

ASSESSING THE EQUITY IMPLICATIONS OF HOT LANES

**A REPORT PREPARED FOR THE SANTA CLARA VALLEY TRANSPORTATION AUTHORITY
(NOVEMBER 2004)**

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EXECUTIVE SUMMARY

Since the earliest days of road improvement and construction in the United States, questions of fairness and equity have shaped decisions about how to finance transportation infrastructure and services. Today, equity debates are once again surfacing as state and regional governments consider a new mechanism for raising transportation dollars, so-called “HOT lanes” (or high-occupancy/toll lanes), where carpools drive for free, but single-occupant vehicles pay a toll to use the lanes. HOT lanes have been received skeptically in some corners and enthusiastically in others because they distribute transportation costs and benefits in new ways, thus forcing us to rethink what we believe to be a “fair” system of paying for transportation infrastructure. This report sets out strategies that policy makers, planners, and citizens can use to understand the equity implications that a particular HOT lane project might have, as well as techniques for designing the most equitable HOT lane projects possible.

The report begins by briefly suggesting how to define equity in the context of HOT lanes. We propose a practical working definition of equitable HOT lane projects as ones that distributes costs and benefits in an acceptable fashion across different groups of people. Coming to consensus on who the relevant groups are, as well as the likely costs and benefits, may be the first step a community takes in the process to decide whether or not a project has desirable—or at least acceptable—equity implications.

The next sections of the report discuss how HOT lanes and equity have been viewed by planners involved in HOT lane projects in 11 regions of the country, as well as in the news media and the professional literature on transportation finance. Our research reveals that equity concerns arose throughout the 11 regions studied, and throughout the media coverage and published literature, but that the nature of concern and the ultimate impacts on individual projects varied.

In the concerns raised generally as equity issues by project participants, we identified three distinct types of concerns. Most common was concern about “income equity,” or the impact that HOT lanes would have on low-income drivers. In three regions, interviewees also raised what we have termed “geographic equity” concerns, a worry that the lanes would unfairly benefit or harm people based on where they lived or worked. Finally, in a few regions interviewees reported “modal equity” concerns, or objections to HOT lanes from transit or carpooling advocates who feared that HOT lane operations would increase the attractiveness of solo driving at the expense of alternative modes.

These varying equity concerns have shaped HOT lane projects in different ways. At one extreme, a project on Maryland’s U.S. 50 was stopped in its tracks in 2001 when then-governor Parris Glendening cancelled the project, arguing that it was unfair to low-income drivers. At the other end of the spectrum, the SR 91 HOT lanes connecting Orange and Riverside Counties in California proceeded largely as planned without major concern over equity. In between these examples fall most HOT lane efforts, where project sponsors have addressed equity concerns through specific planning and design elements.

Four strategies occurred most commonly for incorporating equity concerns into HOT lane planning and project design. First, project sponsors almost unanimously underscored the importance of conducting highly proactive public outreach and education efforts organized for an array of audiences. Second, some agencies explicitly incorporated equity analysis into the formal project planning process. Third, in two cases agency sponsors helped to alleviate concerns about equity by shaping their HOT lane initiatives as pilot projects, whereby the HOT lane facility will operate and be monitored on a test basis for a few years to ensure that it has no unacceptable impacts. Finally, in some regions sponsoring agencies, elected officials, and stakeholders have crafted revenue expenditure plans designed to address equity concerns by funding some alternative benefit or compensation for those who cannot afford the toll.

Drawing from these research results, we recommend a series of steps that VTA or other agencies developing HOT lane proposals can use to address equity concerns effectively. The first advises VTA to address equity proactively and comprehensively throughout planning and implementation phases, while recommendations 2 through 5 provide guidance on how best to address equity in the planning phase.

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1. INTRODUCTION

Since the earliest days of road improvement and construction in the United States, questions of fairness and equity have played a significant role in the finance of transportation infrastructure and services. Tolls, for example, for centuries were seen as a fair way to pay for roads because they raised money directly from the users of the road. In the early 20th century, states and later the federal government followed a similar logic in adopting gas taxes—once again, the user paid. Today, state and regional governments are considering a new set of transportation user fees collectively known as “value pricing.” One of the most prominent value pricing approaches is “HOT lanes,” or high-occupancy/toll lanes. In HOT lanes, carpools drive for free, but single-occupant vehicles pay a toll to use the lanes. And as with tolls and gas taxes, many policy makers and citizens are raising questions about the potential equity impacts of HOT lanes.

HOT lanes have been received skeptically in some corners and enthusiastically in others precisely because they distribute transportation costs and benefits in new ways, thus forcing us to rethink what we believe to be a “fair” system of paying for transportation infrastructure. This report presents policy makers, planners, and citizens with an overview of equity and HOT lanes that they can all use to better understand the equity implications a particular project might have, as well as techniques for designing the most equitable HOT lane project possible.

The report begins with a brief explanation of HOT lanes and a discussion of how “equity” can be defined in the context of HOT lanes. The next section discusses how HOT lanes and equity have been viewed by planners involved in HOT lane projects across the country, as well as in the news media and the research literature. A section explaining how HOT lane project managers have dealt with equity concerns follows, and then the report concludes with a set of recommendations for how VTA can best incorporate a sensitivity to potential inequities into the planning and design of HOT lanes. With careful attention, VTA can design HOT lane projects that distribute access, benefits, and harms in the most equitable fashion possible.

The report is based on a three-part research approach. As the centerpiece of our research, we conducted in-depth interviews with key people involved with the planning and implementation of proposals and existing projects for HOT lanes or similar “variable pricing” projects in 11 metropolitan areas across the country. Second, we examined newspaper coverage of HOT lane projects appearing in major newspaper databanks from 1999 through the summer of 2004. We looked at how HOT lanes were described and what factors may have influenced media discussions of fairness. Finally, we reviewed the professional and academic literature addressing the equity concerns associated with HOT lanes and other forms of variable pricing.

2. WHAT ARE HOT LANES AND VARIABLE PRICING?

HOT lanes, or high-occupancy vehicle lanes that solo drivers may access for a fee, are a subset of a larger group of transportation finance options often grouped under the terms of “variable pricing” (or “value pricing” or “congestion pricing”). These are fees or tolls charged to road users that vary according to the level of congestion, where the fees are highest during the most congested times of day, and lowest at the least congested times of day. By varying the fee in this way, it is possible to discourage just enough drivers from using the facility so that it remains free-flowing at all times. Although variable pricing on roads is a new concept for most Americans, we are all familiar with the concept in many other circumstances, such as movie theaters that offer cheaper tickets for bargain matinees when there are usually fewer patrons, or airlines that charge lower fares on weekends.

Variable pricing in transportation has been applied both to individual roads, as is being considered in Santa Clara County, and also to entire congested downtown areas. The latter scheme, also known as “area pricing,” has existed in Singapore since 1975 (Goh 2002) and was recently adopted in London in 2003 (Transport for London 2004). In area pricing schemes, drivers crossing the boundary

into the designated section of the central city must pay a toll. With variable pricing on individual roads, the toll can be charged on all lanes, or just on a portion of the lanes, as is the case with HOT lanes. The first variably-priced project on a highway appeared on a toll road in France in the early 1990s, and since then various projects have opened in the U.S in California, Florida, New Jersey, New York, and Texas, with many more in the planning stages (FHWA 2004).

There are two options for determining the level of the fees charged in a variable pricing program on a highway. In the purest form of variable pricing, the fee fluctuates constantly to reflect actual congestion levels. Under this scenario, an electronic message board alerts approaching drivers of the toll they will pay. In other cases, however, the fee is pre-set on a schedule that varies according to average congestion conditions. The schedule, which may be reset every few months to better reflect actual congestion levels, is published on the web and other convenient locations. Regardless of how the fee level is determined, drivers usually pay with an electronic transponder like the ones now used to collect bridge tolls.

Many different types of highway projects fall under the rubric of variable pricing, and the terminology can sometimes be confusing because there is little consistency of usage. However, the situation seems to be improving somewhat as project experience accumulates in the United States. The following terms for HOT lanes and their derivatives are defined according to the most common current usage:

- **HOT lanes, or “high-occupancy/toll lanes,”** are lanes on a highway that carpools use for free, but on which solo drivers must pay a toll. Only a portion of the lanes on a freeway will be tolled, with the remaining lanes available for free usage to anyone. In **“conversion” HOT lane projects**, existing carpool lanes are converted into HOT lanes, while in other cases the HOT lane is a brand new lane constructed specifically for that purpose.
- **Express lanes** vary from HOT lanes in that carpools must still pay a toll to use them, though the toll may be lower than that charged to solo drivers.
- **FAIR lanes** (“Fast and Intertwined Regular Lanes”) are a variation on HOT lanes whereby drivers in the regular (un-tolled) lanes receive credits that, depending on the structure of the program, can be used to pay for using the fast (tolled) lanes, or for public transit fares or other transportation services. This approach is under study in several regions of the country, but no FAIR lane project has yet been implemented in the U.S.
- **Variable tolling** refers to bridges or other facilities where all users pay a toll, but where the toll fluctuates according to time of day.

To date, the operational variable pricing projects in the U.S. are as follows:

- HOT lanes on I-15 in San Diego County, California;
- Express lanes on SR 91 in Orange County, California;
- Carpool lanes free to carpools of three or more persons and tolled for 2-person carpools on I-10 and U.S. 290 in Texas;
- Variable bridge tolls in the New York-New Jersey area, and in Lee County, Florida; and
- Variable tolls on the New Jersey Turnpike and San Joaquin Hills Toll Road (SR 73) in Orange County, California.

