



Los Angeles
World Airports

LOS ANGELES WORLD AIRPORTS

Sustainability Report

2011-2013



Cover photo: The LAX Gateway pylons are a symbolic gateway to Los Angeles. The 1.5-mile lineup of 11 translucent, tempered glass columns of increasing heights, from 25 to 60 feet along Century Boulevard, culminate with a ring of fifteen 100-foot-tall columns at the intersection of Century and Sepulveda boulevards. Together, with prominent “L-A-X” letters facing eastward to welcome incoming motorists, the pylons are the most well-known example of public art in Los Angeles, and are visible to airline passengers from 3,000 feet high. In 2006, airport workers replaced the fixtures with light-emitting diode (LED) energy-efficient alternatives. The pylons are illuminated in a variety of colors – 16 million possibilities. Color designations help support awareness campaigns and honor social causes and events.

Disclaimer: LAWA obtained data from a variety of sources to generate this report. The reporting team did not have access to each individual primary document and thus was not able to verify all data sets fully against the source documents. Due to these limitations, it is possible that certain numbers may not be accurate. Performance data numbers cited within this LAWA 2011-2013 LAWA Sustainability Report should not over-ride or replace information in any previously published reports or findings, such as LA Economic Impact Analysis documents, LAX Community Benefits Agreement (CBA) progress reports, and LAX Mitigation Monitoring & Reporting Program (MMRP) reports and other similar publications.

Message from Executive Director

Los Angeles World Airports (LAWA) is pleased to submit our sustainability report covering the years 2011, 2012 and 2013. LAWA's commitment to sustainable practices in its operations, development, and construction is reflected in the accomplishments and initiatives detailed in this report.

Of particular note during the reporting period, LAWA continued to push forward with a significant modernization program that is shaping the new vision for Los Angeles International Airport (LAX), laid the framework for modernization at Van Nuys Airport, and successfully addressed challenges to keep LA/Ontario International Airport (ONT) providing high quality service. The LAX modernization program includes the Tom Bradley International Terminal (TBIT) renovation, construction of new passenger gates at Bradley West and the Midfield Satellite Concourse, construction of a new Central Utility Plant (CUP), and an overhaul of the Landside Access system that will include an Automated People Mover, a Consolidated Rent-A-Car Center, and intermodal transportation facilities, among other infrastructure improvements.



During the reporting period, LAWA completed the Bradley West Terminal and it is expected to earn LEED Silver certification from the U.S. Green Building Council (USGBC). The new terminal doubled the size of the existing terminal and offers eight upgraded gates, all of which can accommodate the larger new generation intercontinental jets. LAWA also completed Phase I construction of the new CUP at LAX, which provides power to the entire Central Terminal Area. The new CUP is a cogeneration facility that generates power with 30% greater thermal efficiency than the pre-existing CUP. The cogeneration design, by its increased efficiency, also decreases the production of greenhouse gases by the airport. The new CUP will be 25% more energy efficient in fuel consumption and 60% more efficient in producing chilled water.

LAWA is proud to partner with the Mayor's office to align its sustainability goals with the citywide sustainability initiatives to set the framework for the region's continued progress. LAWA's commitment to sustainability and the talents and dedication of its staff keep LAWA moving toward the City's goals for the economy, the environment, and equity.

Gina Marie Lindsey



Los Angeles
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Executive Summary

Los Angeles World Airports' (LAWA's) 2011-2013 sustainability report summarizes progress across the full range of capital and operational programs at its airports and landholdings. The report first focuses on Los Angeles International Airport (LAX) as the largest airport LAWA operates, while the subsequent sections cover LA/Ontario International Airport (ONT), Van Nuys Airport (VNY), and LAWA's landholdings in Palmdale.

Sustainability goes beyond addressing traditional environmental concerns. As the Airports Council International – North America defines it, sustainability “is a holistic approach to managing an airport so as to ensure the integrity of the [e]conomic viability, [o]perational efficiency, [n]atural resource conservation, and [s]ocial responsibility of the airport.” This definition uses the acronym EONS. It is an approach that “*meets the transportation and other needs of the present without compromising the ability of future generations to meet their needs.*”¹ To that end, LAWA strives to improve sustainability performance in all areas, and to lead the way in sustainable building and construction, air quality improvements, and sound insulation.

Between 2011 and 2013, LAWA's renovation of the Tom Bradley International Terminal (TBIT) achieved the prestigious United States Green Building Council's (USGBC's) Leadership in Energy and Environmental Design (LEED) Silver certification, and LAWA's new Aircraft Rescue and Firefighting

facility achieved LEED Gold. LAWA also continued to expand its largest-in-the-nation alternative fuel vehicle fleet and its award-winning Employee Rideshare program helping to improve air quality in and around its airports. This report provides visibility on notable sustainability initiatives within all LAWA operations and demonstrates how LAWA is a leader in advancing sustainability.

Some of LAWA's important actions and accomplishments during the reporting period include the following:

- › In 2013, LAX handled approximately 66.7 million passengers, making it the sixth busiest airport in the world and the third busiest in North America with an annual growth rate in passenger traffic of above 4% since 2009. To accommodate increased passenger levels and improve service, LAWA is making significant investments in terminal renovations, developing new terminal facilities, including the Bradley West and the Midfield Satellite Concourse, making runway improvements, and launching a comprehensive overhaul of the LAX ground transportation system (LAX Landside Access Modernization Program). During the reporting period and throughout 2014, LAWA continued planning for the \$7 billion LAX modernization program, which is expected to generate over 90,000 jobs in the next 10-15 years.

¹ ACI-NA, “Airport Sustainability: A Holistic Approach to Effective Airport Management” available at <http://www.aci-na.org/static/entransit/Sustainability%20White%20Paper.pdf>.



- › LAWA increased energy efficiency related to its operations, reducing energy consumption per passenger by over 28% and avoiding associated utility costs of over \$8 million in 2013 alone.
- › LAWA completed construction of a new Central Utility Plant (CUP) at LAX that includes state-of-the-art power generation that is expected to be 25% more efficient in fuel consumption than the old system it replaced.
- › LAWA reduced potable water consumption on a per capita basis by 30% between 2011 and 2013, doing its part to address the long term drought conditions in Southern California.
- › LAX saved over 300,000 tons of pavement by crushing old concrete on-site and re-using the material as base aggregate material for new runways, aprons, and taxiways.
- › LAWA achieved 100% compliance with 65 decibel (dB) Community Noise Equivalent Levels (CNEL) for the affected communities surrounding VNY. LAWA soundproofed over 90% of the noise-affected neighboring residences surrounding LAX in the city of Los Angeles, and continues to work with other jurisdictions surrounding LAX to sound-proof affected residences.
- › LAWA continued to operate its FlyAway® program transporting passengers to and from LAX, which eliminates approximately

18 tons of vehicle emissions on a daily basis and reduces local traffic congestion related to single occupancy driving.

- › LAWA improved habitat in the LAX Dunes, which supports over 900 plant and animal species, including the federally endangered El Segundo Blue Butterfly.

LAWA developed its current sustainability program in 2008 to implement the Board of Airport Commissioners' (BOAC) sustainability policy, which defined LAWA's commitment to "Green" airports and "to continually improve environmental, economic, and social performance." The sustainability program was based on the so-called "Triple Bottom Line" – economic performance, plus impact on the broader economy, the environment, and society. LAWA's sustainability program was designed to influence LAWA decision-making in all aspects of its operation and has resulted in the incorporation of sustainable design and construction practices, better engagement with stakeholders, and many of the activities described in this report.

LAWA is proud of its accomplishments during this reporting period, and continues to improve upon its sustainability program. In 2015, LAWA will embark on an extensive update to its sustainability program and will initiate a comprehensive utility tracking program at LAX to assist LAWA in achieving greater efficiencies, reductions in energy and water consumption, and identification

of necessary infrastructure improvements to help LAWA meet its sustainability goals.

Sustainability excellence requires an effective planning framework and complementary management systems to identify the priority areas for improvement and mechanisms to implement change. LAWA looks forward to continuing to improve sustainability at each of its airports and landholdings and LAWA invites you to participate in the process. Reading this 2011-2013 Sustainability Report is an excellent place to start.

Awards and Notable Achievements

LAWA earned a number of awards reflecting service excellence, superior facilities, and sustainability achievements. A sampling of these awards through 2013 is shown below:

- › 100% noise compatibility compliance with 65-dB Community Noise Equivalent Level (CNEL) requirements at VNY.
- › American Airlines awarded LAX “Top 5 Improved Customer Experience and Innovative Problem Solving” status in 2011.
- › Los Angeles, Orange, and Ventura Counties’ Rideshare Diamond Award for “Outstanding Corporate Rideshare Leadership” for the 17th consecutive year in 2013.
- › The United States Environmental Protection Agency (EPA) included LAWA as a member in its “Best Workplace for Commuters” program in 2011, 2012, and 2013.
- › Los Angeles County Metro recognized LAWA with two Ambassador Awards for Innovative Rideshare Program and traffic congestion relief in 2013.
- › South Bay Business Environmental Coalition’s (SBBEC) SoCal Environmental Excellence Development (SEED) Award Program gave LAWA the Bridge Builder Category Award for the Gateways Internship program and El Segundo Blue Butterfly tours in 2013.
- › The United States Environmental Protection Agency (EPA) recognized LAWA on its “Top 20 Local Government List Green Power Purchaser” in 2011, 2012, and 2013.
- › South Bay Business Coalition awarded “Certification” for LAWA’s innovative sustainability practices in 2011.

Multiple awards for air quality including:

- › Clean Air Awards from the Coalition for Clean Air and South Coast Air Quality Management District.
- › Certificate of Distinguished Achievement from the California Natural Gas Vehicle Coalition.
- › Clean Cities Certificate for participation in the U.S. Department of Energy’s Clean Cities Program.
- › United States Department of Energy Clean Cities Program recognition for performance as a “success story for airports.”
- › Airports Council International – North America (ACI-NA) - Special/Outreach, Education, and Community Involvement Category – Runner-up, for LAX’s Air Quality and Source Apportionment Study.

U.S. Green Building Council recognition:

- › LEED Silver for TBIT renovation.
- › LEED Gold for New Aircraft Rescue and Fire Fighting facility at LAX.

LAX Tom Bradley International Terminal (TBIT) won:

- › Mayor’s “Most Outstanding Float Entry by a City Award” for Pasadena Tournament of Roses Parade.
- › Gold Award in Commercial Real Estate for “Best Public Project” from the Los Angeles Business Journal.
- › Los Angeles Business Council’s Architectural “Under Construction” Award.
- › American Institute of Architects Los Angeles Presidential Award for “Building Team of the Year.”



LAX

*Los Angeles International
Airport Sustainability*





Economic Viability

***In 2013,
LAX served 66.7
million passengers***

Economic viability is an essential component of LAWA sustainability. Decision-making based upon sound business logic is critical to LAWA continuing to provide outstanding passenger experiences, and in retaining talented staff. As a major international aviation hub, LAX provides a vital service to residents of Southern California and to travelers throughout the world.

LAX is the busiest Origin and Destination airport in the world, and is a key air traffic gateway serving a broad mix of international and domestic passengers. In 2013, LAX offered 650 daily flights to 94 destinations in the United States and over 870 weekly flights to 66 international destinations on 58 carriers.² LAX also ranked fifth in the United States in air cargo tonnage processed, handling 1.85 million tons of air freight and 77 thousand tons of mail.

LAX plays an integral role in the economies of surrounding communities and the Southern California region. Operations at the airport generated an estimated 294,400 jobs in Los Angeles County and an additional 19,400 jobs in neighboring counties. This activity contributed \$13.6 billion in labor income and more than \$39.7 billion in economic output. Additional capital improvement projects planned at LAX are estimated to generate a further 90,500 jobs and \$5.6 billion in labor income over the next 10 to 15 years.

² Official Airline Guide Schedules (January-December 2013)

FIGURE 1
Total Passengers at LAX,
2009-2013 (millions)

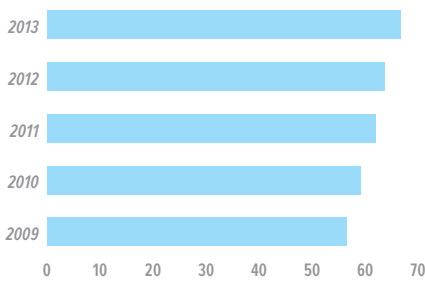


FIGURE 2
Aircraft Operations at LAX,
2009-2013 (thousands)

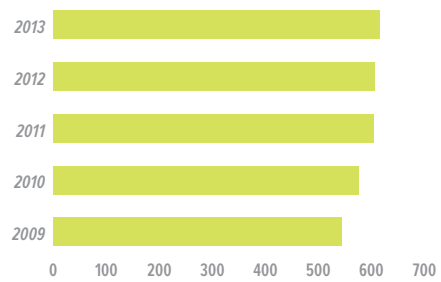
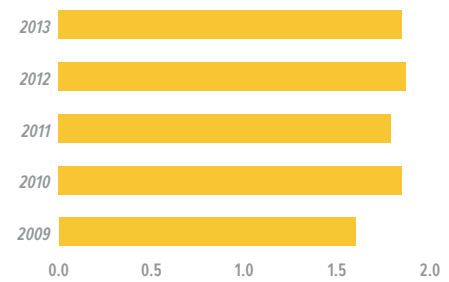


FIGURE 3
Cargo Volume at LAX,
2009-2013 (millions)



LAX Modernization

LAWA is in the midst of the largest public works project in the history of the City of Los Angeles. The newly completed Bradley West opened in September 2013. The new terminal offers eight upgraded gates, all of which can accommodate larger, new-generation Airbus A380 and Boeing 747-8 intercontinental jets. The project also doubled the size of the existing terminal, adding nearly 1.2 million square feet in terminal space. Phase II of the LAX

Modernization Project includes future construction of the Midfield Satellite Concourse and the West Area Maintenance Facility and planning for the LAX Landside Access Modernization Program. Completed and on-going projects have created nearly 40,000 well-paying local jobs and contributed an estimated \$6.89 billion to the local economy.

Activity Trends

In 2013, LAX served a total of 66.7 million passengers. This passenger traffic volume is the highest since the airport's peak of 67.3 million passengers in 2000. LAX is currently the sixth busiest airport in the world and third busiest in North America in terms of passenger volume. (See Figure 1)

Passenger levels at LAX have fully recovered from the declines caused by the 2008 and 2009 global financial crises. Passenger traffic at LAX has increased steadily at an average annual rate of 4.2% since 2009.

LAX is one of the largest and most diverse international gateways in the country. In 2013, over 17.8 million international passengers used the airport, flying to and from destinations in Asia Pacific, Central and South America, Canada, Mexico, Europe, and the Middle East. In the last five years, LAX has attracted new international service from Volaris, Virgin Australia,

Turkish Airlines, Air Berlin, Virgin America, Transaero, and ArkeFly. International passengers help support the local economy, and indirectly help to cultivate new business opportunities for the Los Angeles Region.

