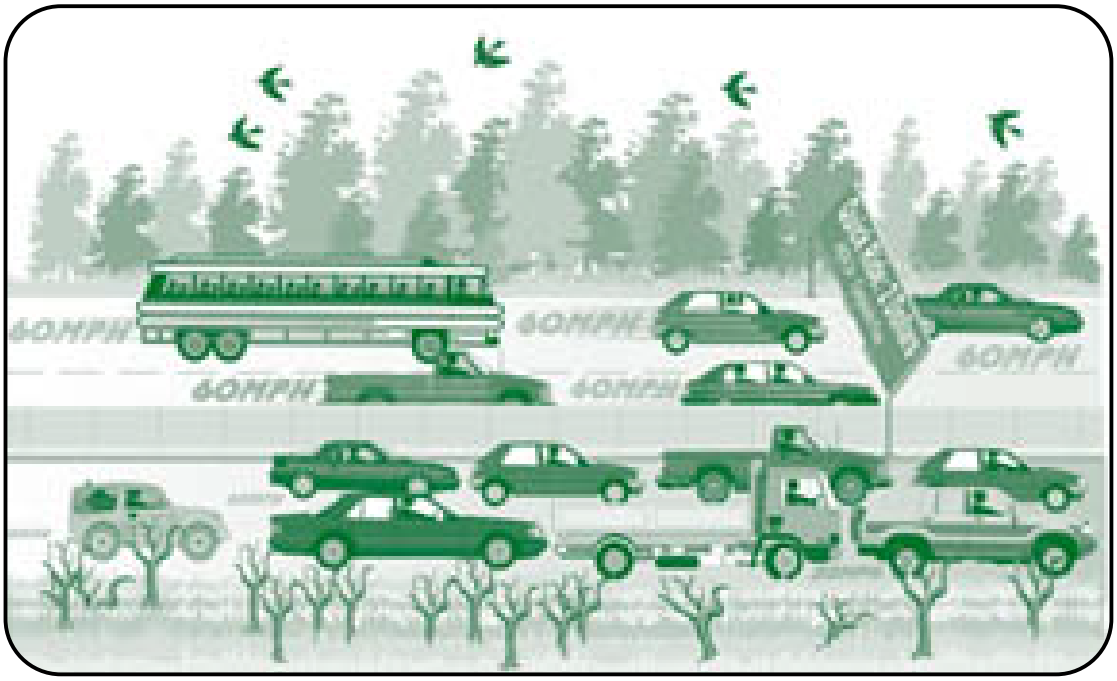
Federal Highway Administration *Pricing Information*



Overview

With the costs of traffic congestion increasing at the same rate as the frustration levels of commuters nationwide, government officials and members of the transportation industry are seeking new strategies for addressing the problem of bumper-to-bumper traffic.

Table 1: Cost of Congestion in 1999

Population Group Average	Annual Cost Due to Congestion	
	Cost ($Million)	Average per Person($)
Very large areas	4,700	920
Large areas	970	760
Medium areas	310	580
Small areas	40	230
68 area average	1,145	630
68 area total	77,800	

Source: Texas Transportation Institute, 2001 Urban Mobility Study

When searching for a solution to the congestion problem, most people immediately think of adding a new lane to an overburdened highway. Average construction costs for adding lanes in urban areas amount to almost $10 million per lane mile. The funding for this construction comes from the tax that drivers pay when buying gas for their vehicles. Overall, funds generated from gas taxes on an added lane during rush hours amount to only $60,000 a year. This amount is grossly insufficient to pay for the lane addition. Naturally, congestion returns soon after new lanes are added because more people are motivated to drive on the expanded highway. On the other hand, introducing value pricing to highway facilities brings transportation supply and demand into balance and keeps the lanes congestion free.

Essentially, value pricing is a way of harnessing the power of the market to reduce the waste associated with traffic congestion. Many drivers choose to bypass congestion by using priced lanes, particularly when they are in a hurry. Although drivers unfamiliar with the concept initially have questions, surveys show that drivers more experienced with value pricing overwhelmingly support it. At the same time, transit and ride-share advocates appreciate pricing's ability to generate both funding and incentives to make transit and ride-sharing more attractive.

Pricing encompasses a variety of market-based approaches to respond to congestion problems. Pricing strategies include:

- HOT Lanes, i.e. High Occupancy Toll lanes, including Queue Bypasses

- Variable Tolls on Toll Roads
- Variable Tolls on Existing Free Roads
- FAIR Lanes, i.e., Fast and Intertwined Regular lanes

This Information Kit provides the full spectrum of pricing strategies involving road user strategies in a condensed packet.

Background

The Value Pricing Pilot Program (VPPP) was established under Transportation Equity Act for the 21st century (TEA-21) to provide up to 15 states, local governments or other public entities with 80 percent Federal matching funds to establish, maintain, and monitor pricing projects. Pilot projects have proven to be successful in at least three areas:

- ***Mobility:*** Revenues from pricing have been used to provide the traveling public with additional travel choices and to increase their mobility. Lane pricing has provided premium service for those willing to pay for it, and has provided for congestion-free movement of transit vehicles.
- ***Productivity:*** Pricing has promoted more efficient use of highway capacity and delayed the need for new capacity, thereby saving tax dollars. Pricing has promoted economic productivity and international competitiveness by decreasing time wasted waiting in congestion and decreasing the uncertainty of delay times.
- ***Environmental protection:*** Pricing has reduced air pollution and fuel consumption.

Additionally, Federal Highway Administration (FHWA) analysis shows that pricing can provide huge benefits to the U.S. economy. If implemented in conjunction with capacity expansion on severely congested freeway facilities in metropolitan areas, over $50 billion in additional net benefits would be generated through travel time and vehicle operating cost savings and reductions in environmental costs.

Lessons Learned

Projects implemented through the Value Pricing Pilot Program have taught us important lessons:

- Pricing *can* work – it can reduce congestion and change travel behavior, and provide additional travel choices.
- Pricing can provide much needed revenues to expand transportation services and delay the need for capacity expansion.
- Pricing can be politically and publicly acceptable. A recently completed public opinion survey in San Diego found that both users and non-users of the dynamically priced I-15 HOT lanes strongly support the use of pricing. Support is high across all

Value Pricing Questions and Answers

Value Pricing Basics

What is value pricing?

Value pricing involves adopting market principles routinely used in the private sector to bring transportation supply and demand into balance. Pricing may sound like a new and complicated strategy for congestion mitigation, but variable pricing is a concept familiar to everyone. We know that the prices we pay for airlines, trains, telephone services, and public utilities are all adjusted according to peak demand or "prime time" rates. This same concept has been applied to prime time roadway usage in countries such as Singapore, France, Austria, Switzerland, and Australia.

Where does the revenue from the tolls go?

That's up to local decision makers. Typically, the revenue raised from tolls is used to finance transit improvements, highway expansion, and/or other congestion-reduction initiatives in the affected area.

Why do we need value pricing?

Traffic congestion is a growing problem and value pricing is one proven way to alleviate it. Traffic congestion costs our economy billions of dollars in wasted time. It contributes to air pollution. It causes us to spend billions on freeway construction. It deteriorates our quality of life.

How does value pricing reduce congestion?

Congestion is ultimately a problem of too many people driving at the same time during so-called "rush hour" periods. Value pricing rewards people who shift to non-rush hour travel, opt for alternative routes, combine trips, use transit, or carpool. When even a relatively small number of travelers make such adjustments, congestion and congestion-related costs are cut.

Isn't value pricing just a fancy name for a toll road?

Value pricing projects are different from traditional toll roads because traditional "flat" tolls are charged 24 hours a day, seven days a week. On the other hand, value priced tolls may be charged only during rush hours. On a value priced facility, motorists do not stop at toll plazas. Instead, tolls are electronically collected as drivers pass at regular freeway speed. A value priced facility also allows drivers to cut or eliminate their expense if they drive off peak.

How Value Pricing Works

How does the electronic toll collection work?

Typically, drivers simply put small tags, or transponders, in the windshield of the interior of their cars. Tolls are then collected as the tag is read at normal highway speeds by electronic scanners suspended from gantries above the highway.

How do drivers manage their account?

Consumers ensure adequate funding is available in their account by linking their accounts to their credit card accounts or through a quick call, trip to a kiosk or office, or visit to a website. Tags emit a signal warning consumers when their account is running low, or they are informed through messages beamed to them as they go by a toll collection point.

What if someone from out-of-town travels onto the tolled area but doesn't have equipment for electronic toll collection?