3. DIMENSIONS OF EQUITY

The first step in determining whether or not a public policy is equitable is to define “equity.” Indeed, coming to consensus on a definition of equity may be the first step a community takes in the process to decide whether or not a policy has desirable—or at least acceptable—equity implications. What constitutes a fair or equitable policy may have dozens of different dimensions, depending on the context and the community’s priorities. Theoretical discussions of equity often revolve around the concepts of regressivity or progressivity, or horizontal and vertical equity. However, although these concepts have value, they may leave community members uncertain how to transfer such concepts into a workable definition to use in their own context. This section of the report therefore avoids more theoretical definitions of equity and instead sets out a practical working definition and a set of questions that VTA and the Santa Clara County community can use to understand what an equitable HOT lane project might be.

In the context of HOT lanes, one can analyze a project’s equity by using a simple, functional pair of questions about how benefits and costs are distributed across different groups of people:

1. **Benefits:** Does any one group benefit disproportionately from the project, and if so, is that reasonable and acceptable?
2. **Costs:** Do the financial burdens or negative impacts from the project fall disproportionately on particular groups, and if so, is that reasonable and acceptable?

In other words, one can define an equitable HOT lane project as one that distributes costs and benefits in an acceptable fashion across different groups of people.

Unfortunately, this rather neat definition becomes quite messy when applied to a particular project. Answering the following set of secondary questions can help community members to sift through the dimensions of equity that will be most relevant to their project.

- **What are the relevant groups?** When most people hear “equity,” they tend to think first of people with low incomes. However, such a narrow focus may well miss important equity considerations related to HOT lanes. Depending on the nature of the project and the local demographics, other classifications to consider may include people grouped by the geographic location where they work or live; mode of travel along the HOT lane corridor (transit users, carpoolers, solo drivers, truckers); race or ethnicity; age; educational status; and gender.
- **Do all groups have access to the facility?** A critically important element of who will directly benefit from HOT lanes is whether or not all people have access to the lanes. Again, it is important to think beyond income in terms of determining access. Geographic location along the corridor or the ability to acquire a transponder could potentially influence many people’s potential access to the facility.
- **What are the direct and indirect benefits of the project?** The most obvious beneficiaries of a HOT lane project will be the solo drivers who choose to buy access to the road. However, there may be many other direct or indirect beneficiaries, such as drivers in the general purpose lanes, if congestion decreases there, or transit riders, if the revenue from the tolls is used to pay for transit service.
- **What are the direct and indirect costs associated with the project?** Thinking most narrowly, the costs of the project are the financial cost to users who chose to pay the toll. However, the concept of “cost” should be expanded to incorporate all direct and indirect impacts flowing from the project, such as any increases in local traffic through communities along the corridor, or reduced service quality for carpool users traveling in the HOT lanes. Such indirect costs are

substantial in many transportation projects, though they may be minimal in the case of projects that convert a pre-existing HOV lane to a HOT lane.

The evaluation of a project's equity will depend on looking holistically across these different dimensions of equity to determine if, in sum, the variations in access, benefits, and costs across different groups are acceptable. Even the best-designed public policies will never effect all groups perfectly equally. Instead of searching for that ideal, the key policy considerations should be (1) whether or not the policy has been designed to achieve the most equitable distribution feasible, and (2) whether or not that distribution is acceptable to the community.

Finally, a vital point often overlooked by critics of a particular project is that its equity implications should be evaluated in the larger context of the reasonable alternatives under consideration. In the case of HOT lanes, for example, we should compare their equity to that of alternative revenue-generation mechanisms, such as higher sales or gas taxes. If the revenue is allocated to fund transit, one option that VTA is considering, then it may also be relevant to compare the equity implications of HOT lanes to those of higher transit fares.

4. EQUITY AND HOT LANES: THE NATURE AND EXTENT OF CONCERN

In the transportation planning and finance literature, equity has been a general concern throughout the last century of modern transportation finance. Concern with HOT lanes poses a recent example of that larger trend, rather than a unique problem. When local and state governments in the early twentieth century contemplated how to pay for expanded networks of paved roads to serve automobiles, questions of fairness featured prominently. Although automobiles were wide-spread by the 1920s, they were still something of a novelty and not owned in equal proportion among all segments of the population. Collecting taxes to pay for paved roads thus raised contentious equity issues that were ultimately resolved by adopting gas taxes, widely seen as fair because road users (drivers) would bear the bulk of the tax burden.

Today, transportation planning at many levels of government incorporates equity analysis. The U.S. Department of Transportation periodically conducts a Federal Highway Cost Allocation Study that assesses the equity of the main sources of federal transportation revenues, fuel taxes and truck weight fees. In the last couple of decades, awareness of the equity impacts of individual road and transit projects has grown with the widening recognition of the environmental justice movement. This movement developed when members of low-income and minority communities began to protest that public and private facilities with negative neighborhood impacts—such as factories, waste disposal facilities, or highways—were disproportionately located in their neighborhoods. The federal government formally recognized these concerns in 1994, when President Clinton signed Executive Order 12898 requiring that all federal agencies consider the impact of their policies on disadvantaged communities. Since then, many states and localities have followed suit with similar environmental justice laws.

Interest in evaluating the equity implications of HOT lanes follows logically from this trend towards growing sensitivity to the equity impacts of transportation projects and finance structures. In order to understand how policy makers, planners, and citizens can best assess the equity implications of HOT lanes and design equitable projects, it is instructive to review the national experience to date with HOT lanes and other variable pricing project experience, looking with a specific focus on equity. The first half of Section 4 lays out general observations about the extent and tenor of discussion of equity, while the second half examines the particular equity concerns that have dominated the discussions, namely income, modal, and geographic equity.

4.1. General Observations

Equity is broadly shared as a leading concern.

The project planners we interviewed reported that equity concerns often received significant attention as their agencies engaged in proposing, planning, or implementing HOT lane projects. Said one project manager, “We knew equity would be an issue all along.” The survey of planning literature and news media that we conducted for this report confirms that equity is widely acknowledged as one of the most important issues for HOT lane project planners to address. A review of five years of HOT lanes news coverage uncovered few articles covering HOT lane proposals that did *not* imply or discuss equity concerns. On the contrary, most reporting noted equity concerns as a key issue. In addition, researchers of transportation finance and planning have produced careful treatments of equity, explaining it with various definitions and nuances, and discussing the challenges of and experiences with measuring equity (see, for example: Arnott et al 1994, Bhatt 1993, Deakin & Harvey 1996, Evans et al 2003, Giuliano 1992, Litman 1996).

In the public policy sphere, a wide array of project stakeholders, political actors, and interest groups have taken an interest in the equity of HOT lanes, and variable pricing more broadly. We found that many parties have raised equity issues, including governors, state representatives, MPO board representatives, and local mayors; transportation agency staff; environmental coalitions and smart growth interests; chambers of commerce and business interests; and transportation or transit advocates and automobile user groups. Their positions have varied from place to place and project to project, and are not always predictable. Such groups as the American Automobile Association that are organized nationally have taken different positions locally, and some stakeholders have changed their position on a HOT lane project over time, first criticizing but later supporting it.

In drawing attention to the diversity of parties and interests that have taken positions on local HOT lane projects and proposals, we hope to convey the importance of communicating with diverse stakeholders early in the planning process and listening to the particular concerns of a given group. It is with these stakeholders that project planners can begin to develop some shared understanding of what equity concerns will be important in that particular community.

Equity issues are often oversimplified.

While the research literature contains thoughtful attention to the equity implications of HOT lanes, this approach has yet to permeate general news reporting. Our review of new coverage suggests that media discussions of the equity issues surrounding HOT lanes are often superficial, even when a considerable proportion of an article focused on whether or not low-income motorists could afford to use HOT lanes. (See Appendix C for a sample of newspaper reporting.) Reporters easily recognize the narrative potential to use a rich-man-vs.-poor-man theme in their coverage of HOT lanes, though the extent to which news coverage emphasizes this drama varies by place and by project. The term “Lexus lane” receives near ubiquitous usage as a synonym for a HOT lane, but often without explanation or any direct discussion of equity.

Several of the project planners we interviewed acknowledged that media reporting often oversimplified the issue. Recounting how the media seized on the term “Lexus lane” to criticize a local HOT lane proposal, one interviewee recalled, “We got killed by the moniker of Lexus Lanes, and we did not have a good sound bite to respond to that. We had big long explanations of who could use them, how they work, etc., ...[but] the TV media and also other media like sound bites, and we lost the war of the sound bites.” Increasingly, project sponsors are taking steps to ensure that equity concerns are addressed in ways that go beyond simple black-and-white high-drama coverage. Also, it is important for sponsors to be prepared to respond quickly and effectively to incomplete and potentially misleading news coverage.

4.2. Dimensions of Equity in Project Experience

In Section 3, we discussed how equity may be considered from several perspectives, such as by focusing on the relevant groups with an interest in the project, the measure of access to the proposed facility, or the distribution of direct and indirect project benefits and costs. Here, we report how equity has been perceived or defined—and in some cases measured—in U.S. project experience and research to date.

Income equity is the most frequently cited equity concern.

