

# The ways we transform.

2017 Energy & Resources Report

ation's Largest Clean-Air F



Metro®

<b>We preserve.</b>	<b>02</b>
Revealing Our Past .....	04
<b>We conserve.</b>	<b>08</b>
Waste, Reuse, Diversion .....	10
Energy .....	13
Water .....	14
A Closer Look: Metro Expo Line.....	16
<b>We restore.</b>	<b>18</b>
Air Quality.....	20
Greenhouse Gas Emissions .....	23
A Closer Look: Metro Gold Line.....	28
<b>We connect.</b>	<b>30</b>
Mobility.....	32
Measure M.....	34
Building Human Capacity.....	35
Community.....	36
Sustainability Indicators .....	38
Methodology and Acknowledgements .....	39

At Metro, we **preserve** Los Angeles’s cultural, artistic, architectural and paleontological history. We **conserve** water and energy, and reduce and manage the waste we produce, while designing a future where we will need fewer of these resources to run our facilities and fleets. We **restore** air quality and climate through careful modernization, clean energy use and vehicle sourcing. And we **connect** people to each other, as well as to places, spaces and resources. All this effort is part of Metro’s core mission: to transform LA County today, and create a better tomorrow for all who live, work and play here.

# We preserve.

While we build the next LA, Metro also believes in conserving and preserving the past. We take exceptional care as we unearth natural, historical and cultural artifacts.



# Revealing Our Past

## As we dig, we reveal LA's multi-layered history.

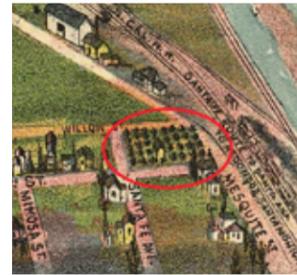
The history of Los Angeles is unique and finding a piece of that story is a very special treasure. Even with the best technology, the unexpected happens. Here are two moments, each associated with the Purple Line Extension, that shed light on what Metro does when an artifact is uncovered:



Nine complete glass bottles, a white porcelain cup and fragments from a porcelain saucer were uncovered during soil remediation in November 2015. Following protocol, items were carefully set aside and documented by an archeologist as they were uncovered. Items were taken to a certified lab for analysis and research. The clear and green glass bottles dated from 1820–1925. During those years, the area was in transition from a residential to commercial neighborhood.



A collection of rusted metal hardware including two corroded, metal spoked wheels measuring three feet in diameter and the remains of a wheelbarrow were uncovered in January 2016, during removal of sub-surface concrete walls. The site inspector followed protocol, moved the artifacts to a safe space and paused work, calling for an archeologist to examine the find. The artifacts were carefully moved for analysis and research.



Land use maps from 1888–1964 showed the area was once used as an orchard, a railway and a commercial building. It was determined that the sub-surface concrete walls were the basement walls of a building complex constructed after 1947. Based on the location of the artifacts, they were most likely stored in this old basement and were not originally from this location.

When curators remove finds, each is carefully researched for significance and preserved if found to be key to our local, state or national cultural past.

## Preservation is part of the task.

Ivory grows like ice cream or paper cones stacked upon each other. It's easy to identify and just as easy to break apart. So, when a three-foot segment of tusk was uncovered in December 2016, the paleo team was called and excavation work was diverted to another part of the site so the find could be properly recovered for preservation and restoration. Removing the tusk took most of a day.

Just a few days later, the same paleo team got another call about an elephant skull. It took the team 15 hours to expose

the full skull and properly remove it. Back in the lab, each piece was reconstructed, bones were strengthened, and the full artifact is being cleaned, stabilized and repaired.

When it is ready, these artifacts will be given to the Museum of Natural History. Metro's team of paleontologists, archeologists and curators preserve artifacts as windows into our natural history. It's the right thing to do, but that's not why Metro does it. "We do it because our job is to preserve LA's ancient history," said Metro's Purple Line paleontologist, Dr. Ashley Leggar.

## We give new life to living things.

As part of the Purple Line Extension, a number of mature agave plants needed to be removed from the area that will become the Fairfax Station. Under the umbrella of Metro's waste diversion priority, some agave were donated to the Good Shepherd Shelter and some to Carthay School. The remaining can be found at the project inventory yard, planted with solar-powered drip irrigation to conserve both water and energy, where they are prospering until they are needed for landscaping when construction is completed.

## Metro takes care of historic places.

There are over 40 historic buildings in proximity to the Purple Line Extension. Special measures are taken to make sure such buildings are protected. The greatest concern is vibration that can impact structural integrity.

When within 200 feet of a historic structure, Metro ensures that all equipment used meets the most stringent federal vibration standards. Vibration monitoring terminals are set up to warn workers of any compounding effects, and geotechnical instrumentation is installed to measure land subsidence due to changes in groundwater levels.

When work will occur within 10 feet of a historic structure, an architectural historian reviews all designs and plans for a deep knowledge of the property and is on site to monitor progress. In addition, monitor terminals and manned, on-site monitors are set up inside the structure to test vibration levels to ensure that thresholds are not exceeded.

Metro takes care when in proximity of historic landmarks, ensuring that the culture of Los Angeles is preserved for future generations to enjoy.

### Relocating bees is so very sweet.

To date, Metro has removed six hives and more than a quarter-million bees from its properties. When an active bee colony was discovered under a freeway overpass, bee keepers had to use a boom lift to get close enough to act.

Honeybees prefer to forage for food within only a few miles of their hive, bringing that pollen back and turning it into honey. They are key pollinators needed for a thriving ecosystem and indicate a local community with plenty for them to eat.

It is estimated that one bee will produce about a 1/2 teaspoon of honey in its lifetime. So, when 150 pounds of honeycomb including nearly 40 pounds of honey were removed from this freeway colony, the

rewards couldn't be sweeter for Metro employees who got some to take home.

The bees were relocated to a safer, more viable environment where they could thrive. Rescued bees are kept for a short time to observe their temperament, health and stability before deciding where they should go: to a bee sanctuary where they are loaned out for California crop pollination, to farmers for direct use on their land, to urban beekeepers, or sent to community partners who meet strict guidelines.

The location where a colony is found is treated with an eco-friendly chrysanthemum-based solution, used to neutralize the pheromone that could bring bees back to the original location.

