Council of Ministers

CHARGING FOR THE USE OF INFRASTRUCTURE

Report on Charges for the Use of Infrastructure

This document relates to item 3 "Main discussion blocks: Charging for the use of infrastructure" of the draft Agenda for the Ljubljana Council of Ministers.

It is submitted to Ministers as a reference document.
INTRODUCTION

In 2003 Ministers adopted a report Reforming Transport Taxes [CEMT/CM(2003)3] which concluded that without more efficient charges and a more predictable framework for prices, investments to meet transport demands will frequently fail to deliver planned results. This work confirmed that: the potential benefits of the reforms set out in the resolutions are large; there are no arguments of principle that give reason to delay reform; therefore a focus on implementation and carrying public opinion is now indicated.

To examine implementation and issues of acceptance, a conference on experience to date of Managing Transport Demand Through User Charges was organised in London on 23 January 2004. Conclusions are presented in document CEMT/CS(2004)20. Two further events, the Symposium on Road Pricing Co-organised by the OECD/RTR Programme, the US Transportation Research Board, the US Federal Highway Administration and the Florida Department of Transportation on 19-22 November 2003 and the workshop organised by ECMT and the US DoT in Washington on 5-7 November 2003 on Fostering Successful Implementation of Sustainable Urban Travel Policies also reviewed relevant experience. The present note briefly summarises the results and recalls the objectives of pricing reform and the principles on which it should be based. It covers both urban and interurban markets and focuses on roads, where reform is most urgent.

OBJECTIVES OF PRICING REFORM AND IMPACTS ON INVESTMENT

The reform of transport taxation serves a number of overlapping objectives:

1. Reducing congestion;
2. Reducing environmental damage by charging infrastructure users in accordance with the real costs they impose on the economy and creating incentives for improved performance;
3. Increasing overall socio-economic welfare;
4. Improving the competitiveness of the economy;
5. Reducing distortions between transport modes in the way they are priced and funded;
6. Reducing distortions of competition in international markets, in particular by substituting km charges for fixed annual charges in the road haulage sector (see Annex 1);
7. Raising revenues in an efficient manner for investment in transport infrastructure projects – that satisfy cost-benefit and environmental assessments;
8. Substituting efficient user charges for more distorting taxes (on labour and capital).

These objectives are discussed in detail in the report Reforming Transport Taxes published in 2003. As that report noted, usually a number of policy objectives are pursued simultaneously. To ensure a coherent result, pricing policies need to be based on a common principle. Economic efficiency — that is
prices and charging systems that tend to maximise socio-economic welfare — provides this baseline. It should be noted that this is not a prescription for uniform charges, as prices need to be determined according to local conditions.

There are two quite fundamental aspects to efficiency: efficient use of the infrastructure that exists and, over the longer term, efficient provision of transport infrastructure in terms of quantity and quality. The use of any road, railway, waterway, port, etc. is optimised when its traffic is charged the short run marginal costs of using it. When there is ample capacity, this means charging for the use of infrastructure according to the following main categories of cost: maintenance and administration; emergency services and other external accident costs; air and noise emissions. When there is a capacity shortage, a demand management charge should be used to balance demand with capacity — in place of rationing by congestion. This should ensure that capacity is reserved for the highest value uses.

The 2003 report concluded the ultimate aim is to charge for the use of transport infrastructure close to the point of use, with charges set at a level in line with that for other goods and services in a market economy, that is close to marginal costs. This is also the conclusion of the European Commission in its 1998 green paper *Fair Payment for Infrastructure Use* and subsequent white papers. Whilst in the short term other criteria, particularly linking charges to expenditure on infrastructure, may take precedence (as may be the case in current negotiations over amendment to the Eurovignette Directive) as time moves on, marginal costs are likely to prove the durable reference point for pricing.

