



Frequently asked questions about light rail

Last updated Dec. 11, 2007

What is light rail?

Light rail is a type of train that operates on steel rails and is powered by electricity from overhead wires. METRO will operate at street level in a lane separated from auto traffic. This dedicated guideway will allow light rail to travel the alignment faster than local buses can.

METRO trains will travel at posted speed limits in city streets and can reach 55 mph in freeway corridors. It will operate on two sets of tracks traveling in each direction. Trains will operate 18-20 hours per day, seven days a week. Passengers will be able to catch the train every 10 minutes during peak hours and every 20 minutes off-peak.

Each light rail vehicle can carry 175 passengers; a train consisting of three cars can carry up to 525 passengers. Initially the system is expected to carry as many as 5,000 passengers per hour during peak hours—about the same as an arterial street. The system will ultimately have the capacity to carry up to 15,000 people per hour, about the same as a six-lane freeway. Light rail will connect seamlessly with bus service and will share the same fare structure.

What agency is responsible for building and operating the METRO system?

METRO is the agency responsible for the design, construction and operation of the light rail system. METRO, formally named Valley Metro Rail Inc., was formed as a nonprofit public corporation in 2002 by the cities of Phoenix, Tempe, Mesa and Glendale. The cities of Chandler and Peoria joined the board in 2007.

METRO operates under a Joint Powers Agreement pursuant to ARS 11-952 and 40-1152, and its board of directors comprises representatives from the member cities—(typically, mayors or council members).

How was the initial route selected?

The 20-mile route is one of the most-traveled corridors in the region and currently has the highest ridership bus routes in the Valley. The alignment passes through more than a dozen major activity centers, and will serve business centers that employ more than 200,000 people. When METRO begins operating, trains will replace bus routes along the METRO alignment, freeing buses to travel expanded and new routes in the Valley.

Will the route be extended in the future?

Six high-capacity transit corridors with the potential to become light rail extensions are included in the Maricopa Association of Governments' *Regional Transportation Plan*. To be eligible for federal funding, planners conduct what is called an alternatives analysis to determine whether light rail is the best transit mode to serve these corridors; other modes considered include expanded local bus service and bus rapid transit. After the mode is chosen, the route is refined based on community input and engineering considerations.

The *Regional Transportation Plan* identifies a total of 37 additional miles of possible light rail extensions or other high-capacity transit corridors to be implemented by 2025. These corridors / possible light rail extension areas include: five miles in northwest Phoenix, 12 miles into northeast Phoenix, three miles into downtown Mesa, two additional miles in south Tempe, five miles into Glendale, and 11 miles west along the I-10 corridor.

The 57-mile light rail system is programmed in the Transit Life Cycle Plan to be built on a pay-as-you-go basis, although some bonding is included to cover timing issues related to the receipt of federal funds. For information on the *Regional Transportation Plan* visit the Maricopa Association of Governments Web page at www.maricopa.gov.

Will extensions run from Tempe to the north? Will they be built in Scottsdale?

Extensions in these areas are not contained in the current Regional Transportation Plan.

The cities of Scottsdale and Tempe completed a study in 2002 that recommended a high capacity transit route along Scottsdale Road, and in 2003 the Scottsdale City Council approved Scottsdale Road as a high-capacity transit corridor. The type of transit has not been determined though. The decision on what types of transit to use is entirely up to the cities. If they do choose light rail as an option, there is a formal process that must be followed in order to add them to the Regional Transportation Plan as an amendment.

How much will the original METRO system cost?

The 20-mile starter route will cost \$1.4 billion and will be funded through local and federal sources.

The federal government provides \$587 million through a New Starts grant, about 41% of the total cost. The cities of Phoenix, Tempe and Mesa contribute \$566 million through local transportation taxes or General Fund monies; the Maricopa County Proposition 400 half-cent sales tax contributes \$199 million to pay for regional assets such as bridges, vehicles and Park-N-Ride lots; and a federal Congestion Mitigation and Air Quality grant contributes \$59 million to the project.

Why does light rail travel in the street, rather than underground or elevated?