This is handled in several ways. Of course, clear signage is used to show drivers which lane or route to use to avoid the toll. This avoids most of these kinds of problems. Some systems also allow drivers to pay via credit card by calling a toll-free line within 24 hours after-the-fact. Some project sponsors simply let drivers use the tolled lane at no charge the first few times. For instance, a letter is sent explaining that if the driver wants to continue to use the facility, he or she should get a tag or risk a fine, but that initial usage is being allowed at no cost. Through these kinds of steps, the chances of tourists, occasional visitors, or inadvertent users being penalized are minimized.

Are all value pricing projects alike?

There are many variations, but pricing projects tend to fall into five broad categories: HOT Lanes, Variable Tolls on Toll Roads, Variable Tolls on Existing Free Roads, FAIR Lanes, and other projects that do not involve tolls or new charges, such as Parking "Cash-Out" and conversion of fixed insurance premiums to mileage-based premium charges.

There are also differences in the manner in which tolls are used. Many projects only charge tolls during those times when roads are most congested. Some charge tolls at all times but charge lower rates during non-peak periods. Under both arrangements, users have a financial incentive to use the facility during non-peak periods.

What kind of value pricing projects are the most common?

Variable tolls on existing toll roads and HOT lane projects are probably the two most common types of value pricing projects in use. High Occupancy Toll (HOT) lanes are in use on State Road 91 in Orange County, CA, the Katy Freeway and US 290 in Houston, and Interstate 15 in San Diego. Variable toll projects have also been successfully used on facilities that already charge tolls. For example, on bridges in Lee County, FL and on bridges and tunnels leading into Manhattan, lower tolls are charged during non-peak periods.

How much is the charge?

The toll fee varies according to the goals of the toll authority. In many cases, the toll fee varies and the fee is adjusted until optimal traffic flow is achieved. For example, the express lane fees for an 8-mile section in San Diego in spring 2002 typically ranged from $1.00 to $4.00. But again, prices will vary from project-to-project due to supply and demand, as well as other regional factors.

Is the charge always the same?

Some projects do use a pre-set schedule of tolls. This has the advantage of being predictable and simple. Another option is called "dynamic pricing," where tolls are continually adjusted according to traffic conditions to maintain a free-flowing level of traffic. Under this system, prices increase when the tolled lane(s) get relatively full and decrease when the tolled lane(s) get less full. The current price is displayed on electronic displays prior to the beginning of the tolled section. This system is more complex and less predictable, but it is flexible enough to consistently maintain the optimal traffic flow.

Other Frequent Questions

Can value pricing solve all of the financing, environmental, and congestion issues we face?

No. Value pricing isn't a cure-all. But when combined with other policies, it is an effective tool to manage traffic, finance projects, and encourage transit and car-pooling.

Instead of value pricing, why not just build more highway capacity?

Highway expansion is extremely costly and right-of-way is expensive in congested urban areas. Budget and environmental constraints often make highway expansion projects difficult to implement. Moreover, when highways are expanded and the new capacity is provided at no additional cost, the highway tends to quickly clog because people are motivated to use the "new and improved" highway. There is a triple convergence of users who adjust to new freeway capacity by changing (1) routes; (2) modes (e.g. bus to car); and (3) the time of day they travel. This may continue until the expanded roads reach capacity again. Value pricing can be a tool to help finance road improvement projects, but it also provides financial incentives to limit triple convergence, induced demand, and urban sprawl.

Instead of value pricing, why not just build more transit?

Major transit improvements often aren't made because financing is increasingly scarce in most parts of the country. In addition, if drivers don't have a financial incentive to use transit options, transit may be underused. When this happens, the potential environmental and traffic management benefits of transit go unrealized. Value pricing is a unique transit-enhancing tool, in that it can provide badly needed transit financing, as well as key incentives to boost transit use.

Isn't this just like a tax?

Like taxes, value pricing raises revenue. But value pricing has differences from traditional taxes that are appealing to many taxpayers. Current taxes pay for the basic level of transportation service. Under value pricing, taxes would still support basic service. But pricing offers citizens the option of bypassing congestion by paying a toll. Hence, unlike most taxes, citizens have some degree of choice over whether they pay this expense. That is, some can avoid or limit the cost when they find ways to combine trips, drive at other times, use non-tolled lanes, travel on other routes, or use transit or carpools. With many traditional taxes, they have no ability to avoid or reduce payment.

Second, tolls are usually tied directly to the benefit. For instance, when drivers choose to pay tolls on I-15 in San Diego, they know what they are buying: (a) the ability to bypass the most congested lanes and benefit from a more reliable travel time and (b) congestion-reducing transit improvements directly on I-15. When citizens pay general taxes, they often are more confused about the direct benefit they are purchasing.

Finally, because value pricing reduces congestion, the demand for new taxes to fund expensive congestion-reducing initiatives is diminished.

The tag-reading equipment can't distinguish carpools from single occupancy vehicles, so how do you keep people from cheating?

Operating projects have established enforcement procedures to control illegal use of the facility.

Enforcement is accomplished through a variety of visual techniques. Visible and regular police presence near tolling points further deters motorists from fraudulent use of the facility.

Won't the electronic technology invade our privacy?

All of the operating projects in the United States and more than 250 other toll facilities across the country use electronic toll collection (ETC). Tolling agencies have devised a method to protect the public's privacy by linking the transponder and the driver's personal information with a generic, internal account number that does not reveal the driver's identity and that is not disclosed to other organizations.

Is value pricing a realistic solution to reduce congestion?

Value pricing has worked in California, Texas, New York, Florida, Norway, Singapore, Australia, Canada, and many other places. Survey results from operating facilities prove that value pricing effectively manages traffic, encourages transit use, is accepted by consumers, funds transit and freeway improvements, and gives drivers more options.

Are tolls unfair to low-income drivers who can't afford them? Aren't we just creating exclusive "Lexus Lanes"?

Results from surveys conducted for projects in operation show that drivers of all income levels use priced express lanes. Although many low-income users don't choose to use the tolled facility every day, they support having the option. For instance, a low-income parent racing to avoid the financial penalty associated with being late for pick-up at a day care, or for work, is often pleased to have the option of paying a fee to bypass gridlock in the regular lanes. In fact, the highest level of support for San Diego's four-year old express lanes comes from the lowest income users (80 percent support). Moreover, low-income bus riders disproportionately benefit from toll-financed transit improvements. Finally, the current system of paying for roads makes relatively heavy use of regressive taxes, such as the gas tax. As such, it places a larger burden on lower income people. A well-designed value pricing plan can be less burdensome to low-income citizens than current transportation financing systems.

Will value pricing discourage ridesharing and transit use?

Within three months of the opening of the express lanes on California's SR-91, a 40 percent jump occurred in the number of vehicles with more than three passengers. Ridership on buses and a nearby rail line have remained steady. Between 1999 and 2001 on San Diego's I-15, revenues generated by users of the facility financed transit improvements that contributed to a 25 percent increase in bus ridership.

Will the public accept value pricing?

In San Diego, the public supports value pricing. After using the I-15 express lanes for four years, 89 percent of users and non-users support extending it.

For more information, visit www.valuepricing.org.

HOT Lanes

Photo: Courtesy Houston Metro

"HOT" is the acronym for "High Occupancy/Toll." On HOT lanes, low occupancy vehicles are charged a toll, while High-Occupancy Vehicles (HOVs) are allowed to use the lanes free or at a discounted toll rate. HOT lanes create an additional category of eligibility for people wanting to use HOV lanes. People can meet the minimum vehicle passenger requirement – or they can choose to pay a toll to gain access to the HOV lane. Tolls vary by time-of-day and are collected at highway speeds using electronic toll collection technology – free-flowing traffic without a toll booth in sight. Vehicles are equipped with transponders, and transponders are read by overhead antennas. Tolls may be set "dynamically" – they may be increased or decreased every few minutes to ensure that the lanes are fully utilized.

A queue bypass, or queue jump, provides a mechanism for vehicles willing to pay a toll to bypass general traffic that is held up at a choke point, such as at a freeway entrance ramp or busy intersection. Queue bypasses can also be used to allow high priority traffic, such as buses, vanpools, or high occupancy vehicles (HOV's), free or discounted use of the queue bypass, as with high occupancy toll (HOT) lane applications.

With citizens growing more frustrated with under-used lanes, HOT lanes are increasingly being viewed as a compromise that can reduce public opposition to under-utilized HOV lanes.

Survey findings show that low-income users express the highest level of support for having the priced express lane option in places like San Diego (80 percent support) and disproportionately benefit from toll-financed transit improvements.

