2012 SUSTAINABILITY REPORT
Measuring VTA’s Environmental Progress
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**On the Cover:** View from the Wrigley Creek restoration area located south of Calaveras Boulevard and west of South Milpitas Boulevard in Milpitas. The project included restoring and enhancing a portion of Wrigley Creek to improve natural water quality, flood storage, fish and wildlife habitats. The site was replanted with native plants, including Congdon’s tarplant, a special status plant species.

**About the VTA 2012 Sustainability Report:** This report is available electronically at www.vta.org/sustainability. For more information, contact VTA at (408) 321-7575, TTY (408) 321-2330.
Annual reporting on VTA’s sustainability performance was adopted as part of VTA’s Sustainability Program in February 2008. The strategy is stated as follows: “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.”

This is VTA’s fifth annual sustainability report. Through this tracking and reporting process, cost and resource savings since the adoption of the Sustainability Program have been monitored. Performance is measured against base year 2007.

The report is organized into the following parts:
- Background of VTA’s organizational structure, facilities, operations, and Sustainability Program;
- Environmental reporting of VTA’s fuel, energy, water, and waste/recycling;
- List of accomplishments from inception of the program to present date; and,
- Conclusions and recommendations to support the program.

Overall, VTA has made significant progress towards reducing its environmental footprint. In comparison to base year (2007), VTA has reduced fuel and electricity by 15%, water by 7%, and waste by 56%.

In comparison to the previous year (2011), fuel use has increased by 2.6% and electricity has increased by 3% due to proportionate additions in bus and light rail service; natural gas has decreased by 8% due to identification and repair of a leak; water use has increased by 18% due to an irrigation leak and modifications to bus wash systems; and solid waste has decreased by 2% due to recycling and conservation efforts.

VTA started producing solar generated electricity at Cerone, Chaboya, and North Divisions in late 2011. Solar accounted for 62-77% of electricity used at these divisions in the first year of production with the most generation occurring during the summer months. Percentage of solar generated power is anticipated to increase with the next 12 month reporting period.

In March 2013, VTA was accepted into the Federal Transit Administration’s Environmental Management Systems (EMS) training and technical assistance program. This program represents an exciting opportunity for VTA’s Sustainability Program. Public and private entities that have integrated EMS into their operations report improved compliance with environmental regulations, enhanced support of environmental stewardship objectives, and enjoyed significant cost savings.
BACKGROUND

This section provides a background of Santa Clara Valley Transportation Authority (VTA) and its Sustainability Program.

OVERVIEW OF VTA

VTA is an independent special district responsible for bus, light rail and paratransit operations, congestion management, specific highway improvement projects, and countywide transportation planning in Santa Clara County. VTA is both a transit provider and a multi-modal transportation planning organization involved with transit, highways and roadways, bikeways, and pedestrian facilities. In this capacity, VTA partners with the cities, towns and County of Santa Clara, as well as intra-county agencies, to develop a practical, multimodal transportation infrastructure that meets evolving travel needs.

ORGANIZATIONAL STRUCTURE

As a special district, VTA occupies a unique position between city government and State government. It is led by a Board of Directors composed of appointees who are directly elected to local governments within Santa Clara County. VTA’s broad array of responsibilities and functions are organized into seven divisions as listed in Table 1. VTA’s General Manager oversees and manages all facets of the organization under policy direction from the Board of Directors. While each division has distinct roles and responsibilities, they work collaboratively to deliver results through an Executive Management Team composed of the General Manager, General Counsel, and Division Chiefs.

FACILITIES

VTA’s facilities include transit centers, park & ride lots, bus stops and shelters, light rail stations, operations and maintenance facilities, office buildings, and facilities associated with inter-agency transportation services such as BART and Caltrain. These facilities are described in the following section. For the purpose of this report, environmental monitoring is focused on the main operating divisions outlined in Table 2.

Bus Operations and Maintenance Divisions

Buses are operated and maintained from the following three operating divisions and an Overhaul and Repair (O&R) facility. Each facility is equipped with solar arrays.

<table>
<thead>
<tr>
<th>Facility</th>
<th>Type of Operation</th>
<th>Address</th>
<th>City</th>
<th>Acres</th>
<th>Building Sq. Ft.</th>
<th>Transit Vehicle Parking Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cerone</td>
<td>Bus</td>
<td>3990 Zanker Rd.</td>
<td>San Jose</td>
<td>123.2</td>
<td>116,252</td>
<td>90</td>
</tr>
<tr>
<td>Chaboya</td>
<td>Bus</td>
<td>2240 S. Seventh St.</td>
<td>San Jose</td>
<td>32.8</td>
<td>57,400</td>
<td>171</td>
</tr>
<tr>
<td>Guadalupe Light Rail</td>
<td>101 W. Younger St</td>
<td>San Jose</td>
<td>17.5</td>
<td>144,891</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>North</td>
<td>Bus</td>
<td>2240 Llano Verde Ave.</td>
<td>Mountain View</td>
<td>16.9</td>
<td>24,229</td>
<td>172</td>
</tr>
<tr>
<td>River Oaks</td>
<td>Administration</td>
<td>3331 N. First St.</td>
<td>San Jose</td>
<td>17.5</td>
<td>211,260</td>
<td>625</td>
</tr>
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</table>
Cerone Bus Division and Overhaul & Repair Facility (North San Jose) - VTA’s Cerone facility includes the Cerone Bus Operating Division (Transportation and Minor Maintenance), the Overhaul and Repair (O&R) Division, and the Central Distribution Center. Cerone Minor Maintenance serves as a base for operations, fueling, servicing, detailing, running repair, and preventive maintenance. The O&R facility provides a centralized major maintenance program for the entire VTA bus fleet, including paint and body repair, upholstery, farebox repair, transmission and small component rebuild, engine overhaul, and the heavy repair and maintenance associated with major component removal. This facility also supports steam cleaning and a water treatment system. The Distribution Center is responsible for the distribution of parts to support all bus operating divisions. This division is also responsible for storage of inactive vehicles and is responsible for decommissioning and disposal of revenue and non-revenue vehicles.