### Innovation creates a new flow and safer community.

Tar still flows like a molasses river beneath the surface of Los Angeles. As the tar rises toward the surface, it expands under reduced pressure. In a city of concrete, the tar has to go somewhere. Over time, the pipes that capture and redirect tar seeps into vaults using collection sumps have been constructed and are regularly cleaned out by the city. However, historical design plans rarely include the exact location and pathways of these underground systems.

When rail construction began down Wilshire Bl, pipes were discovered, but where did they go? Which vaults were connected and how? Normally a video camera would be put into the pipe to trace its path, but in this case, the tar was too viscous and cameras couldn't pass. Metro's environmental engineers got innovative and created an in-building excavation with specialized equipment to understand the situation below. As a result, pipes were redirected out of the construction pathway.

The redesigned sump and tar transport system not only added improved ventilation systems for community safety, but also prevented costly construction delays.

# We conserve.

Resource conservation is at the core of our sustainability mission at Metro. Conserving means employing innovative technologies that use less, work smarter, and improve the health and well-being of our employees, customers and the greater community.



# Waste, Reuse, Diversion

## We're planning for big changes.

Metro's Environmental Management System allows us to better understand trends and their underlying causes. In many ways 2016 was a seed-planting year, as we planned for long-term changes in Metro's approach to waste management.

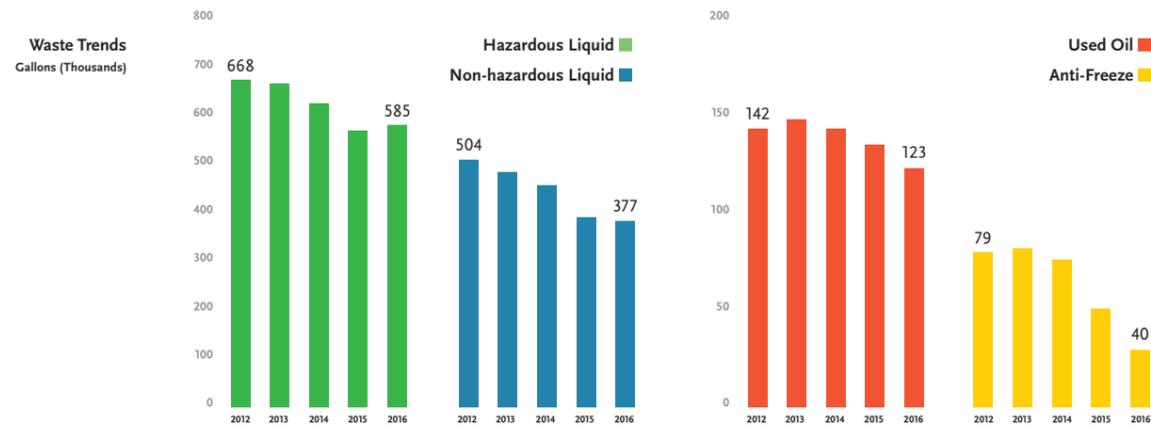
A master plan for solid waste reduction and reuse developed out of site assessments, collaboration with stakeholders, and development of new programs and comprehensive contracts. By creating opportunities to focus on effectiveness and engagement in

conversations from multiple perspectives, priorities became clear and actionable.

Initial efforts focused on hazardous waste and used oil management, resulting in a decline in non-compliances.

The system has also uncovered new priorities related to labeling and storage of empty containers.

Goals for 2017 include creating a waste management hierarchy, widening the scope of training to employees on all shifts 24/7 and developing an organics management program aligned with new state regulations.



## How many times can you use a tire?

It depends. Retreading preserves about 90% of the material in the tire, as well as the energy consumed in the manufacturing process. After retreading, the remaining material can be recycled into other products.

Metro has established a tire regrooving protocol which increases the longevity of tires on the street, while reducing costs invested in tires for the fleet. In 2016, over 42% of Metro's tires were retread, saving money and keeping rubber out of the landfills.

# 42%

of Metro's tires were retread in 2016



## Salvage preserves the past for the future.

Making way for change doesn't have to eliminate the past. As part of the Regional Connector project, the building that housed Atomic Café, Señor Fish and Coast Imports had to be demolished. About 1,000 of the bricks from the café were salvageable and are being stored for use in the new station. An interpretive graphic display, developed in collaboration with the community to commemorate Nancy Sekizawa ("Atomic Nancy") and her café, will be included at the 1st St/ Central Station.

## Waste not, want not.

Metro's Environmental Management System is the first transit program in the nation to be upgraded to the new ISO standard 14001.

By engaging stakeholders in planning and implementation, new and deepened collaboration has led to improved cohesion system-wide and a change in how Metro employees think and work.

How do we know? As we have increased our awareness trainings, new initiatives are organically developing and spreading across the system. A few include:

- Increasingly, divisions are working with their storekeepers for strategies to conserve hand wipes. Rather than distributing them by the box, more and more of the divisions are creating single distribution sites to take what's needed, as needed.
- Fifty-five gallon poly-drums can do more than one job. After the original material they contain is used, employees are repurposing the clean containers rather than disposing of them—for battery management and storage waste.

## We find new life for old banners.

Advertising banners that hang outside buildings and along streets are made of materials strong enough to withstand LA's sun. But what happens to these materials when they're no longer needed? They usually go straight to the landfill. Instead, Metro is turning them into over 5,000 reusable shopping bags for distribution at local events. These one-of-a-kind creations are coveted by employees and riders alike.

Senior Designer Eileen Hsu has taken the idea one step further. She noticed that in the process of printing, the ends of the material bolts remain unused when they can't fit through the printing press. In a moment of inspiration, she used these end-scrap to make chairs, inspiring her team to find uses for other scrap material.

