

# MTP2030 Issue Papers: Road Maintenance



This paper begins discussion, toward developing the MTP 2030, about critical issues facing road maintenance over the next 25 years. Key questions to consider include: How can the region address chronic road maintenance funding shortfalls, especially in more rural areas? What are the consequences of continuing to defer maintenance? What priority should local road rehabilitation have in the investment of regional funds?

Cities, counties, and Caltrans keep the street, road, and highway system in a state of good repair through regular maintenance – activities such as sealing cracks, repairing pavement, cleaning and repairing drains, fixing signals, and sweeping streets. Major repair, rehabilitation, and reconstruction – activities such as sealing pavement, repaving, reconstructing subgrade and drainage, replacing bridges, and reconfiguring intersections—are also done. This paper examines both routine preventive road maintenance and costlier road rehabilitation which comes due on a recurring cycle.

## **Cost of Road Maintenance**

- The 6 counties and 22 cities in the region spend about \$250 million per year to maintain, repair, rehabilitate, and reconstruct the region’s 10,000 miles of local roads, streets, bridges, and sidewalks.
- About \$150 million (60%) of these expenditures go for routine preventive maintenance, done primarily by public works forces, costing an average \$15,000 per mile of road per year.
- About \$100 million (40%) go for major repair, rehabilitation, and reconstruction, usually done as discrete projects using contractors.
- The 6 counties and 22 cities in the region should spend an estimated \$350 million annually for road maintenance and rehabilitation to keep all streets and roads in good state of repair. This means that the region’s cities and counties are deferring about \$100 million (30%) of work that should be done.
- Maintenance and rehabilitation consumes about 80% of the typical local road budget today, leaving only 20% - about \$50 million regionwide - for local improvements and new construction.
- Caltrans is spending \$2.4 billion statewide for state highway maintenance and rehabilitation this year, twice what it spent ten years ago, and is working off deferred maintenance left over from the mid-1990s. Approximately \$125 million of that total is used in the Sacramento region; an amount 70% higher than was envisioned in SACOG’s MTP2025 just three years ago.

## **Paying for Road Maintenance**

- Road maintenance faces a funding squeeze, and there are no easy choices for more money.
  - ▶ Preventive maintenance is key to controlling long-term costs, but the only funds available for maintenance are the local shares of the gas tax, sales tax funds, and local

general funds. For rehabilitation, some state and federal funds can also be brought to bear.

- ▶ The typical local road maintenance and rehabilitation budget comes about 25% from gas taxes, 45% from sales tax-based revenues, 10% from other local sources including general funds, and 20% from state and federal funds for road rehabilitation, but it varies among jurisdictions.
- ▶ Road maintenance consumes close to 90% of local funds currently usable for that purpose. Since the need for road repair is great, deferred maintenance follows unless new local revenues can be found.
- The inadequacy of the state gasoline tax is widely misunderstood; it now covers only 25% of actual local road maintenance and rehabilitation costs, with nothing left over for road improvements.
  - ▶ About 6 cents (1/3) of the 18-cent-per-gallon gas tax goes to cities and counties for streets and roads, and the rest stays with the State. The \$80 million that comes to cities and counties in this region could cover less than 20% of what various cities and counties should spend for road maintenance and rehabilitation; thirty years ago (in 1975) the gas tax covered 70% of these costs.
  - ▶ In 2003, the local share of the gas tax covered actual road maintenance costs for Yolo and Yuba Counties only out of 16 sampled agencies, and when rehabilitation is included, the gas tax covered no more than 50% of these costs for any city or county.
  - ▶ For the first time, in 2005, the State consumed all of its 12 cent share of the gas tax plus all of its federal funds for maintenance, rehabilitation, and operations of state highways and administration of Caltrans, with none left over for state highway improvements or expansion.
  - ▶ Gas tax revenues have increased very slowly, about 1% per year, for the past 25 years. Fleet efficiency nearly cancelled out the large growth in vehicles and miles of travel. The gas tax rate has not kept up with inflation either; the equivalent purchasing power of the 7-cents-per-gallon tax rate of 1965 would have to be 42-cents-per-gallon instead of the 18 cents it is today.
- Sales tax revenues – from Proposition 42, Measure A in Sacramento County, and Transportation Development Act (TDA) in rural areas - have taken up the slack for the gas tax, and now provide about half of local road maintenance and rehabilitation funding in most cities and counties.
  - ▶ Proposition 42 directs the sales tax on gasoline to transportation purposes, with 20% to cities and 20% to counties for local road maintenance (after Traffic Congestion Relief Program (TCRP) funds are taken off the top). Proposition 42 funds in 2005 add about 25% on top of the local gas tax share, but once TCRP funding ends (presumably in 2009) that will increase to about 65%, and maybe as much as 100% if gas prices stay high.
  - ▶ Within Sacramento County, the Measure A ½% sales tax funds about half of local road maintenance and rehabilitation costs.