Changing the way users pay for the use of infrastructure will have effects on the need for future investments in infrastructure. For example, when more efficient charging frameworks reduce congestion and stimulate productivity increases in the haulage industry, as has been the case with the Swiss Heavy Vehicle Fee, the volume of investments needed to meet demand on both the roads and the railway is reduced. In Switzerland the haulage industry was able to make large productivity gains as a result of raising of the truck weight limit from 28 to 40 tons but equally significant are the gains from improved logistics and reorganisation of the sector stimulated by the new charge. The Swiss haulage industry has become much more competitive as a result. There will also be cases where charging efficient prices for using infrastructure will underline the need to expand capacity and will generate the resources to finance expansion. These effects were examined in the 2003 report *Reforming Transport Taxes*, and confirmed. The report suggested no generalised road to rail modal shift is to be expected as a result of moving towards more efficient charges in both modes. The shift in priorities for investment will be at a more specific level. At the same time London has shown a large shift from car to bus demand following introduction of its Congestion Charge. This was foreseen in the earlier report and was partly conditioned by the conditions prevailing before the introduction of the charge.

It should be remembered that the overall purpose of reform is to ensure that the transport sector delivers better services more cost-effectively and thereby minimises resource costs and increases the competitiveness of Member country economies.

**Experience with Electronic Road Charges**

**Road Tolls**

Tolls have financed motorway networks in several European countries and provided for investments in tunnels, bridges and urban express ways in many Member and Associate countries. Much experience relevant to developing more efficient road charges has been accumulated by differentiating some of these tolls to spread peaks in demand (see Annex 2). The most technically advanced system operates in San Diego, California, where tolls on a 13 km stretch the Interstate Route 15 motorway vary on a continuous basis as a function of demand: toll rates can be changed as often as every 6 minutes, with rates displayed
prominently ahead of exits that give access to un-tolled, and more congested, lanes. In peak periods, the numbers of vehicles carried per lane of the motorway has been doubled by the application of pricing to prevent traffic jams.

**Electronic Truck-km Charges**

Pricing reforms in line with the step by step approach set out in Resolution 1998/1 have been successfully introduced in a number of Member countries. The Swiss Heavy Vehicle Fee electronic km charge replaced a fixed annual charge in January 2001 (see Annex 1). Austria replaced a fixed truck charge with its LKW Maut electronic km charge in January 2004. The Austrian system currently employs a flat fee and would benefit from differentiation according to the performance of vehicles in terms of emissions class and road wear. Both systems were introduced without technical problems and enjoy a high degree of acceptance from users. The impacts of the Swiss charge on traffic and the economy has been carefully monitored and the positive developments expected in terms of fleet efficiency and traffic management have materialised (see [www.oecd.org/cem/topics/rail/modalshifte.pdf](http://www.oecd.org/cem/topics/rail/modalshifte.pdf) and [cem/topics/env/London04.htm](http://cem/topics/env/London04.htm)).

Both these systems use conventional road-side microwave transmitters that communicate with on-board units to levy charges. The Swiss system also incorporates a satellite tracking system coupled with an electronic map of the country to switch off the charging system when trucks leave the country by a route not equipped with roadside beacons or should a beacon fail to operate.

Germany will replace its fixed Eurovignette annual truck charge with an electronic km charge that uses satellite tracking technology to calculate the charge and mobile phone technology to make automatic payments. Though planned for introduction in August 2003, teething problems delayed deployment and the system has been re-scheduled to enter service at the beginning of 2005, with some of the more sophisticated features given a longer timetable for introduction.

The advantage of satellite based systems over conventional road-side transmitters is the flexibility to differentiate charges across the entire road network, by road type, location and time of use. The United Kingdom plans to introduce a satellite based electronic km charge for trucks in 2008 with trials of the technology to begin in 2004 on the motorways around the city of Leeds.