Subway and monorail options have been evaluated but were not chosen because they are very expensive. An elevated system would cost three times as much as a street-level system, and subway systems cost 10 times as much. At the time the alternatives analysis was conducted for the 20-mile starter line, there was significant community opposition to an elevated system, particularly along Central Avenue.

Will light rail hurt my property value?

Light rail is likely to increase property values. Studies in other cities show a positive connection between property values and proximity to light rail. A 2003 study by the University of North Texas on property values in Dallas, Texas, found that property values near DART light rail stations were 50 percent higher than comparable properties in other areas, and that vacant land near DART stations appreciated five times faster than other properties in the area.

The study also found that one year after DART service began, retail sales increased more than 12 percent in the Central Business District, compared to a one percent increase citywide.

How can I cross the light rail tracks if they are in the middle of the street?

Automobile traffic will be allowed to cross the tracks at intersections with traffic signals. You will be permitted to make left turns and U-turns at intersections on a green left-turn arrow.

Will light rail change the way traffic is regulated?

A computerized traffic control system will adjust the timing of traffic signals so that most of the time the train will arrive at a green light. The adjustments made to the timing of the signals will be so minor that they will not be noticed by most drivers.

METRO Fast Facts

Topic	Description
Accessibility	<p>Stations and vehicles will be easily accessible to people in wheelchairs or those with limited mobility. Accessibility features include:</p> <ul style="list-style-type: none">▪ Gently sloping station entry ramps▪ Vehicle boarding at the same level as the station platform with no steps, lifts or ramps▪ 4 areas for wheelchairs in each vehicle. Wheelchairs do not need tie-downs on METRO vehicles because of the computer-controlled, smooth stopping action, even in the event of emergency braking.▪ Wide aisles▪ Electronic message displays at stations and inside trains▪ Audible announcements at stations and inside trains▪ Braille at automated fare vending machines▪ Audible warnings (bells and horns) for on-street pedestrians when the train begins movement.
Airport	<p>METRO will connect to Sky Harbor International Airport at the light rail station at 44th and Washington streets. From the METRO station, passengers will board an airport shuttle bus until the airport builds its automated train system. The automated train is a driverless train that will run between the light rail station, east economy parking lot, airport terminals, and the new rental car facility. The automated train is scheduled to be connected to the light rail station by 2013.</p> <p>Stage One of Sky Harbor's automated train system will transport passengers between the light rail station and Terminal 4, which serves 80 percent of the airport's passengers, and to the East Economy parking facility. Stage One completion is estimated for 2013.</p> <p>Stage Two will connect Terminal Four to Terminal Three, a new terminal to replace Terminal Two and the Airport Rental Car Center. Development of Stage Two is set to begin in 2016 and to be operational by 2020. Sky Harbor automated trains will run 24 hours, seven-days per week, arriving at stations every two minutes during peak hours and getting most passengers to their destinations within five minutes after boarding. Baggage carts will be allowed on the trains, easing travel between airport facilities.</p>