- ▶ In rural counties, TDA funds (¼% sales tax) can be used for road purposes once transit needs are met; for rural counties, none of which have enacted transportation sales tax measures, TDA funds cover 10-30% of road maintenance costs, and public works departments assiduously defend their share of TDA funds.
- ▶ TDA and Measure A revenues expand with the economy, as do road maintenance and rehabilitation costs; thus, at least this part of the funding base keeps up with inflation.
- ▶ General sales taxes bear little relation to road use, so users (drivers) lose touch with the real cost of the system they drive on, and can – and do – over-use the system and ignore the public cost.
- No state or federal transportation funds that come to local agencies can be used for road maintenance; state and federal funds must be used for capital improvements or major rehabilitation.
  - ▶ Congress and the Legislature generally prohibit use of federal and state funds for road maintenance, on the principle that local road maintenance should be a local responsibility.
  - ▶ Deferred maintenance, leading to road deterioration and need for rehabilitation, has led SACOG to divert 15% of state and federal funds to rehabilitation instead of improvements since 1998.
- Some local agencies still use general funds for road maintenance, but other local funds dedicated to transportation are typically restricted to capital improvements.
  - ▶ In 1976 local general funds covered 40% of city street maintenance costs and 20% of county road maintenance costs – property access is one of the basic purposes for property taxation. But that source has shrunk dramatically since Proposition 13 in 1978, averaging less than 10% today, and zero in some cities and counties.
  - ▶ Other local revenues used for transportation, including developer fees, assessments, and bonds, are generally dedicated to capital improvements, not maintenance or rehabilitation.
- Caltrans has been able to double its expenditures for maintenance and rehabilitation since the mid-1990s by shifting state and federal funds from the State Transportation Improvement Program (STIP), an elastic funding option not available to local agencies.

### **Factors Affecting Road Maintenance and Rehabilitation**

- Texas Transportation Institute studies conclude that it costs less in the long run to have good roads than bad roads – if you keep up with preventive maintenance continuously.
- Deferred maintenance drives up long term cost; it shortens the cycle for rehabilitation, which is four times as costly. Deferred rehabilitation compounds the problem, often leading to pavement failure and the need to reconstruct the whole roadbed, at ten times the cost.
  - ▶ Routine preventive maintenance, particularly to seal cracks, patch potholes, and keep drains open, on a continuing basis takes on average of \$20,000 per mile of road per year to do right.

- ▶ Regular heavy maintenance, meaning a slurry or chip seal coat, adds costs in the range of \$50,000-\$80,000 per mile for residential streets, on about a seven year cycle.
- ▶ For well-maintained roads, the pavement rehabilitation cycle, meaning an asphalt overlay, comes due in 15 years for arterials and 30 years for local streets, costing \$300,000-\$400,000 per mile; rubberized asphalt can last longer and cuts road noise but costs about 25% more up front.
- ▶ Reconstruction of poorly-maintained roads, which entails removing the pavement and repairing the gravel base underneath, costs as much as \$2 million per mile.
- Heavy truck traffic and wet weather comprise the two most critical factors in pavement deterioration.
  - ▶ Heavy trucks (particularly those hauling gravel, logs, construction materials, overseas containers, agricultural products, garbage) and transit buses flex the pavement and create spaces underneath.
  - ▶ Wet weather, with cracked pavement or poor drainage, can lead to water undermining pavement.
  - ▶ One fully-loaded 80,000-pound truck causes as much pavement wear as 10,000 autos, and trucks' numbers are growing: heavy truck travel has grown at a 50% greater rate than auto travel since 1990.
  - ▶ The original concrete pavement from the 1950s still serves Highway 160 just north of downtown Sacramento, largely because it has carried very little heavy truck traffic for the past 40 years.
- Local agencies point to damage from heavier trucks as a rising factor in poor pavement condition.
  - ▶ Caltrans designs state highway pavements for today's heavy trucks, but heavy trucks do major damage to older rural county roads and urban arterials not built for 80,000-pound loads.
  - ▶ In 1997, via TEA-21, Congress authorized a 10% increase in maximum truck weight (from 72,000 pounds to 80,000 pounds), which increased road wear from those trucks by 25%, without an increase in road maintenance funding.
  - ▶ The Sacramento area, with few cross-suburban state highways, but manufacturing and distribution increasingly moving to suburban locations, faces a particularly vexing challenge regarding heavy truck wear on urban and suburban arterials.
- The road maintenance challenge is real and serious for everyone but affects jurisdictions unevenly on both the cost and revenue sides.
  - ▶ Older built-out cities such as Sacramento, Citrus Heights, and Marysville with older roads built to past standards and years of deferred road maintenance face continuing major rehabilitation costs.
  - ▶ Newer developing cities such as Elk Grove, Folsom, and Lincoln benefit from modern developer-built road mileage that boosts funding formulas without adding major