When asked about the role of equity concerns in their projects, every respondent we interviewed used the word equity to refer to the implications for low-income drivers. This observation also holds true for our survey of newspaper coverage. When articles discussed the fairness or unfairness of a HOT lane project, fairness was defined with reference to one's income and corresponding ability to pay HOT lane fees. The most commonly raised concern was that low income groups would be unable to afford to use the facilities, and that HOT lanes would thus disproportionately benefit high-income drivers. Some reporters also used the term "regressive" when tolls and income. (A regressive tax is one whereby all people pay the same dollar amount, regardless of income. Regressive taxes are often compared to "progressive" taxation, which is structured so that the amount of tax paid rises in accordance with income. Sales taxes, for example, are regressive, while income taxes in the U.S. are progressive.)

Although the argument that HOT lanes are unfair to low-income drivers has been made quite forcefully by some HOT lane critics, research and experience to date suggests that HOT lanes do not necessarily exclude low-income drivers. In fact, assessing HOT lane usage and benefits among different income groups is not straightforward. Extensive evaluation of the SR 91 "express lanes," including surveys of both users and drivers who chose the parallel free lanes, shows that low-income drivers do use the express lanes and that they are as likely to approve of the lanes as drivers with higher incomes. For example, over 30% of drivers from households earning less than \$40,000 a year reported using the lanes at least occasionally. In terms of attitudes, over half of commuters with household incomes under \$25,000 a year approved of providing toll lanes that bypassed congestion, and only respondents from households earning over \$100,000 a year had significantly more positive views of such tolls than did the poorest households. When respondents were asked specifically about tolls varying with congestion levels, the lowest-income households once again showed similar approval ratings to all but the richest households, though on this question approval ratings were lower across the board. Additionally, the majority of commuters do *not* find it worthwhile to use the tolled lanes for every trip, even those from higher income households. These findings from SR 91 counter claims that HOT lanes would add considerably to commuters' weekly costs; in reality, most users choose the lanes infrequently but judiciously, when they stand to benefit most. Still, it is true that drivers with higher incomes use the lanes for a greater proportion of their trips. Also, while the proportion of SR 91 commuters who report using the lanes at least some of the time grew from 28 to 42 percent between 1996 and 1999, this suggests that the majority of SR 91 commuters still do not use the lanes (Sullivan 2000, xxii, 80, 87, & 126-127).

Evaluation results from San Diego's I-15 HOT lanes suggest similar patterns. Users of the HOT lanes were more likely to have higher incomes than drivers in the regular lanes, but lower-income drivers did sometimes use the HOT lanes. A fall 1998 survey found that drivers from households with annual incomes over \$80,000 were over-represented as HOT lane users, compared to their proportion of drivers in the free lanes. Conversely, lower-income drivers were slightly under-represented in the HOT lanes. For example, drivers coming from households with annual incomes of \$20,000 to \$40,000 a year made up 3% of FasTrak users, but 10% of drivers in the free lanes (Golob 2000, 32-33). However, attitudinal panels show that I-15 drivers broadly approved of the HOT lane program, and felt that it was fair and had also reduced congestion (Supernak 2001, 19-21).

A final consideration in the debate over HOT lanes and income equity is the extent to which low-income drivers are likely to travel on the HOT lane corridor during peak hours when tolls would be relatively high (and the benefits to HOT lane users especially valuable). One study of a variable tolling proposal for the Bay Bridge found that the number of low-income motorists crossing the bridge during peak hours of congestion was tiny, numbering only hundreds a day (Frick et. al., 1996). In corridors where such patterns hold, a community might decide that the impacts on low-income drivers as a group are acceptable, even if the impacts for a small number of individuals would be severe.

Geographic equity concerns arise where project benefits and costs have strong spatial patterns or where different constituencies are noticeably segregated.

Concerns about spatial fairness featured less prominently in our study, but they did arise in three of the projects reviewed. HOT lane projects can distribute access benefits in new ways both because the time savings they provide is greater for travelers making longer trips, and also because limited entry points permit some adjacent communities better or more immediate access than others.

The case of Maryland's U.S. 50 illustrates how HOT lanes can distribute benefits in space and how spatial fairness can overlap with income equity, particularly where household income levels strongly shape residential patterns. As a route serving the congested Washington, D.C., area, U.S. 50 was selected several years ago as a promising candidate for a HOT lane facility. Because the route provides access to the capital region from outer-lying eastern suburbs, some elected officials from counties closer in to D.C. suggested that the facility would provide a disproportionate benefit to suburban commuters, while those residing near downtown would not have access to the lanes. Critics also asserted that, because households in more distant communities served by U.S. 50 had higher incomes than those in communities closer to D.C., the proposed facility would favor the wealthy. While there were other contributing factors, these geographic equity concerns were one reason the project did not proceed.

New York City provides another example of geographic equity in play, albeit in a variable tolling effort rather than HOT lanes. In March 2001, the Port Authority of New York and New Jersey implemented a higher peak-period toll at all of its bridge and tunnel crossings connecting New York and New Jersey. The authority had first considered differentiating peak tolls by facility, charging even steeper peak tolls at crossings rich with transit alternatives, in order to encourage some modal shift to transit. This approach would have charged drivers higher peak tolls at some Port Authority crossings than at others. Ultimately, however, the same peak toll was applied across all the agency's crossings, in a more geographically equitable solution.

Evidence from our study also suggests that geographic equity concerns can evolve as regions grow and change *and* as HOT lane facilities themselves change. Up to now, geographic fairness has not been a sticking point on the I-15 HOT lanes in San Diego—attitudinal surveys show that a majority of corridor users consider the HOT facility fair. However, as extensions to the facility are planned to serve northern communities in Escondido, this could change. Escondido boasts a more affordable housing market than does San Diego or its immediate environs and consequently is more attractive to residents with lower incomes. When the HOT lane extension opens, motorists traveling from Escondido to San Diego will have the longest commute and, if the HOT lane tolls are distance-based, the highest fees. Although the toll structure has not yet been determined and musing about potential distributional effects is premature, we cite this example to show that geographic equity implications can evolve as a project expands or changes.

Modal equity is a real concern to groups that promote transit, carpools or other modes.

The operational policies chosen for HOT lanes can create various incentives for choosing one mode of travel over another, whether it be a single-occupancy vehicle (SOV), a carpool, or transit. For instance, a HOT lane may allow 2+ or 3+ carpools to use the facility at a reduced rate or for free. Also, where transit service exists in a HOT corridor, buses often use the lanes to avoid congestion. In several of

the cases we considered, people questioned whether the HOT lane proposed or implemented in their region would unfairly favor one mode over another, raising the issue of modal equity.

Primarily, modal equity concerns have arisen when those who support transit and carpooling fear that HOT lane operations will increase the attractiveness of SOV commuting at the expense of alternative modes. HOT lanes are often introduced in corridors that already host an HOV lane offering carpools and transit a congestion-free trip. Motorists and interest groups may be accustomed to preferential treatment for HOVs in order to encourage carpooling or transit use, and thus they may have concerns when the HOV lane is opened to paying SOVs.

When planning for an HOV-to-HOT lane conversion got underway for Minnesota's I-394, the advocacy group Transit for Livable Communities advocated for a project that would improve bus service in the corridor, a goal that project planners are striving to meet. The Minnesota legislature has directed that 50 percent of HOT lane revenues in excess of project costs be spent on transit in the corridor. In addition, if a second phase of the project goes forward, a third HOT lane would be created in the barrier-separated portion of the I-394 corridor. A moveable barrier design would provide two lanes in the peak direction and one lane in the reverse commute direction, thus allowing buses (as well as carpools and toll-paying SOVs) to use the lane in the reverse commute direction, adding additional benefits to bus rapid transit in the corridor.

In Seattle, one of the primary equity concerns for the SR 167 HOV-to-HOT lane conversion pilot project is transit. Advocacy groups stress that the minimum toll on the new HOT lane facility should be no lower than the transit fare in the same corridor. If the toll is too low, transit advocates argue, then out-of-pocket costs will be lower and trips quicker for SOV commuters than transit users, a factor that could convert transit riders into solo drivers. Additionally transit interests have also pressed for provisions in state HOT lane legislation that would direct a portion of HOT lane revenue to transit, carpool, or transportation demand management programs in the corridor (Transportation Choices Coalition 2003). The Washington State Department of Transportation's proposed legislation for the SR 167 HOT lane allowed for revenue from the HOT lane to be used for expansion of high-occupancy toll lanes and to increase transit, vanpool and carpool, and trip reduction services in the corridor, but left allocation of funds to the legislature.

Available evidence does not support concerns that HOT operations will decrease transit ridership or carpools. With the opening of the SR 91 Express Lanes, some feared that patronage on the parallel express bus and Metrolink commuter rail routes would suffer, but there is no evidence that this occurred. The operational evaluations report that few changes to the bus mode occurred in conjunction with the lanes' opening (Sullivan 2000, xxii). Additionally, in the case of SR 91, a new HOT facility lane rather than an HOV conversion, carpooling (3+) in the corridor increased 40 percent over previous levels *after* the lanes opened. Three-plus carpool were granted free use of the lane at first, though later that fell to a 50-percent toll discount.

Truckers are another modal group that may question how they fare with the distribution of HOT lane benefits. Although none of the interviews or newspaper coverage reported this issue, it is entirely possible that in some corridors truckers will perceive HOT lane proposals as inequitable.

Researchers have documented differences in HOT lane use by male and female motorists, but the public has yet to raise gender equity as a contentious issue.