Don Pedro Chaboya Bus Division (South San Jose) - Chaboya is VTA’s largest-capacity bus operations and maintenance facility. The facility includes a maintenance shop, fueling facility, two bus washers, transit operations, bus operator training and a maintenance training and facilities maintenance building. There is also steam cleaning equipment and a water treatment plant to treat wastewater from cleaning operations.

North Bus Division (Mountain View) – The North Division is the smallest of VTA’s operating facilities and includes a maintenance shop, fueling facility, bus wash, transit operations, steam cleaning equipment and a water treatment plant. The 60-foot articulated buses operate exclusively out of this division.

Light Rail Operations and Maintenance Division
Light rail vehicles (LRVs) are stored and maintained at the Guadalupe Light Rail Maintenance Division near downtown San Jose. This facility is equipped and staffed to perform all rail operations and maintenance functions, including major vehicle overhaul, historic trolley maintenance, and light rail operator and maintenance training. The same facility is also home to the Way, Power and Signal Department, which is responsible for preventive maintenance and repair of wayside facilities including substations and overhead contact systems, light rail signals, tracks, stations, and park & ride lots. The Operations Control Center that serves as a monitoring, reporting, and emergency response hub for coordinating and directing all Bus and Light Rail Transit Operations is also located at Guadalupe Division.

Administrative
The River Oaks Complex contains VTA’s administrative offices in three buildings totaling over 200,000 square feet. This complex was purchased in 1991 and opened in 1992.

Transit Facilities
VTA utilizes 16 transit centers throughout Santa Clara County. Transit centers provide safe, convenient facilities for bus-to-bus as well as inter-modal passenger transfers.

Currently, VTA operates 31 park & ride lots, providing approximately 7,150 total parking spaces at light rail stations, transit centers and other locations. Additionally, there are 16 park & ride lots, with a capacity of approximately 5,000 spaces, for Caltrain service.

VTA currently operates 62 light rail stations and 4,341 bus stops with various passenger amenities including bike lockers, benches, shelters, signage, and trash receptacles.

TRANSIT OPERATIONS
VTA provides transit services to the 346-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 1.8 million residents.

Bus Operations and Fleet
VTA operates 71 bus routes separated into the following service categories. The core bus route network is composed of 18 routes that form the backbone and primary grid of the bus system. The local bus route network is composed of 18 routes that form the local network of the bus system. Community Bus and shuttle routes are 18 routes that serve as community feeders to the rest of the transit system. Six limited stop routes serve as long, commute-oriented service and make limited stops in order to provide fast service. Thirteen Express Bus routes provide service that is tailored to meet the needs of commuters traveling long distances, often operating on highways, freeways, and expressways. Express routes have fewer pick-up stops before traveling non-stop to the final destination. These routes are designed to be time-competitive with automobiles and often stop at park & ride lots.

At present, VTA’s active fleet consists of 426 buses (as of March 2013). VTA’s bus fleet varies in size and configuration based on service requirements. Approximately 21% of the bus fleet are hybrid powered (as of March 2013).

Light Rail Operations and Fleet
VTA operates 42.2 miles of light rail service, and serves 25 stations and 25 park & ride lots, four of which are adjacent to Caltrain stations. VTA’s LRT system has two primary lines: the Alum Rock–Santa Teresa line, and the Mountain View–Winchester line. Additionally, the system operates the Ohlone/Chynoweth–Almaden spur line. The fleet consists of 99 Kinki-sharyo low-floor light rail vehicles and four historic trolleys.
Paratransit Services

Paratransit service is a specialized form of transportation operated for people with disabilities who cannot use conventional public transit service. VTA does not directly provide paratransit service, but contracts with Outreach and Escort, Inc. Outreach has a total of 223 vehicles (as of February 2013). Older vehicles are currently being replaced with more fuel-efficient models such as Prius hybrids. Approximately, 44% of the paratransit fleet is hybrid powered (as of February 2013).

Cooperative funding agreements with other transit systems support the Dumbarton Express inter-county bus service, Highway 17 Express inter-county bus service, Capitol Corridor intercity rail service, ACE commuter rail service, and Caltrain commuter rail service.

Contracted and Interagency Transit Services

VTA provides several shuttle services in partnership with other government agencies. Shuttles typically carry passengers from various train and transit stations to major employment sites. Current shuttles include the Downtown Area Shuttle (DASH), San Jose Mineta International Airport Flyer, Altamont Commuter Express (ACE) Shuttle, and the Caltrain Shuttle.