LAX handled approximately 615,000 aircraft operations in 2013, making it the third busiest airport in the world in terms of aircraft movements. Aircraft operations at LAX have increased at an average annual rate of 3.1% since 2009. Aircraft operations have increased at a slower rate than passenger traffic at LAX. This trend is seen at other airports across the country and reflects the increased use of large aircraft, higher passenger load factors, consolidated routes and other increased efficiencies on the part of the airlines. (See Figure 2)

In 2013, LAX handled 1.85 million tons of cargo. Cargo volume at LAX has remained relatively stable over the last couple of years, though cargo traffic has yet to

recover to levels prior to the 2008-2009 financial crisis. LAX currently ranks 14th in the world and fifth in the United States in terms of air cargo tonnage processed. (See Figure 3)

Social Responsibility

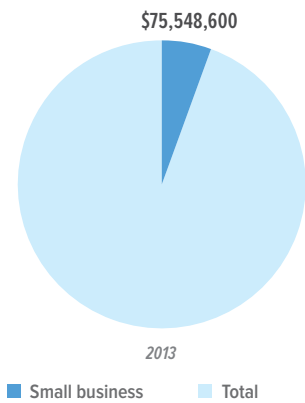
LAWA believes a sustainable organization looks beyond environmental stewardship and pursues social responsibility through engagement with the surrounding community.



LAX purchased over \$75 million in products/services from local, small, minority and women owned businesses in 2011-2013.

LAX has multiple programs to advance the well-being of local businesses and improve the professional capabilities of its own staff. The LAX Community Relations Division's key focus is to establish programs and services to meet the needs of surrounding airport communities. Community Relations oversees youth programs, aviation education, a speaker's bureau, community participation programs, and private industry partnerships. The division helps balance the relationship between regional economic growth and the needs of local residents. One of the key accomplishments is purchasing over \$75 million in products and services from local, small, minority, and women-owned businesses. (See Figure 4)

FIGURE 4
LAX Small Business Procurement, 2011-2013



First Source Hiring Program

LAWA's Business and Job Resources Center (BJRC) administers the First Source Hiring Program (FSHP) and provides employment and educational outreach services to local community-based organizations and residents. The BJRC provides information regarding employment opportunities to job seekers who are interested in employment with airport tenants, surrounding airport companies and other private companies. LAWA staff assists potential employers by providing them with resumes of job seekers whose skills match the needs of potential open positions.

FSHP is designed to provide residents from the communities surrounding the airport and those most impacted by airport operations access to airport jobs. Those communities are a part of the Project Impact Area (PIA) and consist of South Los Angeles, El Segundo, Hawthorne, Inglewood and Lennox.

BJRC works closely with area Work Source and One-Stop Centers, as well as community and faith-based organizations that serve the airport area and beyond, to register potential candidates in the Applicant Tracking System (ATS) for positions with LAWA employers. FSHP is training the job developers at these organizations to prescreen and qualify their clients to be eligible for opportunities at LAWA as they arise. Their clients are able to post their resumes and apply for positions, and those applications are reviewed by hiring managers at the airport.

FSHP referred 2,073 candidates per year during the reporting period. Currently, the program includes 76 employment centers. BJRC plans to expand to more employment centers.

BizConnect Database

The Business Outreach Unit has developed a database, called BizConnect, which consists of approximately 6,000 companies that are seeking to do business with LAWA. This database was developed with the support of LAWA's Information Management and Technology Group, and is maintained by the BJRC staff. Staff periodically request updated information from the listed businesses so that current information is always available. BizConnect lists the companies' contact, concept, and certification information for distribution internally and externally.

The database is accessible through the Business Tab at www.lawa.org/bjrc.

Additional LAX Social Responsibility Contributions

Aviation Career Education

The Aviation Career Education Academy is a free, week-long motivational program to provide students with a basic understanding of career opportunities within the aviation industry, as well as a general knowledge about LAX. This program is open to seventh- and eighth-grade students (between the ages of 12 and 14) and high school students (between the ages of 15 and 18) in

LAX Harvest Food Donation Program

In May 2012, HMSHost initiated what is now known as the LAX Harvest Food Donation Program. The program collects high quality, unsold food items and donates them to local charities. HMSHost sells only sandwiches and salads within 24 hours from the time they are made to maintain top quality food items for original purchase. Food that is not sold within 24 hours is inventoried and packed into tubs provided by the Food Donation Program.

From 2012 through the end of 2013, HMSHost donated approximately 100,000 food items, which equates to almost 48,000 pounds of food.

communities surrounding LAX, including El Segundo, Hawthorne, Inglewood, Lennox, and Westchester/Playa del Rey. Program participants attend site visits and presentations by organizations such as the Federal Aviation Administration (FAA), NASA's Jet Propulsion Laboratory, Transportation Security Administration, Airlines, Encore Flight Academy, Los Angeles Airport Police, LAX Airport Operations, and others.

Gateways Internship Program

LAWA launched the Gateways Internship Program in collaboration with the Inglewood Unified School District and the South Bay Private Industry Council. The program was developed as one of several approaches to address the current and projected demand for qualified employees to fill positions at LAWA. This program provides paid and non-paid internships to local youth currently attending high school or college and was recently expanded to include the Los Angeles Unified School District, Centinela Valley High School District, and the El Segundo Unified School District. The goal of the program is to expose local students to career opportunities in the aviation industry. This is accomplished by providing on-the-job practical experience in the aviation field through education, training and mentoring programs and activities.

AIRCademics

The AIRCademics "Passport to Art Program" is a 30-week school-to-career enrichment program that focuses on teaching the subjects of science, math, reasoning, and aviation through the completion of art projects. Participants, who are of middle school age, also learn about the history of flight while attending lectures and field trips. The final class project is the creation of a comic book about LAX.

Wings to Fly Mentoring Program

The nonprofit Youth Mentoring Connection, partnering with LAWA, pairs airport employees as positive adult role models with at-risk youth in local high schools. Students participate in professionally facilitated workshops, guest speaker

lectures, and spend one-on-one time with their mentors to learn about airport career opportunities within a relaxed setting at LAX two times each month.

Job Shadow Days

Job Shadow Days are an opportunity for students to learn about the aviation industry and its career possibilities while experiencing the workplace. LAWA hosts a group of students, and each student shadows an airport employee throughout the day to witness the individual's daily work activities.

Employee Wellness Program

LAWA introduced the *Wellness Fitness Program* which offers all employees the opportunity to participate in a wellness program focused on enhancing personal health to improve workplace productivity. The *Wellness Fitness Program* was inspired and initiated by an officer serving in the Los Angeles Airport Police Training and Recruitment Division.

The program consists of a one-week orientation that includes nutritional education; exercise techniques to prevent or reduce injuries; and a voluntary submission to obtain a health check-up for weight, cholesterol, blood pressure, and blood sugar levels. Following orientation, the program includes physical training in two weekly 50-minute sessions. Almost 100 LAWA staff members participated in the first set of workout sessions. At the end of each six-week session, participants evaluated their own progress and received a certificate of completion.

Pets Unstressing Passengers (PUP) Program

LAWA implemented an innovative new therapy dog opportunity to alleviate passenger's potential stress at the airport. The *LAX Pets Unstressing Passengers (PUP)* program was created to provide an overall enhanced traveling experience at LAX through interaction with pets. *PUP* volunteers have at least one year of experience working with a recognized therapy dog organization and are there to make passengers' experiences more

enjoyable. They roam the departures levels in the gate areas of each terminal, visit passengers awaiting flights, offer comfort for stress relief and provide airport information.

All *PUP* volunteers and dogs must be registered with Therapy Dogs, Inc. (TD, Inc.), a national organization that registers, insures and supports members who are involved in volunteer animal-assisted activities. These activities include visits to hospitals, special needs centers, schools, nursing homes and for the first time for TD, Inc. - airports.

Water Conservation

Water conservation is an important part of LAX sustainability in light of several years of drought that has impacted the Los Angeles Region as well as the entire state of California.

On a per passenger basis, LAX has decreased water usage from 11.7 gallons in 2011 to 8.2 gallons in 2013.

LAX obtains its water from the Los Angeles Department of Water and Power (LADWP). Water conservation consists of practices to reduce the consumption of potable (drinkable) water which include substituting reclaimed water for potable water where possible, limiting water used on landscaping, and using water efficient plumbing fixtures, among other measures.





LAX drought-resistant landscaping in Central Terminal Area

LAX makes it a best management practice to utilize water-saving equipment in upgrades and new installations. For the reporting period, LAX reduced year-over-year water consumption on both a total consumption and a per passenger consumption basis. This section of the sustainability report provides three key metrics for water consumption: Total Potable Water Consumption, Water Use Intensity, and Water Costs. LAX also utilized substantial quantities of reclaimed water to conserve the potable water supply.

Total Potable Consumption

In 2013, LAX consumed 544 million gallons of potable water. This was 25% less than

2011 consumption levels, and 17% less than 2012. (See Figure 5)

LAX Water Use Intensity

Water intensity is a measure of how much water is consumed relative to the scale of operations. As the number of passengers grow, there is more demand for water. LAX averaged 8.2 gallons per passenger in 2013. Water use intensity decreased by 30% from 2011 levels (11.7 gallons per passenger) and 14% from 2012 (9.4 gallons per passenger). (See Figure 6)

LAX Water Costs

The cost of potable water is a significant contributor to LAX's annual utility bills.

Water conservation reduces both treated water supply and sewerage costs. Reusing water can reduce the sewerage cost further for applications where the water will not return to municipal pipes. In 2013, the cost for water supplied to the airport was \$3.0 million, which was \$430,000 less than the cost in 2011 and approximately \$230,000 more than 2012. (See Figure 7)

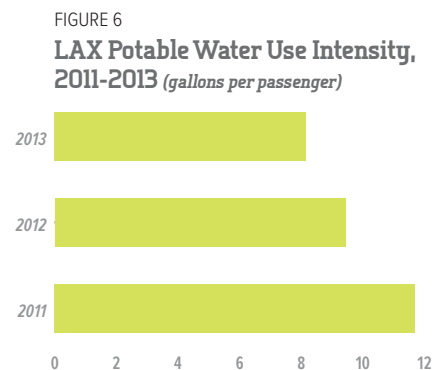
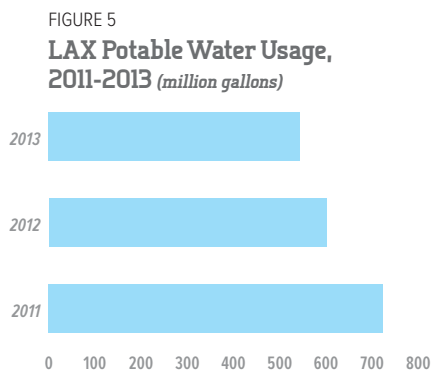
LAWA has advanced a number of conservation strategies to increase water efficiency:

- › **Increased use of reclaimed water:** In 2013, 35% of all landscaped areas at LAX were irrigated with reclaimed water. The number of landscaped areas irrigated with reclaimed water is limited to areas

Reclaimed Water

The use of reclaimed water helps conserve potable supply when drinking level quality water is not essential. The Westside Water Recycling Project generates high quality reclaimed water for distribution to local businesses and LAX. Purple-colored pipes carry the reclaimed water at the airport for uses that include:

- › Irrigation
- › Dust control
- › Construction
- › Concrete production





A section of the Los Angeles Aqueduct Cascades

accessible to the reclaimed water supply pipeline. At LAX, approximately 40.2 million gallons of water are conserved each year by using reclaimed water.

- › **Native and drought-tolerant plant use:** LAWA has increased, by more than 50%, the native and drought-tolerant vegetation in LAX landscaped areas, decreasing the amount of water required for landscaping.
- › **Computer controlled irrigation:** This system provides a central location for controlling irrigation to almost all of the landscape in the Central Terminal Area (CTA), including planters, and along Century Boulevard, Westchester Parkway, and the Sepulveda-Century interchange. Staff can remotely monitor water use without the need for on-site visits. LAWA uses the system to customize the watering durations, helping reduce water usage, particularly during wet weather.

Additional Water Conservation Actions

LAWA pursued many individual water reduction actions at LAX from 2011-2013, and a few are profiled below:

- › **Manchester Blvd. Reclaimed Water Line:** The reclaimed water line under Manchester Boulevard is used to irrigate the Westchester Golf Course, which LAWA owns. LAWA worked with local agencies, including LADWP and the Los Angeles County Department of Health, to complete this application of reclaimed water.
- › **Sepulveda/Imperial Gateway Reclaimed Water Line:** In the fall of 2010, West Basin Municipal Water District installed the Sepulveda/Imperial water line, bringing a reclaimed water line connection to the southern boundary of LAX. Currently, the infrastructure, meters and the irrigation water line have

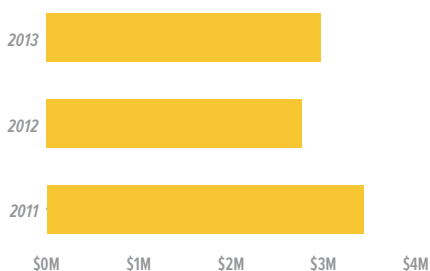
been installed, but have not yet been connected. There is now the potential for future usage of reclaimed water for irrigation purposes at the Sepulveda/Imperial Gateway.

- › **Central Utility Plant Construction:** The new CUP, with construction occurring within the 2011-2013 reporting period, incorporates new cooling towers for improved energy and water efficiency.
- › **Purple Pipe:** The Antonio Villaraigosa Pavilion, in the new Tom Bradley International Terminal, includes piping in place for future use of reclaimed water when it becomes available from LADWP.
- › **Recycled Car Wash Water:** LAWA owns and operates car wash facilities at LAX for its fleet and vanpool vehicles. These facilities service more than 65 vehicles per day, and recycle the rinse water, thereby minimizing discharges to the sewer.

FIGURE 7

LAX Water Costs, 2011-2013

(dollars)



Energy Stewardship

Energy Usage

Energy is central to almost every activity at LAX, from indoor thermal comfort to moving passengers on buses. LAX uses electrical energy in buildings and on the airfield. LAX also utilizes natural gas for conditioning the temperatures inside the terminal, other buildings, and for many LAX vehicles.



Although energy is essential for LAX to function, the amount and the type of energy consumed is influenced by effective management. Energy efficiency provides LAX an opportunity to control a major operational cost and to reduce the environmental impacts associated with emissions. Purchasing energy generated from renewable sources empowers LAX to eliminate environmental impacts associated with burning conventional fossil fuels. This section of the Sustainability Report details LAX's energy stewardship.

LAWA uses both electricity and natural gas in its operations. Electricity powers lights, cools terminals and offices, allows airplanes to turn off their engines while parked at the gates, and powers other electrical equipment. Natural gas provides electricity, heat and cooling for LAWLA terminals and offices.

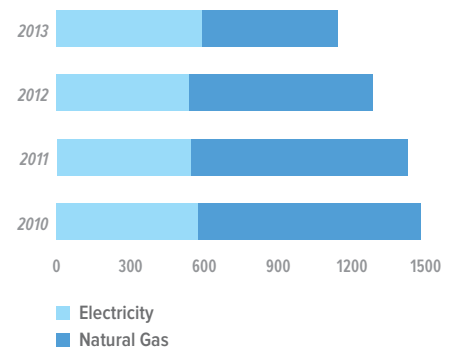
LAWA has established two major energy saving goals:

- › To reduce energy use per passenger and per cargo tonnage; and
- › To purchase green power from utility providers.

The 2010 total energy consumed in buildings and the airfield at LAX was 1.48 billion kBTU (thousand British Thermal Units). This amount is a combination of 574 million kWh (kilowatt hours) of electricity and 903 million therms of natural gas. In 2011, total energy consumed at LAX was 1.43 billion kBTU, a decrease of 2.1% from 2010. For 2012, the total energy consumed at LAX was 1.28 billion kBTU, a decrease of 13% from 2010. In 2013, LAX consumed 1.14 billion kBTU, which is a reduction of over 22% compared with 2010. (See Figure 8)

FIGURE 8

Total Energy Use at LAX
(million kBTU)



LAX reduced per passenger energy usage by over 28% from 2010 to 2013, saving \$8.5 million in costs.