In none of the projects analyzed for this report did issues of gender equity arise. While data from both the SR 91 and I-15 HOT lanes indicate that women make greater use of the lanes than do men, neither motorists nor organized interests have organized or identified as groups along gender lines in these or other corridors (Sullivan 2000; Supernak 2000, 33). On the one hand, this suggests that women may derive more benefit from the lanes than do men. On the other hand, one can also argue that HOT lane fees may be more regressive for women than for men. In a 1996 study that modeled travel data in order to assess road pricing strategies in California, Deakin and Harvey argued that because women have lower incomes than men, distance based fees charged on a per-mile basis (so-called "Vehicle Miles

Traveled” or VMT fees) fall more heavily on women (Deakin and Harvey 1996, 8-7). While Deakin and Harvey did not consider HOT lanes specifically, their work illustrates the kinds of gender equity concerns worth considering in HOT lane projects.

5. EQUITY IN PROJECT PLANNING AND IMPLEMENTATION

Our discussions with project planners suggest that equity has shaped HOT lane projects in different ways, figuring more prominently into project planning and implementation in some places than in others, and with different results. With only one exception (Houston’s Katy Freeway),¹ equity issues were raised in every project for which we conducted an interview, but the impact of equity discussions on different projects has varied.

At one extreme, Maryland’s U.S. 50 HOT lane proposal was stopped in its tracks in 2001 when then-governor Parris Glendening cancelled the project, arguing it was inequitable. “It’s unfair in terms of the economic impact,” Glendening told the *Washington Post*. “If you’re reasonably well off financially and want to pay \$4 to \$5 a day to avoid congestion, then you get to use these lanes. But if you’re a working person out there making \$35,000 a year, an extra \$25 per week is a lot of money” (Shaver 2001). At the other end of the spectrum, the SR 91 HOT lanes connecting Orange and Riverside Counties proceeded largely as planned without major concern over equity. Equity concerns were raised, and the project sponsor paid very close attention to public perceptions of fairness and tolls during planning, implementation and operations, but the project planners never materially altered their plans to respond to equity concerns.

In between these examples fall most HOT lane efforts, where project sponsors have addressed equity concerns through specific planning and design elements. Many project sponsors we spoke to emphasized the importance of proceeding deliberately and thoughtfully when considering a HOT lane project. Here, we document some of the actions taken by project sponsors to address equity in their projects. We present this survey of experience in a spirit of social learning rather than pragmatic politicking, understanding that what is learned from project experiences before can point the way towards more equitable projects in the future. HOT lane projects and the communities they serve will gain the least when sponsors look to employ techniques proven elsewhere simply to deflect potentially controversial issues. Instead, the catalogue of prior experience should help sponsors to design projects that satisfy the interests of most users, nonusers, and residents in communities in the project corridor, with the goal of finding common ground where people agree that costs and benefits are distributed as fairly as possible.

5.1. Public Outreach and Education

Project sponsors almost unanimously underscored the importance of conducting highly proactive public outreach and education efforts, organized for an array of audiences. Although federal transportation planning requirements have emphasized public participation since the 1991 passage of ISTEA, HOT lane experience to date suggests that these projects may require new and different outreach efforts for at least three reasons. First, HOT lanes are not in wide use in the U.S. Beyond transportation planning circles and the regions where HOT lanes already operate, few people know what HOT lanes are or how they work. Second, because HOT lanes use market principles to regulate traffic flow, planning for them requires early outreach and market surveys to measure public attitudes toward the lanes and their willingness to pay for them. Finally, HOT lanes have attracted severe criticisms of inequity in some places. In 1996, Deakin and Harvey reported a “deep distrust among some about a policy that seems to reward the affluent and already privileged classes” when they studied congestion pricing in California

¹ The HOT lanes on the Katy Freeway serve three or more person carpools at no charge. Carpools of two persons may use the lane for a fee. SOVs are not allowed to use the lanes. Thus, project planners report that equity issues as they commonly arise elsewhere (e.g., the Lexus Lanes critique) did not arise in Houston.

(Deakin and Harvey 1996, 10-15). This same mistrust has been mentioned by HOT project planners and is evidenced in news reporting. Thus, planners have made deliberate efforts to collect and communicate information publicly that will allow politicians, motorists, interest groups, and media representatives to make an informed assessment of the fairness of HOT projects. The cases described below illustrate the types of outreach and education activities pursued thus far.

Advisory Task Forces Prove Instrumental in the Twin Cities

Since 1994, state and local planners and policy makers have been exploring the potential for value pricing applications in Minnesota's Twin Cities. After early efforts to develop a toll road failed to win public support, the 2001 formation of a public task force helped to develop the consensus needed to pursue other value pricing applications. The Minnesota state DOT (MNDOT) and the Twin Cities Metropolitan Council partnered with the University of Minnesota's Humphrey Institute to conduct public outreach. Using an FHWA value pricing grant, the institute "coordinated local and regional workshops, and formed the Value Pricing Advisory Task Force to create the public dialogue necessary for the Twin Cities to understand the possible benefits of value pricing applications" (Buckeye and Munnich, 2004). The 30-member group included state legislators, mayors, and leaders of business, environmental and transportation associations. The group advised MNDOT to pursue value pricing in the region, and today the agency is considering a HOT lane project in the I-394 corridor. Project planners report that political champions emerged from the Task Force, facilitating the bi-partisan support and leadership necessary to pursue the I-394 HOV-to-HOT lane conversion.

A subsequent advisory group was also formed in Minnesota, the I-394 Express Lanes Community Task Force, which has helped to guide the implementation of the I-394 HOT lane project. One interesting fact about this task force is that, shortly after the group was selected, its organizers sent six members to visit the I-15 project in San Diego. One planner observed, "One of the big obstacles is showing people how [a HOT lane] really works—and you can't show it until you have it. We let them see for themselves and develop their own sense of the [I-15 HOT lane] project. This helped a lot with the community task force."

Miami Transportation Agencies Collaboratively Host a HOT Lane Workshop

In Miami, the Florida Department of Transportation, Miami-Dade Expressway Authority, and Turnpike Office have together started considering a network of "managed" lanes that would operate across their respective facilities. (The agencies are using the term "managed" lanes to refer to lanes that would be free to transit and emergency vehicles, but tolled for other users.) While the network was in the early planning stages, board members of the Miami-Dade Metropolitan Planning Organization (MPO) expressed concerns for equity and asked for more information about the managed lane idea. Reports one planner, "A few of the board members raised the issue that low income people can't afford [to use the lanes] and so it's not an equitable situation. . . They used the term Lexus Lanes to describe it."

To acknowledge the board's concern and respond with useful information, the three agencies hosted a public workshop for MPO Board members. The one-hour session educated MPO members about the planning and operations of managed lanes, and prominent transportation pricing experts were featured as speakers. The three agencies also distributed a thin, reader-friendly briefing package to board members, providing background on managed lanes and the preliminary analyses underway in the region. To encourage attendance, the workshop was scheduled to precede a regular board meeting. While fewer board members attended than was hoped for, the session clarified the managed lane concept for some and opened the equity dialogue between the MPO and the highway agencies in the region.

Maryland Takes the Driver's Seat with a Press Conference and Public Meetings

When the U.S. 50 HOT lane proposal was cancelled in response to perceptions of inherent unfairness to low-income drivers (see Section 4.2), a local paper editorialized, “High-occupancy toll roads aren’t such a HOT idea” (Washington 2001). “Will it be ‘Lexus Lanes’ or ‘Lumina Lanes’?” the paper asked about commuters’ potential choices. “That depends on how many quarters you can find on the floorboard of your car when it’s not your pay week. Have money, will travel. Otherwise, you just get kicked to the curb.” The paper called the proposed lanes “elitist” and endorsed their cancellation by the governor: “Honk, if you’re with him. What else should the landed gentry be afforded at John Q. Public’s expense? Don’t they have enough toys and privileges they are unwilling to share?”

Three years later, as the Maryland State Highway Administration reinitiated HOT lane planning efforts under a more supportive state administration, aggressive outreach to both the media and the general public figured prominently in its approach. First, they hosted a press conference to educate the media and the public about the “express lanes” concept in general (which did not include free HOV access) and the administration’s interest in exploring a statewide network of express lanes. Use of the term “express lanes” for public outreach was deliberate. Reflecting on the failed 2001 effort, one senior official explained, “We got killed by the moniker of ‘Lexus Lanes,’ and we did not have a good sound bite to respond to that. The . . . media like sound bites, and we lost the war of the sound bites. . . . [T]his time, we thought, ‘What messages can we give out as sound bites?’ That’s how we came up with express toll lanes.” For the press conference, the agency also provided data on HOT lane usage from the two existing California projects to show that the lanes can provide acknowledged benefits to low-income drivers and to encourage more balanced reporting.

Second, the agency initiated a round of public meetings to introduce its “express lanes” concept on a statewide basis, educating the public about the general concept before announcing any specific corridors proposals. These meetings featured large displays explaining express toll lanes, and the agency also distributed a short, colorful brochure that officials say has been a more successful educational tool than any lengthy technical report. The brochure was also sent to the press and to every public official in advance of all meetings to discuss the statewide proposal.

While project sponsors in different regions will determine what outreach efforts are locally appropriate, several cross-cutting observations emerge from the above profiles. First, external factors—including the public education efforts of sponsoring agencies, the public stances of local officials, and an editorial board’s own stance—can affect the quality of HOT lane media coverage and ensuing public debates. Second, project sponsors are taking deliberate steps to inform the public, local officials, and reporters about HOT lane operations and their potential benefits to drivers of different income levels. Finally, where elected officials or the public view HOT lanes with underlying distrust or as inherently inequitable, consistent outreach efforts may be needed to foster public debate that considers potential project benefits *and* costs.