Art	<p>There will be art at each light rail station and is part of the Tempe Town Lake Bridge. The total art budget is \$6.3 million – about one-half of one percent of the cost of the entire 20-mile light rail system.</p> <p>Studies have shown that public art can increase ridership, reduce vandalism and better connect stations to the neighborhood in which they are situated. The Federal Transit Administration recommends spending one-half to one-percent of the construction budget on art, and there are ordinances in Phoenix, Tempe and Mesa that require or recommend that public art be installed as part of capital improvement projects.</p>
Bikes	<ul style="list-style-type: none"> • Four bike racks inside each light rail vehicle • Locking bike lockers at each park-and-ride • Bike signs on the outside of the train windows show riders which door is closest to the bike rack • There is room in the vehicle to stand and hold a bike (for short rides)
Budget	<p>The budget for the 20-mile starter line is \$1.4 billion. That includes financing costs. The federal government is paying approx. 41% of the cost of the project through the Federal Transit Administration's New Starts program.</p>
Bus transfers	<p>Rail passengers will be able to transfer to and from buses near each station. Both bus and train will use the Valley Metro pass system, which does not use transfer passes. A single-ride pass will permit you a single ride on either bus or rail, a three-day or monthly pass will permit you to ride either system for the duration of the pass period. The one exception is the pass for Rapid Bus service, which is unique to that service and may not be used to board either local buses or the train.</p>
Community Advisory Boards (CABS)	<p>Community Advisory Boards, one for each construction line section, are composed of citizens who live or operate a business near the construction zone. These boards are responsible for evaluating whether the contractor does a good job minimizing construction impacts such as noise and dust.</p>
Construction schedule	<p>Street construction will continue through 2008 but traffic restrictions will ease considerably in 2008. Most lane restrictions in the east Valley will end in Spring 2008 while METRO puts the finishing touches on stations, nearby sidewalks, park and rides and landscaping. Lane restrictions in downtown Phoenix will ease considerably in late spring / early summer 2008, and will ease in north Phoenix in Summer 2008.</p>
Employment opportunities	<p>All METRO jobs are posted on our Web site at MetroLightRail.org. There will be 68 LRV operator positions created and these positions are expected to be filled by current bus operators. Hiring will be done not by METRO, but by the contractors who won the contracts to build the vehicles (Kinkisharyo) and operate the trains (ACI).</p>
Extensions	<ul style="list-style-type: none"> • Northwest. Length is 5 miles. Runs north 19th Avenue toward Rose Mofford Park. This extension will be built in two phases: planning has begun for the first phase, which will total 3.2 miles and terminate at Dunlap Avenue. Opens in 2012. Funded by the city of Phoenix Transit 2000 tax. • Tempe South: Two miles, runs southbound on Rural Road from Apache to

	<p>Southern in Tempe. Opens in 2015</p> <ul style="list-style-type: none">• Central Mesa. Runs 2.7 additional miles eastward on Apache Blvd to the downtown area. Opens 2015.• Glendale. Alignment not yet determined. Opens 2017. Locally funded with city taxes.• I-10 West. Ten miles, running near the freeway and ending at 79th Ave. Opens 2019• Northeast. Runs 12 miles northeast toward Paradise Valley Mall. Opens 2025. <p>It is important to note that light rail extensions are not automatically assumed to be the best options for these corridors. Other modes that will be considered include expanded local bus service, bus rapid transit and streetcar service.</p> <p>Planning for light rail extensions begins 9-10 years prior to the opening date. For complete information on high-capacity transit corridors call the Maricopa Association of Governments and ask to receive the Regional Transportation Plan. This plan is also available on the MAG website at mag.maricopa.gov</p>																																		
Fares	<p>Light rail and bus will share the same fare structure.</p> <table><tr><td rowspan="5">Local bus / Light rail</td><td>1 ride</td><td>\$1.25</td></tr><tr><td>All day pass</td><td>\$2.50</td></tr><tr><td>3 day pass</td><td>\$7.50</td></tr><tr><td>7 day pass</td><td>\$17.50</td></tr><tr><td>31 day pass</td><td>\$45</td></tr><tr><td rowspan="5">Reduced fare <i>(Senior, Youth, Disabled)</i></td><td>1 ride</td><td>\$.60</td></tr><tr><td>All day pass</td><td>\$1.25</td></tr><tr><td>3 day pass</td><td>\$3.75</td></tr><tr><td>7 day pass</td><td>\$8.75</td></tr><tr><td>31 day pass</td><td>\$22.50</td></tr><tr><td rowspan="3">Express Bus / RAPID bus</td><td>1 ride</td><td>\$1.75</td></tr><tr><td>All day pass</td><td>\$3.50</td></tr><tr><td>31 day pass</td><td>\$68</td></tr><tr><td rowspan="2">Bus Card Plus</td><td>Local</td><td>Up to \$45/mo</td></tr><tr><td>Express</td><td>Up to \$68/mo</td></tr></table> <p>To streamline its system, bus tickets, tokens and transfer slips are being eliminated. The one-ride pass for \$1.25 is for one ride on either local bus service or light rail. Riders who need to transfer will need to buy an all-day pass for \$2.50, which is good for either / both local bus and light rail service. All-day passes expire at 2:30 a.m. on the following day. If you buy a pass for light rail / local bus, and then decide to take a Express or RAPID bus you simply pay the difference for the upgrade.</p> <p>METRO will use a proof-of-payment system. Pass cards or paper passes must be activated at station platforms or on buses before boarding the train. Passengers</p>	Local bus / Light rail	1 ride	\$1.25	All day pass	\$2.50	3 day pass	\$7.50	7 day pass	\$17.50	31 day pass	\$45	Reduced fare <i>(Senior, Youth, Disabled)</i>	1 ride	\$.60	All day pass	\$1.25	3 day pass	\$3.75	7 day pass	\$8.75	31 day pass	\$22.50	Express Bus / RAPID bus	1 ride	\$1.75	All day pass	\$3.50	31 day pass	\$68	Bus Card Plus	Local	Up to \$45/mo	Express	Up to \$68/mo
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Funding	<p>The federal government will pay for roughly 50% of the cost of the 20-mile starter line: \$587 million in a New Starts grant and \$59 million in an Congestion Mitigation and Air Quality grant. The rest is funded with local sales taxes in Phoenix and</p>																																		