VTA'S SUSTAINABILITY PROGRAM

The Sustainability Program was approved by the VTA Board of Directors in February 2008, with the following goal and operating strategies. The goal of the Sustainability Program is 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. The strategies to achieve this goal include educational programs and outreach, transit-oriented development, increasing sustainability at existing facilities, incorporating green building practices in new facilities, and establishing a means of measuring the progress of the Sustainability Program.

Approximately five employees allocate a portion of their time to support the program in addition to a diverse Sustainability Team. The Team consists of 10-15 employees representing VTA's diverse array of responsibilities and functions including Operations, Engineering, Construction, Fiscal Resources, and Congestion Management. The Sustainability Team meets bimonthly to discuss current and future initiatives, progress, and budget.

There is no dedicated source of funds for the Sustainability Program, so the program is dependent on the two-year budget process for funding. VTA has currently allocated $1 million in its two-year FY12/13 budget for the Sustainability Program. In FY14/15, VTA is proposing a two-year budget of $1.2 million.

ENVIRONMENTAL REPORTING

Reporting on sustainability performance enables VTA to measure, track, and effectively manage current and future program initiatives. This section documents our performance using key metrics such as fuel use, energy use, water consumption, and waste diversion.

Performance is calculated from utility accounts since the 2007 baseline year. The baseline year represents VTA operations prior to implementation of the Sustainability Program. VTA has hundreds of utility accounts under various vendors as described in the following sections. These accounts are currently being updated to reflect current locations and needs. Staff time is focused on tracking performance at VTA’s five main operating divisions (Cerone, Chaboya, Guadalupe, North, and River Oaks) and does not include other transit facilities such as stations, transit centers, or park & ride lots.

FUEL USE

VTA purchases fuel at wholesale prices from SC Fuels (diesel and unleaded gasoline) and Coast Oil Company (biodiesel). In 2012, VTA used primarily ultra-low-sulfur diesel fuel (89.9%), and a small amount of gasoline (7.1%) and B20 biodiesel fuel (3.0%). Most of VTA’s fleet uses diesel fuel, with the exception of non-revenue vehicles and Community Buses, which use gasoline. In 2012, VTA spent approximately $14 million on fuel.

Graph 1 on the next page shows the annual fuel use for VTA’s revenue and non-revenue fleet from the baseline year of 2007 to 2012. In 2012, total annual fuel usage was approximately 4 million gallons. This is a decrease of 15% over the base year of 2007, but a 2.6% increase from the previous year due to a proportional increase in bus service. Fuel usage has regularly declined for several reasons. Since 2007, bus mileage has decreased by 9% as VTA restructured its services in January 2008, and then reduced service by 8% in January 2010, due to the economic recession and the decrease in state funding. Average fuel economy is 5 miles per gallon (mpg) for hybrid buses and 4 mpg for standard diesel buses.

Graph 1 excludes paratransit service, operated by Outreach and Escort, Inc. In Fiscal Year 11/12, approximately 400,000 gallons of fuel was used for paratransit. Since 2006, fuel economy has increased by 39% as a result of more hybrid powered vehicles being added to the fleet each year. In FY11/12, the paratransit fleet averaged 19.5 mpg.

ENERGY

VTA’s electricity and natural gas is supplied by Pacific Gas and Electric (PG&E), City of Palo Alto, Silicon Valley Power (City of Santa Clara), and Solar Star (Sun Power’s parent company). At Cerone Division, VTA uses liquefied natural gas or propane for heating.
ELECTRICITY USAGE AND COSTS

Graphs 2 and 3 show the annual electrical use at Cerone, Chaboya, North, and River Oaks Divisions, and Traction Power (includes Guadalupe Division and traction power substations distributed throughout the rail network) respectively. This data includes electricity supplied by the solar installations at Cerone, Chaboya, and North Divisions, which became operational in December 2011. Traction power, which operates the light rail system, is the largest user of electricity at VTA. In 2012, total electrical use for VTA's major divisions and traction power was 31,467,904 kilowatt hours (kWh).

Since 2007, VTA's electrical use has decreased by 15% due to a number of energy efficiency initiatives that are described in Past Accomplishments. Specifically, installation of fluorescent lighting and LCD computer displays at River Oaks Division, as well as new LED lighting at the maintenance divisions, has led to this decrease. In the last year, however, total electrical use has increased by 3% over the previous year as a result of a 2.6% increase in light rail ridership and a 3% increase in the total train miles.

Electricity use at all other divisions was consistent with 2011. VTA spends an average of $4.1 million annually on electricity for these divisions.
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 the sun is not shining.

Solar electricity generation at Cerone and North Divisions accounted for 71% and 77% of all electricity used, respectively. Solar electricity accounted for 62% of electricity used at Chaboya Division. This lower production is due to an equipment malfunction at Chaboya during the month of February, but Solar Star/Sun Power’s minimum performance guarantee was still met.

Graph 4 shows monthly solar electricity generation in kWh at each of the three divisions where it was installed. Graph 5 shows net electricity use at the divisions by source. As shown, the installed solar panels produce more electricity in the summer months, when electricity rates from PG&E are at their highest. In addition to offsetting peak summer rates, the excess electricity generated is fed back to the grid at a high rate, resulting in higher credits earned for VTA.