In San Diego, where a value-priced express lane has been in place for four years, 89 percent of users support extending it.

Benefits of HOT Lanes

Drivers

- Reduces congestion during the peak period
- Increases travel time reliability
- Finances congestion-reducing road improvement projects
- Offers the option to bypass congestion when in a hurry

Taxpayers

- Offers more choice than traditional taxes
- Encourages responsibility by tying drivers' cost directly to their choices
- Reduces tax demand for congestion-reducing initiatives, such as expanded roads
- Provides a means to repay toll road bonds more quickly

Transit Riders and Carpoolers

- Generates needed funding for transit improvements, park-and-rides, etc.
- Creates financial incentives to make transit and carpooling more attractive
- Provides express bus service and improves transit travel time reliability
- Finances congestion-reducing transit improvement projects

Businesses

- Reduces congestion-related personnel costs
- Cuts congestion-related shipping expenses
- Improves area quality-of-life to help recruit employees and businesses

Environment

- Reduces air pollution resulting from cars idling in traffic jams
- Reduces fuel consumption resulting from stop-and-go traffic
- Supplies reliable funding source for transit and carpool options
- Offers a compromise to those who demand elimination of underused HOV lanes

Q's and A's

What are HOT Lanes?

"HOT" is an acronym for High Occupancy/Toll. On HOT Lanes, a solo driver can pay a fee to access less congested High Occupancy Vehicle lanes normally reserved for transit and carpools, while High-Occupancy Vehicles (HOVs) are allowed to use the lanes free or at a discounted toll rate.

Where does the revenue from the tolls go?

That's up to local decision makers. In the I-15 Corridor in San Diego, part of the revenue raised from the tolls is used to finance an express transit service on the facility. Tolls generated can also be used for highway maintenance, enforcement, expansion, and other congestion-reduction initiatives in the affected area.

Why do we need HOT Lanes?

We need HOT Lanes because traffic congestion is a growing problem. HOT lanes provide a method for alleviating traffic congestion. In some corridors in which HOV lanes are operating, either the HOV lane is at capacity or underused. On the I-10 Katy Freeway in Houston, the HOV lane was getting congested with HOV-2 vehicles. The occupancy requirement was raised, but this left plenty of spare capacity. With conversion to a HOT lane, this spare capacity could be used.

How do HOT Lanes reduce congestion?

Congestion is ultimately a problem of too many people driving at the same time, during so-called "rush hour" periods. HOT lanes allow some of those who previously traveled in the regular lanes to use lanes restricted to HOVs. When even a relatively small number of motorists shift, congestion and congestion-related costs are cut in the regular lanes.

Is it really worth the investment and who benefits from a Queue Bypass?

The toll rates on queue bypasses might not be very high and the time saved might not be as large as with the time savings experienced on longer HOT lane facilities. But survey results show there is a willingness to pay to bypass congested intersections. Toll revenue can help finance facility expansion to provide a queue bypass earlier than expansion might otherwise occur. Indeed, queue bypass revenue, while potentially fast tracking an infrastructure improvement, can also help pay for investment over the life of the facility. The investment needed for a queue bypass should be less than what is needed for larger expansion projects. Beneficiaries of a queue bypass may include all travelers in the area, since current pricing projects show that there is a willingness across all income groups to choose to pay for an express route when the demands of daily life merit it. Also, the benefits of moving some traffic off the regular route are often seen in improved traffic flows for those remaining on the non-tolled route. If HOVs are allowed free or at discounted rates an increase in HOV use may result. Reduced emissions may result from reduced congestion, and increased economic, environmental, and social benefits may result from the increased transportation efficiency.

How does the electronic toll collection work?

Typically, drivers simply put small tags, or transponders, in the dash area of the interior of their cars. Tolls are then collected as the tag is read at normal highway speeds by electronic scanners suspended from gantries above the highway.

Is the charge always the same every day for use at any particular time of the day?

It varies by facility. Some projects do use a pre-set schedule of tolls. This has the advantage of being predictable. Another option is called "dynamic pricing," in which tolls are continually adjusted according to traffic conditions to maintain a high but free-flowing level of traffic. Under this system, prices increase when the tolled lane(s) get relatively full and decrease when the tolled lane(s) get less full. The prevailing price is displayed on electronic displays prior to the beginning of the tolled section. Dynamic pricing, though complex and less predictable, has been very well received by the public and well understood by users. It is flexible enough to consistently maintain the optimal traffic flow.

Instead of creating a HOT lane, why not just build more highway capacity?

Highway expansion is extremely costly and right-of-way is expensive in congested urban areas. Budget and environmental constraints often make highway expansion projects difficult to implement. Moreover, when highways are expanded and the new capacity is provided at no additional cost, the "improved" highway tends to quickly reach capacity because commuters decide to take advantage of the new freeway capacity by changing: (1) routes; (2) modes (e.g. bus to car); and/or (3) the time of day they travel, until the new roads reach capacity again.

Are HOT Lanes just creating exclusive "Lexus Lanes"?

Results from surveys conducted for projects in operation show that drivers of all income levels use express lanes. Although many low-income users don't choose to use the tolled facility every day, they support having the option. For instance, a low-income parent racing to avoid the financial penalty associated with being late for pick-up at a day care, or for work, is often pleased to have the option of paying a few bucks to bypass gridlock in the regular lanes. In fact, the highest level of support for San Diego's four-year old express lane comes from the lowest income users (80 percent support). Finally, the current system of paying for roads makes relatively heavy use of regressive taxes, such as the gas tax. As such, it places a larger burden on lower income people. A well-designed value pricing plan can be less burdensome to low-income citizens than current transportation financing systems.

Will value pricing discourage ridesharing and transit use?

Within three months of the opening of the Express Lanes on California's SR-91, a 40 percent jump occurred in the number of vehicles with more than three passengers. Ridership on buses and a nearby rail line have remained steady. On San Diego's I-15, revenue generated by users of the facility between 1999 and 2001 financed transit improvements that contributed to a 25 percent increase in bus ridership.

For more information, visit www.valuepricing.org.

Variable Tolls on Existing Toll-Free Facilities

When a commuter decides to drive during rush hour and merges into a gap in the traffic stream, the car behind that commuter, and others behind it, are delayed by about two seconds each. Each two-second delay may seem insignificant, but add up all the delays the car causes the other drivers and you'll find that the choice to drive has cost all the other drivers a huge amount of time. If the commuter enters a freeway traffic stream at the beginning of a rush period lasting two hours, a total of about 4,000 vehicles would be delayed by two seconds each—*about two hours and 12 minutes* for all vehicles combined!

The time delay that the driver causes all the others by slowing them down is often far greater than the time the driver might have saved by driving instead of taking some other mode such as transit or carpooling. In addition to the wasted time, the delays increase air pollution, fuel consumption, stress levels, and the risk of accidents for all the delayed motorists. And the driver does not have to pay a penny towards all these added costs. That's the situation on the highways during rush hours in most major metropolitan areas in the United States where roads can be used toll-free at all hours of the day.

By introducing tolls on these existing toll-free facilities, such that tolls are higher when traffic demand is higher, traffic can be reduced and much or all of the congestion eliminated. With such "pricing" of existing free roads, commuters would shift to other modes, routes, or destinations or may choose to travel before or after the peak times when tolls are higher. Present traffic volumes in metropolitan areas are so excessive that even a small reduction in traffic can eliminate much of the time lost because of congestion. And the money from tolls can be used to help pay for improvements to transportation – both highway and transit. Improvements in transit service will increase commuter choice, and encourage even more commuters to abandon their cars leading to even greater traffic reduction, cleaner air, and safer and quieter streets.

Pricing has been introduced on previously toll-free road facilities in three cities in Norway, using cordon tolls, as well as in Singapore. London will introduce an "area license" scheme with a $7 a day charge in Central London in February 2003. A recent study by the Federal Highway Administration suggests that pricing expanded road capacity at an average of 10 cents a mile on the 200 miles of severely congested freeways in the Washington DC metropolitan area would generate more than $400 million in toll revenue annually to pay for much needed transportation improvements. And, in comparison to providing free service on the expanded facilities, $2 billion in net additional economic benefits would be obtained from reduced travel delays, fuel consumption, and environmental and parking cost savings.

Benefits of Variable Tolls on Existing Toll-Free Facilities

Drivers

- Reduces congestion for those commuters who have to drive

In surveys conducted in Seattle and San Diego, drivers expressed preference for tolls, rather than an increase in taxes, to pay for new roadway capacity.