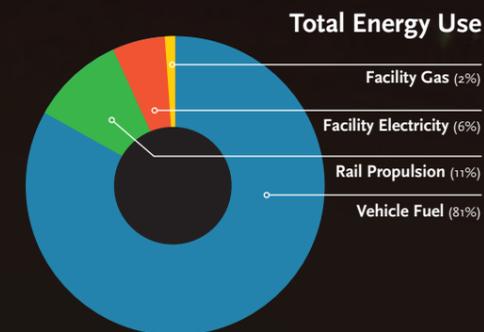


## Energy

### We find ways to give the grid a break.

After the Aliso Canyon Natural Gas facility leak, concerns over electricity shortages during hot summer days prompted LA's Department of Water and Power to create the Summer Shift Program. Metro enlisted over two dozen of its facilities into the program, moving up to three megawatts of electricity consumption away from the summer peak hours of 3–5pm without impacting operations. This action reduced the risk of electricity outages and potential impacts to services citywide, earning Metro LADWP's 2017 Sustainability Award in appreciation of this action.

Much of the electricity Metro uses is directly proportional to the needs of the people we move. Over 90% of the energy used directly runs trains and buses, so with the passage of Measure M and planned expansion of the system, we're thinking ahead. This is why it's more critical than ever for Metro to invest in energy efficient technologies. As the system continues to grow and move more people, we innovate to shrink our energy footprint.



## Reducing mass means saving money.

Crushing oil filters doesn't change the number of filters used, but it does change how much storage is needed to keep used materials until they are collected. Even better, the practice not only reduces the number of times filters need to be transported off-site, reducing hauling costs, but also captures more used oil from the filters.

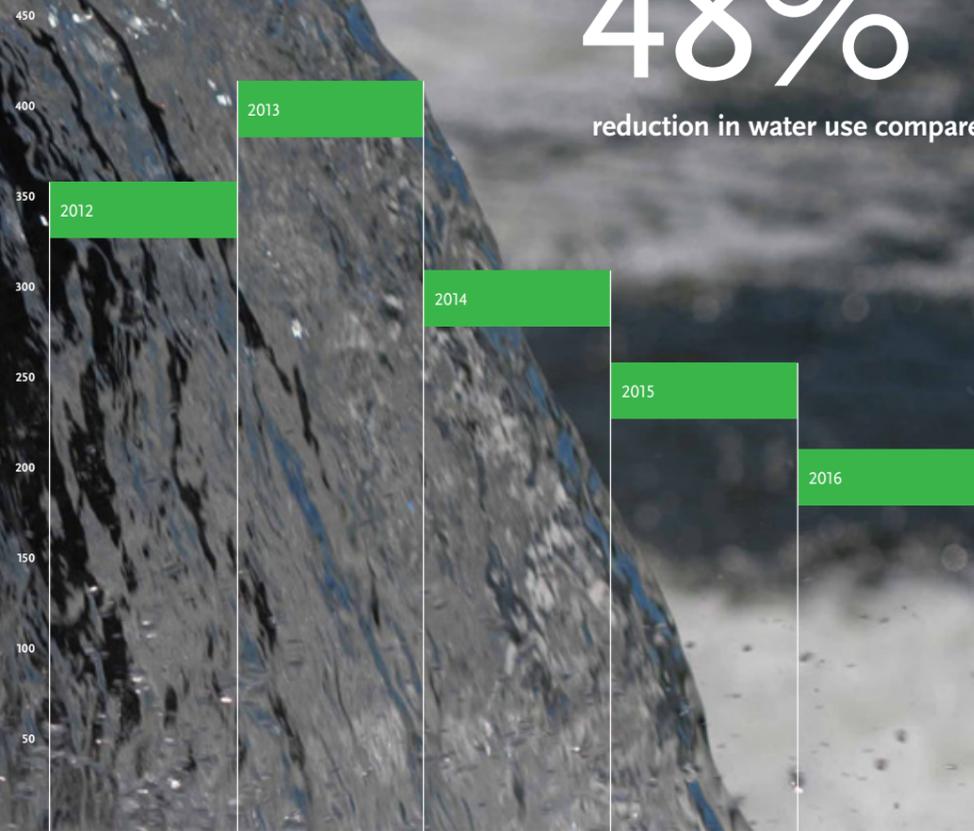
Oil filter crushers are now in place at Division 13, piloting new protocols and testing schedules for future implementation Metro-wide.



# Water

# 48%

reduction in water use compared with 2013



Water supplied (millions of gallons)

## We're aiming to conserve more.

Metro is already meeting its 2017 water reduction targets, conserving 19.4% from 2015 levels and 48% since 2013.

Where can we do better? Consumption along alignments is decreasing, yet still represents a majority of water use across all of Metro's operations. Analysis shows that although 40% of water savings occurred along the Orange Line, this line remains the single largest user.

Nearly 30% of all Metro water use is related to landscaping. What's Metro doing about it? A lot.

- Metro station and division landscaping designs are utilizing native plants and drought tolerant plants to reduce the need for irrigation.
- Metro is installing drip irrigation systems to reduce water loss due to evaporation.
- Metro is installing sub-meters to better understand where more water can be conserved.
- Metro is partnering with LA Department of Water and Power and Southern California Edison to create the infrastructure needed to make reclaimed water available for installation at existing facilities and new construction projects.

## Small adjustments make for big reductions.

When Metro analyzes its water use, we look at use by location and purpose. One area where water use is highest is bus washes. In 2015, Metro piloted alternating bus wash schedules. In 2016, Metro set out to find ways to make the washing system even more water efficient without compromising on effectiveness.

Bus Division 15 in Sun Valley was selected as the site to pilot innovative approaches. Portable ultrasonic sub-meters were installed to monitor actual water use during each method of water conservation tested.

The most promising method found was adjusting the size of the nozzle on the bus wash-down units. Smaller diameter hose nozzles force water through a smaller opening, reducing the amount of water needed. However, water pressure running through the hoses increases as a result, putting new stress on infrastructure.

As a result, retrofitting and modernizing hoses and sumps, as well as new procedures for soaping, is underway to make sure that doing one right thing to help the environment doesn't end up creating unanticipated problems down the line.



# A Closer Look: Metro Expo Line

A new rail line extension,  
designed to serve and conserve.