Energy Units Explained

- › **British Thermal Unit (BTU)** – energy required to heat one pound of water 1 degree Fahrenheit
- › **Kilowatt hour (kWh)** – 1,000 watts of power for one hour = 3,414 BTUs
- › **Therm** – 100 cubic feet volume of gas fuel = 100,000 BTUs
- › **Gasoline** – one gallon of E10 (10% ethanol) gasoline = 112,114 BTUs

LAX Energy Use Overview

ELECTRICITY USAGE

During the reporting period, building and airfield total electricity usage for LAX varied from approximately 155 million kWh to 175 million kWh. In both 2010 and 2011 electricity usage decreased from 2009 levels falling to 157 million kWh in 2011. For 2012 and 2013, electricity consumption increased by about 10%. In 2015, LAWA will implement a comprehensive utility measurement system that will allow LAWA to better manage its electricity usage. (See Figure 9)

NATURAL GAS USAGE

Natural gas data is presented in thermal units (therms). Natural gas usage appears to have peaked in 2010 at 9.0 million therms. In each of the reporting years natural gas usage has decreased. In 2011, natural gas usage decreased to 8.8 million therms, a reduction of about 2%. The following year natural gas usage dropped to 7.7 million therms, a 15% reduction. For 2013, the decrease was the largest of the reporting period, with natural gas consumption

dropping to 5.8 million therms, a 26% decrease. The total decrease between 2010 and 2013 is 39%. Shutting down the turbines in the old CUP during construction accounts for a large part of the reduction in natural gas consumption. (See Figure 10)

Energy Costs

In 2010, the total cost for energy consumption was \$24.7 million. The total cost of energy increased approximately 1.3% between 2010 and 2011; and it was essentially unchanged from 2011 to 2012. In 2013 the cost of energy increased by almost 5%. The LAX costs for natural gas dropped during this time from \$5.01 to \$3.72 a therm from 2010 to 2013. Electricity costs increased from \$0.13 kWh to \$0.14 kWh. Even with the significant reduction in natural gas consumption, the total cost for LAX energy increased due to the growth in electricity use. (See Figure 11)

Energy Use Intensity

Comparing operational activity with total energy use provides a useful energy intensity performance indicator. The

number of passengers served by LAX is the principal metric the airport uses to benchmark and track growth. In 2010, LAX served 59 million passengers and the total energy consumption was 1.44 billion kBTU; that results in a consumption rate of 25.0 kBTU per passenger. In 2011, the number of passengers increased 4.7% to 61.9 million, yet there was a decrease in total energy usage on a per passenger basis to 23.1 kBTU per passenger. In 2012, the number of passengers increased again by 3.0% to 63.7 million; however the total energy use on a per passenger basis decreased again to 20.2 kBTU per passenger. For 2013, the final year of the reporting period, the energy intensity per passenger improved to 17.1 kBTU per passenger, an over 31% reduction compared with 2010. These numbers show that there has been a continual decrease in energy intensity usage on a per passenger basis at LAX. The steady reduction in energy use intensity indicates airport efficiency measures are effective and avoiding significant costs. If energy consumption remained at 2010 intensity levels, given the growth in passengers,

Computer Energy Stewardship

LAWA continues to purchase more energy-efficient computer servers and other electronic equipment. More than 80% of computer servers have been replaced, while other servers have been consolidated using VMware. Additionally, LAWA has set up personal computers and monitors to shift automatically to stand-by mode. This practice saves energy and money since computers don't consume energy when not in use. The resulting savings in electricity cost from this sustainable practice are estimated at approximately \$50 per computer every year. With approximately 3,000 computers at LAWA, this savings adds up to about \$150,000 per year.

FIGURE 9
LAX Electricity, 2010-2013
(thousand MWh)

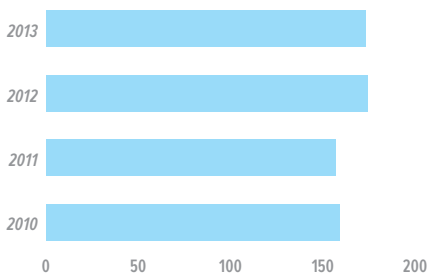


FIGURE 10
LAX Natural Gas, 2010-2013
(10,000 therms units)

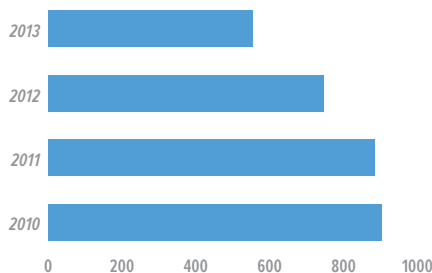
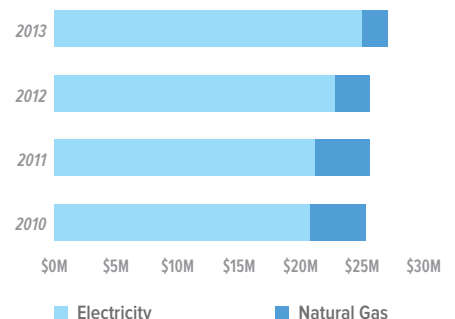


FIGURE 11
Total Energy Costs (by Source) at LAX (dollars)



the additional cost to LAX would have been **\$8.5 million**. (See Figure 12)

LAX Vehicle Energy Consumption

LAWA uses a wide variety of alternative fuels to power its fleet vehicles, including: liquefied natural gas (LNG), compressed natural gas (CNG), gasoline/electric hybrids, electric, and propane. In addition LAWA has many different types of alternative fuel vehicles (AFV) such as sedans, light duty pick-up trucks, sweepers, dump trucks, transit buses, forklifts, and person lifts. LAWA's AFV fleet is the largest of its kind in the nation with over 590 AFVs.

Vehicle fuel consumption was relatively level from 2011 through 2013. While not all LAX vehicle usage is directly linked to the volume of airline passenger traffic, some fuel consumption is tied to buses. While the number of passengers increased over 7% between 2011 and 2013; the total energy usage decreased slightly. This suggests that LAX continues to improve vehicle fuel efficiency on a per passenger basis. (See Figure 13)

Energy Efficiency Measures

Energy efficiency has been a priority at LAWA for decades. Actions include improvements to lighting, HVAC and controls.

During the reporting period, LAWA continued to upgrade its air-handling

equipment and perform regular preventive maintenance. Variable frequency drives and associated motors for the return air sections of the Air Handling Units (AHUs) were installed in Terminal 1 during 2012. The new AHUs also include soft-start controls, which provide energy savings by not consistently operating at full load. LAWA continued to replace AHUs in the remaining terminals in 2013. LAWA had converted 80% of its fan drives to variable speed drives by the end of the reporting period.

In 2009, LAX began to replace the existing lighting systems at LAX with high efficiency fluorescent lighting fixtures, reducing energy consumption while producing more light. Tinted skylights reduce the building's heat load and cut air conditioning energy usage as well. LAWA successfully completed the replacement of incandescent light bulbs with compact florescent light (CFL) bulbs at LAX and ONT. CFL bulbs use less electricity and have a longer life-span than incandescent light bulbs. During 2012, LAWA electricians began a project to replace the existing T12 lamps with T8 fluorescent lamps, which have the same light output while using 40% less energy. Approximately 29,000 fluorescent lamps were replaced in Terminals 1 through 8 and two administration buildings in 2013. For outdoor facilities such as runways, signage, and outdoor lighting, light-emitting diodes (LEDs) have been installed wherever feasible.

In May 2011, LAWA conducted a High Performance Building Audit (HPBA) for Terminal 2 – LAX's second largest terminal. The HPBA is a tool to identify and develop operationally sustainable initiatives for a facility, which may include energy conservation measures, operational enhancements, and utility consumption efficiencies, measures that can increase passenger comfort and improve operational reliability. The final report was completed in September 2011. Several upgrades have been planned for the existing systems and equipment.

Over the reporting period, LAWA has developed and implemented the following additional energy conservation initiatives:

- › Retrofitting lighting by installing energy-efficient light fixtures, ballasts, CFLs and LEDs
- › The following pilot programs were initiated to learn the life, reliability, and color retention of LED lamps: 1500 Lineal Feet (LF) of cold cathode lighting using 10W per LF were replaced with LED lighting using 5.6W per LF; and 27 pole lights using 150W lamps were replaced with LED lamps using 30W each.
- › Training LAWA employees to turn off lights and office equipment when not in use
- › Replacing old computers, monitors, printers and copiers with Energy Star certified office equipment

FIGURE 12
Total per Passenger Energy Use at LAX (kBTUs)

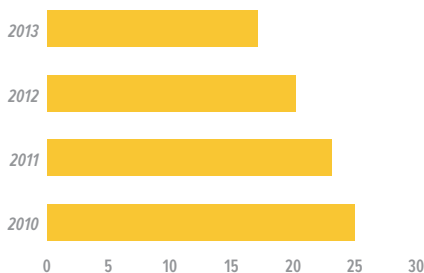
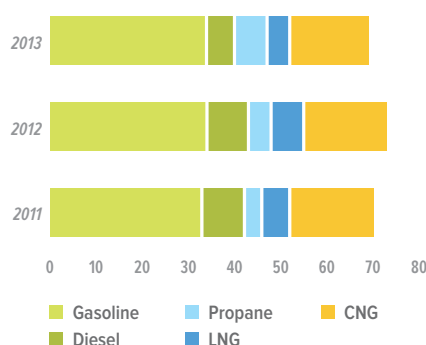


FIGURE 13
LAX Vehicle Energy Usage (million kBTUs)





Central Utility Plant Replacement at LAX

Central Utility Plant

In 2010, LAWA began to replace the 50-year-old CUP at LAX. The new \$438 million CUP will be a modern and state-of-the-art computerized facility providing efficient heating and cooling for the entire CTA. The CUP replacement project is the largest campus-wide energy reduction effort at LAX. The new CUP will be a co-generation facility that simultaneously generates electrical power and steam. This process reduces fuel usage by at least 30% compared to separate electricity and heating processes. Excess electricity generated will be sold back to LADWP for community use at a reduced rate. Phase II of the project includes the demolition of the pre-existing CUP building, construction of the Thermal Energy Storage Unit, and a new maintenance facility.

Green Power Purchase

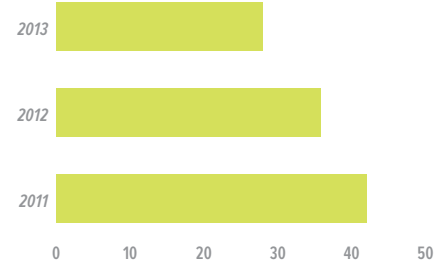
Greenhouse gases (GHGs) are major contributors to climate change around the globe, and are generated by the burning of fossil fuels. Some of the most effective ways to reduce GHG emissions are by increasing energy efficiency, and utilizing more green power. The EPA defines “green power” as a subset of renewable energy that provides the highest environmental benefit, such as electricity produced from

solar, wind, geothermal, biogas, biomass, and low-impact small hydroelectric sources. A green power resource produces electricity with minimal fossil-fuel based GHG emissions.

In 2000, BOAC approved a 10-year agreement for LAWA to purchase green power from LADWP. Since then, LAWA has become a member of the EPA’s Green Power Partnership program, and since 2008, LAWA has remained on the EPA’s “Top Local Government Partner List” achieving its highest rank of 11th place in 2009 and its lowest rank of 20th place in 2008.

Even after the termination of the 10-year agreement with LADWP, LAWA has voluntarily continued to purchase Green Power. In 2011, LAWA purchased 42,027,100 kWh of green power (~25% of the total LAX annual electricity consumption) and ranked 15th on EPA’s list. LADWP’s green power consumed at LAX was derived from renewable sources such as biogas, biomass and wind power. In 2012, LAWA purchased 35,827,829 kWh of green power and was again ranked 15th on the List in 2012. In 2013, LAWA purchased 28,002,570 kWh, 16% of LAX’s total and again ranked as 15th among local governments. (See Figure 14)

FIGURE 14
LAX Voluntary Green Power Purchase, 2011-2013 (thousand MWh)





Air Quality and Emissions Reduction

In 2013, LAWA announced its vision for a new ground transportation program at LAX designed to reduce traffic congestion by 30%.

LAWA made progress in reducing emissions from the region by providing alternatives to conventionally fueled trips and maintaining GHG levels even as airline passengers increased. Enhancing air quality and reducing emissions are LAWA priorities. Challenging regional characteristics, such as an urban area within a large basin surrounded by mountain ranges, inhibit air movement and increase the need to protect air quality. This sustainability report section profiles LAWA's extensive emissions reduction actions at LAX.



LAX VanPool (LAWA RideShare)

Ground Transportation

During the reporting period, LAWA continued to develop plans for a ground transportation program at LAX as part of the Specific Plan Amendment Study (SPAS), which grew out of the 2004 LAX Master Plan and the LAX Specific Plan. LAWA developed the LAX Landside Access Modernization Program to relieve unacceptable traffic congestion within the CTA and surrounding street network, to improve passengers' travel experience, to connect to the regional Metro rail system, and to continue to transform LAX into a world-class airport.

At the centerpiece of the Program is the Automated People Mover (APM), which will provide free, fast, convenient, and reliable access to the CTA for passengers, employees and other users of LAX, 24 hours a day. The APM will be built completely above grade and connect to passenger terminals with a pedestrian walkway system away from crowded roads and curbsides. The APM will transport passengers between the CTA and airport facilities located east of the CTA, including a state-of-the-art, consolidated Rent-A-Car Center (CONRAC), multiple locations for passenger pick-up and drop-off, public parking facilities, and the regional Metro rail system.

The CONRAC will relocate more than 12 rental car operations into a single off-airport location adjacent to the I-405 freeway. The CONRAC will eliminate the need for rental car shuttles to access the CTA by providing direct access to passenger terminals via the APM, resulting in an anticipated 17% reduction in the number of vehicles entering the CTA.

The LAX Ground Transportation program is expected to significantly decrease traffic congestion in the CTA by 20%, decrease vehicle recirculation, idle times, and related emissions. The CONRAC plans also include charging infrastructure for rental and service of zero-emission vehicles. Moreover, the APM will connect to the Metro Rail System and is anticipated to increase transit ride-share for travelers and employees to LAX. Construction is expected to begin in 2018 and be completed by 2024.

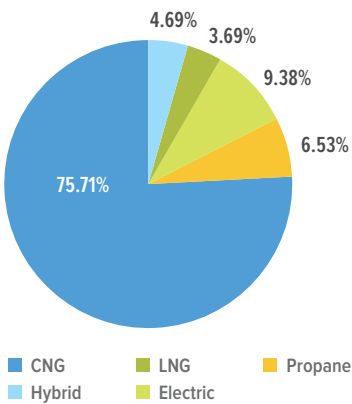
Ground Support Equipment (GSE)

In 2013, LAWA completed a comprehensive feasibility analysis for the increased use of extremely low emission technology in ground support equipment (GSE) at LAX as a means to reduce GSE-related air emissions at the airport. Extremely low emission technology includes, but is not limited to, GSE powered by electricity, fuel cells, hydrogen, future technological developments, and the like. The LAX GSE

goals include achieving a GSE fleet-wide average emission rate of no greater than 2.65 grams per brake-horsepower (gm/bhp-hr) for hydrocarbon emissions (HC) plus nitrogen oxide (NOx), per entity operating GSE at LAX. The LAX GSE goals were determined by the Community Benefits Agreement, and the methodology and assumptions used to calculate gm/bhp-hr are based on the California Air Resources Board's (CARB) existing fleet regulations for GSE statewide, which specifically includes the In-Use Off-Road Diesel (ORD) Vehicle Regulation, the Large Spark Ignition (LSI) Engine Fleet Regulation, and the Portable Engine Airborne Toxic Control Measures (ATCM). These existing statewide rules and programs require operators to achieve improved emissions performance through retirement, replacement, or retrofit of virtually all older, higher emitting GSE.

