Hostetter, Cerone, and Almaden</td>
</tr>
<tr>
<td>Installed weather-based irrigation controllers at 21 facilities</td>
<td>Manage irrigation and configure watering schedules remotely. Estimated to save $37,000 per year</td>
</tr>
<tr>
<td>Replaced sprinkler nozzles at four park &amp; ride lots</td>
<td>Sprinklers replaced at Penitencia Creek, Hostetter, Great Mall/Main, and River Oaks</td>
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<tr>
<td>Funded project to update bike lockers</td>
<td>Converted 110 bike lockers across 12 transit centers to utilize BikeLink smart cards to enable on-demand bike parking</td>
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<tr>
<td>Purchased 15 fuel-efficient hybrids for non-revenue fleet</td>
<td>Retired older vehicles</td>
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<tr>
<td>Controlled weeds and grasses with natural grazing</td>
<td>Goats and sheep grazed at Cerone Division from 2009 to 2012</td>
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Future Projects

There is no dedicated source of funds for the Sustainability Program. Funding is dependent on the two-year budget process. In FY 16/17, VTA budgeted $1 million for the program. Future funding would enable VTA to continue current and planned projects, as follows:

- Continue drought response efforts and consider future projects to reduce potable water consumption, including connecting to recycled water sources.
- Continue efforts to green and diversify VTA’s fleet.
- Promote the use of technology in lieu of printing and copying by converting to an electronic invoicing and archiving process.
- Continue to retrofit existing facilities, incorporate sustainability features into the design of new projects, and reduce waste.
- Quantify GHG emissions, set formal reduction targets, and prepare a Climate Action Plan.
- Provide data for the Low Carbon Fuel Standard (LCFS) which seeks to put California on the path to meet its goal of reducing greenhouse gas emissions to 1990 levels by the year 2020. Under the LCFS, VTA is eligible to receive credits for the light rail system. These credits are based on electrical usage and can be sold to generate additional revenue.