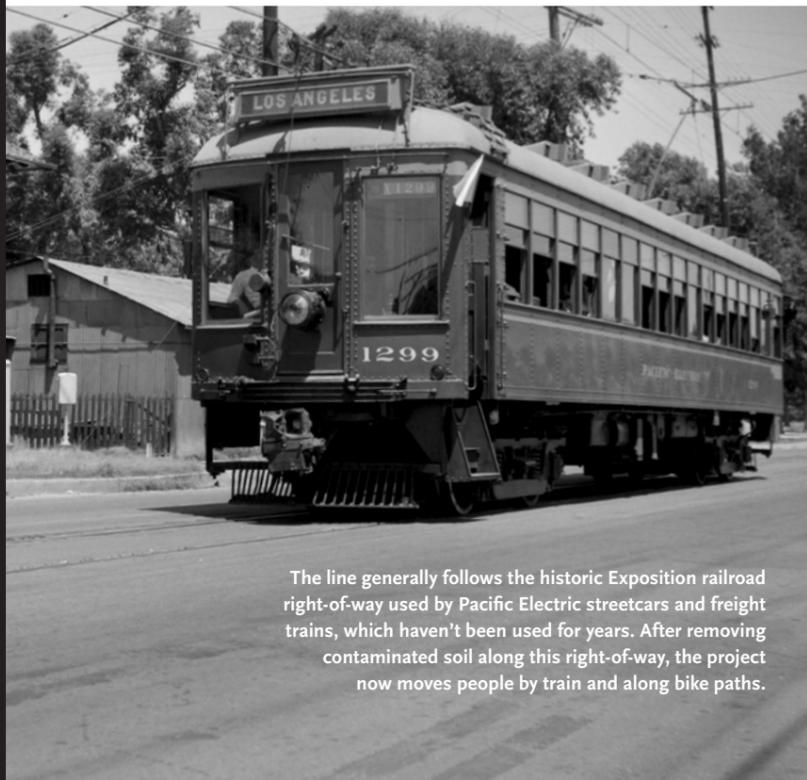
Rail lines are more than rivers of concrete and steel that cross the city. The Expo Line connects downtown Los Angeles to Santa Monica while connecting history, people, businesses and resources. This is the first project Metro has submitted to the Envision Rating System, and with its innovations and focus on conservation, earned Platinum status.



The Expo Construction Authority committed to hiring local and disadvantaged workers, partnering with community programs, local schools, service and training centers, union halls and apprenticeship programs within a five-mile radius of project sites to build lifelong careers in the construction trade.



Water conservation efforts yielded a 27% savings. These efforts included using the Santa Monica Urban Runoff Recycling Facility to recycle gray-water, installation of porous and permeable pavement, highly sensitive leak detection systems and drip irrigation. The 340,000 square-foot landscaping irrigation system uses 20–50% less water than conventional systems, but still accounts for a majority of the project's water use.



The line generally follows the historic Exposition railroad right-of-way used by Pacific Electric streetcars and freight trains, which haven't been used for years. After removing contaminated soil along this right-of-way, the project now moves people by train and along bike paths.

When innovating new technologies and materials for reduced sound and vibration along the tracks, extraordinary care was attuned to worker health and safety during concept testing, construction and maintenance operations.

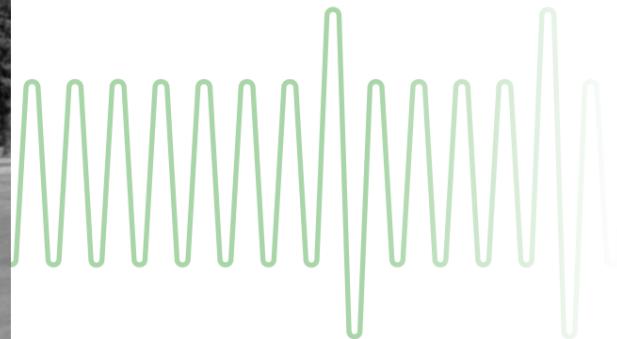


Photo-sensor and LED equipment were used throughout the project to protect North American Songbirds (*vireo bellii pusillus*) from the negative effects of artificial lighting and to reduce energy consumption.



Innovative signage protects people moving in close proximity to the trains. Contracting for materials focused on local businesses, their sensitivity to the environment and product quality.

## **We restore.**

Metro is finding innovative approaches to improving air quality while reducing greenhouse gas emissions and other negative impacts on our climate. By creating more ways to move around the city, using cleaner fuels and energy sources and enhancing critical infrastructure, Metro is improving Los Angeles one breath at a time.



# Air Quality

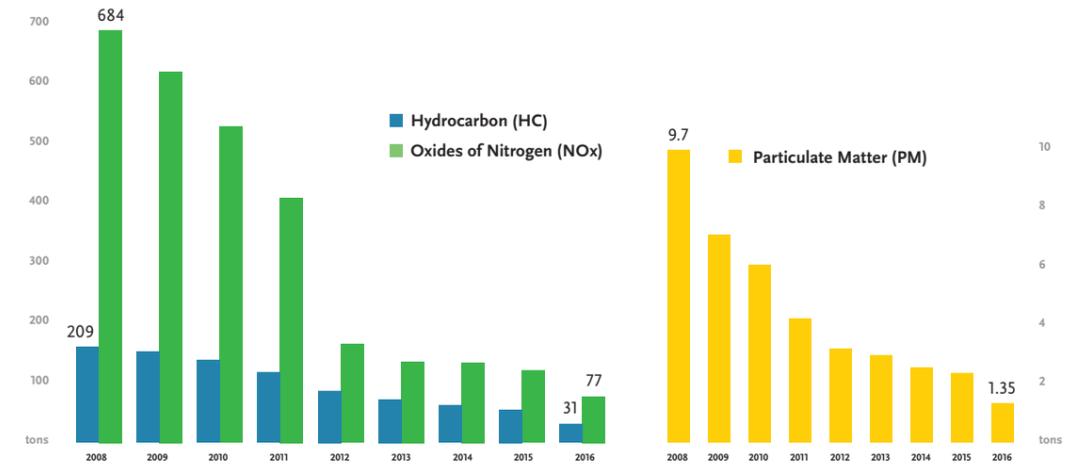
## Our bus fleet grows greener every year.

Metro became the largest compressed natural gas bus fleet in the nation after retiring its last diesel bus in 2011. However, the transit industry is already looking ahead to new technologies and cleaner fuel sources that offer improved efficiency and environmental benefits. Metro's efforts to "repower" older buses with lower-emitting engines have resulted in decreasing criteria air pollutants such as nitrogen oxides (NOx). The results are stunning. Compared with 2008, NOx emissions from Metro's bus fleet have decreased by 89%.