The feasibility study included completion of an exhaustive survey of GSE owners and operators at LAX to develop a comprehensive inventory of all GSE fleets at LAX. The inventory generated specific information for each piece of equipment such as the GSE type, make, year, engine horsepower, fuel type, and other data. The GSE inventory completed in 2013 as part of the feasibility study provided an accurate update to a baseline inventory

FIGURE 15

LAX Alternative Fuel Vehicle Fleet

completed at LAX in 2006. A comparison of the two surveys provides good information regarding how the GSE fleet has improved at LAX over the past several years. Based on the results of the 2013 LAX GSE inventory, LAWA determined that approximately 37% of the existing GSE fleet is zero-emission (electric) technology and another 16% is low emission LNG or CNG technology.

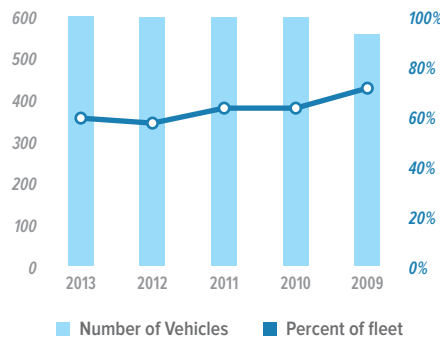
Alternative Fuel Vehicle Program

LAX maintains a high proportion of alternatively powered vehicles with significant improvements over conventionally fueled sources.

LAWA has been a leader in the development and implementation of programs to reduce its emissions. LAWA's AFV programs began in 1993. Alternative fuels currently in use by LAWA include LNG, CNG, fully electric, hybrid-electric and propane. (See Figure 15)

LAWA's AFV fleet is the largest of its kind in the nation, and includes over 650 AFVs utilized at LAX, VNY, and ONT. The LAX fleet, alone, includes over 590 AFVs which, in 2012, equated to over 57% of LAX's fleet vehicles and equipment. In 2013, the alternative fueled fleet increased to 600 vehicles in total. (See Figure 16)

FIGURE 16

LAX Alternative Fuel Vehicles, 2009-2013

CNG vehicles comprise over 75% of the fleet at LAX. LAWA designed and built a state-of-the-art, high-technology LNG/CNG fueling station at LAX and acquired over \$5 million in grant funding to offset the differential cost of AFVs. Two CNG stations are located adjacent to LAX.

Additionally, 100% of the LAX courtesy shuttle fleet is powered by natural gas.

Since 2012, LAWA has upgraded its existing electric vehicle (EV) chargers in the CTA at LAX (and ONT). There are currently over 38 EV chargers available for LAX users. (15 in P1, 15 in P6, and 8 at the VNY FlyAway Bus Terminal.)

Trip Reduction

Congestion in and around LAWA's airports affects air quality and the quality of life for the millions of passengers, the tens of thousands of employees and the millions of community members who live around LAWA's airport properties. Therefore, LAWA has taken specific actions to mitigate these impacts.

FlyAway

LAWA designed the FlyAway Program to provide passengers with an alternate, yet convenient, way to reach LAX while reducing the number of single occupancy

trips to and from LAWA airports. Passengers use dedicated, clean-fuel, high-occupancy buses to reach LAX from the FlyAway locations, which aids in reducing ground traffic congestion. Over the years, the FlyAway program has delivered consistent air quality benefits. (See Figures 17 and 18)

In 2011, LAWA operated FlyAway routes between LAX and remote boarding locations at VNY, Union Station, and Westwood/UCLA.³ In that same year, the program reached an average daily ridership of 3,790 passengers, reduced total vehicle emissions by almost 24 tons per day, and eliminated the equivalent of 3,221 vehicles trips per day, traveling a combined total of 65,505 miles per day on roads approaching LAX.

In 2012, the program achieved an average daily ridership of 3,932 passengers, and removed 3,352 vehicles trips per day, traveling a combined total of 69,032 miles per day, and reduced vehicle emissions by over 25 tons daily on roads approaching LAX.

In 2013, the entire network realized an average daily ridership of 4,049 passengers, reduced vehicle emissions by 18 tons each day, and removed 3,164 vehicles trips per day, traveling a combined total of 63,580 miles per day on roads approaching LAX. In 2014, LAWA opened new FlyAway locations in Santa Monica

³ Irvine Station closed on 8/31/12 from a bankruptcy resulting in an operator-induced contract termination.

FIGURE 17
LAX FlyAway Trips Saved

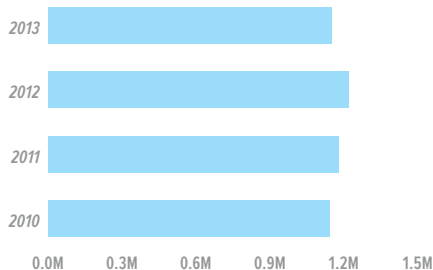


FIGURE 18
LAX FlyAway Average Daily Greenhouse Gases Saved (tons)

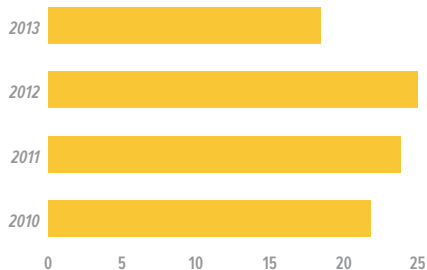
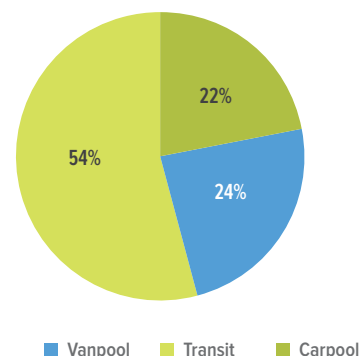


FIGURE 19
LAX Rideshare Breakout



at Main Street/Pico, and in Hollywood, on Vine. New stations are planned at the Torrance Transit Park & Ride Regional Terminal (465 Crenshaw Blvd); and at Victory/Woodley Blvd, connecting Orange Line passengers from Chatsworth to North Hollywood to FlyAway service in Van Nuys.

Employee Rideshare

Each year, LAX’s Employee Rideshare Program saves over 8 million vehicle miles, over 600,000 gallons of gasoline, over 8 million pounds of air pollutants, meaningful vehicle depreciation costs, and countless hours spent driving on Southern California’s over-burdened streets and freeways. LAX’s multi-faceted Employee Rideshare Program includes 69 vanpools, 78 carpool program participants, 270 free monthly transit passes, and numerous marketing and advocacy activities to recruit and retain program participants. Currently, about 25% of LAX’s employees participate in the Employee Rideshare Program, saving nearly 1,000 vehicle trips to LAX facilities

every day. Of the 25% of LAX staff that participate in the ride share, 54% commute via vanpool. (See Figure 19)

LAX is also part of the EPA’s Best Workplaces for Commuters Program, an innovative, voluntary business-government program that distinguishes and provides national recognition to employers offering outstanding commuter benefits. To be part of this program, employers must meet the EPA’s National Standard of Excellence in commuter benefits.

In 2013, LAX added one new vanpool route and also met the required Average Vehicle Ridership Target under South Coast Air Quality Management District Rule 2202 for the 9th consecutive year.

Additionally, in 2012, the Airport Cooperative Research Program selected the LAX Employee Rideshare Program to participate in a study through the National Academies of Sciences Transportation Research Board. This study, which compiled information

about airport employee commute programs nationwide, highlighted LAX’s Employee Rideshare Program as one of the top four most successful airport employee transportation programs in the country.

Additional Trip Reduction Activities

Bicycle Facilities

LAX provides bike racks for airport employees who work in the CTA. There are a total of four bicycle racks located in three different locations within the CTA. Two bicycle racks are located adjacent to Terminal 1; and, one bicycle rack is located adjacent to Terminal 2. The final bicycle rack is located within Parking Structure 6. Bike lockers and showers are also available to LAX staff.

LAX annually promotes “Bike to Work Week” to remind employees of the benefits to bicycling to work and the amenities the program provides.



Car Rental Services

In January 2003, the BOAC approved on-airport concessions for ten rental car companies at LAX as the only firms permitted to provide curbside pickup and drop-off services at the passenger terminals. The program requires on-airport rental car operators to reduce courtesy vehicle trips by at least 20% below 2004 numbers. To achieve this goal, LAWA implemented the Rental Car Traffic Movement Plan in 2005. The plan allots each rental car company a certain number of courtesy trips to the airport in a year. Companies are fined if they exceed their allotted number of trips.

LAWA continues to promote the consolidation of shuttle services to reduce trips associated with these activities. Further consolidation of commercial shuttles in the CTA will be included as part of the LAX Landside Access Modernization Program.

LAX Traffic Control Measures

Traffic control measures are efforts to reduce congestion by gathering real-time information, adjusting traffic signals, communicating road conditions and providing alternatives for drivers who have to recirculate while they are waiting to pick up arriving passengers.

LAWA operates the LAX Traffic Operations Center which uses closed circuit television cameras to view real-time traffic flows within the CTA. The cameras allow staff to identify unusual incidents causing traffic delays and determine whether to adjust the traffic signals. The Traffic Operations Center uses portable and fixed electronic message boards to provide real-time information so that motorists can make knowledgeable driving decisions. Eight portable solar-powered “variable” message signs are available at LAX during peak travel times or for special occurrences. LAWA’s website, www.lawa.org, includes traffic alerts, a

link to the Los Angeles Department of Transportation (LADOT) real-time traffic maps and airport-specific maps showing current lane closures and detours in the LAX area.

LAWA operates a 24-hour cell phone waiting lot located near LAX, where motorists meeting arriving passengers can wait, for up to two hours, until passengers call to say that they are ready to be picked up in the CTA. Utilizing this lot for waiting minimizes impact from people circling the CTA waiting for their passengers to exit the terminal.

LAWA works cooperatively with LADOT and other transportation agencies to improve off-airport streets and intersections to mitigate traffic impacts created by LAWA projects. In addition, LAWA schedules traffic related to airport-specific construction projects outside of peak airport traffic hours.

Coordination & Logistics Management (CALM)

The CALM group coordinates where contractor laydown yards will be located based on available space close to where the contractor will be working on airport grounds. The goal is to efficiently utilize space and minimize travel time and emissions from the laydown yard to the project site. Construction-related traffic and deliveries are also coordinated outside of heavy traffic times in the CTA to minimize traffic-related impacts. Inspectors working with contractors check laydown yards for neatness, management, and storm water impacts.

Greenhouse Gas Inventory

LAX reports GHG performance in compliance with California Assembly Bill 32 (AB 32) and local Los Angeles regulations and directives. There are three types of GHG emissions groupings: Scope 1 – emissions from direct fuel consumption in LAX owned and operated buildings and vehicles; Scope 2 – emissions from energy generated offsite, but consumed at the airport (e.g., grid supplied electricity); and Scope 3 – indirect emissions associated with Airport related actions or contracts (e.g., commuter travel and construction projects). The LAX official greenhouse gas report shows relatively level GHG emissions for Scope 1 natural gas use at approximately 49,000 metric tons CO₂ equivalent (CO₂e)

annually for 2010 and 2011. Scope 1 use of CNG in vehicles is similar at just below 10,000 metric tons CO₂e. Scope 2 GHG emissions were around 100,000 metric tons CO₂e in 2008, 2010 and 2011. LAX is not required to inventory Scope 3 GHG. See Table 1 for a complete listing of GHG scope designations.

Airport Gate Electrification

During the 2011-2013 reporting period, LAX successfully reduced pollutants from the burning of jet fuel in the arriving and departing aircrafts' auxiliary power units (APUs) by providing electric power and pre-conditioned air to passenger gates. During this period, 100% of LAX's passenger gates

were equipped to provide electric power and pre-conditioned air to waiting aircraft. It is estimated that approximately 1% of aircraft jet fuel is burned in the APUs. As LAX eliminates one-half of each originating or destination aircraft's APU usage, the total energy savings and the emissions and fuel savings are significant.

In addition, in October 2013, LAWA consultants completed a comprehensive feasibility assessment study for the electrification of LAX cargo operations and other hangars. LAWA is currently defining the details of projects to provide electrification to cargo operations and other hangars at the airport.

TABLE 1

GHG Scope Designations Explanation

SCOPE 1	SCOPE 2	SCOPE 3
<ul style="list-style-type: none"> › Stationary sources – such as direct fuel burn to heat/cool buildings › Vehicles – LAX owned and operated › Fugitive emission releases such as refrigerant release during recharges 	<ul style="list-style-type: none"> › Purchased electricity › Purchased steam › Purchased heat/cooling from a 2nd party 	<ul style="list-style-type: none"> › Business travel & commuting › Electricity transmission and distribution line losses › Contracted solid waste disposal › Contracted wastewater treatment › Life-cycle emissions from procured products



Noise Management

LAX is committed to minimizing noise disturbances for the neighborhoods surrounding the airport. Through a combination of flight routing procedures (negotiated with the FAA), property acquisitions, sound insulation, and quieter aircraft, the number of incompatible residences within the 65-decibel (dB) Community Noise Equivalent Level (CNEL) is steadily decreasing.

This section of the report provides details on LAX actions to monitor and reduce aircraft noise and maintain effective communication and collaboration with local neighborhoods.

LAX sound insulated over 90% of noise-affected residences located within the City of Los Angeles.





LAX Noise Monitoring

LAX uses LAWA's Airport Noise and Operations Monitoring System (ANOMS), a comprehensive noise management system with enhanced measurement, analysis, and reporting tools, to meet state noise requirements and to serve the needs of the community. ANOMS provides extensive query, analysis, reporting, display, and improved monitoring capabilities, while automating many tasks previously handled manually. The innovative system enables:

- Accurate measurement and recording of noise generated by arriving and departing aircraft.
- Effective enforcement of noise abatement and in-flight procedures.

The system integrates a variety of data including audio recordings of FAA air traffic control frequencies, noise event data from noise monitoring terminals in the surrounding community, radar flight track data, and noise complaint logs. ANOMS, with extensive query and analysis capabilities, equips noise management personnel to perform key tasks such as:

- Investigating noise complaints and preparing monthly reports.
- Monitoring aircraft operations for compliance with noise abatement procedures.
- Conducting noise analysis of aircraft arrival and departure procedures.
- Creating noise contour maps.
- Identifying areas that are impacted by aircraft noise.

LAX Aircraft Procedures to Reduce Noise

LAWA has partnered with the FAA to reduce noise experienced by surrounding communities. Over the years, LAWA and the FAA have reduced the number of aircraft with louder noise-emitting engines operating at LAX, established a preferential use policy to favor departures from the inboard runways (closer to airport terminals/farther from communities), and directed air traffic away from communities over the ocean, when possible, especially during noise-sensitive hours.