rehabilitation liabilities yet, but the cities should attend to an increasing load of preventive maintenance to keep ahead of the curve.

- ▶ Rural counties end up as losers in funding formulas, but many must deal with resource-based economies such as agriculture, logging, or mining that pound old narrow roads with heavy trucks.
- ▶ Cities often must deal with extra costs due to utilities in the roadbed, pavement damage from past utility work, and landscaping in the right of way; counties must consider adding paved shoulders; and Caltrans faces added costs for complex traffic handling and night work.
- ▶ Increases of more than 50% in the cost of fuel and asphalt and nearly 100% in the cost of concrete and steel since 2004 are further squeezing beleaguered budgets for road maintenance and bridge repairs, affecting both local agencies and Caltrans.

### **Road System Condition and Performance**

- City and county public works agencies do a creditable job at keeping roads serviceable, given the shortfall of funding they have to work with.
- Deferred maintenance is the Achilles heel of the whole system – deferred maintenance forces a costlier fix and shortens the cycle when rehabilitation comes due – but essentially all cities and counties have been deferring more of both maintenance and rehabilitation than they should.
  - ▶ A good understanding of cumulative deferred maintenance is elusive: no one tracks it directly, there is no common standard among agencies, some try to inflate it and others hide it, it is a moving target, and the real damage is building up out of sight under the pavement.
  - ▶ The MTP2025 estimated deferred maintenance at \$780 million regionwide, from a sketchy survey done in 1999; a better estimate today would probably show closer to \$1.2 billion, growing by about \$100 million per year. The attached chart shows an unsupported extrapolation.
  - ▶ Deferred maintenance is a hard habit to escape, because of the up-front cost to recover deteriorated pavements.
- Pavement in bad condition causes additional vehicle operating cost for the motorist.
  - ▶ The average urban motorist in the U.S. pays \$396 annually in added costs due to bad roads.
  - ▶ Statewide, California motorists face the fourth highest extra costs of any state due to bad roads, 59% above average.
  - ▶ Sacramento motorists average \$609 in extra costs, sixth highest among 52 urban areas greater than 1 million population nationwide and 54% higher than the average for these 52 urban areas.

### **Comparisons**

- The Conditions & Performance Report to Congress in 2002 indicated an average 15% deferred maintenance rate nationwide; the SR8 Study to the Legislature in 1999 estimated a 30% rate for California.
- California since the mid-1980s has gained a reputation around the country for poor quality roads, a reversal from the mid-1960s when California's road system was widely envied as the best anywhere.
  - ▶ The effects of continuing deferred maintenance and rehabilitation on roads in this region and statewide are showing up clearly.
  - ▶ The Road Information Program reported that California's six metro areas with more than 1 million population ranked first, second, third, fourth, sixth, and tenth worst out of 52 such areas nationwide for urban road condition; Sacramento is the one ranking sixth-worst.
  - ▶ Statewide, interstate highway condition slipped slightly from 1995 to 2000: good-or-very-good condition fell from 36% of mileage to 33% and mediocre-or-poor condition rose from 43% of mileage to 47%.
  - ▶ Statewide, rural arterial road condition deteriorated even more from 1995 to 2000: good-or-very-good condition fell from 27% of mileage to 21% and mediocre-or-poor condition rose from 9% of mileage to 16%; other rural roads are in worse shape, with 30% being rated mediocre-to-poor.
  - ▶ Statewide, urban arterial street condition declined alarmingly from 1995 to 2000: good-or-very-good condition fell from 29% of mileage to 14% and mediocre-or-poor condition rose from 21% of mileage to 51%; other urban streets are in much worse shape, with 75% being rated mediocre-to-poor.
  - ▶ California's roads are noticeably worse than the national average, which showed 43% of all roads in good-or-very-good condition and just 15% in mediocre-or-poor condition in 2002.
- Though we have no Sacramento-specific study or survey, the numbers imply that road conditions in this region are little different than the statewide average.