# 89%

reduction in NOx emissions since 2008

Criteria Pollutant Emissions for Metro Bus Fleet



## Pardon our clean air.

Construction activities don't need to be dirty. Metro adopted a Green Construction Policy in 2011 to make this happen. The policy requires Metro's contractors to use less polluting equipment, and in 2016, the results were dramatic. All matrices dropped considerably below the baseline projections, had these changes not been put in place. Most noteworthy, PM10 emissions are 83% less than the baseline, NOx emissions are 70% less than the baseline and ROG is 52% below baseline as well.

Air quality is directly correlated to public health. It is estimated that these avoided emissions save over \$400,000 in "social costs" each year.

Emissions Reduced on Metro Construction Projects in 2016 (Percentage)

<b>NOx</b>	<b>70%</b>
<b>CO<sub>2</sub>e</b>	<b>9%</b>
<b>PM10</b>	<b>83%</b>
<b>ROG</b>	<b>52%</b>

Metro's Green Construction Policy saves over  
**\$400,000**  
 in social costs annually.



EV Charge Locations throughout the region



## Greenhouse Gas Emissions

Metro can reduce GHG emissions of fleet vehicles by **50%** by converting to electric vehicles.

### Electric Vehicles find an energizing home at Metro.

Metro invests in electric vehicles for the public and employees. Metro is the first transit agency in the nation to integrate electric vehicle (EV) charge stations at its park-and-ride lots, providing low-cost charging at \$1/hour up to \$3/day. Charging stations are located at key rail station parking lots along the Gold, Blue, Green, Orange, Expo and Red Lines.

Metro has been steadily expanding and improving its network of EV chargers to keep up with demand. Los Angeles sells 20% of EVs nationally, yet infrastructure lags behind other major California markets, like San Francisco and San Jose. By the end of 2016, over 50 Level 2 charging stations had been installed by Metro. Another 25 chargers are planned for 2017, working to meet increasing demand.

Metro is looking for ways to support employees as well. Over 70 employees have EVs and studies are underway to install charger stations at key facilities.

Metro completed an internal study of its fleet vehicles for EV opportunities. Over 400 of Metro's current vehicles travel less than 200 miles/day, making them an ideal pilot for EV conversion. Studies estimate that if Metro converts its fleet to EV, over 50% of non-revenue fleet GHG emissions would be reduced and maintenance costs to support the fleet would decrease as well.

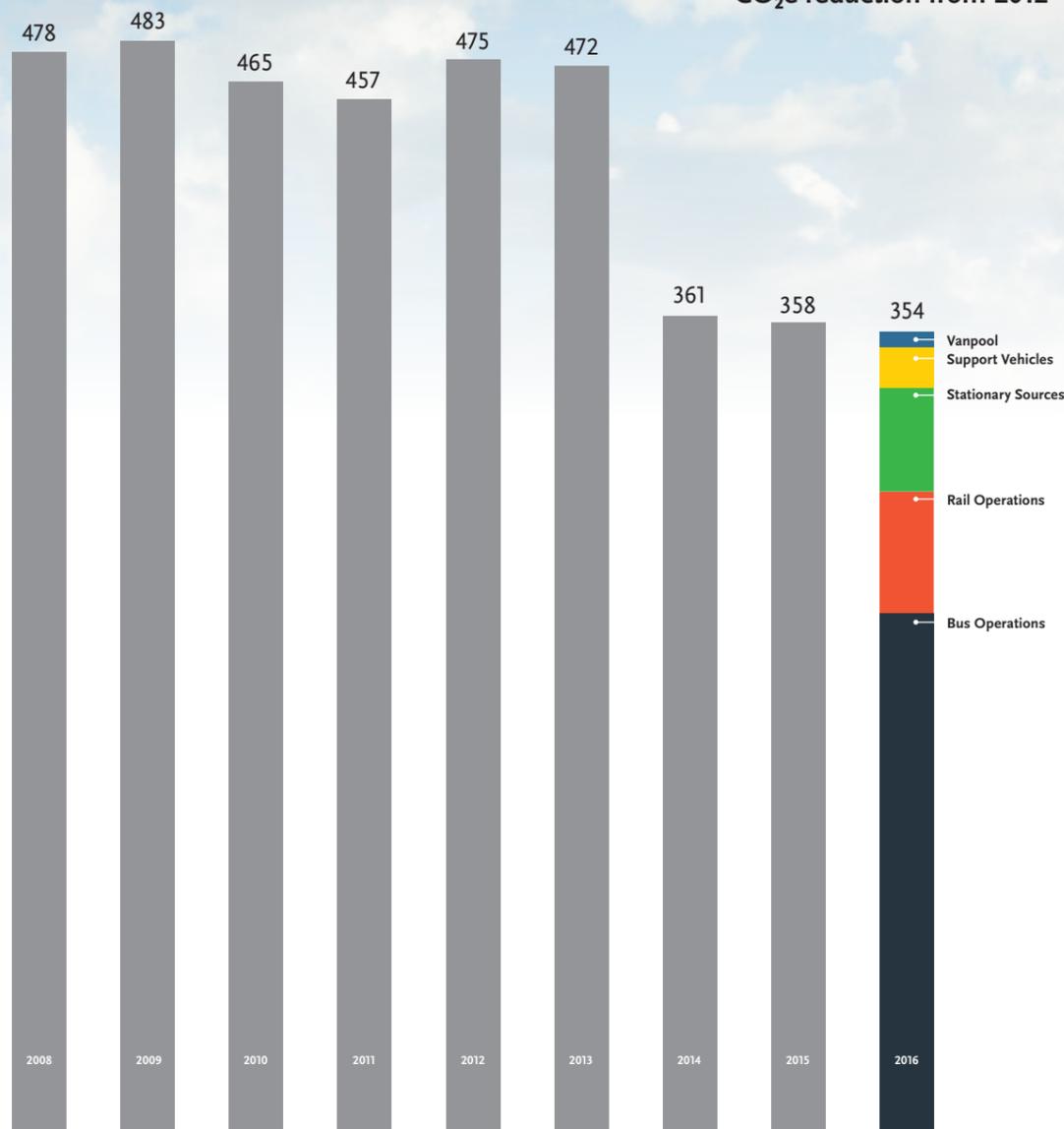
The greatest contributor to Metro's emissions are the fuels it uses to move its riders. Metro is looking into renewable sources of fuel, cleaner vehicle technologies, and other efficient practices in order to maintain the trend of reducing its emissions while it grows its system.