A number of States in the USA are working on deployment of similar systems. In Australia the Government’s Intelligent Access Project experimented with satellite telematics to monitor compliance of vehicles with road access conditions (such as loading limits, speed limits, access for over-dimensioned trailers, driving time). The trucks monitored were exempted from road-side inspections. Some of the State governments are working on introducing operational systems of this sort that include road pricing. In New Zealand the government is examining introduction of a similar system to provide hauliers with a voluntary alternative to the existing paper-based weight and distance charge. In all these cases governments make use of the commercial satellite tracking systems already employed by trucking companies to manage their operations.

**Interoperability**

The Swiss on board unit can be used to pay the Austrian truck charge without modification, though the reverse is not true as the Swiss system requires a link to the vehicle’s tachograph. The Austrian charge uses technology developed by the Italian Telepass electronic motorway toll payment system and in mid 2004 an on-board unit interoperable in Italy and Austria will be available. Interoperability with the Slovenian motorway tolling system will also be achieved in 2004.

Significant progress has been made in achieving interoperability between the automatic electronic tolling systems installed on European toll roads. The Autopass system in Norway achieved interoperability
for all six of the country’s city cordon road charging systems in early 2004 with one on-board unit, one contract and one invoicing system for users in all cities. Interoperability with Swedish and Danish tolls should be established in 2005 and technical interoperability with the French system has been demonstrated. Portugal, Spain, France and Slovenia are cooperating in the EC PISTA programme to introduce a pilot single billing system in 2005. After extensive negotiation, full interoperability was achieved for the nine Australian eastern state toll roads in February 2003. This permitted the use of a single electronic tag for toll ways in Queensland, New South Wales and Victoria.

**Urban Charging Systems**

Electronic urban road pricing systems to manage traffic were successfully introduced in London in February 2003, in Durham, England in October 2002 and in Rome in October 2001. Singapore introduced electronic road pricing in September 1998 and now operates a fairly sophisticated system of charges that are differentiated by time of day and vary with levels of traffic. Charges are regularly updated by route to reflect recorded levels of traffic and achieve efficient use of the network with all roads well-used but free-flowing.

London is the largest scale system with around 125 000 vehicles entering the charging area each weekday. The system was introduced smoothly and has more than achieved its traffic management targets with an estimated 30% reduction in congestion, more reliable journey times that are shorter on average by 14%, little diversion of traffic to roads outside the charging area and a net reduction in congestion on trips originating outside the charging zone. Former car users have been accommodated on public transport, especially the bus system where services have greatly improved as a result of reduced congestion and new investment. The major issue has been lower than expected net revenues from the charge for investment in public transport. This is due primarily to a stronger than anticipated reduction in car trips and a longer list of exempt vehicles than expected and partly to the operating contractor failing to process all the fines due on vehicles that enter the zone without paying. Enforcement is being improved and the contract with the operator has been adjusted to provide incentives for better performance in this respect. Work is underway to assess options for doubling the area over which the charge applies, for possible introduction in 2006, although charging over the entire conurbation is currently not viewed as a cost effective strategy by the Greater London Authority.

A number of other Italian and British towns are developing electronic urban road pricing systems and Stockholm plans to introduce a cordon charge for entering the inner city area early in the summer of 2005, with the aim of reducing congestion by 10%. Experiments are underway, or recently completed, in Bristol, Copenhagen, Gothenburg, London, Atlanta, Minneapolis and Seattle to apply satellite monitoring systems to cars in urban areas to price road use, and in some cases automobile insurance, more directly in proportion to costs.

Six Norwegian cities operate electronic toll rings, beginning with Oslo in 1990. The technology used is basically the same as the Telepass system. The Norwegian systems differ from other urban road pricing systems in that they were introduced on existing roads to raise revenues for new infrastructure investments, mainly road tunnels, rather than to manage traffic. They do nevertheless affect traffic levels.

