

Draft of summary

Paying Directly for Driving

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Car users pay for some of their costs directly through time and money, but much, perhaps most of their costs are paid indirectly and paid by others. Pricing reform would have drivers pay directly for the costs of their driving. In addition to affecting directly the indirect cost, pricing reform would also increase the productivity of the economy and change the way the urban system works. Serious efforts to improve the economy depend on moving toward more honest prices. The perception that such reforms have more costs than benefits is an important part of carism.

Transportation pricing reforms need to be linked as tightly as possible to the particular cost being internalized. Some studies have lumped all the costs into a tax on gasoline, but this grossly oversimplifies the complexity of the situation and in many cases a gas tax wouldn't work.

The summary below, taken from a longer study, describes the major indirect costs and describes a pricing reform for each. "Cost" generally means the cost compared to an alternative system based on pricing reform, land use changes, and supporting transportation facilities.

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1. Environmental externalities.

- a. **Vehicle pollutants**
 - i. **Air pollution:** CO, HCs, NO_x, SO_x, PM, others
 - ii. **Stratospheric ozone:** car air conditioning fluid (chlorofluorocarbons, CFCs)
 - iii. **Global warming/Climate change:** CO₂, water vapor, CFCs, NO_x, pavement
 - iv. **Water pollution** of surface and ground water by cars
 - v. **Solid waste.** Waste tires, batteries, car parts, junked and abandoned cars; car-based litter.
 - vi. **Noise pollution.** Monetary damage and quality of life costs.

- vii. **Vibration damage** to nearby buildings from ground shaking by traffic
- viii. **Pavement damage**: erosion, heat pollution, groundwater recharge, land contamination

red cameras. The tax would deal with one aspect of the heat-island problem of large cities.

2. Congestion delay

- a. As indirect pricing: **value of time lost**, cost relative to costs of induced demand of new capacity, cost relative to direct congestion pricing and dynamic value pricing.
- b. As a **time cost to HOVs** [High Occupancy Vehicles]

Pricing reform: congestion delay

All congestion pricing strategies increase the cost to drivers of SOVs [Single Occupancy Vehicles] to reduce travel at peak hour on c

Where some parking is charged and other nearby parking is not, poaching is a common concern. Poaching occurs when free parking intended for one purpose is used by another, such as BART commuters taking up space in front of a store that needs shoppers, or students parking in a neighborhood near a school. Free parking can be defended from unauthorized use. For example, where commuters poach on shopping spaces, the solution is to sign the spaces against commuter parking, warning of towing. Few commuters want to come home and find their car gone and quickly learn to park where legal.

The carist response to parking charges is two fold: 1) if one can't park, how can one go there? and 2) if it costs so much to park, why would go there? In the carist mind, parking should be free, so parking charges do not compute. Parking charges are possible, but there, some odd or special other place, not here, where people like us live. This attitude, however, is shaped by the built environment and expectations, particularly the amplitude of free parking in suburbia. People do not expect free parking, or even vehicle access, in certain settings, like campus centers, theme and amusement parks, on pedestrian streets, in large buildings, inside shopping malls, and inside ski resorts, where they may walk long distances.

Employer-paid parking. A large and growing literature underlines the efficacy of ending one of the nation's biggest subsidies to driving, the deductibility of employee parking as an employer business expense. It is about the only cost of commuting that has such special status, and tilts the playing field toward driving. All other costs come from personal income and are not deductible.

While the simplest, most economically productive solution is to close the tax loophole, carist political resistance is too fierce. "Cashing out" employer-paid parking for employees has much more appeal; it means offering employees a choice, park without charge, or be paid the value of the parking if not used. Many employees will take advantage of this incentive, which is usually worth from about \$35 to \$100 a month, depending on location. Many employees will switch to car pool, but also may take transit, bike, walk, or park nearby.

So far out discussion focuses on having employees pay their own way directly rather than indirectly by people in general who pay income taxes.

Cash out as currently framed does not appeal to employers, for whom it is a new cost. The reform needs to be expanded to include a vested right to develop land saved from parking, which gives most employers a real incentive to support cash-out reforms. Such building would not be subject to parking requirements and would be based on non-SOV access.

This wrinkle gives employers a benefit to balance the expense.