### Mode shift gets more cars off the road.

Every Metro rider is restoring LA's air. By going Metro instead of driving a car, Angelenos generate fewer greenhouse gases (GHG). This form of emissions displacement is called "mode shift" and is one of the most significant benefits of public transit. The transportation sector contributes nearly 40% of all GHG emissions in California, so it is clear that public transit will remain one of the most important tools for meeting the State's ambitious climate goals.

### Historic Greenhouse Gas Emissions

Metric Tons CO<sub>2</sub>e (x1000)



### Moving to new refrigerants does more than save the planet.

Refrigerants such as Freon (R22) have been found to aid in the depletion of the ozone layer, and Metro is working to phase out their use.

In 2013, Metro's internal data analysis showed an increase in the use of R22 for rail cars. The source of this increase was tracked to leaks in rail car systems, resulting in the need for added refrigerant.

Replacing R22 was not only part of a long range plan, but also created unexpected opportunities. In the search for a replacement, Juan Ruvalcaba at Division 20 partnered with DuPont, finding a compatible solution with less environmental impact. The new product needed testing. Between 2015 and 2016, the Red Line transitioned all of its 104 rail cars to the new product.

For each car, evaporators were cleaned. Seals, valves and packing materials were replaced, overhauling each car, improving its performance.

In partnership with DuPont, Metro mechanics and technicians developed a new process for working together in a systems-based approach. They gained new knowledge, increased efficiencies for the cars, and improved work processes that built relationships across working groups. This new approach to maintenance built expertise across teams that has been applied to other rail systems.

The result is an increase in best mechanical practices, a decrease in unscheduled maintenance, and a reduction in quantity of refrigerant used per car.

500  
400  
300  
200  
100

354

Total Emissions

\*Metric Tons CO<sub>2</sub>e (x1000)

**Metro displaces more emissions than it produces. This is one of the greatest environmental benefits of public transit and every Metro rider contributes!**

448

Emissions Displaced

\*Metric Tons CO<sub>2</sub>e (x1000)

### Metro is innovating buildings that enhance resiliency.

Buildings can have a life of at least 100 years, so Metro is designing for the future. The new maintenance facility at Division 20 was designed with a thought toward extreme temperatures and severe storms to create a more resilient infrastructure.

It is likely that Los Angeles will experience more frequent hotter days in the decades ahead, so the building design reduces heat produced by the building that could impact the surrounding environment. A higher building allows for a smaller footprint to maintain as much natural scape as possible. Building hardscape surfaces reflect heat, such as a cool roof, roof assemblies that limit heat gain into the building, and the incorporation of rooftop parking. Trees will line the west façade to provide shade and reduce heat gain within the building.

To conserve water, landscaping has been designed using native and drought-tolerant plants that can survive periods of drought. Once the landscaping takes hold, this area should require no irrigation.

To prepare for increased frequency and severity of storms, storm drains adjacent to the site are being modernized and a back-up generator and solar panels are being installed, providing clean power to the building and availability in the event of a power outage.

Green buildings such as this put less strain on our current energy and water needs, reducing GHG emissions while planning for a future that may have a climate far different from present conditions.

# A Closer Look: Metro Gold Line

The Gold Line Operations Campus was designed with green in mind.



The water management system was designed to capture 100% of rainfall. The first 112,000 gallons are captured and filtered through underground chambers, which then infiltrate into groundwater aquifers. The rest seeps through permeable areas directly into groundwater.



The campus was designed with solar-tracking, skylights, motion-detecting lights to conserve energy and 714 solar panels generating 178.5 kilowatts, averaging 22,000 kilowatt hours per month. That's a lot of golden sunlight coming in!



Energy-efficient lighting is only the beginning. Energy produced by the site's solar panels that isn't needed at the time is sent to the grid for use elsewhere. Another way Metro is conserving is by using 50% recycled content in the materials used to build the Operations Campus.



Design features include California poppy (also Metro's "orange" bus color) throughout the division, including a cool mural in the lobby.



## New stations add to a sense of place.

The Gold Line's Foothill Extension is not just a journey through communities. Each station has a unique look and feel that offers a glimpse into the rich history and distinct natural and cultural resources of the area.

Highlighted in the e-book *The Art of the Journey: The Foothill Gold Line* (March 2016) are the key artistic elements along the line. Textures, use of light, design of benches, panels, inlays and sculptures, each tell a story reflecting each station's theme.

The new Operations Campus in the City of Monrovia was designed and built to meet LEED Gold standards, and evokes California's golden history. Interior and exterior functional artworks depict our state's flower, the California Poppy. Artist Christie Beniston said that "ultimately my hope is that my contribution is a visual representation of what is important to the broader community, as well as the legacy of the city's new facility."

The main building uses a micro view of a cluster of golden flowers for a grand mural in the lobby. Beniston produced a large, colorful, graphic mosaic composed of hundreds of flowers using 140,000 10mm glass tiles. In contrast, fences along the external public plaza reflect large-scale poppies as a vibrant backdrop along the same theme.



# We connect.

Metro believes in connecting communities, people and innovative ideas. By reducing congestion and providing new choices in how to get from where we are to where we want to be, the LA region is becoming more livable. New transportation infrastructure is fundamentally transforming how we experience our city every day.





# Mobility

## Bike share is Metro's newest (and greenest) fleet.

The Metro Board called for a flexible new transportation option that connects people to transit and places without increasing greenhouse gas emissions or gridlock. Metro answered with bike share, an additional public transportation option designed to help Angelenos and visitors connect, transit and explore downtown Los Angeles...for starters.

Launched in July 2016, Metro Bike Share was designed to provide convenient, round-the-clock access to a fleet of approximately 700 Metro bikes for short round and one-way trips in the densest parts of downtown. Soon, the program will expand to Pasadena, Venice and the Port of Los Angeles communities, expanding the program to a total of 1,500 bicycles and 125 stations, changing the transit experience and expanding the reach of bus and rail.

The beauty of bike share is that the trips are short, averaging less than a mile per ride.

