

# L.A.'s aging water pipes; a \$1-billion dilemma

By Ben Poston and Matt Stevens

As officials weigh rate increases, pipes continue to deteriorate and leak, spewing millions of gallons of water onto city streets amid one of California's worst droughts on record. And costs to repair and maintain the aging system mount, totaling more than \$250 million over the last eight fiscal years.

More than a quarter-million pipes make up the DWP's 6,730-mile water main network. Since 2006, work crews have responded to about 13,000 leaks, about four a day across the city.

Some areas experienced more leaks than others — Hollywood Hills West, Mid-City and Hollywood accounted for the largest number of leaks in the city since 2010, agency data show.

## Leaks by area, 2010 to 2014

Sources: Los Angeles Department of Water and Power, MapBox and OpenStreetMap.

During the last eight fiscal years, the department spent an average of \$44 million annually to replace about 21 miles of pipe per year.

Still, water officials estimate that about 8 billion gallons of water are lost each year to leaky pipes, firefighting, evaporation, theft and other unaccounted losses, though they emphasize that the leak rate has been in decline over the last decade, and is about half the industry average. But the lost water could supply almost 50,000 households for a year.

One small pipe in Woodland Hills leaked more than half a million gallons of water over the course of the year it took the DWP to find and fix it. A DWP spokeswoman said ambient noise made it difficult to find the leak with sound equipment. Workers drilled dozens of holes and dug out sections of the road to locate the leak, leaving uneven patches and a pothole filled with water, residents said.

"This thing was wasting water and we're in this severe drought," said Rick Russell, who visits his mother in the neighborhood. "It's kind of like a slap in the face."

Analyzing pipe infrastructure data, The Times found that pipe age, soil quality, water pressure and leak history are key factors that contribute to leaky water mains. DWP engineers weigh those factors when prioritizing pipes for replacement, assigning a letter grade to each water main based on its likelihood of failure and the potential consequences of a break. About 6% of the system earned grades of D and F, according to The Times' analysis.

The department's 10-year plan is aimed at replacing pipes that have poor grades. Officials believe that they can replace all the pipes now ranked D and F by 2025.

More than 40% of the pipes graded D and F were installed in 1930 or earlier as Los Angeles' population boomed. The expansion of underground water mains in the city mirrored the growth in population above ground. Installation dropped off during the Great Depression and World War II, and surged during the baby boom, when the DWP installed more than 2,500 miles of water mains, department data show. Those postwar pipes will approach the end of their useful life span in about 30 years.

The DWP uses letter grades to prioritize water mains for replacement in the city's 6,730-mile network.

Lucio Soibelman, a civil engineering professor at USC, reviewed the DWP's database of more than 260,000 water mains that The Times obtained through a California Public Records Act request. He found that older pipes in corrosive soils such as the sandy ground in Venice are the most likely to leak.

"These are the pipes that have to be replaced first," Soibelman said.

Those aren't the only factors, though. Water pressure and leak history are also important indicators of potential pipe failure, said Julie Spacht, the DWP's water executive managing engineer. Nearly 30% of the leaky pipes had more than one leak, the data show. Most of the at-risk water mains are being targeted for repair, The Times' review shows.

" " Because pipes are out of sight and out of mind, no one has really thought about how we're going to pay for this. " " — Colin Chung, an asset management consultant Share this quote

Outdated engineering methods can also make a pipe more likely to fail. Cast iron mains installed before the 1930s often rusted from the inside out, causing leaks, officials said. DWP workers began lining new pipes in the mid-1930s with concrete. That change corresponds to a steep decline in leaks, The Times found.

Cities such as Portland, Ore., San Francisco and Seattle are also seeing old pipes come of age, according to infrastructure experts who praised the DWP for addressing the issue.

"This is not just an L.A. problem," said Colin Chung, an asset management consultant based in Irvine. "Because pipes are out of sight and out of mind, no one has really thought about how we're going to pay for this."

One of the biggest recent pipe failures occurred last summer on Sunset Boulevard when two trunk lines — arterial pipes with diameters larger than 20 inches — ruptured. One of the trunk lines was more than 90 years old and graded C when it failed. The other was more than 80 and graded D.

## Los Angeles DWP crews replace a water main



The broken pipes sent about 20 million gallons of water rushing into Westwood, rendering cars inoperable, warping the hardwood floor in UCLA's Pauley Pavilion and causing what school administrators estimated would be millions of dollars in damage.

Pipe repair costs totaled almost \$900,000, DWP said.

After the blowout, Garcetti asked the DWP to present a plan to address the city's infrastructure. Garcetti said the agency's goal of replacing D- and F-rated pipes by 2025 is achievable using mostly bonds and cash from existing

base rates.

He didn't rule out water rate increases, but that requires public meetings and political capital from the DWP Board of Commissioners, City Council and mayor, all of whom must approve an increase.

"We do need to pay for what we need to fix," Garcetti said.

Although the DWP's \$1.3-billion plan would fix many of the current problem pipes, water officials said it doesn't address pipes that will deteriorate in coming years. Even the department conceded it is unlikely that it will ever entirely catch up.

Agency officials must also contend with quality-of-life realities for Los Angeles residents. Replacing several hundred miles of pipe could snarl traffic on roads that must be excavated. And the work will cause headaches for those who have to endure construction outside their homes.

The department's plan could also be hampered by constant regulation changes, water price fluctuations and evolving drought conditions, which some infrastructure experts said can make executing a massive long-term initiative nearly impossible.

But water officials said they need to act now.



Leslie Pope says DWP crews have repaired four leaks on her street in Venice since 2010. (Bob Chamberlin / Los Angeles Times)

"The goals we set are 'stretch'-type goals, but not unreasonable," Spacht said. "We're in a spot where we have an opportunity to take measures to keep us from being in a desperate situation in the future."

Leslie Pope and her husband, Doug Fischer, who live on Nowita Place in Venice, said they would pay higher water rates if it meant improved pipes. Since 2010, crews have repaired four leaks on their street and three on the next block.

The day the pipe split in front of her Craftsman bungalow, Pope and about 60 of her neighbors went without water most of the day, according to DWP records. Cones and a massive white truck blocked off the area as crews pumped out standing water. Workers ripped out and tossed aside chunks of asphalt, then dug a chest-deep hole that measured 12 feet square, the records show.

By the late afternoon, crews had removed and replaced seven feet of rusty pipe, records show.

"I love Venice," Fischer said. "But it's old and falling apart, and these things need to be taken care of."

**Credits:** Interactive Map: Priya Krishnakumar. Interactive Chart and Digital Producer: Honest Charley Bodkin.