NATURAL GAS USAGE AND COSTS
Graph 6 shows the annual use of natural gas at Chaboya, North, River Oaks, and Guadalupe Divisions. Natural Gas is used for operating space heaters and heating water at Chaboya, North and Guadalupe Divisions. River Oaks Division uses natural gas for heating water only. Propane is used for heating at Cerone Division. In 2012, total natural gas usage was 143,487 therms. Between 2007 and 2012, natural gas usage has increased 7% overall, but decreased by 8% in the past year (2012) and by 14% since 2010.
In summer of 2012, VTA reviewed its usage at North Division, which was high compared to Chaboya and Guadalupe Divisions. A leak was found and repaired in October, resulting in a $4,000 savings when compared to the October through December average cost. Future years will show the true cost savings of this repair.

VTA spent approximately $103,000 on natural gas in 2012, and an average of $133,000 annually.

WATER
VTA’s water is supplied from 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. Since invoices must be manually entered for each account, the Sustainability Team has focused staff time on recording invoices and tracking usage for its five main operating facilities.

Graph 7 shows the annual water use at Chaboya, North, Cerone, River Oaks, and Guadalupe Divisions from 2007 (baseline year) to 2012. Since 2007, VTA has reduced water use at its main operating facilities by an average of 15%, but has increased use by 18% since a record low level in 2011. This increase is due mostly to usage at River Oaks Division.

River Oaks Division used the most water in 2012, at approximately 7.1 million gallons. Water is used primarily for irrigation and indoor/domestic use. Exceptionally high water use this year, 54% higher than in 2011, can be attributed to intensive irrigation of new landscaping, and an irrigation leak which was located and repaired in July. Usage in 2012 is 7% lower than in 2007. The decrease is due to installation of low flow shower heads, aerators, more efficient toilets, and irrigation improvements.

Chaboya Division has the second highest water use at approximately 6.1 million gallons. Usage in 2012 is 258% greater than in 2007, and 12% higher than in 2011. The increase is attributed to ongoing modifications to the bus washes to eliminate water spots. In 2009, a reverse osmosis water treatment system was installed to remove soiled and soapy water, which was found to be causing the spots. In 2011, extra rinse nozzles were removed to conserve water. Bus wash schedules have also been modified to account for weather conditions. Water use at Chaboya Division is attributed to washing approximately 100 buses each day, indoor/domestic use, irrigation, and general cleaning.

North Division used approximately 2.1 million gallons of water in 2012, equal to usage levels in 2007, but 24% lower than in 2011. Water use is attributed to washing approximately 80 buses each day, indoor/domestic use, irrigation, and general cleaning.

Water usage at Cerone Division peaked in 2008 due to leaks at the bus wash and other areas. After water-saving devices and conservation measures were installed and implemented in 2008-2009, annual water consumption has gradually decreased from nine to three million gallons. Water use is attributed to washing approximately 130-140 buses each day, indoor/domestic use, irrigation, and general cleaning. Two waste water treatment systems are operated and inspected daily. These systems were installed in 1992 and 2005. In 2011, programming and mechanical glitches were found during a maintenance inspection of the waste water treatment systems. Cerone used approximately 3.8 million gallons of water in 2012. Water use at this Division has decreased 32% compared to 2007, but has increased 20% since 2011.

Guadalupe Division used approximately 1.4 million gallons in 2012. Due to ongoing modifications and improvements, water use has declined 75% at Guadalupe since 2007, and by 8% since 2011. The high usage in 2009-2010 is attributed to an underground water leak. Pipes were repaired in late 2010 resulting in a significant decrease (2,826,692 gallons) in usage from that point forward. Water use is attributed to washing approximately 50-60 light rail vehicles each day, indoor/domestic use, irrigation, pressure washing and cleaning parts.

WASTE AND RECYCLING
While VTA has waste and recycling programs at its major operating divisions, it does not currently have recycling programs onboard its vehicles or at its transit facilities. VTA’s solid waste providers are Republic Services (City of San Jose, formerly Allied Waste), City of Mountain View, and the City of Milpitas. VTA
staff collects waste from its transit facilities and disposes of it at either the Newby Island or Zanker Landfill. Some waste is also handled by Clear Channel Communications, who maintains certain bus shelters under an advertising agreement with VTA.

Graph 8 shows the annual waste and recycling generation at Chaboya, North, Cerone, River Oaks, and Guadalupe Divisions from 2007 (baseline year) to 2012. Waste and recycling fluctuates seasonally and from year-to-year based on project cycles. In 2012, approximately 280 tons of materials (mixed paper, plastic, aluminum, glass, wood, and metal) were recycled and 1,106 tons of waste were collected by VTA’s solid waste providers. Overall, 56% of waste has been reduced since 2007 at VTA’s main operating divisions, with a 2% decrease in the past year. The dip in 2009 is most likely attributed to the addition of a compost program at the River Oaks cafeteria and adjustment of hauling services and container sizes to meet current needs.

This section outlines past and present accomplishments of the Sustainability Program. Current and future projects are also described.

**PAST ACCOMPLISHMENTS**

Prior to the implementation of a formal sustainability program, VTA made ongoing improvements to improve operations and reduce costs. Examples include: Energy Management System upgrades (2004); replacing HVAC equipment with more efficient models (1997 to 2006); and installing cool roofing materials (2005).

In 2008, when the Sustainability Program was adopted, audits were completed to analyze operations and identify improvements, including formal audits by PG&E and the Santa Clara Valley Water District. The program team first focused on “low-hanging fruit” items and was able to accomplish over $800,000 in annual savings. Past accomplishments (2008-2012) are described below.