5.2. Including Equity Analysis and Documentation in Project Planning

If effective outreach can broaden the dialogue about HOT lanes, concrete project analysis and documentation are necessary to assess the fairness of actual proposals or applications. Many interviewees reported citing SR 91 and I-15 project results to allay initial public fears that HOT lanes will create unjust outcomes; as the most mature and heavily documented HOT lanes to date, analyses of these projects are a valuable resource for others. However, many people have stressed that the southern California results may not be replicable elsewhere, or that they may not satisfy local project critics and stakeholders. Said one planner,

We know the California data show no major disparity between users, [but] there may be an equity issue; we don’t know yet. So, we plan the project with demographic surveys of the corridor and

monitoring during the test pilot to see if there are any equity issues. . . . We're taking a monitor-and-see approach; if equity arises, we'll develop mitigation.

For some projects, this equity analysis is conducted as part of National Environmental Protection Act (NEPA) requirements, although in other cases the equity analysis is undertaken as a separate project. Methods that project sponsors have planned or started to assess include:

- Surveying the demographic characteristics of current corridor and potential HOT lane users.
- Using attitudinal surveys and focus groups to ascertain people's perceptions of HOT lanes and their willingness to use them. These surveys have been done before, during and after implementation.
- Including in project plans specific commitments to collect data on the proposed HOT lane usage, for several years into project operations.
- Monitoring operational and mode-share impacts on including transit services and carpools.
- Evaluating the traffic impacts not only on the HOT facility but also on potentially impacted arterials that service the facility or serve as an alternate route.

Federal funding has supported comprehensive before and after analysis of both the I-15 and SR 91 projects. The results are available online and planners may wish to browse their contents to explore the range of data collected about users, non-users, HOT lane operations, and revenues.² Depending on local circumstances, any of this information could be relevant for measuring the equity of a given HOT lane project.

5.3. Designing the HOT Lane Project as a Pilot

In two of the cases we reviewed, agency sponsors helped to alleviate concerns about equity by shaping their HOT lane initiatives as pilot projects. Project documents or necessary supporting legislation define the project as an initial trial, whereby the HOT facility will operate and be monitored for a few years to ensure it has no unacceptable impacts. Presumably, if the HOT lanes function well and stakeholders are largely satisfied, the project will continue. But a trial phase provides some security that a project with inequitable outcomes will be adjusted or possibly even cancelled. This approach has allowed sponsors to acknowledge equity concerns and uncertain outcomes, yet move forward with the project.

In Seattle, the Washington Department of Transportation addressed the concerns of elected officials regarding a proposed HOV-to-HOT lane conversion on a nine-mile section of SR 67 by designing the project as a four-year pilot. The project requires state legislative approval to impose tolls. Said one planner, "Equity has been raised, but it's not deal killer." Framed as a pilot, the project can proceed with the caveats that the DOT will conduct outreach, education, monitoring, and evaluation to address potential equity issues; that the lane operations may need to be tweaked as operational knowledge is gained; and that the project will not continue if visible inequities materialize.

In Alameda County, the local Congestion Management Agency has also pitched its HOT lane proposal for the I-680 corridor as a demonstration project. One project manager explained that, after initial study of the proposal, "we believed that the equity issue could be a fatal flaw. We talked about a demonstration period to determine the actual impact of a HOT facility on lower income travelers. This seemed to resonate with elected officials."

² For information on I-15 in San Diego, see the San Diego Association of Governments (SANDAG) web page "I-15 FasTrak Project Related Reports" at <http://argo.sandag.org/fastrak/library.html>. For information on SR-91, see the web page <http://gridlock.calpoly.edu/sr91/sr91.htm>, hosted by the California Polytechnic State University's Applied Research and Development Facilities and Activities (ARDF) program.

5.4. Using HOT Lane Revenues to Address Equity

How HOT lane revenues are spent can greatly affect whether people believe the project is fair or not. In some regions, sponsoring agencies, elected officials, and stakeholders have recognized this and crafted revenue disposition plans to address equity. HOT lanes create a new revenue stream that can be used, if appropriate, to fund some alternative benefit or compensation for those who cannot afford the toll. This section describes some of those expenditure plans. Interested parties did not always agree upon the most equitable way to spend toll revenues, but competing interests usually reached consensus as to what was fair.

Returning Revenues to the Corridor

Both the professional literature on HOT lanes and our own interviewees stressed that using HOT lane revenues for improvements in the corridor itself could create a more equitable or acceptable project. The Minnesota legislation that allows the I-394 HOV-to-HOT lane conversion stipulates that 100 percent of toll revenues be spent in the corridor; half of the funds will support transit service in the corridor and the other half will fund necessary road improvements. One Minnesota policy advisor remarked, “When you tell people that the money goes back into the corridor, people are satisfied. Our advice to the legislature was that this was the best way to do it and to avoid trouble.”

In Seattle, proposed state legislation (ESHB 2808, 2004) to authorize the SR 167 HOT lane pilot project would create a special multimodal account for all HOT lane toll moneys collected. The bill specifies that “[m]oneys in this account may be used for . . . debt service, planning, administration, construction, maintenance, operation, repair, rebuilding, enforcement, and expansion of high-occupancy toll lanes and to increase transit, vanpool and carpool, and trip reduction services *in the corridor* [emphasis added].” It also directs that a “reasonable proportion of the moneys . . . be dedicated to increase transit, vanpool, carpool, and trip reduction services *in the corridor* [emphasis added]” (Engrossed Substitute House Bill 2808, State of Washington, 2004).

Funding or Improving Corridor Transit Service

In addition to the Inland Breeze bus service funded with revenues from San Diego’s I-15 HOT lane, transit service has been incorporated into several other HOT lane plans around the country, including Alameda County’s I-680 Sunol Grade HOT lane project. “The fact that we’re providing transit service in a corridor where there’s none now made the project acceptable,” reported one agency staffer working on the I-680 proposal.

In New York, express buses are a key component of the HOT lane being considered for the Port Authority’s Lincoln Tunnel connecting midtown Manhattan with New Jersey. The agency already operates an extremely successful contra-flow express bus lane in the corridor, connecting from New Jersey’s Route 495 to the Port Authority’s midtown bus terminal and moving roughly 1,700 buses and 60,000 riders in the morning peak. The single lane has reached capacity over the last decade, and the authority is considering converting a second general purpose lane in the corridor to a contra-flow HOT facility that serves express buses *and* paying drivers. The authority anticipates that the extra lane would increase the service level for buses via more reliable travel times, meet increased demand for buses, and potentially increase bus ridership.

Compensating Non-Users

With FHWA encouragement, some regions are considering a new kind of facility similar to a HOT lane, but where drivers using the general purpose lane are compensated with toll credits or other benefits. This concept, known as Fast and Intertwined Regular Lanes or FAIR Lanes, uses revenue derived from tolled “fast lanes” to improve corridor access for low-income travelers, addressing income

equity concerns head on. No FAIR lane facility has yet been implemented in the U.S., but the idea is under consideration in several places, including Alameda County, California; Atlanta, Georgia; and Portland, Oregon. As with HOT lanes, single- or low-occupant vehicles would be tolled to access the fast lanes, but revenues would be used expressly to fund needed transportation services for low-income persons. These may take the form of toll credits for those who must drive solo and improvements to transit, paratransit, or ridesharing services. There has also been preliminary discussion of using revenues to support affordable housing options near employment sites.

A Caveat about HOT lane Revenue

Using project revenues in the ways described above can help to assuage equity concerns, but HOT lane projects do not always generate excess revenue (Evans 2003, 14-50). Interview respondents noted that they could not count on excess revenues, especially where newly constructed HOT lanes have to pay for themselves. In Maryland and in Miami, Florida, project sponsors have avoided calling their projects *HOT* lanes, instead favoring the terms *express* and *managed* lanes to communicate that high-occupancy vehicles may not be allowed free travel. One national expert on HOT lanes attributes this to limited capacity and increasing needs for project revenue: “In more and more parts of the country, you don’t have the spare capacity on HOV lanes [to accommodate large numbers of solo drivers], and new [HOT] lanes can’t pay for themselves *and* pay for transit.” Some places have recognized this, the interviewee said, and there project sponsors have responded to equity concerns by arguing that tolling all vehicles in the new lane is the only financing option that will cover the cost of the lane, so the community must “take it or leave it.”

5.5. Treating Perceived Inequity as Seriously as Measurable Inequity

A final observation drawn from our study is that project sponsors often realize that it is not enough to determine how or what the agency *itself* conceives as fair. Sponsors have discovered that public reactions were sometimes unanticipated or surprising to them, as in the case of the Port Authority’s 2001 increase in tolls. When the Port Authority instituted peak tolls on its bridges and tunnels, it also moved to eliminate long-standing discounts on multiple pre-paid trips. However, the authority ultimately decided to maintain the deep discounts only for Staten Island motorists, who had protested that their unique island geography and limited transit service made them more car dependent and thus more reliant upon the discount than peer communities in the region. Ironically, one authority official observed that Staten Islanders actually “pay a higher average toll under the structure they asked us to adopt than under the one that we had originally proposed.” The official added that Staten Island drivers do not seem to realize that the proposal they wanted would cost them more. He continued, “It’s more a perception of equity. And they’re appreciative that we respected their wishes.”

