

Congestion Pricing on Doyle Drive

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Paper originally submitted December 2007 in CP216 Transportation Finance

Identified by the federal government as a promising strategy to combat congestion, congestion pricing is being considered more seriously than ever before. In California, “public agencies are studying the feasibility and potential effectiveness in response to legislative mandates for . . . congestion relief” (Guiliano 1992). In San Francisco’s Doyle Drive proposal, congestion pricing has the additional goal of generating revenue to fill a financing gap for the reconstruction of Doyle Drive. Through the federal government’s Urban Partnership Program, the Bay Area has received a grant to fund the implementation of congestion pricing. However, state legislative authority is required to both access this money and give final approval for the congestion pricing program. Thus, the support of both the general public and the state legislature is needed before further steps can be taken. After providing the background of Doyle Drive and its congestion pricing proposal, this paper applies lessons learned from the Bay Bridge pricing attempt to Doyle Drive and provides recommendations for influencing public opinion and providing a clear, justifiable pricing proposal.

1. Doyle Drive Background

Doyle Drive is the 1.5 mile southern approach road for the Golden Gate Bridge. Part of US-101, it is an elevated viaduct that extends from the tollbooths, through the Presidio, to the Palace of Fine Arts. Doyle Drive currently carries 91,000 weekday vehicles (including 270 weekday buses), 17,000 weekday transit riders, and 127,000 weekday persons in cars. This sums to 144,000 weekday persons in all modes (SFCTA 2007). As shown in Figure 1, during the AM peak there are approximately 16,600 vehicles per hour coming off the bridge into San Francisco. About two thirds of these vehicles continue onto Doyle Drive, and the remaining third branch off onto Park

Presidio Boulevard. During the AM peak hours, 85 percent of the trips on Doyle Drive are from the North Bay, and during the off peak that number is 70 percent (Bent 2007).



Figure 1: AM Peak hourly flows (Bent, 2007)

Built in 1936, Doyle Drive has both design and structural deficiencies, and needs to be replaced as soon as possible. The roadway has narrow lanes and oncoming traffic is separated by a row of plastic pylons. This design is unsafe; Doyle Drive has almost three times more accidents than other facilities of its type (Cabanatuan 2007). Structurally, the road has received the state’s worst seismic stability rating (Eslinger 2007) and is federally rated as being in the second-worst condition of all California-owned bridges (Nelson 2007). In 1993, USA Today reported that the elevated Doyle Drive was the fifth most dangerous bridge in America (Alexander 2004). As the highest priority safety project in the state (Bent 2007), the need to replace Doyle Drive is not debatable.

Initially, Caltrans proposed replacing the current structure with an eight-lane freeway. However, environmentalists and the National Park Service, as well as the

general population of San Francisco wanted a scenic, six-lane road with a design more sensitive to the road's location in a national park. Caltrans conceded three westbound lanes would provide sufficient capacity, so a six-lane design with an auxiliary eastbound lane was approved. After a prolonged design process, a parkway design with broad consensus was decided on for the Doyle Drive replacement (Bent 2007).