In the United States of America, variable tolls according to time of day have been introduced on the six road crossings between New York City and New Jersey. Electronic road pricing has also been introduced on a number of highway sections to pay for the cost of expanding capacity in response to congestion. These include Southern California’s Route 91, San Diego’s Interstate 15 and Houston’s Katy Freeway. These developments were driven by a need to find complementary funding as the revenues from fuel taxes, which are traditionally earmarked to cover construction costs in the US, have not kept up with demands for investment. The additional capacity is provided in the form of additional lanes to which the
electronic toll is applied, while the existing lanes remain free of charge. A variant has been developed for areas where additional lanes have been built and reserved for high occupancy vehicles. Where capacity in these reserved lanes is underutilised single occupancy vehicles are now allowed in if they pay an electronic toll. All of these tolled lanes are located in suburban areas which have seen the strongest growth in car traffic over recent years. Congestion tends to be concentrated here rather than in urban centres and more land is available for expansion of expressways in the suburbs.

Factors for Successful Implementation

A step by step approach to developing technology is seen as a key to success in the development of a number of charging systems. One example is the incorporation of satellite tracking in the Swiss truck km charge system. This currently serves as a back-up system but it can be developed to provide further services in the future. Singapore’s system has seen a progressive incorporation of increasingly sophisticated charging mechanisms and technologies. Charging began in 1975 with a paper based permit system for entering the city. Electronic payment was introduced first as an option for frequent users and only later became universal. London has also begun charging with a simple system that relies solely on cameras to recognise number plates. The possibility of adding an automatic payment system is being evaluated.

Successful design and implementation requires extensive consultation before the introduction of new charges in order to gain understanding and acceptance of the need for the system. Eliminating the “do nothing” alternative is an important step. After introduction, consultation needs to continue as the basis for modification of the system over time to increase effectiveness or to deal with problems that may arise.

Careful and detailed preparation is also important. This begins with monitoring traffic and modelling the impacts the system is designed to achieve. It requires a thorough communication strategy to prepare users for complying with the requirements of the scheme. Choosing the timing for the introduction of the system in a period of low traffic demand helps and it is essential to prepare press and public expectations for the first few critical days of operation.

Where private sector suppliers and operators are involved care must be taken to draw up effective and transparent contractual arrangements. The task may be more complicated than with private-public partnerships for constructing infrastructure given that it requires marketing and operating a service with which users are not familiar. It also involves enforcement with technology for which an effective legal framework has to be created. Competition for the award of the contract has to be carefully coordinated with system development and technology selection in order to achieve a reliable system with a durable assignment of risks and acceptable costs. Conventional motorway tolling systems (relying mainly on manned toll booths) consume very roughly 20% of revenues in the costs of operation. Some of the electronic charging systems introduced show much better revenue to cost ratios, and some lower ratios. Much depends on the scale of the charging scheme and the size of the charge.

Contracting coupled with the communications strategy can be expected to account for at least 10% of total system development costs.

The acceptability rating of new charges increases rapidly after introduction. No infrastructure user can be expected to be enthusiastic about the prospect of paying any charge. But like most taxes they are accepted by the public if they are needed to deliver services. With user charges there is the prospect of fairly visible improvements that aid acceptance. Opinion surveys ahead of the introduction of charges almost never show a majority in favour of a new charge ahead of its introduction but surveys in Norway, and London have shown this negative score transformed into majority support for the charge shortly after introduction. Only in Switzerland was the charge subject to referendum ahead of its introduction, as part of
a package of measures that included large investments in transport infrastructure. This underlines the role of earmarking some of the revenues raised to investment in transport infrastructure or in measures to mitigate the negative impacts of traffic, in enhancing the acceptance of new user charges.

Conclusions

Where electronic user charges have been developed there have always been pressing reasons for their introduction, and a sense of urgency, either for managing chronic congestion, improving the urban environment or for raising additional finance for investment in transport and ensuring all users, including foreign trucks, pay their costs.

Electronic user charges have been deployed with success to manage urban road traffic and inter-urban truck traffic. The success of road pricing in managing congestion in the largest European urban area, London, has been greater than expected. The targets for improved road journey time and reliability have been met, public transport services have improved and a majority of citizens approve the scheme now it is in operation.