6. RECOMMENDATIONS

Drawing from material in the preceding sections, we recommend a series of steps that VTA or other agencies developing a HOT lane proposal can use to most effectively address both real and perceived equity concerns. Recommendation 1 is that VTA proactively address equity throughout planning and any implementation phases. Recommendations 2 through 5 then provide guidance on how best to address equity in an agency’s planning phase.

Recommendation 1: Design a continuing and comprehensive approach to address equity concerns.

Equity is a concern that is best addressed in a comprehensive fashion, from the earliest phases of project planning, all the way through implementation and management of an existing project. A comprehensive approach has the best chances of producing an equitable outcome, as well as satisfying

stakeholders that the agency has taken the issue seriously. An overarching framework for addressing equity would consist of three components:

1. **Evaluate equity during both planning and implementation.** While evaluating equity in the planning process is obviously crucial, it is also important that there also be a commitment to evaluating equity impacts after a project begins operations. Because every project is unique, only after implementation will it be possible to identify with certainty how the project has shifted distributional patterns of benefits or costs onto particular groups. If equity continues to be monitored after implementation (such as through periodic user surveys), it may be possible to adjust operational procedures to improve the situation if the outcome is unreasonable.
2. **Foster community dialogue.** Equity is a complicated and emotional issue for many people, but it is often debated only superficially. Such cursory discussions can stall or even stop projects when real or perceived inequities are identified only late in the project lifecycle. Agencies planning HOT lane projects should sponsor thoughtful, well-informed community dialogue on equity issues. Such outreach efforts will allow genuine equity concerns to be identified that might otherwise have been overlooked. In addition, by educating policy makers, the media, and the public at large, it will be easier to avoid a situation where a misleading or inaccurate claims about equity cause costly project delays.
3. **Design the project's physical, operational and financial details to be as equitable as possible.** There are numerous potential modifications to any HOT lane project that will influence how benefits and costs are distributed throughout the population. Examples of project details that can be designed to improve equity include the ways transponders are distributed, how revenues are spent, and the location of entry and exit points. By keeping equity in mind when designing all the operational details of a project, it will be possible to achieve the most equitable results.

The remaining four recommendations provide more specific ideas for ways that VTA can effectively evaluate equity in the project planning stage.

Recommendation 2: Assess the multiple dimensions of equity.

As this report has emphasized, assessing the equity of HOT lanes requires is not merely a question of how the lanes would impact low-income drivers. Although concern that HOT lanes might exclude low-income drivers has been the central equity concern raised to date in the U.S., it is crucial to actively consider other groups that may be affected. These include people classified by where they live or work, as well as the mode of travel they use, two concerns that have already been raised in more than one region of the country. However, there may well be other groups affected disproportionately in particular regions, and thorough project planning will attempt to identify them.

Recommendation 3: Compare the equity of HOT lanes to other transportation finance options.

Some observers complain that HOT lanes are regressive, and therefore should be rejected merely upon that basis. However, HOT lanes do not exist in a vacuum. As with any policy, they can only be assessed in comparison to their alternatives. This means comparing HOT lanes to the two other main sources of transportation funding, sales taxes and gas taxes. Considered in this light, the fact that HOT lane tolls are regressive takes on a somewhat lesser significance, since sales taxes and gas taxes are also regressive.

HOT lanes may in fact be much less regressive than sales and gas taxes. Sales taxes are paid by all low-income people, whether they drive or not, while fuel taxes are paid every time somebody drives. HOT lanes, however, are voluntary, allowing low-income households to use them selectively. Compared to raising fuel or sales taxes to pay for road improvements, HOT lanes may actually be the more equitable financing option.

Recommendation 4: Assess the full range of costs and benefits that impact low-income households.

Although low-income drivers are not the only group that could be inequitably impacted by HOT lanes, they are inevitably a key population to consider. In order to fairly and accurately understand the impact a project will have on low-income drivers, it is necessary to think beyond the standard “Lexus Lane” argument that since tolls are regressive, they must be unfair.

While there is no question that tolls are regressive, this observation ought to be the beginning of the debate, not the end. Any government fee is inevitably regressive, but that does not mean that all fees are unacceptable. Governments already charge fees for all sorts of services, a system that society in general has concluded to be reasonable and that does convey benefits on lower income people. (Garbage collection fees, community college tuition, and fees to use public swimming pools are all examples of widely-tolerated fees charged by public agencies.)

Second, evidence from existing HOT lanes suggests that some low-income people *do* voluntarily make use of the lanes, indicating that they feel the benefits they receive are greater than the cost of the toll. It is easy to imagine scenarios where the toll might be less than the financial penalty incurred by sitting in congestion and being late—late fees at a daycare agency, salary penalties for being late to work, or a job call missed by somebody who works on location. In addition, it is important to keep in mind that most people do not use HOT lanes twice a day, five days a week. Paying two or even four dollars to use a HOT lane is a price that most people can afford, at least occasionally.

Third, if HOT lane revenues are used to support enhanced transit, carpool matching services, or other transportation services of benefit to low-income families, it might be possible to create a system whereby low-income households actually have considerably more or faster travel options along the corridor than they did before the HOT lanes were implemented.

Finally, it is also true that looking at equity and income simply in terms of regressivity could miss important impacts or access barriers that low-income drivers may face. For example, access to transponders could be a problem for some individuals if one needs either a credit card or lump sum deposit to open an account.

Recommendation 5: Consider the unique equity impacts that may result from a project’s location and design

Every project will have unique equity impacts, because the impact of benefits and costs across the population will vary tremendously according to both the project location and specific choices about how it operates. To follow upon the example in the preceding discussion, a project design element such as whether or not a credit card is required to acquire a transponder will impact who has the opportunity to use the lanes, while the decision as to how revenues are used will determine the potential benefits to non-users. In fact, if toll revenues are spent in ways that improve travel options along the corridor for non-drivers, HOT lanes might actually creating a substantial equity *improvement*. There are dozens of other such decisions about how a particular HOT lanes functions that will also influence the resulting equity impacts. In addition, the characteristics of the local population groups, the geographic distribution of who lives where along the corridor, and even the existing transit options or alternative driving routes will all influence the distribution of benefits and costs flowing from a project.

* * *

To conclude this report on the equity of HOT lanes, a simple quotation from one of the project planners interviewed for this project sums up the spirit of our recommendations. The planners, reflecting on the equity impacts of a proposed HOT lane, said: “It comes down to [this]: We don’t know [what the equity impacts will be], so we can only go forward cautiously with our eyes open.” With a careful, on-

going commitment to evaluation and project design, HOT lane projects can be designed so that the equity implications are acceptable to the community.

ACKNOWLEDGEMENTS

The authors gratefully thank the many interviewees who generously shared their experience on the subject. In addition, the authors thank Professor Martin Wachs of the University of California at Berkeley for his advice and review of drafts. All errors and omissions are the authors' fault alone, however.

BIBLIOGRAPHY

- Arnott, Richard et al. 1994. The Welfare Effects of Congestion Tolls with Heterogeneous Commuters. *Journal of Transport Economics and Policy* 28 (2): 139-162.
- Bhatt, Kiran. 1993. Implementing Congestion Pricing: Winners and Losers. *ITE Journal* 63 (12): 33-37.
- Buckeye, Kenneth R., and Lee W. Munnich, Jr. 2004. Value Pricing Outreach and Education: Key Steps in Reaching High Occupancy Toll Lane Consensus in Minnesota. Paper read at the Annual Meeting of the Transportation Research Board, Washington, D.C.
- Deakin, Elizabeth and Greig Harvey. 1996. *Transportation Pricing Strategies for California: An Assessment of Congestion, Emissions, Energy, and Equity Impacts*. Sacramento: California Air Resources Board.
- Evans, John E. IV et al. 2003. Chapter 14: Road Value Pricing. In *TCRP Report 95: Traveler Response to Transportation System Changes Handbook*. Washington, D.C.: Transportation Research Board.
- Federal Highway Administration (FHWA), Office of Transportation Policy Studies. 2004. *Value Pricing Project Quarterly Reports: January - March 2004*. Washington, D.C.: FHWA. Available at <http://knowledge.fhwa.dot.gov/cops/hcx.nsf/384aefcefc48229e85256a71004b24e0/7c2311e6beb51b2585256e9a0041b86c?OpenDocument>; last visited 9/3/04.
- Frick, Karen T. et al. 1996. Bay Bridge Congestion-Pricing Project: Lessons Learned to Date. *Transportation Research Record* 1558: 29-38.
- Giuliano, Genevieve. 1992. An Assessment of the Political Acceptability of Congestion Pricing. *Transportation* 19 (4): 335-58.
- Goh, M. 2002. Congestion management and electronic road pricing in Singapore. *Journal of Transport Geography* 10 (1): 29-38.
- Golob, Jacqueline et al. 2000. *I-15 Congestion Pricing Project: Monitoring and Evaluation Services: Task 8: Phase II Year Two Attitudinal Panel Study*. San Diego, CA: San Diego State University Foundation. Available on-line at http://argo.sandag.org/fastrak/pdfs/yr2_att_pan.pdf; last visited 9/3/04.
- Higgins, Tom. Spring 1997. Congestion Pricing: Public Polling Perspective. *Transportation Quarterly* 51 (2): 97-104 .
- Litman, Todd. 1996. "Using Road Pricing Revenue: Economic Efficiency and Equity Considerations." *Transportation Research Record* 1558: 24-28.
- Shaver, Katherine. 2001. Glendening Rejects Toll Lanes. *Washington Post*, June 22, B1.
- Sullivan, Edward. 2000. *Continuation Study to Evaluate the Impacts of the SR 91 Value-Priced Express Lanes: Final Report*. Project report to the State of California Department of Transportation, Traffic Operation Program, HOV Systems Branch, Sacramento. Available at http://ceenve.calpoly.edu/sullivan/SR91/final_rpt/FinalRep2000.pdf; last visited 9/3/04.