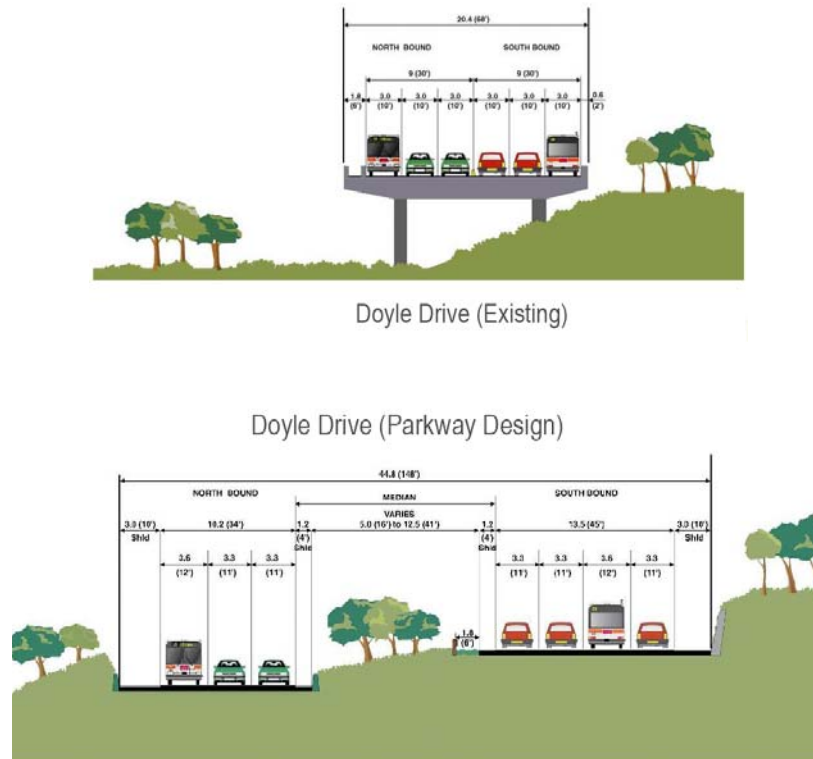


Figure 2: The Existing and Parkway designs for Doyle Drive (taken directly from Bent 2007)

In addition to the years of debate over the final design, the replacement of Doyle Drive has been stalled because of a lack of funding. The city refused to pay for the entire replacement (Eslinger 2007) because Caltrans owns the road. But for Caltrans, Doyle Drive wasn't a priority because according to them, the road served just San Francisco, not the region. Jose Luis Moscovich of the San Francisco County Transportation Authority commissioned a study that showed that a failure of Doyle Drive would halt Golden Gate Transit's bus service and cause major traffic impacts to be felt around the Bay Area.

Thus, Doyle Drive was a regional problem. In 1999, enough money became available to begin engineering and environmental impact studies. In 2003, San Francisco voters approved the transportation sales tax extension (Prop. K), ensuring the City's funding for Doyle Drive. However, California's budget crisis cancelled all new transportation funding (Alexander, 2004).

2. Congestion Pricing

Congestion pricing is an economic tool for managing road space- a scarce, under-priced resource. Congestion charging imposes a fee paid by motorists driving on key congested areas or roads. The fee sends price signals to drivers to postpone their trips or switch mode. Through pricing, enough drivers can be shifted off of the peak hours to allow free flow during previously congested periods. According to Jose Luis Moscovich, the goal of congestion pricing is "not to dissuade people from driving, but to encourage people who have to drive at different times of day to move to less-congested periods or to take transit" (Cabanatuan 2007).

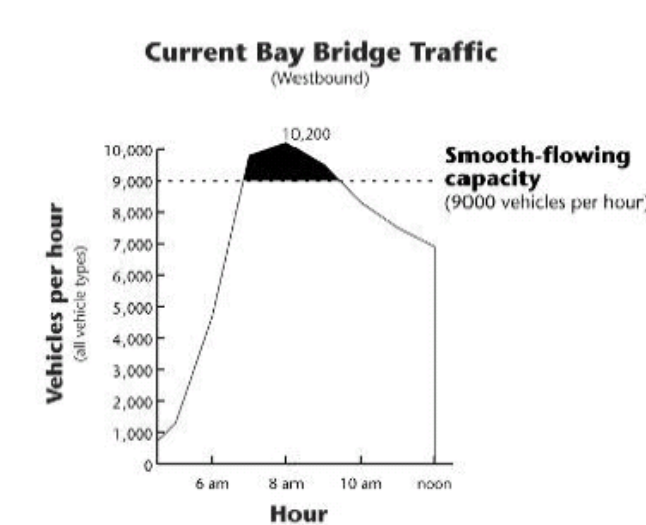


Figure 3: A graph from the Bay Bridge Design Task Force showing how the removal of a small number of vehicles during the peak hour will reduce congestion and result in free-flowing traffic. (taken directly from Frick 2007)

According to the US DOT, “transportation system congestion is one of the greatest threats to our Nation’s economic prosperity and way of life.” Nationally, congestion costs \$200 billion a year, and the problem is most severe in major metropolitan areas. The Bay Area is the second most congested region in the nation and San Francisco sacrificed \$2.3 billion to congestion in 2005 alone (Bent 2007). The congestion problem is expected to get worse with projected job growth and residential development over the next twenty-five years (Alexander 2004).

Congestion pricing is one strategy to solve that problem. The unique geography of San Francisco provides an opportunity to implement either area-wide pricing, or entryway pricing. A cordon around some part of San Francisco’s downtown would be effective in shifting trips because there are about 1 million trips made daily into and out of San Francisco’s downtown, and private automobiles make up about half of that load (Gordon 2007). An entryway pricing scheme would be effective because San Francisco is on a peninsula with limited points of entry.