In international truck traffic, electronic km charges are the most promising way of ensuring foreign vehicles contribute to costs where this is currently perceived as a problem. They can also be coordinated with other taxes and charges to remove current distortions in haulage markets, which arise from differences in the level of annual national vehicle taxes.

In both urban and inter-urban contexts user charges have been successfully employed to raise additional revenues for investments in transport systems aimed at improving the efficiency and environmental performance of the transport system as a whole. Reinvesting part of the revenues raised is also an effective strategy for gaining acceptance of new charging systems.

Tried and tested systems are available for road charging without technological problems. At the same time systems using newer satellite technology are maturing rapidly and already incorporated in the Swiss truck charge. Satellite systems will eventually enable further improvements in traffic management.

Electronic road pricing systems have so far been limited to city centres and to the highly regulated haulage industry. Universal application to national car fleets is not so far envisaged.

Rough estimates of marginal costs have been successfully employed in road charges to stimulate the responses desired from users without the need for a high degree of precision in estimating external costs.

User charges are at a relatively early stage of development in both road and rail sectors. This is a stage when freedom for local and national authorities to work towards sustainable systems of charges is vital. International regulations need to provide for such freedom, both in the ways in which they constrain prices and through periodic review. This fits the step by step approach to the reform of transport charges and taxes adopted in ECMT Resolutions, and numerous other policy statements.
ANNEX 1: DATA ON TRUCK CHARGES

Table 1: Average Rates for Electronic Truck-km Charges (40 ton truck)

<table>
<thead>
<tr>
<th>Country</th>
<th>Charge</th>
<th>Euro cents per ton* kilometre</th>
<th>Euro cents per kilometre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switzerland</td>
<td>January 2004</td>
<td>HVF</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>January 2005</td>
<td>HVF</td>
<td>1.6</td>
</tr>
<tr>
<td></td>
<td>January 2008</td>
<td>HVF</td>
<td>1.8</td>
</tr>
<tr>
<td>Austria</td>
<td>January 2004</td>
<td>LKW Maut</td>
<td>0.65</td>
</tr>
<tr>
<td>Germany</td>
<td>January 2005**</td>
<td>LKW Maut</td>
<td>0.3</td>
</tr>
</tbody>
</table>

Notes: * Authorised gross laden weight; ** German LKW Maut expected to be introduced during 2004, probably initially at the rate of 12 cents/km, rising to the planned level of 15 cents/km; The table records only the specified charges and ignores fuel tax, annual vehicle taxes etc. For data on total taxes and charges see the ECMT database http://www1.oecd.org/cem/topics/taxes/AnnexB3e.xls.

Figure 1: Tolls and km-charges for crossing the Alps on alternative routes of similar length

![Diagram showing tolls and km-charges for Frejus, Gothard, and Brenner]

Note: These figures compare average costs for 40t trucks of making Alpine crossings. Average national motorway tolls (and infrastructure costs) in France are lower than those on the route illustrated. The fall in Swiss HVF between 2001 and 2004 is accounted for by exchange rate fluctuations; in Swiss Francs the level of the charge increased. The figures inside the columns are in Euro cents per vehicle kilometre.

Figure 2A: Fixed Annual Vehicle Taxes for Trucks in Europe

National Taxes in Euros per t-km

€/t-km

1998
2000
2001
first quarter 2004

A
B
CH
CZ
D
DK
E
F
FI
H
I
NL
NO
PG
PL*
S
UK

* New 2002 ‘road tax’ in Poland not included.

Figure 2B: Taxes and Charges for Trucks, Excluding Tolls and Electronic Kilometre Charges

National Taxes plus Eurovignette and other Vignette-Type Charges

€/t-km

1998
2000
2001
first quarter 2004

A
B*
CH
CZ
D*
DK*
E
F
FI
H
I
NL*
NO
PG
PL
S*
UK

Notes: A: Including StraB (abolished in 2004); E: Including "Business tax"; F: Including Axle tax; H: Vignette replaced motorway tolls in 2004; PL: Including "Road tax" introduced in 2002; * Eurovignette countries (no longer applied in Germany) – in Belgium and Sweden the Eurovignette is applied as a fixed annual charge for all trucks registered in these countries with the option of purchasing daily, weekly or monthly vignettes only available to foreign vehicles.