Taxpayers

- The toll "tax" payer is guaranteed to get something in return for what he or she pays (a smoother commute)
- Encourages economically efficient use of scarce public highways– this reduces need for higher taxes to support capacity expansions and delays the need for new capacity, thereby saving tax dollars
- Finances congestion-reducing transit, ride-sharing and improvements to the highway facility, reducing the drain on tax revenues
- Transit service can be provided more efficiently, with fewer buses and drivers, because drivers can make more round-trips each day on highway facilities with reduced congestion, saving tax dollars

- Increases vehicle throughput on existing infrastructure, recovering capacity that is otherwise lost because of slow-moving traffic

Transit Riders and Carpoolers

- Toll revenue provides needed funding for transit improvements in the corridor, park-and-ride facilities, etc.
- Reduced congestion saves time for bus riders
- Higher costs for highway use make transit and carpooling more attractive – higher transit ridership allows more frequent service, further increasing its attractiveness

Businesses

- Reduces congestion-related personnel costs
- Cuts congestion-related shipping expenses
- Promotes economic productivity
- Improves area quality-of-life to help recruit employees and businesses

Environment

- Reduces air pollution and fuel consumption resulting from stop-and-go vehicle movement in traffic jams
- Supplies steady funding for pollution-reducing transit and carpool improvements
- Makes alternatives to solo driving more attractive, providing new and improved transit services, while at the same time establishing financial incentives to use transit or carpool
- Increases incentives for compact growth by improving transit service, which in turn allows higher "people throughput" on existing infrastructure, and therefore higher development densities

Q's and A's

How can we be sure that revenue collected will be used to benefit commuters in the travel corridor?

Tolling of currently free roads requires special state legislation. When this legislation is crafted, it will be important to include a clause stating that net revenues (i.e., tolls minus expenses) can only be used to fund transportation needs within the travel corridor where tolls are collected.

Don't drivers pay for congestion they cause through the costs of delay that they are subjected to during rush hours?

Delays *are* reciprocal. Drivers slow down one another. However, the "free-road" system fails everyone, because everyone suffers. With a toll pricing system, some "win" (those who have a high value for time saved), and some "lose" (those who have a lower value for time saved or who shift to less desirable modes, routes, destinations, or times of day to travel). However, because the huge amount of new revenue can be used to compensate the losers (for example, by redistribution of the revenue through tax cuts), everybody can win with a well-crafted pricing program.

Would drivers be willing to pay new tolls?

Yes, many drivers will be willing to pay because the benefit of a faster travel time will be worth more to them than the toll. For example, a trucking firm would be willing to pay a toll to be able to deliver its cargo a half-hour faster, especially if it is running late for a *just-in-time* delivery. A contractor or service worker that bills at $50 an hour would gladly pay a toll to cut a half-hour off the trip. For taxicabs, less traffic will mean more miles and more fares. For someone running late to catch a flight at the airport, or to the hospital or clinic to get emergency care, a toll would be well worth the cost.

Where could the toll plazas be installed without making a traffic and pollution disaster?

With modern technology, that is no problem. On highways in Toronto, Texas, California, and many other places in the United States and around the world, card-readers mounted on overhead gantries allow tolls to be paid at free-flowing highway speeds. "Toll cards," like phone cards, can let drivers pay electronically but anonymously. Motorists from outside the region may open accounts and obtain transponders at welcome stations located on freeways at entry points to the metropolitan area.

Won't tolls violate the American publics right to freedom of movement?

Tolls won't violate anyone's rights. After highway facilities are tolled, the motorist will still be able to drive wherever and whenever he or she wants. The motorist will simply pay for the use made of a costly

facility and a scarce commodity (that is, rush-hour road space).

What about possible diversion of traffic from tolled freeways to free surface streets, disrupting neighborhoods through which traffic is diverted?

Diversion of traffic from tolled freeways to free surface streets will be less of an issue if tolls are introduced with capacity expansion, because traffic could actually be diverted away from surface streets to the freeways due to the increase in freeway capacity.

Aren't tolls regressive since they have a disproportional impact on low-income groups, taking a larger share of their incomes?

These objections to tolls can be overcome with packaging of pricing with other strategies, including improvements to transportation services in priced travel corridors. To increase public acceptance, all metropolitan area motorists could be provided with transponders and a limited quota of credits for use on the tolled freeways during rush hours. Those who use up their quota of toll credits would be allowed to use the freeways with payment of the requisite toll charged to their transponder accounts and billed to them on a monthly basis. All licensed drivers in the metropolitan area would be provided upon request with a free transponder and credits usable to pay peak period tolls or, at their option, a transit "smart card" with credits usable on transit and other authorized paratransit services. The value of the credits allocated could be related to the income tax bracket of the driver's household to ensure equity. Drivers from low-income households could be provided with a higher amount of credits than middle and upper income households.

For more information, visit www.valuepricing.org.

Variable Tolls on Existing Toll Roads

A variable toll refers to the fluctuation of a toll rate. Toll authorities adjust the toll rate in an effort to control congestion. Typically the toll is higher during peak travel hours and lower during off-peak or shoulder hours (i.e., the times right before and after peak hours). The toll may also vary by day of the week and by vehicle type. With less people traveling during congested periods, the remaining peak period travelers will have decreased delays. Advances in technology, such as electronic toll collection, make the adoption of variable tolling easier to implement and allow traffic to flow even more freely. Ultimately, shifts in traffic will result in less need for roadway expansion on toll facilities. This pricing strategy also encourages travelers to use the roadway during less congested periods, to shift to another mode of transportation, or to change routes.

Photo: Courtesy of Lee County DOT

Benefits of Pricing Existing Toll Roads with Variable Tolls

Drivers

- Reduces congestion during peak periods
- Increases reliability of travel time
- Provides financial advantages for those who travel during off-peak periods

Taxpayers

- Delays the need for additional capacity expansion
- Encourages economically efficient use of scarce public highways, thereby reducing the need for higher taxes to support capacity expansions
- Increases vehicle throughput on existing infrastructure, recovering capacity that is otherwise lost because of slow-moving traffic
- Provides a means to repay bonds more quickly

Transit Riders and Carpoolers

- Provides opportunity for discount toll
- Reduces congestion, creating a travel time savings for all users
- Provides funding for transit improvements in the corridor
- Makes transit and carpooling more attractive for some users

Businesses

- Reduces congestion-related personnel costs
- Cuts congestion-related shipping expenses
- Promotes economic productivity
- Improves area quality-of-life, thereby helping to recruit employees and businesses

Environment

- Reduces air pollution and fuel consumption resulting from stop-and-go vehicle movements

Toll Authorities

- Delays the need for expansion by making better use of existing roadways

- Offers a means for meeting revenue or vehicle throughput goals
- Promotes an increased use of electronic toll collection (ETC)
- Improves throughput at existing toll plazas because of ETC

Q's and A's

Don't prices already vary on toll roads?

Toll facilities have typically charged multi-axle trucks more but have not traditionally charged toll rates that vary by time of day or level of congestion.

Are variable tolls a realistic solution to reduce congestion?

It only takes a small shift in traffic to decrease congestion. Results from the pricing project on Florida's Lee County Bridges show that anywhere from 3-12 percent of those traveling with transponders (i.e., devices for electronic toll collection) are shifting their travel times, due to the reduction in the toll rate. That shift means less congestion for others going through tollgates during rush hours.

Will variable tolls affect a toll authority's revenue and its ability to meet its bond covenants?

Pricing, with its ability to manage demand, can increase revenue. Certainly, it depends on how an authority chooses to set its toll rates. If toll rates are raised during the peak hours, and some traffic shifts to the shoulder periods, an authority may experience an increase in revenue. If the authority reduces toll rates in the off-peak periods while increasing the rate during the peak period it can achieve a revenue-neutral situation.

Are there any toll authorities already using variable pricing?

The New Jersey Turnpike Authority implemented a variable tolling strategy in the fall of 2000 for users of the electronic toll collection system. The Port Authority of New York and New Jersey established a peak/off peak pricing plan on its tunnels and bridges in March 2001. In addition, two toll bridges in Lee County, FL were the first to use variable pricing in August 1998. The San Joaquin Hills Transportation Corridor Agency in southern California introduced peak pricing in February 2002 on its mainline facility.

How does variable pricing work with electronic toll collection?