Over-Ocean Operation Procedures

From midnight to 6:30 a.m., all aircraft at LAX arrive and depart over the ocean, unless FAA Air Traffic Control determines that weather, equipment or operational conditions are unsafe for such operations. This operational guideline provides nearby communities to the east of the airport with some noise relief from arriving aircraft during noise-sensitive hours. (See Figure 20)

Preferential Runway Use Procedures

Between 7 a.m. and 10 p.m., LAX gives preference to inboard runways (closer to the terminals) for departures, while the outboard runways (closer to communities) are designated for arrivals. Departures are usually louder than arrivals due to the engine power requirements during take-off and the duration of the peak noise. During the noise-sensitive hours between 10 p.m. and 7 a.m., FAA Air Traffic Control maximizes the use of the inboard runways and taxiways for all operations to lessen

community noise impacts. This is commonly referred to as *Preferential Runway Use Procedures*. (See Figure 21)

Early Turn Notification Program

Aircraft departing toward the west (over the ocean) must fly straight until past the shoreline before beginning any turns, unless the FAA Air Traffic Control instructs them to do otherwise in order to maintain flight safety requirements. Beginning a turn after take-off and before reaching the shoreline is known as "early turn." Reducing such turns decreases aircraft noise over residential communities that are adjacent to LAX. As part of the *Early Turn Notification Program*, LAWA regularly monitors all early turns and uses recordings of communications with pilots to verify whether FAA Air Traffic Control instructed the early turns for aircraft safety. LAWA issues notification letters with supporting graphics to airlines, and other aircraft operators, that deviate from this noise abatement procedure. The airlines and operators are asked to investigate the incident and to respond to LAWA with an explanation of the cause of the early turn and what they have done or will do to correct the problem for future departures. A monthly report for local communities, the FAA and other interested parties is also generated and available online at www.lawa.org. (See Figure 22)

Aircraft Engine Maintenance Limitations

Departing and arriving aircraft are not the sole sources of noise. Aircraft require regular engine maintenance and testing. LAWA requires that all idle engine checks



and tests and run-ups be conducted only for the minimum time required to satisfy necessary maintenance or preflight checks, with auxiliary power units also operated as minimally as possible. Run-ups of mounted aircraft engines for maintenance or testing are prohibited between 11 p.m. and 6 a.m., and maintenance or test running for not-yet-mounted jet engines is prohibited unless performed with a “test cell” (physical acoustic enclosure) to reduce noise.

Other procedure actions:

Operational restrictions at Imperial Terminal – Upon arrival, turboprops over 65,000 pounds and all turbojets must taxi to a position on Taxiway A, where engines are shut down. Aircraft are then towed to assigned parking positions to minimize noise.

Helicopter Operations – Helicopter operators with a valid Operating Agreement with LAWA must comply with LAX and FAA noise mitigation requirements and procedures regarding route choice and minimum altitudes.

LAX Sound Insulation Programs

LAWA funds the largest airport sound insulation program in the nation. The purpose of the program is to reduce the impact of aircraft noise for residents living within the noise contours where noise levels exceed state-mandated levels. (See Figure 23) The program reduces interior noise to 45 decibels (dB) through installation of sound insulation. At LAX, about 28,000 homes are eligible for sound insulation treatment in the adjacent four neighborhood jurisdictions. LAWA

FIGURE 20
Over-Ocean Operation Procedures

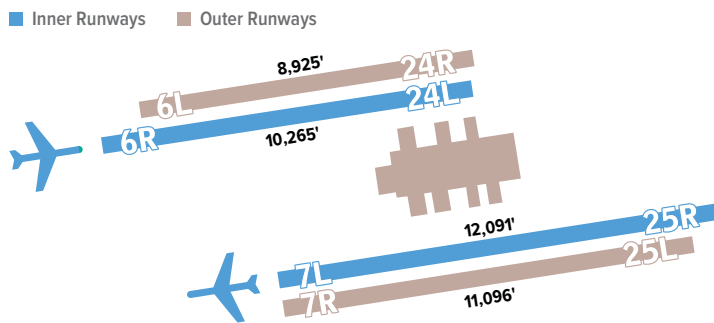


FIGURE 21
Preferential Runway Use Procedures

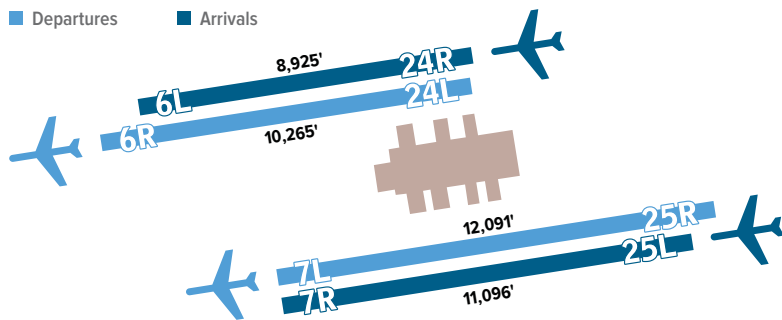
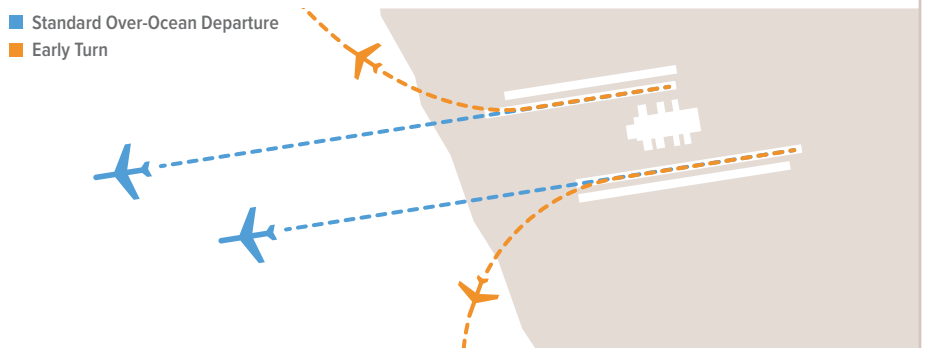


FIGURE 22
Minimizing Early Turns to Reduce Community Overflights



and the FAA spent a combined \$600 million through 2013 to provide sound transmission-rated windows and doors, add insulation to attics, and install ventilation or air conditioning within these jurisdictions. In 2013 alone, the program provided \$43 million dollars for sound insulation construction projects.

LAWA has purchased residential property within the cities of Los Angeles and Inglewood to relieve the noise impacts. Inglewood also purchased land within the City of Inglewood. This program addressed circumstances where the exterior noise level was at least 75 dB and sound insulation alone was not sufficient. Residents participated in this program on a voluntary basis. LAWA has spent over \$463 million for property acquisition programs at LAX.

City of Los Angeles Sound Insulation Program and Voluntary Residential Acquisition Program

LAWA's Airport Development Group oversees and manages the sound insulation program for the City of Los Angeles. This program finished its last construction contract in 2014, completing sound insulation in approximately 7,400 dwelling units out of the 8,200 dwelling units originally eligible. LAWA contributed over \$160 million for this program.

LAWA's Commercial Development Group oversees the Voluntary Residential Acquisition Program, which is in its final

stages. The areas eligible for acquisition and relocation were Airport Belford and Manchester Square representing 502 properties. LAWA spent \$370 million to fund the City of Los Angeles' acquisition program through 2013.

City of Inglewood Residential Sound Insulation and Voluntary Residential Acquisition Program

The City of Inglewood has a Residential Sound Insulation Program for residential property owners most impacted by aircraft noise. The Inglewood Program is the largest sound insulation program at LAX, with 8,700 homes eligible for sound insulation. By the end of 2013, the City of Inglewood had insulated 50% of eligible units. The FAA and LAWA spent \$206 million to fund this sound insulation program through 2013.

The City of Inglewood managed a Voluntary Residential Acquisition Program from the mid 1980's through 2013. The acquisition program concentrated on Century Boulevard. The FAA and LAWA have spent over \$93 million on Inglewood's acquisition program through 2013.

City of El Segundo Residential Sound Insulation Program

The El Segundo program has 4,550 homes eligible for sound insulation. In 2013, the City of El Segundo had completed insulation in 33% of all eligible

units. The program spent \$68 million in combined funding from the FAA and LAWA through 2013.

County of Los Angeles Residential Sound Insulation Program

The County of Los Angeles has a Residential Sound Insulation Program for the residents in the unincorporated areas of Athens, Del Aire, and Lennox. In the County areas, 6,200 homes were eligible for sound insulation. By 2013, the County of Los Angeles completed insulation in 44% of all eligible units. Almost \$118 million in combined FAA and LAWA funds was spent for the County's sound insulation program through 2013.

Noise Contours

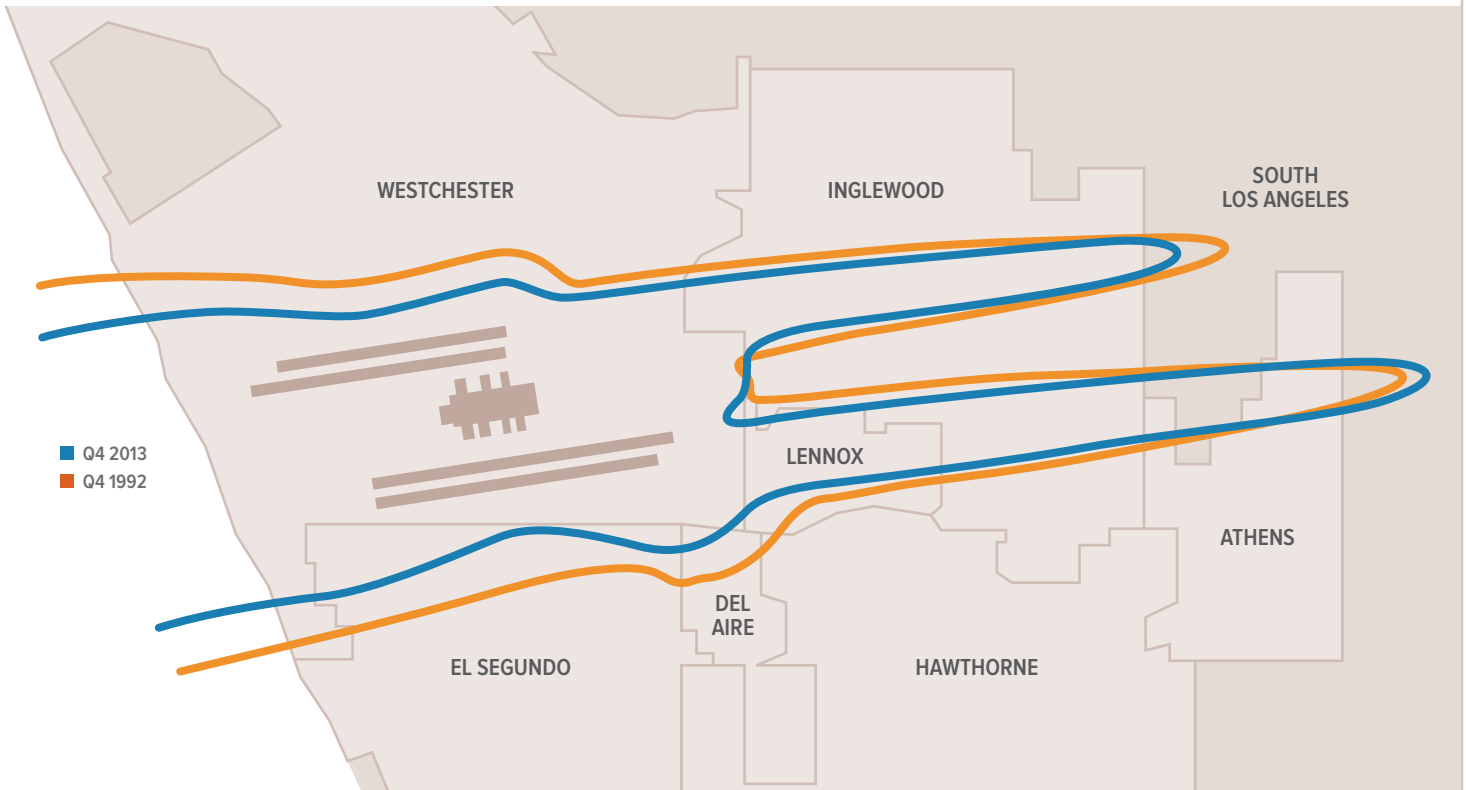
The noise contour map, designated as Figure 23, depicts the overall noise reduction at LAX from 1992 to 2013. The number of residences located within the 65-dB CNEL contour has been reduced, through property acquisitions and the evolution toward quieter aircraft, and have achieved -1 to -8 dB sound level reductions by installing sound insulation across the areas that remain within the noise threshold area. (See Figure 23)

LAX Internet Flight Tracking and Complaint Handling (via WebTrak)

In 2010, LAWA fully implemented a state-of-the-art noise and operations monitoring system at LAX that includes web capabilities through WebTrak, which is part of the LAX ANOMS system. The LAX WebTrak site can be used to view when and where aircraft are flying and identify the aircraft operators. The LAX WebTrak site can be found under the Noise Management page at www.lawa.org, and displays movement of flights and air traffic patterns within the greater Los Angeles Region, as well as allowing community members to obtain information on the type and altitude of any aircraft flying over their neighborhoods. WebTrak features include:

- › Identifying which aircraft caused the noise disturbance
- › Filing a noise complaint about a specific noise incident or a general concern
- › Locating a residential property on the map to determine its relation to the airport and flight patterns
- › Viewing current or historical aircraft flight activity
- › Obtaining noise readings for aircraft flying near LAX
- › Observing the airport's current weather conditions

FIGURE 23
LAX Noise Map with 1992 and 2013 65-dB CNEL Contours



LAX Community Noise Roundtable

LAX works to ensure local neighborhoods can communicate and address noise concerns. Since 1959, when the Los Angeles Airport Sound Abatement Coordinating Committee was formed, LAX has continually improved efforts to monitor and mitigate noise experienced in nearby communities. Today, LAX continues to address airport noise with communities through the LAX/Community Noise Roundtable, which celebrated its 10th Anniversary in 2010.

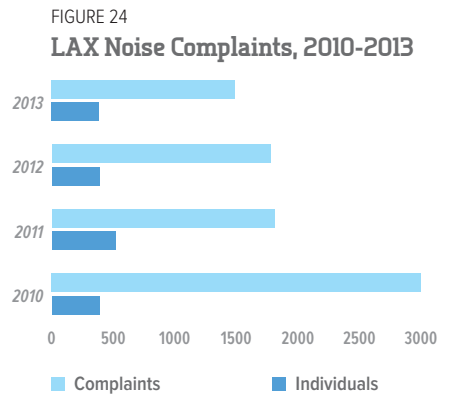
The LAX/Community Noise Roundtable brings together representatives to help reduce and mitigate aircraft noise impacts on surrounding communities. Roundtable members include local elected officials and staff, representatives of congressional offices, members of recognized community groups, the FAA, airlines and LAX management. The Roundtable has been successful in obtaining FAA assistance in

changing several procedures, including the increase of altitude for aircraft arriving during Easterly Operations (when aircraft arrive from over the ocean and take-off to the east over land). The Roundtable is also pursuing adoption by the FAA of specific new departure procedures using satellite navigation instead of verbal direction and altitude instructions from FAA air traffic controllers.