## ANNEX 2: DIFFERENTIATED TOLLS, CORDON CHARGES AND ELECTRONIC KILOMETRE CHARGES WORLDWIDE

<table>
<thead>
<tr>
<th>Location and Name</th>
<th>Rate Description</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Austria</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Austria, LKW Maut | Undifferentiated truck km charge based on roadside microwave transponders. Entered service January 2004. | www.bmvit.gv.at  
www.go-maut.at |
| **Australia**      |                  |         |
| Australia, Melbourne CityLink | Night discount for trucks, weekend pass discount for cars and trucks. | www.transurban.com.au  
| **Canada**         |                  |         |
| Canada, Toronto, Highway 407 | Peak and off-peak toll. | www.407etr.com/ |
| **France**         |                  |         |
| France, A14 | Peak and off-peak tolls | www.sanp-autoroutes.fr/default.asp?LANG=EN |
| France, Marseille, Prado-Carénage Tunnel | Day toll and night toll | www.tunnelprado.com/ |
| **Denmark**        |                  |         |
| Denmark, Copenhagen | Trials with road pricing for cars based on satellite monitoring completed in 2003, no current intent to introduce full scale system. | www.progress-project.org/ |
| **Germany**        |                  |         |
| **Italy**          |                  |         |
www.progress-project.org/ |
| Genoa, Cordon charge to enter 2.5 km² city centre, based on automatic number plate recognition technology. | www.progress-project.org/ |
| Bologna, Milan, Sorrento | Cordon pricing experiments near ready for full scale application | www.transport-pricing.net |
| **Korea**          |                  |         |
| Korea, Seoul, Namsan #1 and #3 Tunnels | Day toll, nights and Sundays free | www.progress-project.org/ |
| **Norway**         |                  |         |
| Norway, Trondheim, Toll Ring around city | Peak toll, off-peak toll, and free at night, road-side transponder based cordon charge. | www.progress-project.org/  
http://www.aksess.no/vegvesenet/concert/index_eng.html |
| Bergen, Toll ring around city | Toll during day, free at night, road-side DSRC based cordon charge. | www.ita.gov.sg |
| **Singapore**      |                  |         |
| Singapore, Electronic Road Pricing | Multiple peak-period pricing rates, based on road-side transponders. | www.lta.gov.sg |
| **Spain**          |                  |         |
| Spain, Autopista del Sol Artxanda Ausol I&II | Summer and winter rates  
Peak and off peak rates  
<table>
<thead>
<tr>
<th>Country</th>
<th>City/Region</th>
<th>Description</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sweden</strong></td>
<td>Stockholm</td>
<td>Road side transponder based cordon charge to enter city to be introduced in mid 2005 with peak and off peak charges. Referendum to be held after first year of operation.</td>
<td><a href="http://www.stockholm.se/miljoavgifter">www.stockholm.se/miljoavgifter</a></td>
</tr>
<tr>
<td></td>
<td>Gothenburg</td>
<td>Trials with road pricing for cars based on satellite monitoring completed in 2003. No intent to go to full scale system.</td>
<td><a href="http://www.progress-project.org/">http://www.progress-project.org/</a></td>
</tr>
<tr>
<td><strong>Switzerland</strong></td>
<td>Heavy Vehicle Fee</td>
<td>Electronic truck km charge based on road side transponder system linked to tachograph, with satellite tracking back-up.</td>