Finally, a third angle of approach is to tax all employee parking. Such a tax could be based either on recouping the cost of the tax loophole, or on pollution attributable to the trip to the parking, or both. The tax could be relatively uniform, avoiding debates over value. About \$3 per week day would be close to market value for most areas except downtowns, which are more expensive. The employee parking tax can be administered by County Assessors as an add-on to the property tax. Visual inspection of aerial photographs can take care of most enforcement, with some inventory of covered parking and field inspections covering the rest. It is, however, more difficult to make a tax swap work at the county level, so the revenues could be used for transit, roads, and road user services otherwise paid for by sales and property taxes.

The parking tax is especially appealing for areas with large job surpluses and housing deficits, which force high housing prices, long-distance commuting, congestion and air pollution.

Since the parking tax will shift some SOVs to HOVs, it also speeds flow on freeways accessing

In some cases two hour parking time limits during work hours can keep commuters and students out of a neighborhood, but this is regulation, not a pricing reform. Alternatively, some spots can have parking meters to allow visitors to park temporarily.

Other on-street parking on shopping streets, public lots, and multi-family neighborhoods can charge for parking, but coin-operated meters can be more trouble than they are worth. The solution may be to designate a local area for parking charges—whether on a street, in small parking lots, or at a neighborhood shopping area—and have it function like a parking garage without an attendant. Large, structured public parking is usually charged and uses time-stamped receipts, payment on exit, and credit cards. This kind of convenience needs to be applied more broadly. An area scheme would have to be clearly posted and have entry gates where drivers could stop to pick up a receipt through their window. To get the receipt they would swipe a credit card or a smart card with stored value. The receipt would be displayed on the dash and show the car was paying properly. There would also be exit gates where the cards would be read again when leaving and the receipt could be stamped for record keeping. These methods should be far more convenient and less annoying than primitive parking meters. They should have low overhead, and could parking available charges by Ayr of 43200 and 0000 load of (analep) 512 3200 0.00m0ily. h theate Ar demand, so that there would always be spaces available. In higher density areas, like the Mission District in San Francisco or along crowded small streets like Natoma that serve dense housing, an area scheme could better manage the parking pressures.

Charging for parking in a way that seems fair to local residents and makes parking predictably available, though at a price, may be helpful for more than just pricing reform. A major reason for local resistance to smart growth schemes increasing neighborhood density is the feared impacts of parking pressure and traffic. Neighbors may feel aggravating this problem is more of a cost than the benefit of more purchasing power and more local business from new development. Thus, it might be valuable to set up the scheme as a parking benefit district with neighborhood input about the use of surplus funds. The revenues could be used on pedestrian improvements, transit serving the neighborhood, more policing, or other amenities as advised by a neighborhood council.

Transit parking. Transit agencies usually do not own parking. Caltrans owns a little and charges for it, though possibly not enough. BART, however, owns more parking than any other entity, governmental, private, or non-profit, in the Bay Area. There is excess demand for this

parking at many parking at many stations. At West Oakland, in fw0an0.00000 TD(do not own parking. Caltrans owns a little and

Rental housing parking. This is discussed as a market imperfection below.

4. Local government

- a. **Road construction**, local capital projects: part not from user fees but from property and sales taxes, role of property, role of developers
- b. **Road maintenance** not from gas tax
- c. **Local road user services**: police, fire, ambulance, hospital, legal, liability costs
- d. **Municipal revenues forgone** to ROW

Pricing reforms: local government.

The gas tax should be used for much road construction, road maintenance, and local road user services, that is, for all of a, b, and c above not covered by property tax. The formula for gas tax distribution now primarily benefits state highway departments for state and federal highways. The gas tax taxes all drivers to benefit those who use state and federal highways more than average.

My preference would be to not increase the gas tax for these purposes, but to redistribute the existing tax, based on the fact that there is excess capacity of federal and state roads which is hidden by traffic caused by excessive indirect costs. The increase in the gas tax for swap purposes and parking charges would significantly dampen demand, obviating the need for most new roads. The diminished state-federal share should be enough for maintenance of existing roads.

Some burden still needs to fall to property as the balance of purpose for road use shifts from general travel to access to specific property. The property tax should probably cover some minimum of road costs for roads relatively close to or fronting every property. The tax would not be based on frontage, but would be higher for larger and further-out properties and smaller for small lots and multiples and closer-in properties, which reflects their real road costs.

Use of sales tax to subsidize driving is especially perverse and can be changed by shifting finance of voter-approved sales tax transportation projects and programs to the gas tax.