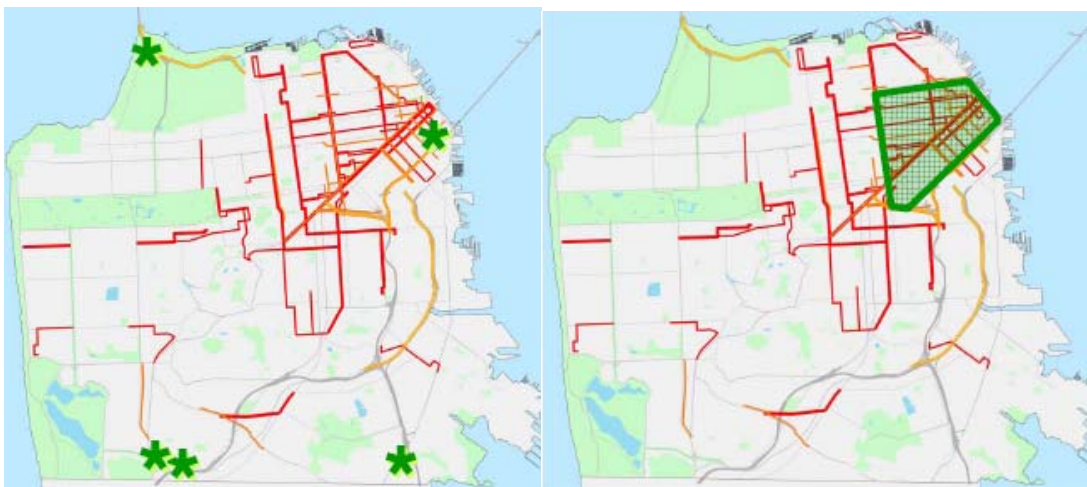


Figure 4: Congestion charging in San Francisco may take the form of tolls at entryways or a cordon around the downtown. (taken directly from Bent 2007)

If the revenue generated by the fees is reinvested in transportation improvements such as transit service, signal optimization, bicycle access or streetscape enhancements, the benefits of congestion pricing will be felt by everyone, not just motorists dealing with less congestion. Everyone will benefit from improved air quality and improved safety such as reduced pedestrian injuries. Those choosing to drive will have faster, more reliable trips as well as improved traffic flow. Transit riders will benefit from faster, more reliable transit as well as new services and amenities. Beyond improving transportation system performance, congestion pricing can be used to enhance the environment and quality of life, maintain economic vitality and support sustainable growth (Bent 2007).

A handful of cities around the world have put congestion pricing into operation including London, Rome, Stockholm and Singapore. The implementation, charges, and revenues vary from place to place, but benefits are seen across the board. Over those four examples, congestion pricing has reduced delays and traffic 13-26%, increased speeds 20-39%, resulted in better transit reliability and ridership of 5-18%, and generated net revenues of \$50-200 million (Bent 2007). London charges about \$16 a day to drive downtown, and Stockholm charges up to \$8.60 a day (Gordon 2007). London has used its revenue to add 14,000 new bus seats, and Rome has added fourteen new regional bus lines (Bent 2007).

In the United States, a number of cities including New York City, Seattle, Minneapolis-St. Paul, Miami and San Francisco are considering congestion pricing. The San Francisco study is still in its early stages. A baseline analysis and case study research has been completed, and a first round of workshops to identify issues and goals

has begun (Bent 2007). The scenarios include a cordon around downtown or pricing at entry points. The revenues generated would be used to help pay for replacing Doyle Drive (Cabanatuan 2007).

3. Congestion Pricing to fund Doyle Drive!

Having identified congestion as a major problem in American cities, the federal government created an Urban Partnership program to fund pilot congestion pricing programs in the United States. In addition to tolling (congestion pricing) the Partnership program's strategies include transit, telecommuting and technology.

San Francisco applied in April 2007 and was named an Urban Partner. The US DOT awarded the Bay Area \$158.7 million and also awarded \$354.5 million to New York, \$138.7 million to Seattle, \$133.3 million to the Minneapolis-St. Paul area and \$62.9 million to Miami (Nelson 2007).