The Roundtable normally meets on the 2nd Wednesday in the months of January, March, May, July, September and November as posted on the LAX Noise Management page of LAX's website at www.laxnoise.org.

The number of noise complaints fluctuates due to many factors. During the reporting period both the total number of complaints and the number of unique individuals filing those complaints decreased. In 2011 the total number of complaints was 1,778 and the number of unique individuals filing those complaints was 519. That dropped in

both 2012 and again in 2013, falling by 18% to 1,487 complaints, and by 26% for the number of individuals. (See Figure 24)



Materials Conservation and Resource Efficiency

LAWA strives to minimize waste and maximize environmentally preferred material purchases. Materials conservation and resource efficiency are practices designed to minimize waste headed to the landfill or incinerator.

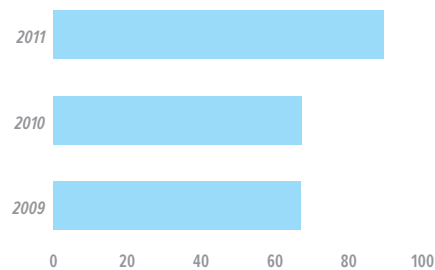
*LAX reused over 300,000 tons
of old pavement as an aggregate
base for runways, aprons,
and taxiways.*



Every person that visits or works at LAX participates in the sustainable management of materials. Passengers create potential waste material through meal and retail purchases that have associated food preparation waste or product packaging. Airlines and concessions activities generate waste streams such as cabin-service beverage containers and cardboard packaging. The LAX Procurement Services Division (PSD) promotes resource efficiency with contract language that includes recycling requirements and through direct purchase of products with sustainable attributes and certifications.

Within this section of the report, diversion refers to the total material that was either eliminated because it was no longer necessary (source reduction), material that LAX has found a secondary usage for (reuse), or items collected and taken offsite for the constituent materials to be remanufactured as a new product (recycle). Waste refers to material that is not reduced, reused, or recycled. LAWA achieved a nearly 90% recycling rate in 2011, a significant increase over 2009 and 2010 due to pavement recycling actions. At the time of this report 2012 and 2013 recycling data was not available. (See Figure 25)

FIGURE 25

LAX Recycling Rate, 2009-2011*(percent of total waste)***Three "Rs" Defined**

Reduce: The optimal way to minimize waste is to avoid the initial purchase. Reducing purchases eliminates impacts associated with resource extraction, production, transportation and disposal.

Reuse: When existing material is no longer needed, the ideal option is to find another use for it. Reused items minimize the need for new material and usually require less energy than recycling.

Recycle: When reuse is not possible, it is often more sustainable to send material to be reconstituted as a feedstock for new items rather than sending it to a landfill or incinerator.

Municipal Solid Waste

Minimizing municipal solid waste is one of the most important sustainability initiatives developed by LAWA. Recycling receptacles are in place throughout the terminal areas to encourage recycling. LAWA monitors and collects data on the amount of waste and recyclables generated by LAX and its tenant groups such as airlines, cargo facilities and concessions.

The waste diversion total quantities are an aggregate of different waste streams. The recycled waste streams include paper, plastic, glass, metals, wood, green materials, tires, food, construction debris and other miscellaneous items. On-site reuse of pavement provided the single largest source of waste diverted material at 295,853 tons combined for 2011 and 2012. In 2013, pavement recycling totaled 9,615 tons.

To increase recycling and source reduction at all facilities and throughout all operations, LAWA has implemented the following strategies:

- › In-house collection of recyclable materials generated by LAWA and from common-use recycling containers and bins in airport terminals and airfield areas.
- › Source reduction through the purchase of recycled products and reuse of materials.
- › Implementation of an extensive construction and demolition (C&D) debris recycling program.
- › Development of recycling programs with concessionaries and restaurant management companies, such as HMSHost, Hudson Group, and Westfield.
- › Implementation of airlines' and tenants' own recycling programs and reporting of data to LAWA.





Photo by Ellen Callaway. Part of the Recycled Beauty portfolio.

- › Expansion of inflight recycling programs to five major airlines: Alaska, American, Delta, United, and Southwest.

In 2012, LAX added the following services:

- › Offering tenants file clearing services.
- › Public outreach, including to tenants and other stakeholders, on the new statewide, mandatory commercial recycling law that went into effect in July.
- › Partnership with HMSHost at LAX for the Food Donation Program. More information on the Program is provided in the Social Responsibility Section of this report.

Material Waste Streams

Table 2 lists the amounts of major waste streams collected and recycled between 2009 and 2011. 2012 and 2013 data were not available at the time of this report.

LAX recycles a broad number of materials as shown in Table 2. C&D is the largest source of potentially recycled material, followed by paper. Combined construction and paper recyclable materials comprise over 70% of the recycling and 50% of the total LAX waste stream. Both construction materials and paper products have potential after-market value that can reduce waste disposal costs associated with landfill or incinerator waste. Wood

pallets are another major source of material at over 6,000 tons of material from 2009 through 2011.

Construction and Demolition Debris Recycling

During the reporting period, construction and renovation activities produced a large amount of C&D debris. A high percentage of building materials can be recycled if the contractor separates items during construction or demolition. Metal pipes, metal framing, cement, drywall, glass, wiring, acoustic tiles and carpets can all be commercially recycled. Since 1997, LAX has recycled over 119,000 tons of construction debris. The *LAX Airport Modernization*

TABLE 2

LAX Recycled Materials 2009-2011 (in tons)

RECYCLED MATERIALS	2009	2010	2011	COMBINED TOTAL
Paper	5,581.4	8,066.9	7,422.7	21,071.0
Plastic	829.3	765.4	557.6	2,152.3
Glass	28.1	11.1	10.5	49.7
Metals	440.1	562.2	486.1	1,488.4
Wood/Pallets	1,146.2	2,449.3	2,452.0	6,047.5
Green Materials	341.0	340.6	228.8	910.4
Tires	85.2	76.9	376.9	539.0
Food	13.1	14.3	132.9	160.3
Construction and Demolition (C&D) Debris	10,825.1	7,298.1	8,996.4	27,119.6
Others	400.0	617.4	996.2	2,013.6
Total Amount Recycled	19,689.5	20,202.1	22,549.5	62,441.1
Total Amount Generated	30,590.0	32,200.0	30,750.0	93,540.0

LAX Pavement Reuse

LAX utilizes crushing equipment in order to reuse pavement after it reaches its specified lifespan. The sources of the pavement include existing runways and taxiways, and aprons. Concrete pavement is fed through the crusher, where it is broken into smaller fragments. Crushed pavement is then fed through an on-site concrete batch plant. The end product is then used as aggregate for low-strength “Econcrete” that underlies new high strength Portland Cement Concrete, or serves as a base material that is placed and compacted below the Econcrete. LAWA saves both materials and costs by reusing existing concrete on-site. A highlight for this technology was the Taxilane S project:

- › In 2011, over 245,000 tons of concrete were reused.
- › In 2012, 50,000 tons of concrete were reused.
- › In 2013, almost 10,000 tons of concrete were reused.

Program recycled significant amounts of C&D debris during the South Airfield Improvement (100%), TBIT Modernization (>75%) and Crossfield Taxiway Projects.

Environmentally Preferable Purchasing (EPP)

In the reporting period, LAWA began efforts to improve purchasing standards through environmentally preferred purchases and sustainable supply chain mandates. The standards, once complete, will align with the City’s EPP Ordinance requiring all city departments to develop their own EPP programs. The new LAWA standards will include procurement guidance to increase purchases of sustainable products with validation by widely recognized and respected third-party authorities such as *ENERGY STAR*®, *Green Seal*, *Greenguard* and *EcoLogo*.

LAWA is committed to the use of post-consumer recycled products. PSD is responsible for the monitoring and tracking of post-consumer recycled product use within LAWA.

Green Procurement Language

In 2009, LAWA began to include green procurement language in its custodial paper and chemical contracts. This language allowed LAWA to purchase post-consumer recycled “PCR” content paper towels and toilet tissues for all its restrooms and offices. In addition, LAWA has increased purchase of 3rd party validated environmentally

preferable products that may have secondary benefits such as reduced volatile organic compounds. LAWA requires that all cleaning supplies be either certified by *Green Seal* – an independent non-profit organization that develops environmental standards for cleaning and other consumer products or *Environmental Choice* – a green labeling program created by *Environment Canada*. LAWA is developing a comprehensive EPP program that will include: a) non-custodial cleaning products and services, b) packaging and labeling requirements, c) reporting requirements, and d) liquidated damages for deviation from EPP and environmental specifications.

Other Sustainable Procurement Components

Recycled Content Paper Purchases

Adhering to Los Angeles Ordinance No. 170485, LAWA established a 10% pricing preference for bids on recycled products. Since 2008, LAWA has transitioned to purchasing only 30% PCR paper for its printers and copiers and other custodial products such as multi-fold paper towels, toilet rolls and toilet seat covers. In October 2010, LAWA signed a five-year contract to supply custodial products with sustainable attributes for LAX, ONT and VNY.

Recycled Content Plastic Bags

LAWA has purchased plastic bags or trash liners containing a minimum of 30% PCR content since 2010.



Sustainable Construction Practices

*Tom Bradley International Terminal
renovation and New Aircraft Rescue and
Fire Fighting facility achieved
LEED certification*

The best time to incorporate sustainable elements into a building or other airport infrastructure is during the design process. LAX completed many construction projects from 2011 through 2013 that included sustainable standards to reduce resource consumption and promote sustainable actions and materials.



LA Green Building Code

LAWA published its Sustainable Airport Planning, Design and Construction Guidelines in 2008 ahead of California state requirements. In January 2011, the state adopted the California Green Building Standards, known as CALGreen, which required all new construction exceeding 10,000 sq. ft. to adhere to the CALGreen codes. Later in the same year, the City of Los Angeles adopted the Los Angeles Green Building Code (LAGBC), replacing LEED in the Los Angeles Municipal Code, and mandating the inclusion of green building measures in construction. In response, LAWA replaced its Sustainable Airport Planning, Design and Construction Guidelines, as well as its reliance on the LEED rating system. LAWA now requires building projects with a Los Angeles Department of Building and Safety (LADBS) permit-valuation over \$200,000 to achieve LAGBC Tier 1 conformance.

LAGBC contains over 52 mandatory sustainability measures, including:

- › **Parking spaces** for clean air vehicles
- › **Water reduction** of **30%** for indoor potable consumption
- › **Energy efficiency** **15%** above code
- › **Waste minimization** achieving at least **50% diversion**
- › **Non-emitting** building materials
- › **Commissioning** equipment

FIGURE 26

LAWA Sustainable Construction Code Timeline

Timeline of LAWA's building code changes relating to sustainability

- ▶ **JANUARY 2008**
LAWA publishes Sustainability Planning, Design and Construction Guidelines
- ▶ **JANUARY 2011**
California issues CALGreen Green Building Code
- ▶ **DECEMBER 2011**
City of LA issues Los Angeles Green Building Code (LAGBC)
- ▶ **NOVEMBER 2012**
LAWA adopts LAGBC Tier 1 Compliance Standards

Sustainable design and construction approaches reduce consumption of critical resources like energy, water, and raw materials. Efficiently designed buildings minimize utility costs over the life-cycle of the facility. Sustainable pavement practices reduce material costs by reusing existing material. There are also a wide range of additional benefits, such as air quality protection, that can be achieved through sustainable construction requirements. LAWA follows sustainable design requirements and formalized this commitment starting in 2008. (See Figure 26 for a timeline)

This section of the report profiles a few success stories related to sustainable construction including four major projects.

Tom Bradley International Terminal Renovation

The TBIT renovation upgraded the facility with a new in-line baggage screening system and other interior improvements to enhance customer service and convenience in LAX's international gateway terminal.

Following the renovation program, USGBC awarded the building its prestigious designation of **LEED Silver**, recognizing the renovation's efforts at maximizing operational efficiency while minimizing environmental impacts. Significant upgrades to the terminal's energy management system include:

- › An automated lighting control system using high-efficiency fluorescent lighting with dimmable ballasts.
- › More energy-efficient heating, ventilation and air-conditioning (HVAC) systems.
- › Materials and resource conservation, with more than 75% of construction and demolition waste recycled or salvaged.
- › The terrazzo floors and metal ceilings are comprised of 80% and 70% recycled material, respectively.



Construction on Taxiway S



Bradley West under Construction (LA-Next Photo)

Crossfield Taxiway and Taxiway S

The Crossfield Taxiway Project (Taxiway R) provides another taxiway connection between the north and south airfield complexes at LAX. The new Taxiway improves aircraft safety and efficiency. The project included demolishing existing structures, removing deteriorated concrete and asphalt pavement, constructing Portland cement concrete and asphalt concrete pavement, installing airfield signage and lighting systems and airfield pavement markings, and improving storm drains. The existing World Way West road was realigned and two bridges were installed over the road – one for aircraft crossing as part of Taxiway C13 and the other for vehicular traffic.

Taxilane S opened for use in November 2011. Taxilane S is a 3,785-foot-long taxiway to connect Taxiway B on the south airfield and Taxiway E on the north airfield. It also provides ramp access to aircraft.

Sustainable measures included:

- › **Construction material** recycling
- › **Transportation reduction** by strategic placement of onsite concrete mixers and other equipment to reduce the number of trips to and from the site and mandatory construction vehicle routing.
- › **Emission and noise-reduction** retrofits for construction equipment.
- › **Dust control** measures.
- › **Porous concrete** for the new 1,600-space surface parking lot to reduce runoff and recharge local groundwater.

Bradley West Terminal

The new Tom Bradley Terminal provides greater capacity to the existing Tom Bradley International Terminal with upgraded gates to comfortably accommodate passenger loads for the larger new generation aircraft and a great hall for premier dining and retail shopping. It is considered to be the largest public works project in the history of Los Angeles and it created 4,000 construction related jobs over the course of the four-year project. These are benefits above and beyond the primary goal to accommodate passenger traffic at LAX.

LAWA designed Bradley West to achieve **LEED Silver** certification. Key elements to minimize environmental impacts include:

- › Recycling or salvaging more than 75% of C&D material.
- › Installing efficient lighting fixtures and controls with occupancy sensors throughout the terminal to reduce lighting costs and save energy during off-peak hours.
- › Installing heating, ventilation and air conditioning controls that reset temperatures to maximum efficiency without sacrificing occupant comfort.
- › Using interior finishes with materials made of recycled content.
- › Selecting low-emitting paints, adhesives, carpets and sealants for the terminal's interior.
- › Specifying ultralow-flow plumbing fixtures in restrooms.
- › Retrofitting construction equipment with emission and noise-reduction devices.

- › Obtaining locally produced building materials.
- › Deploying reclaimed water for dust control.
- › Working with tenants and concessionaires to install equipment to minimize water consumption and electricity use.
- › Commissioning systems to optimize HVAC equipment and lighting controls performance.

Central Utility Plant Replacement

LAWA began construction of Phase I of the new CUP in February 2011. This phase included construction of the CUP facility and its major systems, as well as installation of piping and electricity distribution systems, new plant equipment, combustion gas turbines, heat-recovery steam generators, cooling towers, water refrigeration and heating equipment, and ancillary pumps. It also included new maintenance shops and offices for plant personnel. In addition, the construction team replaced the cooling and heating equipment in passenger terminals, the Theme Building, and an airport administration building. As part of the project, LAWA also installed a state-of-the-art computerized building information and management system for the entire CTA.