Maybe it's about running a quick errand, meeting someone for lunch, or getting to the station on time. With over 355,000 miles traveled in 2016, that's a lot of short trips.

Metro is the only transit authority with a bike share program allowing the program to integrate payment services. Riders choose what works best. Payment is designed to match riders' needs with monthly passes, flex passes, individual ride fares and rider relief coupons. Since December, the number of Flex Pass holders surpassed the number of Monthly Pass holders.

The program launched in July 2016 and topped 100,000 trips within the first six months. In a city focused on improving our health and well-being, we could also report well over nine million calories burned and 330,000 pounds of carbon dioxide diverted.

## Sharing the ride saves time and money.

When you calculate gas costs, vehicle maintenance, tolls and pollution, driving alone is the most expensive form of transportation. Metro encourages sharing the commute as a convenient, reliable and economical way to get to work and school. Carpooling allows you to use HOV lanes, and vanpools take the stress out of long-distance commutes.

Ride-matching services help connect people heading to the same destination at about the same timeframe. That includes matching families with students from the same school who share similar schedules.

Participation in Metro's vanpool program has grown tremendously over the years. Although vanpool only represents about 1% of boardings by transit mode, it is actually one of the most cost-effective modes of transportation.



100,000 trips within the first six months

# Measure M

Just a few of the projects Measure M will fund over the next 40 years:

## This plan is our most ambitious move yet.

Angelenos spend an average of 81 hours per year stuck in traffic. There are 10.2 million people living in LA County and this number is expected to grow by 2.3 million in the next 40 years. With more growth comes increased congestion and air pollution. Metro is tackling this challenge with bold, long-term thinking to transform transportation across our region.

With a goal to improve mobility, provide more transportation options, stimulate the local economy and create jobs, Measure M was created to enhance LA County's public transit program through a ½-cent sales tax until voters decide to end it. The people of LA County spoke with a resounding voice, approving Measure M with 71.15% support.

Measure M is expected to generate an estimated \$860 million a year in 2017 dollars and add 465,690 new jobs across the region.

Nearly **\$30 billion** in bus and rail operations, including Big Blue Bus, Long Beach Transit and Foothill Transit

**\$22.5 billion** in local street improvements

**\$2.4 billion** to maintain our system in good working condition

**\$2.4 billion** in affordable fares for students, seniors and the disabled

**\$2.4 billion** in bike and pedestrian connections to transit, including safe routes to school programs

**\$1.9 billion** in regional rail, including Metrolink

# Building Human Capacity

## Metro is re-inventing environmental training.

To create a greener workforce, Metro believes in investing in the region through education that leads to quality infrastructure. This includes training current employees, as well as current and future contractors, in the concepts related to sustainability practices and the foundational knowledge of green infrastructure.

When we can come together with the same foundational knowledge, we can work smarter, not harder, and get more done for the region. This initiative brought together the key Metro departments of environmental, talent development, training, operations and safety with key community partners who offer training programs.

The first offerings for the Growing a Greener Workforce Program, Green Professionals (G-PRO) Building Skills Training and Envision Rating System Training were reviewed, analyzed and customized to highlight Metro examples for implementation in 2017.

Metro plans to have 500 Metro employees and 1,000 professionals in the region certified in the Envision Rating System. Similarly, Metro aims to have over 200 Metro employees and 500 professionals in the region certified in G-PRO.

## We're building a healthier workforce.

When employees look and feel good, they do their best work. Metro opened One Fitness to give all employees access to a free, quality fitness and wellness program, no matter an individual's personal fitness level.

The new program was designed and developed in less than a year, opening its doors in December 2016. Access is free to regular employees, including up to 1 ½ hours of validated parking for those who don't work at Metro Headquarters. One Fitness provides machines and weights for individual use and classes hosted by employees and staff, including meditation, yoga, tap dance, spin, zumba and boot camp. For those just getting started or wanting to check on their progress, the staff offers fitness tests. For those needing to knead that knot out of their shoulders, there are 10-minute chair massages. There's something for everyone.

Goals for 2017 are to increase awareness about offerings and convenience, to encourage employees to do at least 30 minutes of exercise a week, whether at One Fitness, at one's desk, or walking Metro campuses. Programming will help provide support and community because working out together is half the fun.

The upcoming wellness program will include a partnership with the Metro Café to highlight healthy choices and portion sizes.



## Metro is partnering with cutting-edge thought leaders.

Metro's deepening partnership with the US Green Building Council—Los Angeles Chapter (USGBC-LA) has produced "Building Resilience Los Angeles: A Primer for Facilities," which highlights some of Metro's innovative practices. Trainings on how to use this primer are planned for 2017. USGBC-LA is also a partner in the development and implementation of new trainings on sustainability principles for Metro employees and our greater Los Angeles regional partners. Green Professional (G-PRO) trainings launch in 2017.

# Community

## We're connecting our customers with fresher food options.

The "Go Metro to Farmers' Markets" initiative is growing more than food. It's growing opportunity, community health, and resilience. Since the launch of Metro's interactive website in 2014, research has identified key neighborhoods where fresh produce is needed. As a result, farmers' markets in proximity to rail stations have expanded to more than 20 locations around Los Angeles.

In 2016, the Real Estate Division deepened their research and outreach to community partners about the best locations for farmers' markets and how to bring them onto Metro sites to further connect productivity and mobility. This feasibility study is nearly complete.



## Metro incubates green thinking.

Metro's landmark public-private partnership with the Los Angeles Cleantech Incubator (LACI) elevates the importance of cutting-edge sustainable technologies for regional transportation systems. By connecting to LACI portfolio company technologies, increased synergistic opportunities to address transit-specific challenges that stimulate the local economy of clean technology entrepreneurs can thrive.

Metro's workspace at the La Kretz campus establishes a presence aimed at understanding and prioritizing pilot initiatives on common challenges related to energy, water and waste reduction. Branded conference space highlights elements of Metro's operations to spark LACI innovators who occupy this space to focus on transit-oriented solutions.

## Eat, Shop, Play encourages local buying.

Metro knows that the distinctive character of neighborhood businesses is what makes a community unique, creating an economic advantage that cycles revenue back into local economies, enriching the local community. Metro is changing how public projects get built by maximizing exposure and foot-traffic to directly impacted local businesses.