Supernak, Janusz C. et al. 2000. *I-15 Congestion Pricing Project Monitoring and Evaluation Services: Phase II Year 2 Overall Report*. San Diego, CA: San Diego State University Foundation. Available at http://argo.sandag.org/fastrak/pdfs/yr2_overall.pdf; last visited 9/8/04.

Supernak, Janusz C. et al. 2001. *I-15 Congestion Pricing Project Monitoring and Evaluation Services: Task 13: Phase II Year 3 Overall Report*. San Diego, CA: San Diego State University Foundation. Available at http://argo.sandag.org/fastrak/pdfs/yr3_overall.pdf; last visited 9/3/04.

Transport for London. 2004. *Congestion Charging: Impacts Monitoring Second Annual Report*. London: Transport for London. Available at http://www.tfl.gov.uk/tfl/cclondon/cc_monitoring-2nd-report.shtml; last visited 9/3/04.

Transportation Choices Coalition. 2003. "One Shot at the HOT lane!" Available at <http://www.transportationchoices.org/oneshotathotlane.asp>; last visited 8/25/04.

Washington, Adrienne T. 2001. High-occupancy toll roads aren't such a HOT idea. *Washington Times*, June 26, C2.

APPENDIX A: LIST OF INTERVIEWEES

Project-Specific Interviews

Alameda County, California: I-680

- Jean Hart (Deputy Director, Alameda County Congestion Management Association)

Houston, Texas: I-10 (Katy Freeway) and US-290

- Mark Burris (Assistant Professor, Texas A&M, Texas Transportation Institute)

Maryland: U.S. 50, I-495 (Capital Beltway), I-270, I-95 NE

- Neil Pedersen (Administrator, State Highway Administration, Maryland DOT)
- Lon Anderson (AAA Mid-Atlantic, Director, Public and Government Relations)

Miami-Dade, Florida: I-95, SR 836 & SR 874, “Homestead Extension” of FL Turnpike

- Gary Donn (Director of Planning, Florida DOT, Region 6)

Minneapolis-Saint Paul, Minnesota: I-394, and others

- Lee Munnich (Senior Fellow, Director, State and Local Policy Program)

New York-New Jersey: Bridge/tunnel Hudson River crossings

- Mark Muriello (Assistant Director, Port Authority of NY and NJ)

North Carolina: I-40

- Richard Lakata (Research Engineer, Research and Development Unit, North Carolina DOT)

Orange County, California: SR 91

- Edward Sullivan (Professor, Cal Poly San Luis Obispo)

San Diego, California: I-40

- Janusz C. Supernak (Professor, San Diego State University)

Seattle, Washington:

- Nytasha Sowers (Transportation Specialist, Planning, Washington State DOT)
- David Forte (Systems Planning Manager, Washington State DOT)

Virginia: I-495

- Lester Hoel (Professor, University of Virginia)

General Consultation

Patrick DeCorla-Souza (Team Leader, Value Pricing Pilot Program, FHWA)

APPENDIX B: SUGGESTIONS FOR FURTHER READING

Overviews on policy issues related HOT lanes and value pricing:

Perez, Benjamin G. and Gian-Claudia Sciara. 2003. *A Guide for HOT Lane Development*. Washington, D.C. Federal Highway Administration.

(Available at: http://www.itsdocs.fhwa.dot.gov/JPODOCS/REPTS_TE/13668.html)

This report discusses value pricing in general, with some mention of HOT lanes in particular. It provides an overview of the goals of value pricing, the evidence to date on how drivers respond to road pricing, some of the policy issues relevant to value pricing (including a discussion of equity), and short case studies of the experience to date with area-wide road pricing in Singapore and HOT lanes on I-15 and SR-91.

Federal Highway Administration (FHWA), Office of Transportation Policy Studies. "FHWA Value Pricing Program."

(Available at: <http://www.fhwa.dot.gov/policy/otps/valuepricing.htm>)

These pages from the FHWA describe the agency's Value Pricing Program. Particularly useful are links to pages describing the projects the agency is or has funded, including both those in the preliminary and detailed planning phases, as well as operational projects.

Hubert H. Humphrey Institute of Public Affairs, University of Michigan. "Value Pricing Homepage."

(Available at: <http://www.hhh.umn.edu/centers/slp/projects/conpric/index.htm>)

This series of pages, sponsored by the FHWA and maintained by the University of Michigan's Hubert H. Humphrey Institute of Public Affairs, includes explanations of what value pricing is and the different types of programs it encompasses, as well as links to information on existing value pricing projects and planning of new projects. In general the material takes a very pro-pricing stance.

Evans, John E. IV., Kiran U. Bhatt, and Katherine F. Turnbull. 2003. Chapter 14: Road Value Pricing. In *TCRP Report 95: Traveler Response to Transportation System Changes Handbook*. Washington, D.C.: Transportation Research Board.

(Available at: http://gulliver.trb.org/publications/tcrp/tcrp_rpt_95c14.pdf)

This report discusses value pricing in general, with some mention of HOT lanes in particular. It provides an overview of the goals of value pricing, the evidence to date on how drivers respond to road pricing, some of the policy issues relevant to value pricing (including a discussion of equity), and short case studies of the experience to date with area-wide road pricing in Singapore and HOT lanes on I-15 and SR-91.

Reports and research on the existing HOT lanes on I-15 and SR-91

Sullivan, Edward. 2000. *Continuation Study to Evaluate the Impacts of the SR 91 Value-Priced Express Lanes: Final Report*. Prepared for the State of California Department of Transportation, Traffic Operation Program, HOV Systems Branch, Sacramento.

This report summarizes the results of five years of research into the impacts of the SR-91 HOT lanes. In addition to observations of the lanes, the researchers collected extensive survey data. Although the authors do not highlight the equity implications of their work, they report a great deal of data on the socio-demographic characteristics of the HOT lane users, as well as travelers attitudes towards the lanes.

Supernak, Janusz C. et al. 2001. *I-15 Congestion Pricing Project Monitoring and Evaluation Services: Task 13: Phase II Year 3 Overall Report*. San Diego, CA: San Diego State University Foundation. (Available at: http://argo.sandag.org/fastrak/pdfs/yr3_overall.pdf)

This report summarizes the results of a multi-year research project into the impacts of the I-15 HOT lane project. Topics covered include changes in traffic patterns on the HOT lanes and free lanes on I-15; the attitudes towards the lanes of drivers in the corridor, as well as their socio-demographic characteristics; and the media coverage of the HOT lanes. Copies of the dozens of individuals reports written as part of the project can be found at: <http://argo.sandag.org/fastrak/library.html>.

APPENDIX C: SAMPLING OF NEWSPAPER COVERAGE ON HOT LANES

This appendix contains three different newspaper articles on HOT lanes, each showing a reporter who has taken a very different approach to the question of equity. The articles were selected to illustrate the range of coverage on the question of equity and HOT lanes.

- The article by Whitacre mentions equity and “Lexus Lanes” only in passing.
- The article by Scripps argues vigorously against HOT lanes on various grounds, including equity.
- The article by Meyers is generally favorable to HOT lanes, and quotes various agency staff and academics who argue that equity concerns are not a reason to reject HOT lanes.

Dianne Whitacre, “Can I-77's HOV Lanes be Converted for Tolls?” *Charlotte Observer*, February 15, 2004, p. 2B.

Interstate 77 drivers, it's time to fantasize about what could be.

Use your imagination, and I'll let you buy your way out of a traffic jam. Flip the calendar ahead to October when the freeway's new car-pool lanes open north of uptown. Now picture yourself driving home on I-77 trying to get to the day-care before 6 p.m. to avoid the \$10 late fee. Or hurrying to the airport to catch a plane.

Yikes, a wreck has crippled traffic, and you're crawling along.

Cars are whipping by in the new High Occupancy Vehicle lane, but you're driving alone and don't want to risk a \$200 ticket for using it.

Would you be willing to pay a dollar to use that lane legally?

That's what's happening now on car-pool lanes in Houston, Orange County, Calif., and San Diego. Drivers who don't have enough passengers to use the HOV lanes are buying their way on one trip at a time.

Those HOV lanes also are HOT lanes, where the letter T means toll.

On Interstate 15 in San Diego, the price of the toll can change every six minutes. If traffic is light and moving at the speed limit, the toll is low. If traffic's bogged down, the toll goes up to discourage more drivers from using the special lane.

Tolls for the eight-mile trip typically range from 50 cents to \$4 and have gone as high as \$8. Car pools drive free. Solo drivers can use the lane if their car has a transponder, part of the electronic toll-collecting system.

The upside: Traffic volumes in the general freeway lanes have dropped and risen in the car-pool lanes, which previously had been only lightly used.

The downside: Critics call it a Lexus lane and say it's unfair to allow wealthy drivers to buy their way out of congestion.

Charlotte City Council member Susan Burgess has studied the HOV/HOT idea and says the San Diego's lane's busiest day is Halloween when moms and dads are hurrying home.