**ENERGY**

In 2012, Lockheed Martin’s Heavy Industry Energy Efficiency Program performed a site audit of select light rail stations to evaluate potential energy saving opportunities. At Convention Center Light Rail Station, Lockheed’s program recommended that VTA replace the existing 16 High Pressure Sodium (HPS) lamps (100 watts each) with LED fixtures (40 watts each). The replacement was complete in January 2013. The lighting quality and visibility of the station has improved from a yellow to white color. Estimated annual cost savings are $900. This results in a payback of approximately 6 years. Annual maintenance savings due to the longer lifespan of the LEDs reduces the payback time by half.

In 2011, solar parking structures consisting of 5,070 SunPower high-efficiency solar panels, totaling 2.1 megawatts, were installed at Cerone, Chaboya, and North Divisions. The clean electricity provided from these solar panel systems will offset VTA’s three bus maintenance divisions’ electricity demand and save $2.7 million in electricity costs over the next 20 years. The solar panels will help cut California’s atmospheric
pollution by reducing carbon dioxide levels by an estimated 2,000 metric tons each year, which is equivalent to removing more than 9,000 cars from California’s roads or planting 10,000 acres of trees over the next 20 years. The panels also shade and protect VTA vehicles.

In 2009, VTA’s Sustainability Program implemented the following initiatives to conserve energy:

- Purchased a submeter for the Guadalupe Division that helped identify $107,000 in overcharges in PG&E’s billing.
- Reduced the number of cars per train during peak and non-peak hours to minimize electrical usage. Based on a PG&E evaluation, it is estimated that this measure has achieved an annual electrical savings of 2,032,774 kWh and annual cost savings of $251,515.
- Began turning off auxiliary power systems for light rail vehicles parked at Guadalupe Division after extensive testing of the effect on VTA Operations. Based on a PG&E evaluation, it is estimated that this measure has achieved an annual electrical savings of 3,812,536 kWh and annual cost savings of $471,725.
- Modifications were completed at the River Oaks Division to enable participation in PG&E’s Automated Demand Response Program to reduce electricity usage during periods of high demand. VTA received $35,000 in technical and participation incentives to help fund the modifications.
- VTA’s Information Technology Department also programmed desktop computers to automatically go into hibernation mode after two hours of no activity and replaced 60 CRT monitors with LCD monitors.
- Partnered with a local technology company to install 27-kilowatt High Gain Solar Plant at Cerone Division. The project was a pilot to market a new type of solar collector that collects more energy per square foot and is less expensive to procure than traditional solar flat panels. Skyline Solar built the plant at no cost to VTA.

In 2008, VTA partnered with PG&E to complete Integrated Energy Audits of its main operating divisions. The audits recommended retrofitting existing inefficient fluorescent and metal halide lighting fixtures with energy efficient models. To date, VTA has replaced over 2,100 lighting fixtures with T-8s, T-5s, and LEDs. Occupancy sensors have also been installed in conference and break rooms per audit recommendations.

**TECHNOLOGY**

Over the last two years, VTA’s Technology Department implemented several improvements to facilitate electronic document sharing and reduce paper including: retrofitting conference rooms with monitors expanding Wi-Fi networks, implementing a pilot iPad program to replace aging laptops and portable devices, and updating the employee intranet site.

In 2010, VTA staff and electronics provider conducted a walk-through analysis to understand departmental and individual workflows associated with digital office equipment (scanners, printers, copiers, and fax machines). The analysis showed that VTA was using over 670 different devices, each requiring costly resources like energy, paper, ink and maintenance. In 2011, these devices were replaced with Multi-Function Devices (MFDs), cutting the inventory by over 70%. All equipment removed from VTA was recycled or returned to the leasing company.

**TRANSPORTATION**

The accomplishments described below were implemented with assistance from the Sustainability Program.

**Bike Lockers**

In 2009, the Sustainability Program assisted with the conversion of 110 bike lockers across 12 transit centers, to on-demand service through the use of Bikelink smart cards. The smart cards serve a dual purpose as both cash and a key for the electronic lockers. The card can be purchased, activated, and monitored online. This facilitates the use of bike lockers by a greater number of users.

**Electric Vehicle Charging Stations**

In 2012, VTA received a free electric vehicle charging station (EVCS) from ChargePoint, which was installed at River Oaks Division. This dual Level 1 (120 volts) / Level 2 (240 volts) unit can charge two vehicles simultaneously. Usage and cost data is being collected, after which a comprehensive fee plan will be implemented. Since installation, the charger has been well utilized by VTA employees and visitors.

VTA is in the process of selecting a vendor for additional charging stations at Eastridge Transit Center, as well as the Milpitas and Berryessa BART Stations. Charging stations will continue to be implemented at the major divisions and other facilities as data on cost and usage is acquired.

**Hybrid Vehicles**

In 2009, the Sustainability Program purchased 10 Ford Escape and 5 Toyota Prius hybrids and retired 15 older vehicles in the non-revenue fleet. VTA’s “Keep the Valley Green” logo is affixed to all fuel-efficient vehicles. The vehicles are primarily used in support of protective services and transit delivery supervision activities.