The Eat, Shop, Play program makes it easier for the public to eat at local restaurants, shop at unique stores and play at one-of-a-kind destinations that are located within Metro's subway construction zones. The program provides one-on-one marketing support to the over 250 potentially impacted businesses in six targeted communities. Dedicated staff work with business owners to customize and coordinate promotional activities, including lunch meet-ups, video spotlights (mini-commercials) and customer loyalty prizes.

"With the help of social media, traditional media, and some good ole' fashioned door-to-door outreach, Metro is making a significant commitment to helping businesses survive and thrive throughout construction," explains JC Lacey, Metro Business Liaison.

### 2016 Eat, Shop, Play Accomplishments\*

- 250+ partnerships with project-area businesses
- 22+ video spotlights put out on social media
- \$21,500+ in catering orders to impacted restaurants
- 67+ vendor day spaces provided at Metro Headquarters, waiving the \$200 customary fee

\*since launch

### 2017 Eat, Shop, Play Goals

- Host at least two lunch meet-ups per month
- Create at least 36 video spotlights
- Host quarterly vendor days
- Give out at least 12 customer loyalty prizes and 7-Day TAP cards per month
- Increase catering orders over last year's dollars
- Hold monthly special events/community festivals



# Sustainability Indicators

The Sustainability Indicators below were derived from the Recommended Practice for Quantifying and Reporting Transit Sustainability metrics, prepared by the American Public Transportation Association (APTA) Standards Sustainability Metrics Working Group.

Year to Year Comparison of Key Sustainability Indicators

REGRESSED	IMPROVED
<b>Greenhouse Gas Emissions</b>	<b>1.2%</b> 4,152 Fewer Tons Emitted
<b>Greenhouse Gas Displacement</b>	<b>-3.6%</b> Decrease in Metric Tons of CO <sub>2</sub> e Displaced from Metro Operations
<b>Energy Use</b>	
> Fuel Use	<b>2.7%</b> 1 Million Gallons Saved
> Rail Propulsion Power	<b>-4.7%</b> 9 Million More kWh Used
> Facility Electricity Use	<b>-2.3%</b> 3 Million More kWh Used
<b>Water Use</b>	<b>19.4%</b> 51 Million Fewer Gallons Consumed
<b>Waste and Recycling</b>	
> Solid Waste and Recycled Waste	<b>0.1%</b> 11 Fewer Tons
> Used Oil Waste	<b>0.1%</b> 11,795 Fewer Gallons
> Hazardous Liquid Waste	<b>-2.7%</b> 15,250 More Gallons
> Non-hazardous Liquid Waste	<b>3.0%</b> 11,750 Fewer Gallons
> Anti-freeze Waste	<b>21.2%</b> 10,669 Fewer Gallons
<b>Criteria Air Pollutant Emissions</b>	<b>38.5%</b> 69 Fewer Tons
<b>Vehicle Miles Traveled per Capita (Los Angeles County)</b>	<b>0.6%</b> 45 Fewer Miles Traveled
<b>Unlinked Passenger Trips per Capita</b>	<b>-5.7%</b> 23.3 Million Fewer Boardings
<b>Operating Expenses per Boarding</b>	<b>-17.4%</b> 56 Cents More per Boarding

## A Note on Methodology

Data for this report is generated using industry-best practices which are reviewed each year for accuracy and relevance. Questions about methodology can be directed to Metro's Environmental Compliance and Sustainability Department at [sustainability@metro.net](mailto:sustainability@metro.net).

## Acknowledgements

The process of capturing data and transforming it into stories for a report of this breadth could not have been done without the tremendous support of the following Metro departments and community partners:

### Metro Departments:

Building Services, Community Relations, Construction Management, Contract Services, Countywide Planning and Development, Division 13, Division 15, Division 20, Environmental Compliance and Sustainability, Facilities/Property Maintenance, Fleet Management and Support Services, Foothill Division, General Services Administration, Gold Line Division 24, Logistics, Maintenance Administration, Maintenance Division, Marketing, One Fitness, Program Control, Purchasing, Purple Line Extension, Quality Assurance, Rail Quality Assurance and Instruction, Rail Vehicle Engineering and Acquisition, Regional Communications, Shared Mobility and Implementation, Transit Corridors, Transit Project Delivery, Wayside Systems Facility Maintenance

### Partners:

Bee Catchers Inc., Cogstone, Cumming Corp, Kleinfelder, La Brea Tar Pits Archeological Department, Los Angeles Department of Water and Power, Pasadena Water and Power, Southern California Edison, Southern California Gas Company, TRC Solutions, US Green Building Council—Los Angeles Chapter

## Board of Directors

**Eric Garcetti**

*Chair*

Mayor of the City of Los Angeles

**Sheila Kuehl**

*1st Vice Chair*

Los Angeles County Board Supervisor  
District 3

**James Butts**

*2nd Vice Chair*

Mayor of Inglewood

**Kathryn Barger**

*Board Member*

Los Angeles County Board Supervisor  
District 5

**Mike Bonin**

*Board Member*

Los Angeles City Councilmember  
District 11

**Jacquelyn Dupont-Walker**

*Board Member*

Appointee of Mayor of the  
City of Los Angeles

**John Fasana**

*Board Member*

City of Duarte, Mayor Pro Tem

**Robert Garcia**

*Board Member*

Mayor of Long Beach

**Janice Hahn**

*Board Member*

Los Angeles County Board Supervisor  
District 4

**Paul Krekorian**

*Board Member*

Los Angeles City Councilmember  
District 2

**Ara Najarian**

*Board Member*

Councilmember, City of Glendale

**Mark Ridley-Thomas**

*Board Member*

Los Angeles County Board Supervisor  
District 2

**Hilda L. Solis**

*Board Member*

Los Angeles County Board Supervisor  
District 1

**Phillip A. Washington**

*Chief Executive Officer*

**Carrie Bowen**

*Nonvoting Board Member*

Appointee of Governor of California



**Metro**

One Gateway Plaza  
Los Angeles, CA 90012-2952



323.GO.METRO



[sustainability@metro.net](mailto:sustainability@metro.net)



[metro.net/sustainability](http://metro.net/sustainability)



**Metro**<sup>®</sup>