Municipal revenues forgone to ROW. Some roads are obviously essential for a city to function, but when more area than is really needed is used for right-of-way, the economy loses benefits from development, urban system loses functionality and efficiency, and a city loses revenue. These indirect costs can be estimated.

How much pavement is enough? That question can not be easily answered now because of overuse of roads caused by large scale subsidies to drivers. As those subsidies are reduced through direct pricing, traffic would also be reduced, revealing excess roadway that may be developable. Road closings become possible, allowing improvement of the road grid and more smart growth redevelopment of close-in land, which in turn can increase walk-transit trips and decrease car trips, allowing comparable amenity with less traffic at a lower monetary and environmental cost. Meanwhile, modeling allows an estimate of pavement needed when induced demand is subtracted, and could justify some depaving.

5. Federal and state government

Pricing reforms: federal and state government.

a. Federal and state highway construction and maintenance not from gas tax.

The gas tax (state now ~18¢ and federal ~18¢) used to be a user fee for state and federal highways. Its purchasing power has eroded dramatically since the 1970s, when the legislature stopped the historic pattern, from 1931 to 1970, of tax increases. The state gas tax is now about 60 percent below its historic effective rate, adjusted for inflation and fuel efficiency. Restoration
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The Real Price of Gasoline, November 1998) These subsidies should be cancelled.

e. Military expenditures, car's share of defending Mideast oil

Oil war costs should be borne by oil users based on a tax on oil to cover the cost. The gas tax should be raised to cover gasoline's share of the military defense of oil imports. The income tax would be reduced correspondingly. Prior to the invasion of Iraq, the US was spending at least \$ 50 billion per year for maintenance of a Gulf force, four times the cost of the oil imported from that region. Forty-three percent of the oil is used for gasoline, or \$ 21.5 billion. We consume about 109.5 billion gallons per year, yielding a cost per gallon of \$.20.

f. Moral jeopardy and moral turpitude in supporting violent, non-democratic governments that abuse fundamental human rights

When I wrote this several years ago, I did not contemplate invading other countries as a solution. This cost like some others can not be easily quantified; but it is something to consider. Both military expense and moral turpitude are related, at least in part, to the economic insecurity engendered by dependency on a single source of energy, discussed below. The major choices seem to be business as usual, overthrowing governments we do not like, or using less oil.

g. Governmental regulatory costs for oil pollution oversight, monitoring, inspection, enforcement, clean up, and liability not paid for by polluters

The polluting industry should pay and, failing that, the gas tax should pay, for these costs.

h. Coast Guard and DOT Maritime Administration uncompensated protection services

While this subsidy is very small in the larger scheme, market-based fees should be charged for regular services, some billing system based on ability to pay should be worked out for emergency services, and regulations should be applied to all businesses to reduce risks and the need for such services.

i. Mortgage subsidies favoring dispersed housing over compact housing.

Fannie Mae should reduce over five to ten years all loans secured by houses built on greenfields, houses built further out, and houses in low density developments. Fannie Mae should correspondingly increase loans for townhouses and condominiums based on redevelopment, housing in centrally located areas, and housing at higher densities. Sprawl housing does not pay its own way. It is subsidized by indirect pricing of cars which creates the access that makes distant units marketable. Sprawl also has many external costs. These factors allow financing of distance based infrastructure that it inherently more expensive to build, operate, and maintain than closer in and shorter infrastructure.

6. Zoning

i. Uneconomic parking forced by zoning

ii. Uneconomic land waste forced by zoning

Pricing reforms: Zoning

Parking requirements subsidize car travel by forcing developers to build unneeded parking that makes no sense economically. Excessive parking then induces traffic and congestion, which degrades street quality for pedestrians and gives density a bad name. Forced parking also undermines transit by increasing auto ownership, causing traffic that competes with transit and reduces ridership.

Academic research on San Francisco housing in 1988 discovered that zoning forced an increase in housing prices of about one eighth of the cost of the house, or about \$40,000 per house. Over a period of years zoning reduced the housing supply by 43,400 houses.

Parking requirements should be eliminated from zoning. If a developer still wants parking, then it should conform to reasonable space sizes, lane widths, turning radii and so on. Perceived problems (poaching) and solutions are discussed under parking above of the house, or about \$40,000 perout \$40

exceptionally vulnerable to construction defect litigation by condo associations, effectively closing down all condo construction in the state. Recent reforms promise to redress the balance by, for example, allowing a contractor to fix a problem before a case is filed. Town houses, which sell the land to single owners and only have a common area under association ownership, were not affected.