I bring up this daydream because Charlotte transportation planners want the state to undertake a \$1 million study on creating a network of HOV/HOT lanes here.

Even if the state agrees to a study, any construction probably would be more than a decade away, until more HOV lanes are built. An HOV/HOT lane probably wouldn't attract a lot of businesses until traffic on I-77 is miserably slow.

But the idea of car-pool lanes doing double duty is a hot idea.

To read more about HOT lanes, visit www.rppi.org/ps305.pdf

Dale McFeatters Scripps, “Fast lanes for rich are really stupid idea” (Opinion), *Desert News* (Salt Lake City, UT), May 30, 1999, p. AA5

Before the guillotine put an end to those golden days, French aristocrats would come thundering down the middle of the road in their coaches, lashing a passage through lesser travelers, scattering livestock and running down the occasional slow-footed peasant. It was their right.

Several state highway departments are working to bring back the practice. Under the misleading benign name “congestion pricing,” the departments are planning to sell rich people special traffic perks—like the right to drive solo in the carpool lane during rush hour. The stiffs in their clapped-out Chevettes call the perk the “Lexus lane.”

Like so many cutting-edge bad ideas, this one got its start in California, and the reasoning was typically New Age: It costs “society” more in terms of pollution, wasted time and inefficient use of infrastructure for people to drive during rush hour than offpeak hours.

“Society” is not losing money because of gridlock; the poor schlemiels stuck in traffic are. And, if letting rich people pay for special perks makes more efficient use of infrastructure, then it is only a step toward subsidizing—or requiring—poor people to commute at offpeak hours, say, going to work at 4 a.m. and returning home at 10 p.m.

Louis XVI saw nothing wrong with a 16-hour day for the peasants; on paper, at least, it was an efficient use of the aristocracy's fields and the peasants' time. The peasants were never consulted and neither will the middle-income driver.

Other states are considering copying California's Lexus lanes, but, as usual, California has not thought through the social implications of its actions.

The rich solo drivers in the carpool lanes roaring past traffic stalled in the snail lanes are likely to be disproportionately white males, cause enough for the Clinton administration to tank the state's federal highway money.

The state will then have to install a huge bureaucratic apparatus to ensure that the solo rich drivers include the proper percentages of women, minorities, gays, the differently abled, undocumented aliens and those who, through no fault of their own, lack Internet access.

This bureaucracy, of course, will require huge, new sources of revenues and that can mean only one thing: Selling more perks to rich people. And, having gone this far, why not? Let those willing to pay for the privilege run red lights, drive on the shoulder, park in handicapped spaces and honk the horn in hospital zones.

The argument always made for giving the rich special treatment is that they pay more in taxes. Of course they do—and here the mathematics gets tricky—because they have more money.

But the rich do not necessarily pay more in taxes for highways. The highways are funded by the gasoline tax, and if the poor guy has a gas guzzler and a longer commute he is paying more for the highways than the rich guy. If you assume that gas is a necessity, and most people do, then the gas tax is also highly regressive, meaning poor people pay a greater share of their income than rich people.

It took the French peasants several hundred years to catch on to the fundamental unfairness of their treatment. With talk radio, it will take our peasants less than an afternoon.

Communist social planners outlawed private cars for good and sound reasons. They couldn't have people going where they wanted, when they wanted and with whom they wanted. Americans love their cars for those same reasons, and they are egalitarian in the extreme about traffic: rich and poor, knave and knight, equally at a standstill on the interstate.

The other day TV showed President Clinton's motorcade—motorcycles, limos, vans, ambulances and heavy-duty SUVs—roaring out of the White House, sirens screaming, down the street to the expressway on-ramp—and coming to a dead halt.

The sirens screamed, the motorcycles roared up the shoulders, the Secret Service sternly made Secret Service-type gestures, but the cars on the on-ramp were so jammed they had no place to move.

The president of the United States was stuck in traffic. Is this a great country or what?

Mike Meyers, "Toll Lanes: What to Expect?" *Minneapolis Star Tribune*, July 1, 2003, p. 1D.

A theater ticket commands a higher price for a Saturday night performance than for a Sunday matinee.

A hotel room often costs more during the week than on weekends.

Electricity rates are higher on hot August days than in the cold days of January, in many parts of the country.

But using price to balance supply and demand—a long-held practice in many industries—remains a road less traveled on the nation's highways.

The prospect of charging tolls on the "sane lanes" of Interstate Hwy. 394, an idea recently approved by the Legislature, would put Minnesota near the head of the line in a new application of an old idea.

"We've had a one-size-fits-all highway system," said Bill Stockton, associate director of the Transportation Institute at Texas A&M University in College Station, Texas. "Everybody is equal. They all sit in congestion."

And congestion can be costly. Several examples recited by economists illustrate the point.

In the late 1960s, millions of Americans would make long-distance calls to their relatives on Sunday night, at the close of a busy weekend. The results for long-distance provider AT&T were nearly calamitous.

In the face of a flood of demand—far higher than any other time of the week—switching stations were overwhelmed and many callers got nothing more than a fast busy signal for their trouble.

Ma Bell's solution: It raised the price of long-distance calls on Sunday night, encouraging price-sensitive customers to dial Mom or Uncle Joe some other time—and freeing lines for those willing to pay more.

Electric utility companies found the same kind of results nationwide by getting state permission to add surcharges on electricity used in the hot days of summer—a practice that encourages users to turn down their air conditioning. As a result, existing power generators meet demand for more years—saving customers around the nation billions of dollars in power plant construction costs.

Advocates of transforming the "sane lane" on I-394 into a toll road, for all but carpool commuters, point to peak-load pricing as a strategy for improving service _ both to impatient motorists willing to pay a toll to get out of heavy traffic and to motorists on the freeway who move a little faster when traffic is siphoned off to a toll lanes.

The tolls haven't been set, but they are expected to range from about \$2 to \$4 a trip.

"It's an idea whose time clearly has come," University of Chicago economist Sam Peltzman said. "Once it starts and works . . . the opposition will melt like an ice cube in August."

A Lexus lane?

Although a survey of Twin Cities motorists last year found 57 percent favored the option of paying to use an un congested freeway lane when they're in a hurry, critics contend a toll would turn 11 miles of I-394 into a "Lexus lane."

One of those critics, Sen. Mark Dayton, D-Minn., for years has said that a toll lane to fight congestion would create a caste system on publicly built roads, with those who can afford tolls enjoying a faster ride than those who cannot.

Experience in other cities might not support that view, however.

Rush-hour toll lanes in San Diego and Houston are far more democratic than skeptics envisioned, said Stockton, at Texas A&M.

"Instead of a small cadre who use it morning and afternoon every day of the week, what you get are people who use it once in a while," he said.

Time is money, not only for the well-to-do, Stockton said.

“If you're late to day care, those prices are \$1 or \$2 a minute for every minute you're past the deadline” for picking up a child, he said. “Plunking down a couple of bucks to get there on time can make a huge financial difference.”

Rush-hour toll lanes are no more subsidies for the rich than are last-minute airline fares or a ticket to a popular play on Saturday night, said Anthony Downs, senior fellow at the Brookings Institution, a think tank based in Washington, D.C.

“There's no handout,” he said. “People are paying for it.”

Kenneth Small, vice chairman of the economics department at the University of California, Irvine, said toll roads represent a nearly perfect form of taxation—a charge paid willingly by people who see they directly get something in return.

“There is a relationship with income, but it was not as tight as you might think,” Small said. “There are some high-income people using it, and plenty of low-income people are using it.”

More choices

Lee Munnich, senior fellow at the University of Minnesota's Hubert H. Humphrey Institute of Public Affairs, has been promoting the idea of rush-hour tolls for nearly a decade.

“If you allow people choices, you can get a lot more out of the system,” he said.

One complaint about the I-394 toll lane idea Munnich finds ironic: The forecast that fewer people will carpool if the “sane lane” also is taking on cars that pay a toll.

In San Diego, he said, exactly the opposite has happened.

“Carpooling went up,” Munnich said. “People saw they were saving a couple of bucks by pooling.”

So can taxpayers, if the experience of Texas, California and Florida is any guide.

The Katy Freeway—Interstate Hwy. 10—in Houston will raise an estimated \$250 million in revenue in the next couple of decades, money that will help build new capacity, when it's needed, without tapping taxpayers, Stockton said.

Just as AT&T in the 1960s didn't think to try peak load pricing until the company faced a crisis, toll roads first have been tried in fast-growing parts of the country where congestion is forcing commutes measured in hours rather than minutes.

“The dire need hasn't been there until fairly recently,” Peltzman said. “All the data show congestion is a problem. The ability to answer that by building new roads clearly is eroding.”

Booth slowdown

Another reason highway departments have been slower than airlines, theater owners, utility companies and others who use peak-load pricing: Toll booths slowed, rather than speeded, traffic.

Technology has alleviated that problem in other cities with scanners that read stickers on cars to identify—and later bill—motorists who drive at peak hours.

The toll scanners promise economy, as well as speed.

“Toll booths are expensive to operate. The process cost 20 to 25 percent of the revenue collected,” said Martin Wachs, director of the Institute of Transportation Studies at the University of California, Berkeley.

“The new technology lowers the cost to 1 to 2 percent of the revenues collected.”

In not many years, Wachs and his researchers believe tolls that fight congestion will pay for whatever concrete gets poured for new roads — a move he said would benefit all drivers.

“We can envision an era in five or eight or 10 years where electronic toll collection would replace the fuel tax as a way to finance roads,” he said.