<td><a href="http://www.are.admin.ch/are/en/verkehr/lsva/index">www.are.admin.ch/are/en/verkehr/lsva/index</a> <a href="http://www.afd.admin.ch/i/firmen/steuern/lsva/info/information.php">www.afd.admin.ch/i/firmen/steuern/lsva/info/information.php</a></td>
</tr>
<tr>
<td><strong>United Kingdom</strong></td>
<td>Birmingham, M6 Motorway relief road</td>
<td>Day toll and night toll, electronic toll option.</td>
<td><a href="http://www.m6toll.co.uk/pricing/">www.m6toll.co.uk/pricing/</a></td>
</tr>
<tr>
<td></td>
<td>Central London</td>
<td>Flat rate charge for daytime travel anywhere in central London (20.5 km² area). System based on automatic number plate recognition.</td>
<td><a href="https://www.cclondon.com/">https://www.cclondon.com/</a></td>
</tr>
<tr>
<td></td>
<td>Dartford-Thurrock Crossing (Thames crossing on M25 London orbital road)</td>
<td>Reduced night time fee for trucks. Optional electronic tolling.</td>
<td><a href="http://www.dartfordrivercrossing.co.uk/">www.dartfordrivercrossing.co.uk/</a></td>
</tr>
<tr>
<td></td>
<td>Durham, Saddler Street and Market Place</td>
<td>Daytime fee for use of road through historic centre of town, Monday through Saturday.</td>
<td><a href="http://www.durhamcity.gov.uk/">www.durhamcity.gov.uk/</a></td>
</tr>
<tr>
<td><strong>USA</strong></td>
<td>Florida, Cape Coral and Midpoint Bridges</td>
<td>Regular toll and shoulder period toll discounts</td>
<td><a href="http://www.leewayinfo.com/">www.leewayinfo.com/</a></td>
</tr>
<tr>
<td></td>
<td>California, SR-91</td>
<td>Variable toll with HOV discount</td>
<td><a href="http://www.91expresslanes.com/">www.91expresslanes.com/</a></td>
</tr>
<tr>
<td></td>
<td>California, San Joaquin, Foothill, and Eastern Toll Roads</td>
<td>Peak-period, peak-direction premium</td>
<td><a href="http://www.thetollroads.com">www.thetollroads.com</a></td>
</tr>
<tr>
<td></td>
<td>Houston, I-10 (Katy Freeway)</td>
<td>HOT lane with toll during the peak</td>
<td><a href="http://www.quickride.org">www.quickride.org</a></td>
</tr>
<tr>
<td></td>
<td>Houston, US-290</td>
<td>HOT lane with toll during the peak</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Missouri, Lake of the Ozarks Bridge</td>
<td>Summer and winter rates</td>
<td></td>
</tr>
<tr>
<td></td>
<td>New Jersey Turnpike Authority Roads (except Garden State Parkway)</td>
<td>Cash toll, off-peak toll, peak toll, and weekend toll</td>
<td><a href="http://www.state.nj.us/turnpike/">www.state.nj.us/turnpike/</a></td>
</tr>
<tr>
<td></td>
<td>Port Authority of New York and New Jersey Crossings</td>
<td>Cash toll, peak toll, off-peak toll, night toll and a HOV discount</td>
<td><a href="http://www.panynj.gov/">www.panynj.gov/</a></td>
</tr>
<tr>
<td></td>
<td>New York, Tappan Zee Bridge Spring Valley Toll Barrier</td>
<td>Peak period surcharges for trucks, HOV (3+) discounts;</td>
<td><a href="http://www.tzbsite.com/">www.tzbsite.com/</a></td>
</tr>
<tr>
<td></td>
<td>San Diego, I-15</td>
<td>HOT lane with variable toll rate</td>
<td><a href="http://argo.sandag.org/fastrak/">http://argo.sandag.org/fastrak/</a></td>
</tr>
<tr>
<td></td>
<td>Virginia, Dulles Greenway</td>
<td>Cash toll, ETC toll, and weekend discount</td>
<td><a href="http://www.dullesgreenway.com/">www.dullesgreenway.com/</a></td>
</tr>
</tbody>
</table>

Primary source: Mark Burris, Assistant Professor Texas A&M University completed by ECMT.