In 2009, VTA’s Sustainability Program implemented the following initiatives to conserve energy:

- Purchased a submeter for the Guadalupe Division that helped identify $107,000 in overcharges in PG&E’s billing.
- Reduced the number of cars per train during peak and non-peak hours to minimize electrical usage. Based on a PG&E evaluation, it is estimated that this measure has achieved an annual electrical savings of 2,032,774 kWh and annual cost savings of $251,515.
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- VTA’s Information Technology Department also programmed desktop computers to automatically go into hibernation mode after two hours of no activity and replaced 60 CRT monitors with LCD monitors.
- Partnered with a local technology company to install 27-kilowatt High Gain Solar Plant at Cerone Division. The project was a pilot to market a new type of solar collector that collects more energy per square foot and is less expensive to procure than traditional solar flat panels. Skyline Solar built the plant at no cost to VTA.

In 2008, VTA partnered with PG&E to complete Integrated Energy Audits of its main operating divisions. The audits recommended retrofitting existing inefficient fluorescent and metal halide lighting fixtures with energy efficient models. To date, VTA has replaced over 2,100 lighting fixtures with T-8s, T-5s, and LEDs. Occupancy sensors have also been installed in conference and break rooms per audit recommendations.

**TECHNOLOGY**

Over the last two years, VTA’s Technology Department implemented several improvements to facilitate electronic document sharing and reduce paper including: retrofitting conference rooms with monitors expanding Wi-Fi networks, implementing a pilot iPad program to replace aging laptops and portable devices, and updating the employee intranet site.

In 2010, VTA staff and electronics provider conducted a walk-through analysis to understand departmental and individual workflows associated with digital office equipment (scanners, printers, copiers, and fax machines). The analysis showed that VTA was using over 670 different devices, each requiring costly resources like energy, paper, ink and maintenance. In 2011, these devices were replaced with Multi-Function Devices (MFDs), cutting the inventory by over 70%. All equipment removed from VTA was recycled or returned to the leasing company.

**TRANSPORTATION**

The accomplishments described below were implemented with assistance from the Sustainability Program.

**Bike Lockers**

In 2009, the Sustainability Program assisted with the conversion of 110 bike lockers across 12 transit centers, to on-demand service through the use of Bikelink smart cards. The smart cards serve a dual purpose as both cash and a key for the electronic lockers. The card can be purchased, activated, and monitored online. This facilitates the use of bike lockers by a greater number of users.

**Electric Vehicle Charging Stations**

In 2012, VTA received a free electric vehicle charging station (EVCS) from ChargePoint, which was installed at River Oaks Division. This dual Level 1 (120 volts) / Level 2 (240 volts) unit can charge two vehicles simultaneously. Usage and cost data is being collected, after which a comprehensive fee plan will be implemented. Since installation, the charger has been well utilized by VTA employees and visitors.

VTA is in the process of selecting a vendor for additional charging stations at Eastridge Transit Center, as well as the Milpitas and Berryessa BART Stations. Charging stations will continue to be implemented at the major divisions and other facilities as data on cost and usage is acquired.

**Hybrid Vehicles**

In 2009, the Sustainability Program purchased 10 Ford Escape and 5 Toyota Prius hybrids and retired 15 older vehicles in the non-revenue fleet. VTA’s “Keep the Valley Green” logo is affixed to all fuel-efficient vehicles. The vehicles are primarily used in support of protective services and transit delivery supervision activities.
WASTE DIVERSION

In 2012, VTA reduced hazardous waste by 105 tons over calendar year 2011 and improved recycling. Hazardous waste was reduced by 31% at Cerone Division, 55% at Chaboya Division, 70% at North Division, and 40% at Guadalupe Division. The reduction is due to improved procedures and changes to wastewater treatment equipment. Facility inspections and trainings have increased employee knowledge and awareness of hazardous waste. New mixed recycling containers were added to bus operator and maintenance training areas at Chaboya Division.

In 2011, VTA started donating spent CDs, DVDs, and miscellaneous items that could not otherwise be recycled to Resource Area for Teachers (RAFT). RAFT is a non-profit organization and certified Green Business with a Learning Resource Center in San Jose. The items are used for educational and art projects.

In 2010, a recycling process for plastic shields was identified at maintenance divisions. The shields, which protect buses from vandalism, are collected and picked up by a local polymer recycling vendor at no cost to VTA.

In 2009, a composting program was started at the River Oaks cafeteria and mixed recycling was expanded to California Circle offices in Milpitas.

In 2008, battery recycling was expanded at the River Oaks Division.

WATER CONSERVATION

In 2010, Facilities Maintenance replaced most of the bottled water coolers at VTA’s main operating divisions and administrative offices with new filtration units. Some bottled water coolers were retained for emergency supply. The filtration units reduce costs by 75% and reduce environmental impacts associated with transport, delivery, and bottling of water.

In 2008, Water Use Surveys were conducted in partnership with the Santa Clara Valley Water District. The surveys recommended toilets, urinals, showerheads, and aerators be replaced with low-flow equipment. To date, VTA has replaced over 90 fixtures.

Irrigation and Landscaping

In 2010, Sustainable Landscaping Guidelines were developed for planting, irrigation and stormwater management at VTA facilities.

VTA’s Cerone Division was grazed by a herd of goats and sheep between 2009 and 2012. The animals were managed by Living Systems Land Management and offered a natural and cost-effective solution to weed and grass mowing. The grazing was discontinued to analyze the decrease in Burrowing Owl populations.