	<p>Tempe, and General Fund monies in Mesa, with a small portion of the 20-mile starter line funded by the county's Proposition 400 half-cent sales tax.</p> <p>The city of Glendale has passed a sales tax to pay for a future extension to downtown Glendale.</p>
Hours of operation and frequency of service	Expected to be 20 hours per day, 7 days per week. You can catch a train every 10 minutes during daylight hours, every 20 minutes at other times.
Line sections	The 20-mile light rail construction project is divided into construction line sections. Each line section has an architect, engineer, community outreach coordinator and construction contractor.
Operations and Maintenance Center	The METRO Operations and Maintenance Center is a 20-acre site where light rail vehicles are assembled, maintained, repaired and stored, and is where operators check in for their shifts. Because of safety and security considerations, the Operations and Maintenance Center is not open to the general public.
METRO	<p>The brand name of both the Valley's light rail system, and the agency formed to plan, build and operate the system. METRO and Valley Metro are two separate agencies that work together to provide transportation solutions to the Valley of the Sun. METRO is responsible for light rail and Valley Metro is responsible for providing connectivity between rail and bus service, and for coordinating bus and rideshare services.</p> <p>METRO was formed as a nonprofit public corporation in 2002 by the cities of Phoenix, Tempe, Mesa and Glendale. The cities of Chandler and Peoria joined the board in 2007.</p>
Misters, stations	Misters will not be used at light rail stations because they are too expensive to maintain.
Noise	Light rail is extremely quiet and will make about as much noise as a passenger truck. For safety, bells will sound when the train approaches and leaves the station. For safety, it is very important that you stop, look and listen every time you're near light rail tracks.
Parades	Three large parades that used to be held on Central Avenue in Phoenix—the Fiesta Bowl Parade, Electric Light Parade and Veterans Day Parade—have been permanently relocated in order to accommodate the marching bands and balloon entries. The parades now begin on Central north of Montebello, then head east on Camelback Road, then south on Seventh Street.
Park-and-rides	<p>There are 8 park and ride locations offering a total of 3,324 parking spaces. Locations:</p> <ul style="list-style-type: none"> ▪ 19th Avenue and Montebello, south of Bethany Home Rd (795 spaces) ▪ 19th Avenue and Camelback (411 spaces) ▪ Central Avenue and Camelback (128 spaces)