Many toll authorities are already switching to electronic toll collection with rave reviews. Electronic toll collection allows increased throughput over simple cash or token transactions. Although many toll facilities still have tollgates, the electronic toll collection lanes (dubbed FasTrak, EZPass, Mtag, SunPass, or other similar brand names) offer users a faster trip through the toll lanes. Charging prices that vary by time of day or level of congestion is certainly easier electronically than if toll attendants must keep track of toll rates when receiving cash. Where users have already become familiar with electronic toll collection, variable toll rates simply are one more way to reduce congestion on the tolled facility.

Toronto's ETR 407 opened in the late 1990s as the first variably priced fully electronic toll road in North America. For those travelers who do not have a transponder, a license plate recognition system was activated to photograph their license plates and send them a bill for using the toll road.

Can variable prices work with the frequent user plans offered by my toll authority?

A number of different payment plans co-exist with variable pricing on current variably priced facilities. It is important for toll authorities to consider how different plans affect variable pricing's ability to manage demand. Payment plans such as frequent user programs, are popular with some toll authorities. Other toll authorities have decided against offering such programs, believing that the administrative burden and the cost of operating such programs outweigh the benefits.

Will we be rid of toll booths?

Probably not, at least not until all toll facilities become electronic. Given the investment in existing toll plazas, existing toll authorities likely will continue to use the equipment for its useful life.

For more information, visit www.valuepricing.org.

Pricing Existing Toll-Free Highways with FAIR Lanes

Photo: Courtesy of California Private Transportation Company

"FAIR lanes" are part of an innovative value pricing strategy that seeks to alleviate concern about the opportunity for people of all income levels to have access to free-flowing lanes when an existing free lane is converted to a priced lane. The strategy has not yet been implemented but is being considered in several areas. The concept involves separating freeway lanes, using plastic pylons and striping, into two sections: fast lanes and regular lanes. The fast lanes are electronically tolled express lanes where tolls may change dynamically. Motorists are advised of the toll rate changes using electronic message boards located on the highway before the entry points to the fast lanes. As traffic volume in the fast lanes approaches the maximum that can be accommodated to keep vehicles moving at the designated highway speed level, tolls are increased to deter additional vehicles from entering the fast lanes. This ensures that the lanes offer a faster and more reliable trip than the regular lanes.

In the regular lanes, constricted flow would continue, but drivers would be compensated with credits. Credits could be used as toll payments on days when they choose to use the fast lanes, or as payment for transit, paratransit, or parking at commuter park-and-ride lots in the corridor. The credits would be funded from toll revenue from the fast lanes. Motorists in the regular lanes would also need electronic toll tags (or "transponders"), so that their use of regular lanes can be recorded and their accounts credited.

Benefits of Pricing Existing Toll-Free Highways with FAIR Lanes

Drivers

- Provides reliable congestion-free alternative that drivers can choose to use for a fee
- Provides additional travel choices for those who do not prefer to drive
- Offers the option to bypass congestion when in a hurry
- Compensates "regular" lane drivers with credits

Taxpayers

- Allows taxpayer to choose whether or not to pay the toll "tax"
- Guarantees toll "tax" payer something in return for what he or she pays
- Benefits the one who pays, instead of improving someone else's mobility (with traditional taxes, revenues may be spent on any project, including those that may not benefit the taxpayer)
- Encourages economically efficient use of scarce public highways, which reduces need for higher taxes to support capacity expansions, and delays the need for new capacity, thereby saving tax dollars
- Finances congestion-reducing transit, ride-sharing, and improvements to the fast lanes, reducing the drain on tax revenues
- Transit service can be provided more efficiently, with fewer buses and drivers, because drivers can make more round-trips each day on congestion-free fast lanes, saving tax dollars
- Increases vehicle throughput on existing infrastructure, recovering capacity that is otherwise lost because of slow-moving traffic

Transit Riders and Carpoolers

- Provides needed funding for transit improvements in the corridor, park-and-ride facilities, etc.
- Provides congestion-free movement of transit vehicles
- Makes transit and carpooling more attractive – higher transit ridership allows more frequent service, further increasing its attractiveness
- Creates more efficient use and expands the opportunities for drivers to use underused HOV lanes
- Encourages the development of new commercial paratransit, providing those who cannot carpool or take conventional transit with a new choice

Businesses

- Reduces congestion-related personnel costs
- Cuts congestion-related shipping expenses
- Promotes economic productivity
- mproves area quality-of-life to help recruit employees and businesses
- Provides a new option to commercial vehicles that are running late for a "just-in-time" delivery

Environment

- Reduces air pollution and fuel consumption resulting from stop-and-go vehicle movement in traffic jams
- Supplies steady funding for transit and carpool improvements
- Makes alternatives to solo driving more attractive, providing new and improved transit services, while establishing financial incentives to use transit or carpool

Q's and A's

Why will credits be offered to motorists in the regular lanes?

The credits will compensate them for giving up the existing lane or lanes taken over to create the fast lanes. Credits will also be used to ensure equity among drivers.

How will motorists in the regular lanes get credits?

Motorists in the regular lanes will need to display transponders if they wish to get credits. Transponder readers will be also be placed in regular lanes (in addition to the fast lanes). The readers will record credits instead of tolls.

How can credits earned be used on transit and paratransit services?

Those wanting to use their credits to ride transit or paratransit vehicles, or to pay for parking at park-and-ride lots, will need to have a "smart card." The smart card account will be linked to the transponder account, allowing use of the credits.

What will be the amount credited per vehicle in the fast lanes?

Two factors will be important in determining a "fair" credit: first, the percentage of existing lanes that have been taken to form Fast lanes; and second, the amount of the toll charged at that particular time on the Fast lanes. For example, if the toll in the Fast lanes is $1, and one lane out of three existing lanes was taken (i.e., 33 percent of capacity), then the "fair" credit would be 33 cents. If two lanes out of four (i.e., 50 percent of capacity) were taken, then the "fair" credit would be 50 cents. To ensure financial feasibility without use of tax dollars, the balance of the revenues will be needed to pay for capital and operating costs of the fast lanes, as well as improved transit and paratransit services.

How can we be sure that revenue collected will be used to benefit commuters in the travel corridor?

Tolling of currently free state roads requires special state legislation. When this legislation is crafted, it will be important to include a clause stating that net revenue (i.e., tolls minus credits) can be used only to fund transportation needs within the travel corridor where tolls are collected.

How will toll violators be caught?

Vehicles without transponders are automatically photographed, with close-up pictures of their license plates. Addresses of the vehicle owners are obtained from the DMV. Notices are then sent out, with bills for the amount due plus a penalty fee.

Why have a set of two Fast lanes, instead of a single lane, like many HOV lanes?

A single lane has reduced capacity because gaps form in front of a slow-moving vehicle. Moreover, platoons of vehicles that are caught behind it are slowed down. With two lanes, faster vehicles can overtake slower ones, using gaps that might otherwise be "wasted", and allowing faster flow of traffic. With two lanes, it is also possible to allow trucks into the Fast lanes, thus permitting more reliable "just-in-time" deliveries and reducing losses to the trucking industry.

Why do two fast lanes move more vehicles than two congested regular lanes?

A congested lane has reduced capacity because when vehicles slow down or operate in a stop-and-go fashion, fewer vehicles are carried in that lane. Traffic data suggest that losses of capacity can be as much as 33 percent. When traffic flows freely on fast lanes, these losses are recovered, so that the productivity of existing infrastructure (in terms of vehicles moved per lane) is greatly improved, while speed increases fourfold (from about 15 mph to about 60 mph). Of course, productivity in terms of *people* moved per lane can more than double as more people shift to improved transit services or carpooling.

For more information, visit www.valuepricing.org.

Useful Internet Transportation Sites

www.valuepricing.org - Value Pricing Homepage

NATIONAL:

www.fhwa.dot.gov - The Federal Highway Administration home page.

www.fhwa.dot.gov///policy/13-hmpg.htm - FHWA's Value Pricing Pilot Program.

www.italladdsup.gov - FHWA, the U.S. Environmental Protection Agency, and the Federal Transit Administration raise the public's awareness of the connection between their transportation choices, traffic congestion, and air quality.

www.innovativefinance.org - InnovativeFinance.org is an Internet based clearinghouse providing information on innovations in all areas of surface transportation finance offering information on federal, state, local, and private funding of highways, passenger rail and bus systems, intermodal links, intelligent transportation systems, and other related facilities, with an emphasis on innovative alternatives to traditional funding methods.

http://mobility.tamu.edu/ums - The Texas Transportation Institute's 2002 urban mobility study with facts about congestion in major metro areas.