In 2009, many improvements were made to VTA’s irrigation systems including flow sensors, irrigation controllers, and sprinkler nozzles. The automatic shut-off sensors were installed on backflow preventers at five park & ride lots: Great Mall/Main, Penitencia, I-880/Milpitas, Evelyn and Hostetter. The sensors monitor abnormally high or low flows at each location and will automatically shut off flow to avoid unnecessary water usage. Since installation, VTA staff have received and reacted to alerts of abnormal flows such as 18.9 gallons per minute at Hostetter park & ride lot.

Weather-based irrigation controllers were installed at 21 facilities in partnership with the Santa Clara Valley Water District. The controllers enable staff to receive email alerts, configure watering schedules remotely, and manage irrigation controls based on soil, slope, plant type, and weather conditions. The anticipated savings from this measure are over 12 million gallons of water and $37,000 per year.

Sprinkler nozzles were also replaced with MP Rotators, which distribute water more efficiently and more uniformly, at the Penitencia Creek, Hostetter, and Great Mall/Main park & ride lots, and the River Oaks Division.

ACTIONS CURRENTLY UNDERWAY

Below is an outline of projects for the current fiscal year. The Sustainability Team continues to meet bimonthly to provide input and discuss progress on these projects.

APTA SUSTAINABILITY COMMITMENT

VTA became a signatory of the American Public Transportation Association (APTA) Sustainability Commitment in September 2009. The commitment sets out common sustainability principles, an action plan and a course for progress. Signatories can obtain higher recognition by achieving additional actions, putting long-term processes into place, and attaining reduction targets for a series of indicators. VTA is signed up for the Bronze level, but could move up to Silver, Gold or Platinum as we achieve our goals. Under Bronze, VTA is committed to reduction targets of 2% over the baseline within two years. These reduction targets have been met for VTA’s five main operating divisions.

In order to track utilities at other VTA facilities, a utility management software or service is needed. This software or service would assist with the management and tracking of hundreds of water, electricity, and energy accounts. The Sustainability Program is currently evaluating software and service options to assist with this task.
HYBRID VEHICLE PROCUREMENT
Operations will be retiring older non-revenue vehicles over the next two fiscal years. The vehicles will be replaced with hybrids. The first phase includes 16 Prius hybrids.

OUTREACH
One of VTA’s ongoing goals is to increase environmental awareness and promote environmental stewardship in the workplace and in the local community. Outreach to VTA employees includes:

- Introductory presentation at each New Employee Orientation;
- Monthly articles in employee newsletter Timepoint;
- Bike to Work Day competitions;
- Nominations of “Sustainability AllStars” – a recognition program for employees acting as stewards of the environment;
- Seasonal “Farmer’s Markets” put on by employees who share produce grown at home, and;
- Spare the Air Alert messages when a Bay Area Spare the Air Day is issued.

In 2012, VTA participated in SunShares, a regional employee group purchasing program for residential solar power, offered by the Silicon Valley Leadership Group. The program simplified the process by selecting a contractor and securing a discount rate upfront. Employees could enter into the program to take advantage of financing options and a group rate of $4.25 per watt, or 20% less than the average market installation cost. Three VTA employees participated in the program to install solar on their homes.

In 2012, VTA employees also participated in a volunteer clean up upstream of the Upper Penitencia Creek (UPC) Improvement Project. The project is a biological restoration effort located at the future BART Silicon Valley Berryessa Station campus in San Jose. Recognizing that litter located upstream of the project could...
wash into the restored creek area, a group of 13 volunteers gathered on Saturday, October 27, to pick up trash. Their efforts resulted in three truck hauls of materials.

Table 3 lists events and campaigns organized for Earth Day each year. VTA also issues news releases on sustainability efforts to local media outlets and attends community fairs to promote public transportation throughout the year.

Table 3: Earth Day Events and Campaigns

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Name</th>
<th>Event Description</th>
<th>Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>Earth Week</td>
<td>Daily events scheduled during the lunch hour including: Sustainable Cook-Off, Film Showing, Bike Repair Workshop, and trivia challenge.</td>
<td>VTA Employees</td>
</tr>
<tr>
<td></td>
<td>Great American Litter Pick Up</td>
<td>Volunteer clean up of Wrigley Creek near VTA’s Freight Railroad Relocation mitigation site.</td>
<td>Public</td>
</tr>
<tr>
<td>2012</td>
<td>Quarterly Brown Bag Lunch and Learn Series Energy Showcase (Spring), E-Waste Drop-off (1,390 lbs collected; Fall), Waste Jeopardy (Summer), Electrical Vehicle Charging Station Opening (Winter).</td>
<td>VTA Employees</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>Make Every Day Earth Day PowerPoint Presentation on current sustainability programs.</td>
<td>VTA Employees</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Earth Day Pledge</td>
<td>166 pledges received to carpooled, bike, walk, or take transit on Earth Day.</td>
<td>Public</td>
</tr>
<tr>
<td></td>
<td>Essay Contest</td>
<td>Write an essay describing “what sustainability means to you.”</td>
<td>High School Students</td>
</tr>
<tr>
<td>2010</td>
<td>Earth Day Extravaganza</td>
<td>Resource Fair and Chili Cook-off; E-Waste Drop-off (2,905 lbs collected).</td>
<td>VTA Employees</td>
</tr>
<tr>
<td>2009</td>
<td>Earth Day; E-Waste Drop-Offs Lunch-time workshops; E-Waste Drop-offs (400 lbs. collected in April; 2,460 lbs. collected in June).</td>
<td>VTA Employees</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>Sustainability Program Kick-Off PowerPoint Presentation introducing the program (April), Recycling Celebration (September).</td>
<td>VTA Employees</td>
<td></td>
</tr>
</tbody>
</table>