	<ul style="list-style-type: none"> ▪ 38th Street and Washington (189 spaces) ▪ Apache Blvd and Dorsey (90 spaces) ▪ Apache Blvd and McClintock (300 spaces) ▪ Apache Blvd and Loop 101 (695 spaces) ▪ Main Street and Sycamore, east of Dobson (844 spaces)
Passenger capacity	The light rail system can accommodate up to 12,000 passengers per hour, the same as a six-lane freeway, and up to 66 passengers seated per vehicle, with max. capacity of 175. In its first year of operation, we expect at least 26,000 boardings per day. Projected ridership in 10 years is 50,000 boardings per day. Most light rail systems in the West have far exceeded their initial ridership projections.
Pollution	The METRO light rail system is virtually pollution free, since it is powered by electrical power. The METRO system is expected to reduce airborne emissions by more than 12 tons each day compared to emissions associated with the same amount of passengers in cars.
Power system and overhead power lines	The overhead wiring system that provides electrical power to the trains consists of 750v high-voltage lines typically placed at 16 feet above ground. These lines are not accessible to the general public and when they are lower than 16 feet, such as around overpasses, they are clearly marked. These power lines should be treated with the same respect given to electric company power lines. City traffic workers who may be required to work on traffic signals near the lines are given special safety training before they are permitted to work in the area. Additionally, METRO and its partner cities will provide safety education to property owners who may have buildings or other structures near to METRO power lines.
Route description	<ul style="list-style-type: none"> ▪ Begin at 19th and Montebello, just south Bethany Home Rd. ▪ South to Camelback Rd. ▪ East on Camelback to Central Avenue ▪ At 1st Ave, southbound trains travel on 1st Ave ... northbound trains travel on Central Ave ▪ East and westbound on Jefferson and Washington ▪ Washington continues eastbound to Tempe Town Lake bridge in order to cross the lake ▪ East on Third St. along the abandoned railroad track line to Sun Devil Stadium/College Drive ▪ South to University, then southeast on Terrace Road ▪ East on Apache Blvd until it turns into Main Street in Mesa ▪ East on Main Street, ending at Sycamore just east of Dobson.
Safety around light rail	<p>Driving, walking and bike riding</p> <ul style="list-style-type: none"> ▪ Never stop or park your car or bike on light rail tracks. Don't walk or stand on tracks. ▪ Stop on red. Make left turns only with a green arrow.

	<ul style="list-style-type: none"> ▪ Look both ways before crossing the tracks by car or bike. Pedestrians should cross only at crosswalks and obey the crosswalk signs. ▪ Never drive your car or ride a bike in the light rail tracks, the area in which the train operates. ▪ Light rail trains are extremely quiet – there is no “clickety-clack” or engine noise! Always look both ways when crossing the tracks and look for flashing train headlights and listen for warning bells and horns. ▪ The ends of a light-rail train are identical. White headlights show a train approaching, red taillights show it moving away. ▪ METRO’s overhead power lines are high voltage; exercise the same caution you would around electric company power lines. ▪ Parents should hold the hands of small children when near METRO tracks and when on station platforms. <p>Teach your kids</p> <ul style="list-style-type: none"> ▪ Stop, look and listen around light rail tracks. ▪ Cross intersections only in a crosswalk and to obey the crosswalk signs. ▪ At crosswalks, get off bikes and skateboards and walk them through the crosswalk. ▪ Never play near the tracks, and don’t fly kites or airplane models near the tracks because of the overhead power lines. ▪ Skateboarding, rollerblading and riding bikes on the tracks or on light rail platforms is not safe and is not permitted.
Safety and security design	<p>METRO safety measures</p> <ul style="list-style-type: none"> ▪ A curb separating the light rail tracks from automobile traffic ▪ Signalized intersections for pedestrians and auto traffic ▪ Signage to warn motorists and pedestrians of the light rail tracks and approaching trains ▪ Bells to warn passengers, pedestrians and motorists of trains arriving and departing at stations ▪ The headlights and turn signals will flash when the audible warnings are initiated as a visual warning for the hearing impaired. <p>Passenger security</p> <ul style="list-style-type: none"> ▪ Closed circuit TV cameras at each station, park-and-ride and inside the vehicles, which are monitored by the central operations center ▪ Security officers in uniform and plain-clothes ▪ Emergency phones at each station and well-lit stations
Speed	<ul style="list-style-type: none"> ▪ METRO will travel at posted speed limits on city streets, to a maximum of 35 miles an hour. We project an average speed during rush hour of 25 mph. If METRO eventually extends onto a freeway corridor, the train will travel at 55 miles per hour, which is its maximum rated capacity.
Stations and transit centers	<p>There are 28 stations on the starter line. Each is 300 feet long and 16 feet wide, and are positioned either in the median or alongside outer curbs. Stations have tensile</p>