8. Energy

a. Energy dependence risk

- i. Transportation sector: gasoline, diesel fuel
- ii. Household and commercial sector: space and water heating fuels

Pricing reforms: Energy

Pricing aspects of this issue are largely discussed above under other topics; here the issue is risk. Generally, monoculture has increasing risks of instability as it approaches carrying capacity, while diversification reduces risks. In transportation, dependence on a single source of fuel for 84 percent of trips creates some risks, and they increase as the number and security of the suppliers decreases. The subsidies that favor car use put competing urban systems at a competitive disadvantage and impede diversification and energy security.

The household-commercial sector is also fossil fuel dependent, caused in part by indirect pricing. 14.280060.0000 TD(ns)TjET1. 0.0000 TD(ng)Tj 42.9600 0.0000 TD(ng)TjET1.m800 0sd in part by indire

c. **Distance-based utility and service costs**

Pricing reforms: Resources

Is only one clear subsidy in this area, but there are some impacts on resource consumption from the car pricing and subsidy system. An economically sound system would also consume resources, and resource efficiency is only partly related to indirect car pricing. An analy

b. Adverse shadow effects on agricultural operations

Farming, usually beautiful from a distance, smells bad up close. Farm tractors, equipment, and wagons can force following vehicular traffic on narrow two lane country roads to a crawl. The new people in the subdivision don't like the pesticide over-spray and drift, or the flies, or the manure, and they complain. They wreck fences, harass farm animals, rustle cattle, and steal fruit. The loss of farmland reduces the demand for local farm equipment dealers, seed and feed stores, and farm gate processors. Nuisance lawsuits add to the pressure to reap a final harvest from the last crop, houses.

There is here, an odd conflict of externalities, that is, the farmers' externalities which helped them stay in business get in the way of the city people brought to the new subdivision by the externalities and indirect pricing of the car system, who then create new external costs for the farmers.

Farmers need to clean up their acts as much as any interest, they pollute air and water too much and cause too much dust. However, there is also a need for balance. Right-to farm regulations should protect farm operations, especially in areas where new low density housing is encroaching and where a coherent farming area is in danger,

c. Opportunity costs of excess land in pavement

be radically

policing do not seem feasible, but architectural and design changes, e.g., traffic calming and skinny streets, can do a lot to slow cars and thus reduce the external cost they place on walkers and bike riders. Increased traffic calming in neighborhoods and on shopping arteries can reduce speed, improve safety and amenity, and increase commerce.

Traffic calming includes special pavements at neighborhood entry points, traffic bumps (usually in parking lots), traffic humps (usually on neighborhood streets), bollards, planters and parked cars blocking the

city neighborhoods. They would be helped by improved transit and walking.

However, pricing reform is no guarantee of equity. Some pricing reforms have equity impacts. Revitalization of the city does not guarantee benefits to the poor; they may just get dislocated out of gentrifying neighborhoods. Pricing reform saves the city; it may not save the poor people in it. Therefore it is necessary to address equity issues in any pricing reform plans. Fortunately, the reforms can generate the revenue needed to deal with the problem.

f. Aesthetic degradation

Aesthetic degradation is easy to see but hard to measure. Most people agree that parking lots, wide streets, lack of landscaping, overhead utility lines, chaotic and jumbled street signs and store signs, and a lack of trees make a bad impression. Not only urban landscapes are damaged; there are also impacts on natural, historical, and cultural heritage.

Since pavement is the major feature of degradation, some kind of “aesthetic degradation tax” based on square feet could be added to the pavement tax for water pollution and heat generation.

12. Economic

a. Economic inefficiency due to distorted prices.

Pricing reforms: Economic

Many specific pricing distortions have been discussed above; some can be quantified while others are more abstract. The quantifiable costs can all be added up to a total economic estimate, but this is only a first order estimate of the economic effects. Economic theory indicates a second order effect that adds to the obvious benefits of pricing reform, which is an extra increase in efficiency as the system changes and becomes more productive. It is important in doing some kind of analysis to include estimates for external costs where market valuations are lacking. Only if the initial costs going in are comprehensive is there a gain coming out. For example, congestion pricing benefits should include value of time, which is not a dollar transaction. Current accounting uses mostly money exchanges, which can make underpricing appear to contribute to GDP when it detracts from it.

This issue is especially interesting but may be hard to P w3.4800 rd to me