EXISTING PROJECTS:

www.sandag.org/index.asp?projectid=34&fuseaction=projects.detail - San Diego's I-15 FasTrak web site.

www.91expresslanes.com. - Orange County's SR91 website.

http://ceenve.calpoly.edu/sullivan/sr91/sr91.htm - SR91 research.

www.ridemetro.org/services/commuter.asp - Houston's Katy Freeway commuter programs.

www.leewayinfo.com - Lee County, Florida's LeeWay program.

www.bridgetolls.org - Website created for advocating introduction of tolling on the East River Bridges in and out of Manhattan

OTHER RESOURCES:

www.dot.state.mn.us/links.html - The Minnesota DOT has a long list of transportation related links.

www.cts.umn.edu - The Center for Transportation Studies (CTS) at the University of Minnesota supports the search for ways to improve transportation through research, education, and outreach activities.

www.fhwa.dot.gov/webstate.htm - Links to all state department of transportation web sites.

www.vtpi.org - Victoria Transport Policy Institute: Information about pricing and other traffic demand management strategies.

Success Stories

San Diego's Hot Lanes

Photo: Courtesy of San Diego Association of Governments

Under San Diego's I-15 "FasTrak" pricing program, customers in single-occupant vehicles pay a per-trip fee each time they use the I-15 HOV lanes. Vehicles with two or more occupants ride free. Tolls are collected using vehicle transponders and overhead readers. The normal toll varies between 50 cents and $4. During very congested periods, the toll can be as high as $8.00. The unique feature of this pilot project is that tolls vary "dynamically" with the level of congestion on the HOV lanes. Fees vary in 25-cent increments as often as every six minutes to help maintain free-flow traffic conditions on the HOV lanes. Toll revenue supports express bus service in the corridor. By establishing HOT lanes on existing underutilized HOV lanes, a transportation agency can increase traffic flow on the priced lanes and can often reduce congestion on the parallel mixed use lanes, providing air quality and energy consumption benefits, and making better use of capacity on underused HOV lanes.

Key Findings

- The I-15 value pricing program has successfully met its primary goals of making better use of excess capacity on the I-15 HOV lanes and improving transit services along I-15. Daily traffic volumes on the Express Lanes averaged 18,560 vehicles in November 2001, an increase of 102 percent from the pre-project level of 9,200 daily vehicles, while still maintaining the desired high level of service. About one-fourth of the vehicles are FasTrak users.
- Recent surveys show broad support for the project, with the vast majority of users and non-users considering the express lanes to be fair. Most I-15 travelers (90 percent of FasTrak customers, and 73 percent of other I-15 travelers) believe the FasTrak program reduces congestion on I-15.
- The project is self-sufficient, generating $1.2 million in revenue annually, about one-half of which is used to support transit service in the corridor.
- Successful implementation of dynamic pricing has demonstrated the feasibility of the concept and has led to acceptance among users. Dynamic pricing, where prices vary directly with traffic levels, was shown to be more effective in spreading traffic over the peak period than were fixed monthly price schedules. An off-peak toll reduction had the desired effect of shifting some traffic out of the peak into the off-peak periods.
- One of the chief initial concerns about this project was that it would harm carpooling, but this has proven not to be the case. In fact, carpooling has increased, possibly due to enhanced enforcement leading to lower HOV violations, or because the availability of the priced lanes allows more flexible carpooling arrangements.

For more information, visit www.valuepricing.org, and click on "Established Projects."

Variable Tolls on Toll Facilities in New York and New Jersey

Photo: Courtesy of Port Authority of New York and New Jersey

Both the New Jersey Turnpike Authority and the Port Authority of New York and New Jersey have recently launched variable tolling strategies. The Turnpike's program began in Fall 2000 and the Port Authority's variable charges went into effect in March 2001. The Turnpike program provides for tolls about seven percent lower during off-peak hours than during peak periods for users of the electronic toll collection system. The Port Authority charges off-peak tolls 20 percent less than peak period tolls on its bridges and tunnels.

Key Findings

- Preliminary data from the New Jersey Turnpike show that value pricing is working to shift traffic out of the peak period and is supported by the Turnpike's customers. Most of the recent growth in traffic on the Turnpike has been in the off-peak hours. Due to electronic toll collection (which eliminated delays at toll booths), total traffic was up by around seven percent over a one-year period. But morning peak traffic was up by only six percent and afternoon peak traffic was up by only four percent. The proportion of daily Turnpike traffic accounted for by the morning peak dropped from 14 percent to 13.8 percent, and the afternoon peak's share of traffic decreased from 14.7 percent to 14.3 percent.
- Data from the Port Authority value pricing program are just beginning to be analyzed, but it appears that some motorists may be shifting from congested rush hours to off-peak time periods. Overall daily traffic remained relatively stable over the period from May 2000 to May 2001. However, after introduction of variable tolls, during a typical weekday in May 2001 seven percent more motorists used Port Authority bridges and tunnels between midnight and 6 a.m. compared to a similar day in May 2000. Almost half of this increase was evident in the 5-6 a.m. period. Traffic reductions were seen on Port Authority facilities in the morning peak period (a 7 percent reduction) and in the evening peak period (a 4 percent reduction.)

For more information, visit www.valuepricing.org, and click on "Established Projects."

Value-Priced Express Lanes in Orange County, CA

Photo: Courtesy of California Private Transportation Company

The SR 91 Express Lanes in Orange County, CA opened in December 1995 as a four-lane toll facility in the median of a 10-mile section of one of the most heavily congested highways in the United States. The toll lanes are separated from the general purpose lanes by a painted buffer and plastic pylons. There are eight general purpose lanes, four in each direction. As of November 1, 2001, tolls on the Express Lanes varied between $1 and $3.60 in the westbound direction and $1 and $4.75 in the eastbound direction, with the tolls changing by time of day to reflect the level of congestion delay avoided in the adjacent free lanes, and to maintain free-flow traffic conditions on the toll lanes. All vehicles must have an electronic transponder to travel on the express lanes. Vehicles with three or more occupants pay a reduced toll.

Key Findings:

- The Express Lanes carry a substantial share of traffic in the SR 91 corridor. According to the toll operator, during heavy congestion periods, 40 percent of total traffic is carried on the express lanes even though they comprise only one-third of the capacity, because throughput is higher under free flow conditions.
- Variable pricing successfully maintains free flow traffic conditions of the express lanes during peak traffic hours.
- The proportion of commuters who choose to use the express lanes increases with income. However, 25 percent of those in the lowest income grouping of SR 91 users (less than $25,000 annual household income) indicate they frequently use the express lanes.
- Female commuters are significantly more likely than male commuters to be frequent users. The proportion of commuters who use the express lanes over free lanes is higher for females.
- The express lanes had a generally positive or neutral effect on ridesharing.
- Approval for the toll lanes in general was high (in the 50-75 percent range for most commuter groups) in surveys taken in 1996 and 1999.

For more information, visit www.valuepricing.org, and click on "Established Projects."

Variable Tolls on Bridges in Lee County, FL

Photo: Courtesy of Lee County Department of Transportation

Lee County's value pricing strategy on two toll bridges has created a peak/off-peak pricing structure by providing bridge users with a discount toll during times before and after the peak traffic periods. Under the pricing plan, a 50 percent toll discount is provided for trips made during the half-hour period before the morning peak of 7-9 a.m. and in the two-hour period following the morning peak. In the evening, the discount period is two hours before the evening peak of 4-6:30 p.m. and ½-hour after the peak. Local reaction to the project has been favorable, since the program has been successful in moving traffic out of the peak congestion period and improving service to bridge users.

Key Findings:

- The pricing program has improved traffic flow, provided associated air quality and energy conservation benefits, and delayed the need to expand highway capacity. Drivers have shifted trips out of the peak congestion period into the times before and after the peak, leading to more efficient use of available bridge capacity and improved service for bridge users.
- As shown in Table 1, demand elasticities calculated across different discount periods varied considerably. Demand elasticity is the percent change in pre- and post-peak period demand divided by the percent change in pre- and post-peak period price. For example, the elasticity of -.20 on the Cape Coral Bridge means that a price reduction of 50 percent in the pre-a.m. peak period yielded a 10 percent increase in travel in that period among those motorists who were eligible to participate. Toll reductions during the times surrounding the peak traffic period led to shifts of traffic from the peak to the times before and after the peak, with accompanying reductions in congestion and traffic delay.