	<p>fabric for shade canopies and louvered shade panels to throw shade no matter the direction of the sun. Amenities include trees and plants, benches and drinking fountains, electronic display boards, security cameras and security phones, fare machines and bike racks.</p> <p>Each station costs about \$2.2 million to build (\$1 million for the foundation civil work and \$1.2 million for the structure). Each transit center costs \$1.5 million; they are less expensive because they have very simple bus shelters and consist mostly of paving, with amenities and basic landscaping.</p> <p>STATION NAMES are the same as their location</p> <p>Montebello / 19th Avenue 19th Avenue / Camelback 7th Avenue / Camelback Central Avenue / Camelback Campbell / Central Avenue Indian School / Central Avenue Osborn / Central Avenue Thomas / Central Avenue Encanto / Central Avenue McDowell / Central Avenue Roosevelt / Central Avenue Van Buren / Central Avenue Van Buren / 1st Avenue Washington / Central Avenue Jefferson / 1st Avenue 3rd Street / Washington 3rd Street / Jefferson 12th Street / Washington 12th Street / Jefferson 24th Street / Washington 24th Street / Jefferson 38th Street / Washington 44th Street / Washington Priest Drive / Washington Center Parkway/Washington Mill Avenue / Third Street Veterans Way / College Avenue University Drive / Rural Road Dorsey Lane / Apache Boulevard McClintock Drive / Apache Boulevard Smith-Martin / Apache Boulevard Price-101 Freeway / Apache Boulevard Sycamore / Main Street</p>
Tempe Town Lake Bridge	<p>The METRO system includes a bridge over the Tempe Town Lake between the Mill Avenue bridge and the historic railroad bridge. The METRO Tempe Town Lake bridge has a fiber-optic lighting system that will light up at night in millions of color combinations and patterns. The first-ever illumination of the bridge occurred in</p>

	December 2006.
Transit centers	<p>There are five transit centers on the METRO system. METRO is building four of them, and the city of Tempe is building one.</p> <ol style="list-style-type: none"> 1. 19th Ave and Montebello 2. Central Ave and Camelback 3. 44th St and Washington 4. 5th and College 5. Sycamore Center
Travel times and route length	<p>55 minutes, end-to-end. Sample trips:</p> <ul style="list-style-type: none"> – Entire 20-mile route: 57 minutes – Chris-Town Mall to downtown Phoenix, 20 minutes – Chris-Town Mall to the airport, 32 minutes – Chris-Town Mall to ASU, 42 minutes – Downtown Phoenix to Sky Harbor (44th St. airport shuttle) 14 minutes – Downtown Phoenix to downtown Tempe, 23 minutes – Downtown Phoenix to downtown Mesa, 37 minutes – Downtown Tempe to downtown Mesa, 15 minutes <p>The METRO starter line is 20 miles total.</p> <p>Phoenix: 13.34 miles Tempe: 5.5 miles Mesa: .97 miles</p>
Vehicles	<p>METRO will begin operation with 50 vehicles. Our Operations and Maintenance Center has the capacity to handle 100 vehicles.</p> <p>FEATURES OF THE VEHICLES</p> <ul style="list-style-type: none"> ▪ Platforms are the same level as the vehicle entry – no stepping up or down. ▪ Four hanging interior bike racks ▪ Space for four wheelchairs ▪ Air conditioned to 74-78 degrees ▪ Metallic silver and teal paint scheme, like Rapid buses ▪ 92 feet long. Weighs 102,000 pounds. ▪ Capacity: 66 seated, 175 total (seated and standing) ▪ Can be linked into trains of up to three vehicles. Each vehicle has three body sections with two articulation points that allow them to hinge to make tight turns. ▪ Electrically powered using a 750-volt DC traction power system ▪ Has two driver cabs, one at each end <p>MANUFACTURER. Kinkisharyo of Japan. Kinkisharyo has designed and manufactured transit vehicles in Japan since 1920. There are no US light rail vehicle manufacturers. Final assembly of the vehicles occurs in Phoenix, at METRO's Operations and Maintenance Center at Washington and 48th streets.</p>
Vendors	<p>People interested in becoming contractors or vendors should visit the METRO website at MetroLightRail.org. There you will find links to the employment page or</p>

	the procurement page.
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