LAWA designed and built the new CUP to achieve **LEED Silver** certification. Key elements to minimize environmental and operational impacts from construction include:

- › Recycling construction materials.



Terminal surface curbside appeal improvements

- › Strategically placing concrete mixers and other equipment onsite to reduce the number of construction vehicle trips and traffic.
- › Designating specific routes that construction vehicles must use when traveling to and from the site.
- › Retrofitting existing construction equipment with emission- and noise-reduction devices.

Additional Sustainable Construction Accomplishments

- › **LAX LAFD Aircraft Rescue Firefighting Station 80.** In 2011, the new Aircraft Rescue and Fire Fighting (ARFF) facility at LAX achieved LEED Gold certification. The structure is the first ARFF at an international airport to achieve **LEED Gold**.
- › **Terminal 5 Renovation (ongoing).** The Terminal 5 renovation and modernization project improves passenger service and security with a new baggage claim facility, new elevators and escalators and new passenger amenities. High-efficiency lighting will replace the previous system, reducing energy use while producing

more light. A more efficient mechanical system will also reduce energy use. Additionally, installation of low-flow plumbing fixtures in restrooms will reduce water consumption.

- › **Terminal 6 Renovation.** This renovation and modernization project increased lobby space, replacing traditional ticketing counters with new check-in kiosks, bag check stations, and a behind-the-scenes in-line baggage handling system. Additional security screening checkpoints were added to facilitate quicker screening. The overall Terminal 6 renovation also integrated sustainable construction practices; the Alaska Airlines Board Room lounge was designed to meet USGBC requirements for **LEED Silver certification**.
- › **Jenny Lot Site Modifications.** LAWA built a new 1,900-space parking lot called the “Jenny Lot.” Improvements included hazardous materials abatement and removal, demolition of existing facilities, grading, striping, signage, and installation of lights, hydrants, fences and gates. Stormwater runoff mitigation measures included a rainwater clarifier system.

- › **LAX Elevator and Escalator Modernization (ongoing).** LAWA’s elevator and escalator modernization project replaces and rehabilitates deteriorated equipment and systems to meet current standards of safety, operation requirements, and environmental protection. The first phase focused on the 48 units most in need of replacement/refurbishment. The second phase will cover the next 70 units most in need of replacement. The final phase will include the remaining 94 units at seven of LAX’s eight terminals and the parking garages.

LAX Curbside Appeal Project

The Curbside Appeal and Roadway Improvement Project provides a new, dramatically upgraded look for LAX with the installation of modern LED street lighting, wayfinding components and canopies. All of the new lighting, from the sculptural poles to the canopies and other site features, uses LED technology. The LEDs enhance visibility and safety with a whiter, brighter and more energy-efficient light. In addition, the recyclable LEDs have no mercury and last longer (up to 10 years), conserving maintenance staff resources and substantially reducing toxic landfill waste.



Natural Resources Management

LAWA's El Segundo Blue Butterfly Conservation Program restores native coastal dunes habitat and promotes public awareness about stewardship of this endangered species

One of the primary elements of LAWA's sustainability program is LAX's dedication to its biological and natural resources. LAWA is committed to natural resources management and protection through the LAX Dunes Endangered Species and Habitat Conservation Program and many other programs. LAX has a dedicated Wildlife staff that have successfully protected, restored, conserved and reintroduced the native coastal habitat in the LAX Dunes. The LAX Wildlife Hazard Management Safety Program has successfully captured and relocated wildlife using sustainable wildlife management practices.

maintenance of the endangered coastal dunes habitat found at LAX. Community organizations and state agencies continue to collaborate and have restored the native plant communities to approximately 230 acres over the past 27 years.

The LAX Dunes Endangered Species Conservation Program

LAX Dunes is home to the federally-listed endangered El Segundo Blue Butterfly (ESBB) and its natural food, the coastal buckwheat plant. The 2011 ESBB population estimate was between 120,610 and 125,920 individuals. During 2012, over 120,000 butterflies were estimated to live within the LAX Dunes.

LAWA implemented the following restoration and preservation projects in the Dunes from 2011-2013:

Dunes Habitat Restoration Project

This project focused on the reintroduction, protection and conservation of the coastal buckwheat plant.

LAX Coastal Dunes Improvement Project

The project commenced in 2013 and is managed in consultation with the United States Fish and Wildlife Service, and the California Department of Fish and Game, United States Department of Agriculture (USDA) Wildlife Services, and the California

Coastal Commission. The Project involves removing pavement from abandoned roads and retaining walls and other structures, planting native species, and eliminating invasive plants to restore a 48-acre portion of the northern LAX Dunes. Much of the project's success is a result of LAWA's dedicated two-person crew that works in the LAX Dunes to maintain the land and remove non-native invasive plant species; a major threat to both the ESBB and the coastal buckwheat plant.

LAX Adopt-a-Dune Program

LAWA initiated the Adopt-A-Dune Program in 2013 and it has since grown in popularity. This volunteer program provides an opportunity for organizations and their members to directly support and learn about the coastal dunes environment. Organizations participated in the LAX Adopt-a-Dune by committing to three to four volunteer visits per year.

Volunteers are trained about coastal dunes restoration and learn to care for their adopted coastal dunes area. Their training includes moving through sensitive habitat areas in a manner that minimizes negative impacts to the land. Once trained, the volunteers remove invasive plants, weeds, trash and rubble.

Other Native Coastal Habitat Conservation Initiatives

In 2013, LAWA completed the design for LAX's Northside, which included landscape design guidelines that consist

LAX Dunes Overview

The 307-acre LAX/El Segundo Dunes Habitat Preserve (LAX Dunes) is a coastal dunes habitat located between the western edge of LAX and the Pacific Ocean. LAX Dunes is the largest remaining contiguous area of coastal dunes along the Southern California coast, is home to more than 900 species of plants and animals, and is a popular place for bird-watching, wildlife observation, and volunteer activities.

During the reporting period, LAWA committed significant staff and financial resources to coastal dunes habitat restoration in response to local, state and federal advocacy for the protection, preservation, restoration, and

El Segundo Blue Butterfly

LAWA's sustainability practices to protect and restore the LAX Dunes created an enhanced habitat for the ESBB.

The ESBB spends its entire development cycle metamorphosing from egg – to larva – to pupa – to adult around the coastal buckwheat plants that grow on the preserve. The butterflies stay

within 200 feet of their food source sucking nectar, mating, and laying eggs around the buckwheat's flower heads.

A sweet secretion from the butterfly's larvae attracts ants that protect the developing larvae. When the ESBB adults finally emerge from June through September, they live for two to seven days.

Zoo Partnership

In September 2013, LAWA and the Los Angeles Zoo began an innovative partnership. Through this partnership, LAWA removed invasive acacia trees and ficus plants from the dunes on a weekly basis; and transported them to the Zoo where they were fed to hooved animals such as giraffes and rhinoceroses. This arrangement was a sustainable alternative to LAWA transporting biomass waste from the removed trees to a City disposal site. LAX continues to support this partnership with the Zoo.

The variety of acacia found in the LAX Dunes is one of the world's most invasive species, and it has been known to take over grasslands and abandoned agricultural areas. The acacia is one of the African continent zoo animals' favorite foods and is part of their natural diet in their native habitat. According to Zoo staff, almost every part of the acacia tree is edible by one resident species or another.

of native and drought tolerant species, similar to the habitat found on the rest of the airport. The landscape plant palette was chosen to balance the safety of airfield operations with the need to protect sensitive coastal habitat native to the area. The preservation of plant species unifies the site, reduces potential impacts to adjacent biological resources, and creates a sustainable and visually attractive urban landscape for the new northern airport campus.

Wildlife Management

Ensuring aircraft safety is a central element of LAWA's mission. Aircraft collisions with birds are an aviation safety risk and can result in major damage to the airplane engine, airframe; and potentially the passengers and crew. Birds are also an important part of the natural environment and contribute ecosystem services, including maintaining level insect and rodent populations and dispersing plant seeds. The Airport Wildlife Hazard Management Program implements aircraft safety practices to minimize impacts with birds and reduce the possibility of bird strikes.

Raptors, or birds of prey, are commonly found near LAX and they are the primary type of bird caught on the LAX airfield operating area. LAWA, in conjunction with the USDA-Wildlife Services, removes the birds, as necessary, which minimizes the impacts to the birds and maintains safe aviation operations to avoid bird strikes.

Raptors are easier to relocate given their size. Goshawk, a natural decoy and net traps are used to capture raptors alive. All raptors caught at LAX are transported to the South Bay Wildlife Rehabilitation Center for relocation within 24 hours of capture. Over 280 raptors were successfully relocated between 2011 and 2013. (See Figure 27)

Eagle Scout Saving Raptors

In 2012, a prospective Eagle Scout designed a project to safely capture and relocate birds of prey from LAX. This young man worked with LAWA and USDA biologists and obtained funding for the Eagle Scout project from American Airlines. He and his troop constructed Goshawk bird traps that were placed, with the assistance of a USDA biologist, on airport grounds.

The Goshawk trap is designed to automatically close when birds fly into it. Red-tailed hawks, barn owls, great horned owls, kestrels, Cooper's hawks, and merlin are the most common species captured. Trapped birds are tagged prior to their release away from the airport.

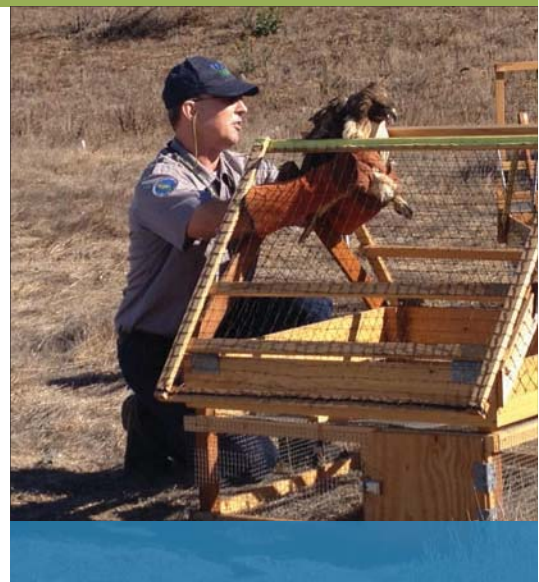
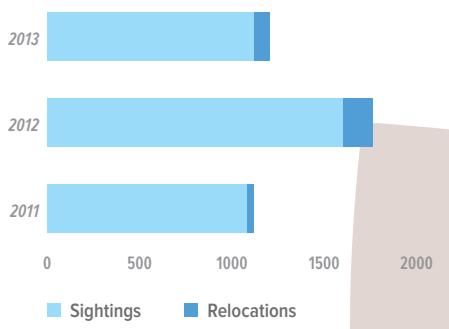


FIGURE 27
LAX Raptor Numbers, 2011-2013



ONT

Los Angeles - Ontario International Airport Sustainability

ONT's ability to navigate significant economic challenges is a strong sustainability success story.

Passenger activity at ONT fell as the airline industry has restructured its business model, which has included a stronger focus on large hub airports at the expense of small and medium hub airports like ONT.



Friends of ONT

The Friends of Ontario Airport is a unique organization within the aviation industry. As a nonpartisan, nonsectarian organization, it unites people of all backgrounds into a special group with a common interest in aviation and the development and growth of ONT for the benefit of everyone.

They have taken a leadership role in informing the public of the aviation services available at ONT, seeking additional air carrier service, encouraging citizen support of the airport and working with aviation industry officials towards the goal of making ONT one of the most convenient air

transportation centers on the West Coast. Members meet every other month at ONT to learn about the aviation industry through guest speakers, and take behind-the-scenes tours.

LAWA has worked to keep ONT competitive to support the increasing passenger traffic and to ensure that airlines remain aware of ONT's strengths as a full-service, commercial airport that supports aviation interests beyond passenger air carriers, including companies providing service to private and corporate aircraft, fueling agents, ground handlers, and cargo operators. ONT is home to two major air cargo operators, UPS and FedEx, both of whom have long histories at the airport and are committed to growing their respective businesses on and off the airport. Since 2010, ONT has seen its total cargo volume increase. LAWA will continue to assist ONT to provide high quality air service as the Inland Empire returns to economic vitality.

Economic Activity

ONT is a medium-hub, full-service airport with commercial jet service to major U.S. cities and through service to many

international destinations. ONT's service area includes a population of six million people living in San Bernardino and Riverside Counties and portions of north Orange County and east Los Angeles County. In 2013, 3.9 million passengers used the airport and 460,535 tons of air freight were shipped.

Over the past 45 years, LAWA has been committed to improvements at ONT and has invested over half a billion dollars from a combination of funds, including \$128 million from Passenger Facility Charges (PFCs) collected from passengers at LAX, ONT PFCs, bonds secured by LAWA, and federal grants. The list below represents some of the larger investments made at ONT since 1998:

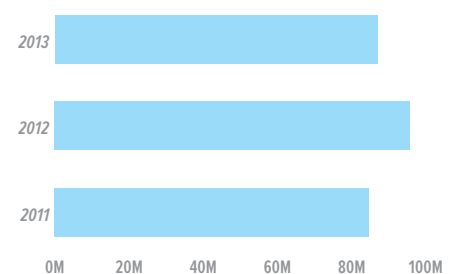
- › New Terminals Project \$276 million,
- › In-Line Baggage System \$70 million,
- › Runway 26R Reconstruction \$55 million,

- › Consolidated Rental Car Facility \$30 million,
- › Taxiway N Extension \$18 million,
- › Perimeter Fence Project \$17 million,
- › Airport Drive Improvements – Grove Ave. to Haven Ave. \$14.5 million,
- › Land Acquisition – East of Haven Ave. \$12.8 million,
- › Parking Lot 5 \$7 million,
- › Closed Circuit TV Upgrade \$3.7 million, and
- › Archibald Ave. Grade Separation \$2.3 million.

During the 2011-2013 reporting period, LAWA focused heavily on maintaining economic viability for its partner airlines through aggressive fiscal management. In 2007, the airport handled over 7 million passengers. The loss of activity-based revenue during the downturn, however,

ONT successfully reduced operational costs by 23%

FIGURE 28
ONT Water Consumption,
2011-2013 (gallons)



necessitated structural changes at ONT. LAWA has been successful with cost cutting, reducing operational expenses by 23% since 2008. The following sections of this report detail individual actions that support the operating bottom line and also contribute to other sustainability performance areas.

Social

The economic downturn required ONT to reduce staffing levels from a high of 435 to under 200 employees. In lieu of layoffs, LAWA offered ONT staff positions at LAX, allowing them to continue their employment and maintain continuity in providing for their families.

Water

During the reporting period, ONT accomplished considerable success in reducing water consumption. In 2007, ONT used 150 million gallons of water. In 2011 through 2013, water use ranged from a high of 95.7 million gallons in 2012 to a low of 84.5 million gallons in 2013. These values are at least 56% of the peak usage levels in 2007. (See Figure 28)

ONT achieved the water reductions through a number of actions including:

- › Utilization of a computerized irrigation system, which adjusts watering to match weather conditions by measuring solar radiation, air temperature and humidity.

- › Conversions of road medians to waterless options (rock or native species).
- › Installation of low-flow bathroom fixtures.