Table 1. Price Elasticity Estimates

Discount Period	Midpoint Bridge	Cape Coral Bridge
Pre-a.m.	–0.36	–0.20
Peak Post-a.m.	–0.11	–0.11
Pre-p.m. Peak	–0.11	–0.11
Post-p.m. Peak	–0.05	–0.30

For more information, visit www.valuepricing.org, and click on "Established Projects."

HOT Lanes in Houston, TX

Photo: Courtesy of Houston Metro

Houston's "QuickRide" pricing program on existing HOV lanes of the Katy Freeway (Interstate 10) and US 290 allows a limited number of HOV-2 carpools to buy into the reversible HOV-3 lane during peak-travel periods. During this time period, participating HOV-2 vehicles pay a $2 a trip fee while HOV-3+ vehicles continue to travel free. Single-occupant vehicles are not allowed to use the HOV lane. The QuickRide project is completely automated, and no cash transactions are handled on the facility.

Key Findings:

- The "QuickRide" pricing program has maintained free flow of traffic on the priced lanes and taken some cars off the parallel mixed use lanes, providing air quality and energy conservation benefits, and making better use of capacity on underused HOV lanes. HOV usage has shown modest improvement during the peak traffic period. As of September 2001, daily use by QuickRide participants was 850 vehicles for both peak periods combined on the Katy Freeway, and about 575 in the A.M. period alone on the US 290 HOV lane.
- Most QuickRide participants are persons who formerly traveled in SOVs on the freeway main lanes.
- The vast majority of users are occasional users, with about one in four transponders being used in a given week. Only one in 20 transponders is used five or more times per week.
- The traffic effects of the QuickRide program have been less pronounced than the other pricing projects, perhaps because of the smaller scale of the project and the limitation of the availability of "entry for a fee" access to vehicles with two or more passengers.

For more information, visit www.valuepricing.org, and click on "Established Projects."

Variable Tolls on the San Joaquin Hills Transportation Corridor in Orange County, CA

Photo: Courtesy of Transportation Corridor Agencies

A peak period premium was introduced on this toll facility in February 2002. Open since November 1996, the 15-mile route provides an alternative to heavily congested portions of I-5 and I-405. Vehicles are making an average of 2.3 million trips through the facility a month. The San Joaquin Hills Toll Road (SJHTC) is near capacity during peak periods.

Key Findings:

- Early data collection shows that peak period pricing is working. Congestion is down and revenue is up.
- The Transportation Corridor Agencies, the facility's operator, will monitor and evaluate the effectiveness of the peak pricing scheme for six months. Additional pricing may be implemented based on the reactions to the peak pricing scheme. Initial user response has been positive.

For more information, visit www.valuepricing.org, and click on "Demonstration Projects" or visit the Transportation Corridor Agency's website at www.thetollroads.com.

Value Pricing Articles

Not only have transportation specialists recognized the value of pricing, but the general public has spoken out in support of it. The following section includes articles from renowned newspapers addressing value pricing.

Wednesday, October 31, 2001

Engineers wondering if premium pay lanes would calm Atlanta traffic

The Associated Press

ATLANTA – Atlanta commuters could one day choose to pay a few bucks to avoid traffic snarls by using premium pay lanes.

Atlanta traffic planners are considering special lanes that drivers could pay to use, so that people willing to pay for a faster commute would get a chance. The money would go to regional transportation projects, including mass transit.

A Georgia Regional Transportation Authority committee began discussing the idea this week. It will take about a year for managers to decide whether pay lanes will be used.

Pay-lane proponents say they would manage traffic and give people in a real hurry the chance to get ahead. But the idea has gotten mixed reviews from highway experts.

"I am convinced that it is not the silver bullet for Atlanta," said Marvin Woodward, a transportation manager with the Federal Highway Administration. Woodward was talking to group of road planners who met Monday to discuss pay lanes.

Different cities operate the lanes in different ways.

Los Angeles has a 10-mile freeway built and run by a private company. It costs $1 to use it during off times, but up to $4.75 to use the lane during traffic peaks. It saves commuters about 20 minutes during the trip.

Charging drivers more during peak times keeps some commuters in regular traffic, so the pay lanes don't get jammed.

Houston has a 13-mile high-occupancy toll lane that costs $2 to use at peak times. Car poolers with three or more riders get a discount.

Minnesota tried twice to build the lanes. It failed both times, said Carol Flynn, a former Minnesota state senator.

It's a tough sell to commuters and legislators, she said. In Minneapolis, the special lanes were dubbed "Lexus lanes" because wealthier commuters can afford to use them more.

Patrick DeCorla-Souza has studied the issue for the Federal Highway Administration. He said an important aspect of gaining acceptance for the lanes is using the money they raise to give options to poorer commuters.

Some options would be to charge poorer users less, or to give them credits for using the regular lanes during peak times. The credits could be used to buy time in the special lanes or to buy usage on public transportation.

Use of the lanes could be tracked by a credit card-sized sensor, much like the toll cards used now on GA 400.

Chick Krautler, executive director of the Atlanta Regional Commission, said he didn't believe that changing or taking away lanes already in use would work.

But, he said, with the expansion of Atlanta's HOV system, now is the time to consider the issue.

Sunday, May 05, 2002

Driver friendly and efficient, high tech tolls can solve Seattle's mess

By Randall Pozdena

Spedial to The Seattle Times

No marketplace can function well if its prices aren't linked to costs. Imagine a supermarket that charged the same flat rate per pound whether shoppers bought lobsters or baking flour. There'd be a constant shortage of high-cost items such as lobsters, and dwindling demand for some lower-cost goods such as flour.

Our highway system uses the same one-price-fits-all approach and thus has exactly those same problems. There is a constant shortage of high-cost services, such as freeway capacity during rush hour, and weak demand for low-cost alternatives such as car-pooling.

The current system is incredibly unfair, too. Drivers can't pay just for the portion of the road system they personally use. Rural drivers are convinced they're paying to build expensive urban facilities, while urban users are equally convinced they're paying for little-used rural roads.

By paying for roads with fuel taxes and vehicle-registration fees, commuters haven't the foggiest idea how much it costs to provide them with a space on a busy urban freeway. The cement-truck driver is totally oblivious to how much wear and tear his heavy truck is causing on your local neighborhood street.

There is a solution, a silver bullet if you will. It is tolls, but not what you might be thinking of. I'm not suggesting the traffic-stalling toll booths of yesterday, but a high-tech network using global-positioning satellites, dashboard price displays and "smart" credit cards.

But first, a look at our increasingly obsolete way of financing roads today.

For the past 80 years, fuel taxes and registration fees collected from highway users have paid for most major roads in the United States. The revenue is pooled in state and federal trust funds or highway accounts. Highway commissions and legislative committees guide the spending of the money for maintenance or new roads.

Over the years, the flaws in this method of financing roads have become embarrassingly clear.

The system seems incapable of keeping up with traffic growth and congestion. The process of picking those lucky projects that do get financing has gotten so politicized, contentious and slow that many voters have simply lost faith that their elected officials will ever get anything done.

Road users are convinced their taxes are always used to pay for the other guy's road.

Voters have responded in a predictable and, frankly, justifiable way. Despite recognizing the need for better maintenance and some new facilities, they are simply saying no to higher highway taxes and fees, lacking confidence that higher taxes will solve their problems.

On top of the fundamental policy problems, the current system looks increasingly like a dead duck, technologically. If we make the transition to electric or fuel-cell cars, for example, what good is a gas tax? Even today, as the fuel efficiency of cars and trucks has improved, fuel-tax revenues have declined on a per-vehicle-mile basis.

To economists, the problems that Washington and other states are having come as no surprise. In fact, these problems are an inevitable consequence of the way we have chosen to price and finance roads.

The first problem with the current system is that it levies essentially a flat, per-mile charge through fuel taxes. But the cost of providing and maintaining a road is not a constant amount per mile. Far from it. It depends a lot on the specific type of vehicle, the cost of developing the particular road, and other factors.

Taxpayers think the system costs too much and is unresponsive to their needs, while users have no idea what their financial impacts on the roadways are. Since there are no useful pricing signals, there is no way for drivers to adjust their behavior to save themselves, or the rest of us, money.

If the system provided price signals, we might choose a different route, a different time of travel, take a bus, use a lighter-weight truck, etc. Or, we might reduce or consolidate the trips we make or ask friends to drive with us to share the cost.

Conceptually, the solution is simple: Give drivers better signals about the costs they impose on the road system.

In some circumstances, this would mean paying a lot more per mile than the current gas-tax charges. In other circumstances, it would mean paying a lot less. On balance, total costs would not change dramatically. But the clearer signals will lead to behavioral changes that, over time, will lower the cost of providing highway services.