In May 2009, VTA initiated a Sustainability Working Group to discuss ways public agencies can operate facilities in a cost-effective sustainable manner. The group, consisting of 12 public agencies in the local Bay Area, agreed to develop a Silicon Valley Public Environmental Preferable Purchasing System (PEPPS) that would result in reduced staff time and greater economies of scale. A PEPPS website was created in 2010 with the assistance of San Jose State students as part of their Management Information Systems Honors program. Due to lack of participation from participating agencies, the website closed in February 2013. The Sustainability Working Group continues to meet bi-monthly to discuss strategies for Environmental Preferable Purchasing and share lessons learned.

REDUCING OFFICE PAPER

The most significant and immediate way to reduce the environmental and financial costs associated with office paper is to use less of it. VTA’s Sustainability Program and Office of Information Technology have teamed up to identify VTA’s paper waste stream from purchase to disposal. This includes evaluating the type of paper used and the activities that produce paper waste.

In 2012, VTA electronic provider, Ricoh, implemented a remote web-based system to track usage at approximately 80 Multi-Functional Devices (MFD). “Super Users” were identified for each MFD. These users were trained on trouble shooting errors and strategies to reduce paper such as using duplex printing, avoiding paper jams, sharing documents through the intranet, adjusting settings, and scanning hard copies for email distribution. Currently, usage data is being evaluated according to division and department. Additional training and education is forthcoming.

SILICON VALLEY BERRYESSA EXTENSION

VTA, BART and the Design-Build Contractor (Joint Venture of Skanska, Shimmick, Herzog (SSSHJV)) aim to achieve best practices in sustainability performance through design and construction of the 10-mile BART extension into Silicon Valley. The two BART stations, in Milpitas and San Jose, are designed based on CALGreen 2010 Standards. This includes green building measures in energy efficiency, water conservation, sustainable materials sourcing, occupant comfort and site impact. The Project has incorporated sustainability in the construction process through aggressive waste diversion goals, potable water reduction, recycled-content in concrete and a project-wide carbon footprint analysis.

Some of the Project Sustainability Measures currently being pursued under the CALGreen umbrella include:

- Use of cement and concrete with recycled products such as fly ash and slag;
- Use of plumbing fixtures that reduce the potable water usage;
- Use of recycled materials in construction;
- Energy efficient lighting and fixtures;
- Water conservation measures.

VTA 2012 Sustainability Report
Total demolition waste of about 4,043 tons, out of which only 28 tons has been sent to Landfills. All remaining waste has been recycled and reused;

- Use of available city recycled water for landscape irrigation requirements;
- Use of collected ground water during excavations for dust control;
- Use of LED fixtures instead of high density mercury or sodium vapor lamps;
- Application processed to Cal-OSHA for escalator permanent variance resulting in crawl speeds in the absence of users resulting in annualized energy cost savings.

**FUTURE PROJECTS**

The following projects have been committed in the Sustainability Program’s FY14/15 budget allocation.

**UTILITY MANAGEMENT SOFTWARE**

VTA’s goal is to use this software to reduce its utility usage and costs by three to five percent through the identification of anomalies, billing errors, and energy efficiency projects.

**GREENHOUSE GAS INVENTORY**

A greenhouse gas inventory is an accounting of greenhouse gases (GHGs) emitted to or removed from the atmosphere over a period of time. Estimating GHG emissions would enable VTA to create an emissions baseline, monitor progress, and assess the relative contributions of emission sources per APTA recommendations.

**UTILITY METER GIS**

Creating a geographic information system (GIS) of VTA's utility meters would greatly assist maintenance staff in investigating and responding to abnormal changes in water and energy usage.

**RECLAIMED WATER USE STUDY**

Using reclaimed water for irrigation purposes reduces dependency on imported water and conserves drinking water supply. A study would identify opportunities to connect VTA’s landscape irrigation meters to reclaimed water lines.

**CONCLUSION**

VTA’s efforts in the Sustainability Program are inherently linked to VTA’s role as both a transit provider and a multi-modal transportation planning organization. According to APTA, public transportation reduces energy consumption by the equivalent of 4.2 billion gallons of gasoline, enough to fill up 320 million cars, per year. Those who choose to ride public transportation reduce their carbon footprint and conserve energy by eliminating travel that would have otherwise been made in a private vehicle. The result is fewer vehicle miles of travel and reduced emissions. These savings represent the beginning of public transportation’s potential contribution to national efforts to reduce greenhouse gas emissions and promote energy conservation.

VTA’s Sustainability Program continues to serve an active role in engaging employees, reducing costs, and strengthening VTA’s commitment to environmental excellence. Since there is no dedicated source of funds for the Sustainability Program, the program is dependent on the two-year budget process for funding. Since 2008 the Sustainability Program has implemented conservation measures resulting in annual savings of over $1 million. Future funding would enable VTA to continue current and planned projects including completion of the two-year EMS program. Previous transit agencies who have completed the EMS program have reported dramatic cost reductions in operations and significant progress toward sustainability goals.