Rapidly escalating utility rates, however, reduced the ability to achieve significant cost savings due to the water conserved. In 2007, ONT paid \$621,000 for water utilities. In 2013, the cost was \$610,000 even though ONT used 36% less water. In 2013, the unit cost for water increased from \$3.20 per hundred cubic feet to \$5.40 per hundred cubic feet, a 68% increase in cost over seven years. (See Figure 29)

Energy

During the reporting period, ONT has made major changes to reduce energy consumption. The airport moved the administration offices from Terminal 1 into a new, more energy-efficient building in late 2009. This has enabled ONT to decommission parts of both existing terminals, reducing both the costs to light and condition the air plus the associated custodial and maintenance costs. Additional cost savings include:

- › Shutdown of lighting on one of the two runways at night (achieves \$20K/month savings).
- › Use of stand-alone HVAC units in Terminal 1, so the entire terminal does not have to be heated or cooled.

- › Installation of energy-efficient light fixtures, ballasts, CFLs, and LEDs.
- › Installation of occupancy sensors in administration and maintenance facilities.

These actions have enabled ONT to save both electrical and natural gas energy. In 2007 ONT used 32.5 million kWh of electricity and 309,000 therms of natural gas. ONT used just 26.1 million kWh of electricity and 131,000 therms of natural gas in 2013. This is a reduction of 19% for electricity and an impressive 58% for natural gas. Energy costs are controlled at an average of approximately \$3 million annually despite electricity cost increases. (See Figures 30 and 31)

Airline Energy Efficiency

ONT has two “anchor” carriers – Southwest and UPS. ONT has contributed to their energy savings by equipping all gates with electric power to reduce the use of aircraft auxiliary power. In addition the carriers have done the following:

- › Southwest has transitioned to electric Ground Support Equipment.
- › UPS moves the majority of air freight at the airport and on the ground, via CNG-powered trucks.

FIGURE 29
ONT Water Costs,
2011-2013

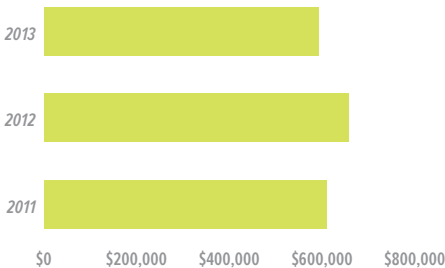


FIGURE 30
ONT Total Energy Consumption,
2011-2013 (kBTUs)

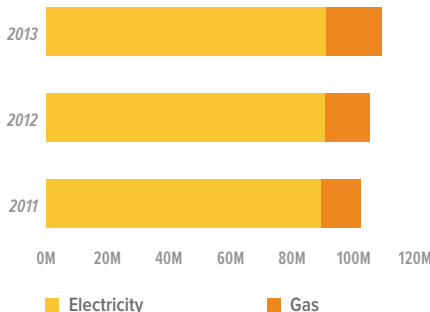
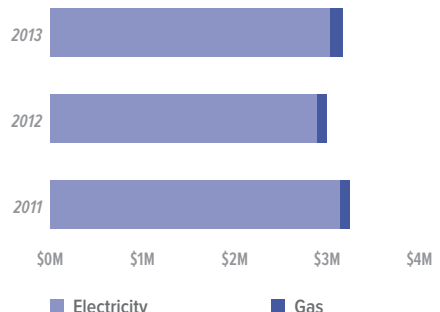


FIGURE 31
ONT Energy Costs,
2011-2013





ONT Natural Gas Vehicles

In March 2012, LAWA opened an on-airport CNG fueling station at ONT. The CNG station is open to LAWA and airport tenants, and the community, including commercial fleets, consumer vehicles, transit agency buses and local school district buses.

- › ONT owns and operates 45 CNG-powered vehicles, which represents approximately 25% of the airport's total fleet.
- › Since July 2010, only taxis using CNG can pick up ONT passengers.

Waste

ONT has made progress increasing waste diversion. In 2012 non-recyclable waste decreased from the year prior's 1,776 tons to 1,528 tons. 2013 waste performance data was not available at the time of publication of this report. ONT collected cardboard, commingled recyclables and biomass material streams to reduce waste. To increase recycling awareness ONT has developed relationships with tenants and concessionaries. (See Figure 32)

Noise

Reducing noise impacts is a priority at ONT. The airport has pursued a full noise control and mitigation approach which includes state-of-the-art tracking tools and sound proofing local residences. In addition to monitoring and soundproofing programs, LAWA:

- › Reduces noise impacts through close collaboration with the FAA to continue the ONT preferential runway use program, including the use of contra-flow procedures during nighttime hours.
- › Prohibits nighttime engine run-ups between 10 p.m. and 7 a.m. with certain exceptions to reduce noise exposure at night.

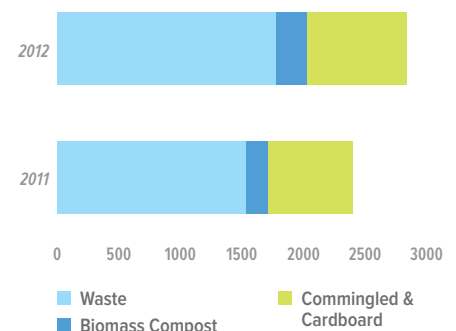
- › Continues to host the Ontario Airport Noise Advisory Committee meetings, which provide opportunities for community members to learn about noise mitigation efforts, general business activities, and to discuss specific noise concerns.

Insulation Program

In the spring of 2012, LAWA awarded a \$1.5-million grant for Phase 10 of the City of Ontario's Quiet Home residential sound-insulation program, bringing the total of LAWA's grants since 1992 to \$43.4 million (\$10.65 million for soundproofing and \$32.75 million for land acquisition and relocation). To date, the City of Ontario has sound insulated 1,133 residential units. The City of Ontario has also acquired 240 properties, totaling 52 acres to be acquired and developed with compatible land uses.

FIGURE 32

ONT Waste Diversion, 2011-2012 (tons)



VNY

Van Nuys Airport Sustainability

VNY makes significant economic contributions to the local economy. The airport implements a range of sustainability actions to support social responsibility, decrease the use of resources, and minimize noise impacts to neighbors. This section of the report provides a summary of the top sustainability performance areas for Van Nuys Airport.



Main Runway (16R) Reconstruction

Reconstruction of 16R took place in 2012 and 2013. The project was completed in August 2013 with a ceremonial reopening that included the famous stunt pilot, Sean Tucker, flying his custom Challenger biplane 220 mph through three ribbons strung across the runway, the final ribbon cut while flying inverted; followed by aviation legend Clay Lacy being the first to land on the new runway with his oldest business jet, a Learjet 24, the first corporate jet based out of VNY in 1965. During construction, VNY staff coordinated extensively with operators and various stakeholders to minimize disruptions to VNY tenants. Complete shutdown of the runway was ultimately limited to just 10 full days due to a coordinated construction plan and well-executed project implementation.

Economic Activity

Located in the heart of the San Fernando Valley, VNY is one of the world's busiest general aviation airports. Dedicated to noncommercial air travel, VNY averages over 260,000 takeoffs and landings annually.

VNY plays a crucial role in the Southern California airport system, serving a variety of private, corporate and government aviation needs. By providing a place for general aviation, which encompasses all flying other than scheduled air carrier service or the military, VNY enhances both safety and efficiency at the region's commercial airports. LAWA, as owner and operator, leases space to a variety of tenants that provide aviation- and non-aviation-related services. In doing so, the airport generates nearly \$80 million in state and local taxes annually.

As part of the regional approach to meeting passenger demand, VNY serves a vital purpose in reducing congestion and diminishing flight delays at LAX and other nearby airports. Business jet take-off and landings at VNY reduce non-commercial operations at the regional commercial airports. Contributing more than \$1.3 billion each year to the Southern California economy, VNY creates jobs, promotes business and provides critical general aviation and emergency services. Business travelers and tourists using private, corporate and charter aircraft benefit from the airport's convenient proximity to city business, recreation and entertainment centers.

Social

VNY provides a base and maintenance facilities for fire, police, air ambulance, search and rescue, and news media aircraft that serve the region. VNY also supports local educational programming such as



Van Nuys Airport's Runway 16R

ACE Academy, which is a week-long free motivational program designed to introduce students to aviation career opportunities.

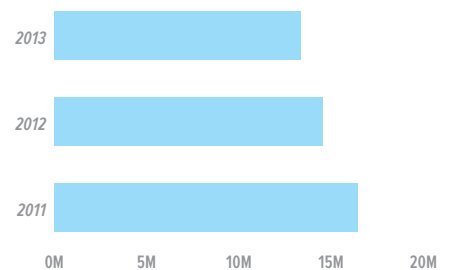
Water

VNY has implemented a number of water conserving practices to reduce potable water consumption. VNY's potable water consumption decreased in each of the reporting years from 16.4 million gallons

Van Nuys has achieved 100% compliance for state noise requirements

FIGURE 33

Van Nuys Potable Water Consumption, 2011-2013 (gallons)





in 2011, to 14.5 million in 2012 and then 13.4 million gallons in 2013. Total water costs also decreased from \$166,000 in 2011 to \$143,000 in 2013. Water supply and sewerage charges increased during this time from \$7.54 per hundred cubic feet in 2011 to \$7.99 per hundred cubic feet in 2013. Saving potable water reduces operational costs and minimizes the impact of increased water costs due to supply scarcity and other factors. (See Figure 33)

In 2011, the Van Nuys Golf Course, a LAWA tenant located just south of the airport, converted to using reclaimed water for course irrigation, thereby conserving potable water for other essential needs. (See Figure 34)

Energy

Over the years, VNY has implemented a number of energy savings measures including changing the runway and taxiway lighting to LED alternatives and switching night-time airfield lighting to an on-demand

system. During the reporting period electricity consumption was level at around 4 million kWh in each of the three years. Natural gas, which is used in the heating and cooling systems, increased over the three years from 13,000 therms in 2011 to 18,400 in 2012, and up to 45,300 therms in 2013. No analysis is available at this time to determine the cause of the increased gas demand over the reporting period. (See Figure 35)

VNY also utilizes alternative fuel in its vehicle fleet of 12 alternative energy powered vehicles; 11 that use CNG, and one hybrid-electric sport utility vehicle.

Waste

VNY is committed to minimizing waste and has taken a number of actions summarized below.

Commingled Recycling: In 2011, total waste diversion at VNY reached over 9 tons and grew to almost 17 tons in 2012.

Noise

After developing and instituting aggressive noise abatement policies and programs, VNY is the first LAWA airport to achieve full compliance with noise regulations in the California Code of Regulations Title 21.

Noise Standards. In 2012, VNY achieved a zero noise impact area, allowing it to operate without obtaining a variance from the state for the first time since 1980. VNY's noise compliance strategy includes two major elements:

- › Reduce noise at the source, and
- › Reduce noise for the receiver.

Reducing noise at the source is accomplished through both formal and informal noise abatement policies and procedures, as well as changes in overall airport operations and a transition to quieter jets. Major improvements also are made by soundproofing homes within the airport's noise impact boundary.

FIGURE 34
Van Nuys Reclaimed Water Use,
2011-2013 (gallons)

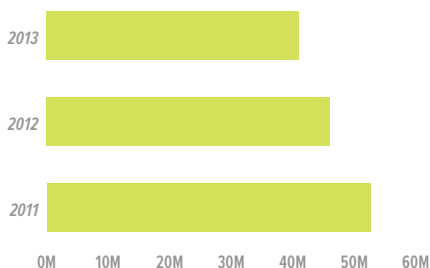
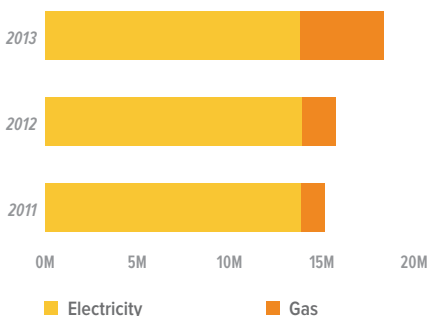


FIGURE 35
Van Nuys Total Energy Usage,
2011-2013 (kBTUs)





New Propeller Aircraft Park

Work is underway on the new Propeller Park at VNY, a campus-like complex on the west side of the airport that will be home to propeller airplanes that fly in and out of the facility. The airport and developer partners are building the \$21 million complex on 30 acres that was formerly the Air National Guard site.

Pacific Aviation, the developer of the Propeller Park, has incorporated many sustainable principles in the proposed development as project components. These items include, but are not limited to, energy-efficient building design, recycling or reuse

of 10-20% of construction waste, use of ultralow-flow fixtures, use of low-emitting adhesives and sealants, use of drought-resistant plants in landscaping surrounding the Park, and use of sediment and erosion control measures.

The 350,500-square-foot complex will also include a terminal, maintenance services, a restaurant, a self-service fuel station, and an aircraft wash rack. Eventually, there will be an office component, a retail store for pilots, and a car rental office.

VNY's ongoing noise reduction efforts include:

› **Noise Abatement and Curfew**

Regulation: This program prohibits aircraft generating departure noise levels equal to, or above, 74 decibels departing the airport between the hours of 10 p.m. and 7 a.m.

› **The Non-Addition Rule:** This is a requirement that prohibits any additional Stage 2 aircraft (older aircraft) with noise levels exceeding 77dBA from being based at VNY.

› **Noisier Aircraft Phase-out:** This is an ordinance that prohibits operation of aircraft with Certified Take-off Noise Levels of 83 dBA in 2011. The rule tightens to 80 dBA in 2014, and then to 77 dBA in 2016.

› **“Fly Friendly” (Quiet Jet Departure):** This program lessens noise in the local community by having pilots agree to use predetermined, recommended procedures to reduce noise from jet departures. Awards are granted to high-performing quiet pilots.

› **No Early Turn:** With 24-hour monitoring, this program detects jet aircraft that turn too early after departure and subsequently fly over adjacent residential areas.

› **Helicopter Route and Altitude Deviation Program:** This program notifies helicopter owners/operators of arrival and departure operations that deviate from established ingress and egress routes close to the airport.

› **Soundproofing:** This is a grant program that provides funds to insulate residence walls, doors, and windows to reduce noise impacts from aircraft.



Palmdale Landholdings

LAWA owns 17,000 acres near the City of Palmdale that were acquired in the 1960s for future airport operations. While significant efforts were made in 2007 and 2008 to attract passenger traffic to Palmdale Airport, LAWA found it had to cease operations because the airport could not provide the range of destinations that would make passengers select it over LAX, VNY or Bob Hope Airport in Burbank. Today, most of the land is used for other purposes, and portions of the land holdings serve as a manufacturing plant for aircraft used by the military.

Two sustainability Palmdale landholding highlights worth noting are:

- › **Agreement with Kinkisharyo:** In October 2013, LAWA granted the rail vehicle manufacturing firm Kinkisharyo a right of entry to Site 9 at LAWA's Palmdale land holdings. This was the first step in an agreement with Kinkisharyo that will allow the company to build 175 railcars for the Los Angeles Metropolitan Transit Authority (LA Metro). The new LA Metro cars will carry additional transit passengers, which supports regional traffic congestion relief and vehicle emissions reductions.
- › **Use of Reclaimed Water:** LAWA has several agricultural tenants on its landholdings in Palmdale. During the reporting period, LAWA agreed to the use of reclaimed water to irrigate tenant crops.

LAWA continues to evaluate opportunities to maximize revenue from Palmdale. To that end, LAWA is collaborating with the County of Los Angeles on the Antelope Valley Area General Plan Update to encourage viable sites for potential renewable energy projects that would not preclude the development of a potential future airport.



*Los Angeles
World Airports*





LAWA's new Central Utility Plant is designed to achieve LEED Silver with a 30% energy efficiency improvement over the utility plant it replaces.



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