Economists have been advancing these notions for decades. They call these policies variable pricing or road pricing strategies.

The basic way to provide better, more refined pricing signals is through some sort of toll system. Until recently, though, implementing variable pricing was not a very easy thing to do: Old-fashioned tollbooth technology slows up traffic and gobbles up land.

On East Coast and Southern California freeways, "transponder cards" mounted in the windshield are used. Antennas on overhead gantries talk to the "transponder card" to identify the vehicle and record a vehicle's use of the road for later billing purposes.

But the cost of building a statewide or nationwide system of antenna gantries to perform this function would be very high, among other concerns.

The better solution is technology that does not need expensive gantries, that displays to the driver the price of using the road and that keeps all of the billing activity inside the vehicle.

I will call this device the Personal Road Spending meter. Think of it as an in-vehicle equivalent of your home's electric meter or the meter in a taxicab.

Here is how such a system might work. A small electronic device in the vehicle is connected to a

Global Positioning System (GPS) antenna and to a price display on the dashboard. The antenna tells the device the time of day and which road the vehicle is using. Unlike the transponder-antenna approach, no information is broadcast outside of the vehicle, maintaining the user's privacy. A memory chip in the device contains the price schedule, which is displayed to the driver. As the driver travels around the region, the "bill" for using the highway system is calculated in the device.

The only information permanently saved in the device is the driver's aggregate mileage and billings on different portions of the road system. This would be downloaded during annual vehicle inspections, or at some other interval. This data will permit spending on roads to be allocated to benefit those who are paying for the roads.

The driver would pay his accumulated bill either through inserting a "smart" credit card or pre-paid cash card in the device.

During a transition period, the driver could be credited for any fuel taxes paid until the gasoline tax or diesel taxes were phased out altogether. Keeping the fuel tax for a while would provide a way to collect from out-of-state users of the system until their state adopts a similar Personal Road Spending meter approach.

The technology is fundamentally simple, and the costs will quickly drop with volume production. Moreover, the GPS antenna component will be built into most future vehicles as part of emergency-vehicle-location strategies. The additional costs of the Personal Road Spending meter are small.

The Minnesota Department of Transportation will be experimenting with the new technology next year. An experiment is already under way in Copenhagen. The Puget Sound Regional Council has proposed a similar study in the Seattle area; it is awaiting word from the Federal Highway Administration on a financing request.

Some effort is involved in abandoning a system with an 80-year history. But there are not many choices, and the advantages of this approach will be well worth the effort.

It would be nice to pay only for what we actually use, and to have real incentives to travel economically. And it would be nice to have one's contributions to highway funds set aside to improve the system for one's own benefit, not someone else's.

Most importantly, it would be nice to get going again.

Randall Pozdena is managing director of the Portland office of ECONorthwest, an economics and finance consulting firm.

Saturday, November 16, 2002; Page A19

Fixing Traffic Without New Taxes

by Ken Cuccinelli

washingtonpost.com

On November 5, Northern Virginians rejected the idea of raising their taxes to fund a proposal that would have perpetuated many of the transportation failures of the past. In a Nov. 6 editorial, your paper suggested that opponents had not offered alternative solutions ["No-Go in Virginia"]. I take issue with that assertion.

During the campaign, those of us who opposed the tax increase explained our agenda to alleviate congestion in Northern Virginia. It is important for Virginians to know that we never adopted a strategy of saying "no, no, no." At all times we have offered alternatives that would better serve Northern Virginia. Had we not done so, I am convinced that we could not have defeated the tax increase.

Some of our proposals include the following:

- Changing the transportation funding formula to reflect the significant needs in the congested areas of Virginia.
- Amending the state constitution so funds that are "dedicated" to the Transportation Trust Fund cannot be diverted to other uses.
- Increasing transportation funding by phasing in the commitment of a half-cent of the existing sales tax to transportation projects at the point of sale, meaning that part of the money raised in sales taxes in Northern Virginia would be spent on Northern Virginia projects.
- Coordinating transportation and land-use planning, e.g., changing zoning laws to encourage higher-density development around Metro stations and establishing property rights in transit routes to expand the size and flexibility of the slug concept.
- Working with businesses toward solutions, e.g., shifting employees closer to home.
- Moving to HOT lanes (high occupancy toll) instead of HOV lanes.
- Synchronizing all the traffic signals in Northern Virginia and integrating them into a system that responds to traffic dynamically. This solution would move cars 15 percent to 35 percent faster on existing roads and would reduce air pollution. What's more, it can be accomplished quickly (relative to building new roads or transit), and it is more cost-effective, by far, than any other proposal.

I hope your readers consider our alternatives and continue to make their voices heard, as they did on Nov. 5.

— *The writer, a Virginia state senator (R-District 37), is chairman of the Coalition Against the Tax Referendum.*

Tuesday, February 19, 2002

A New Toll? No, It's Just Value Pricing

By John Tierney

New York Times

City officials, afraid of angering drivers and politicians in Brooklyn and Queens, are reluctant to admit that they're considering tolls on the city-controlled East River bridges. But the tolls would actually be a huge favor to most drivers, not to mention everyone else in the city.

The news of the tolls was buried in the city budget plan, which projects $800 million in new revenue by 2006 from "congestion pricing" and "E-ZPass initiatives." The only obvious way to get that money is from tolls on the East River, which traffic engineers have been urging for decades. When the budget was released last week, that $800 million figure set off rejoicing among an international array of traffic experts that happened to be in town for a conference sponsored by the Manhattan Institute's Center for Civic Innovation.

The conference, devised to explore New York's traffic problems, was dedicated to William Vickrey, the Columbia University professor who solved the problem of traffic jams a half century ago. He proposed that drivers pay more to use popular roads at peak times. Shortly before his death, in 1996, he won the Nobel Prize in economics, and today his theory of road pricing is conventional wisdom among traffic experts.

The only problem is convincing politicians and drivers who like to believe there's such a thing as a free bridge. To make Vickrey's idea sound more palatable, today's traffic engineers have changed the term from "congestion pricing" to "value pricing," the idea being that drivers are paying to get something of value.

The costs of the East River tolls, the experts at the conference predicted, would be vastly outweighed by the benefits of rapidly moving traffic: less time wasted, less fuel burned, less air pollution, more economic activity. The experts cited estimates that traffic congestion currently costs the New York metropolitan region $10 billion. Gridlock is not good for business unless you're a squeegeeman.

The traffic planners swapped success stories of cities that used tolls to decrease congestion and increase carpooling. Seoul eased bottlenecks in its tunnels and tripled the level of car-pooling by charging high tolls at rush hour. Singapore, by charging drivers to enter the central business district, sharply reduced traffic congestion even while employment was increasing. Most drivers in central Rome have to pay for the privilege of being there, but there are exemptions for people transporting the handicapped with a predictable result.

There's been an enormous rise in compassion for the disabled in Rome," reported Peter Samuel, the editor of Toll Roads Newsletter. He hailed the Port Authority of New York and New Jersey for its new policy last year of charging higher tolls at peak times, a policy that has reduced some congestion at rush hour. But traffic would flow more smoothly, he said, if politicians in New Jersey and New York would give the Port Authority the leeway to experiment with a greater range of tolls.

The experts at the conference spent a lot of time about the politics of tolls. They're used to lonely fights. They have recently been joined by a few environmentalists —during the fight over the Hudson River tolls, Environmental Defense supported value pricing as a way to reduce pollution from idling cars — but most people and politicians instinctively oppose new tolls.

The city's budget crisis, though, could be just the right moment for tolls, said Samuel I. Schwartz, who coined the term "gridlock" when he was chief engineer of the city's Department of Transportation. In the keynote address at the conference, he proposed emulating Singapore by charging a fee for driving in Manhattan's central business district. He also proposed tolls on the East River bridges, and suggested having higher-priced express lanes in which drivers would be guaranteed a three- minute crossing or their money back.

The tolls could be used to ease the city's cash woes, subsidize mass transit and restore the dilapidated bridges to their former glory, Mr. Schwartz said. He suggested that Brooklyn and Queens drivers compare their four "free" bridges with the toll crossings of the East and Hudson Rivers.

"There were times, over the past two decades, that as many as half of the 30 lanes on the four East River bridges were closed due to emergencies and construction," Mr. Schwartz said. "The culprit: corrosion from lack of maintenance from lack of dedicated funds. There has never been a full or even significant emergency shutdown at any of the neighboring tolled facilities." Sooner or later, you pay to cross the East River.