The San Francisco Urban Partnership application was submitted by the Alameda-Contra Costa Transit District (AC Transit), the California Department of Transportation (Caltrans), the Metropolitan Transportation Commission (MTC), the San Francisco Municipal Transportation Agency (MTA), the San Francisco County Transportation Authority (TA), the Bay Area Toll Authority, and the Golden Gate Bridge, Highway and Transportation District, with the TA as the lead organization. The diversity of projects required by the agreement reflects this diversity of organizations as well as the diversity of goals of the Partnership program. As part of the agreement, San Francisco must

- implement variable pricing on either Doyle Drive or the Golden Gate Bridge- in either case to reduce the level of traffic congestion on Doyle Drive;
- variably-price on street and off-street parking in downtown San Francisco;
- improve regional ferry boat service;
- develop a simplified travel forecasting approach for a Very Small Starts project in the Grand/MacArthur BRT corridor;

- provide travelers with integrated mobility accounts (linking FasTrak and TransLink);
- upgrade hardware/software in key corridors leading to and throughout downtown San Francisco (modernizing traffic signals);
- upgrade the regional 511 system to provide real-time pricing, parking, and transit information;
- create a Vehicle Infrastructure Integration test bed along Doyle Drive
- expand the technical and promotional aspects of San Francisco's telecommuting and related alternative commute programs (US DOT).

Through the Urban Partnership program, the US DOT will provide San Francisco \$158.7 million in Federal grant funding as well as regulatory flexibility, and dedicated expertise and personnel. \$12 million of this total package comes from the FHWA's Public Lands Highway Discretionary Program and is to be used for variable pricing of either Doyle Drive or the Golden Gate Bridge. \$35.3 million of the total package comes from the same Public Lands Highway Discretionary Program and is to be used for the reconstruction of Doyle Drive and provision of associated parking enhancements as needed to improve access to the Presidio (US DOT).

The Urban Partnership agreement requires operation of variable pricing by September 30, 2009 and completion of Doyle Drive reconstruction by 2015. Additionally, the agreement requires that privately operated over-the-road buses be exempted from tolls to the same extent public transportation is exempted from tolls, and that congestion charges not be assessed against vehicles owned or operated by any foreign government or international organization.

The Urban Partnership program addresses the need for project evaluation, and states that, "applicants and their partnering organizations are responsible for evaluating effects of the proposals they implement. DOT will work closely with those partners to ensure proper baseline and post-implementation measurement and evaluation."

However, the exact metrics for measuring impact on congestion, be it peak delay reduction, total delay reduction, travel time reliability improvement, or traffic volume reduction, are left undefined. The agreement reads, “Urban Partners and the US DOT will establish the performance measures by which congestion reduction will be evaluated. No pre-determined set of measures is contemplated at this time, but measures involving congestion intensity, scope, duration, number of vehicles, number of passengers, etc., are all presumed candidates for evaluating improvements” (US DOT).

The Doyle Drive Value Pricing Program is the centerpiece of SF’s Urban Partnership Program. In addition to managing peak period demand, pricing Doyle Drive will showcase technology and build public trust in government to deliver transparent public process and public participation. Monitoring and evaluation of congestion pricing on Doyle Drive will help inform decision-making for potential congestion pricing in San Francisco. Thus, congestion pricing on Doyle Drive is a demonstration project for a larger San Francisco congestion pricing program (Bent 2007).

Pricing Doyle Drive has the additional goal of filling the current funding gap. Replacing Doyle Drive will cost \$810 million and currently, the funding strategy includes federal, state and local funds. There are \$605M committed state and local funds comprised of \$405 million from the State Highway Operation and Protection Program., \$100 million from San Francisco transportation sales tax proceeds and \$100 million from a slew of miscellaneous sources. Additionally, there are \$35M in Federal funds from the Urban Partnership Program, however, legislative authority is required to access these grant funds. Currently, this scheme leaves a \$170 million unfunded gap (Spotswood 2007). Congestion pricing will fill this funding gap with toll revenue. Thus, the goal of

congestion pricing on Doyle Drive is both to close the funding gap as well as manage congestion (Bent 2007).

The amount charged and how it would fluctuate according to the time or day has yet to be determined. The TA is studying a range of tolls between 50 cents and \$4 on top of the existing \$5 bridge toll (Gordon 2007), and has found that \$1.50 appears to be the price at which drivers consider delaying their trip or taking transit (Cabanatuan 2007). Preliminary toll studies show that charges of \$1 to \$2 per day could shift 10-12% of traffic to off-peak or transit (Bent 2007). An updated toll study will to be conducted once CHAMP 4.0, San Francisco's travel forecasting model, is completed (Bent 2007).

The logistics of the one-way toll collection have yet to be decided. According to the Urban Partnership Agreement, San Francisco can implement variable pricing on either Doyle Drive or at the toll plazas of the Golden Gate Bridge. If the fee were collected at the toll plazas, collection would be relatively simple, making use of the FasTrak electronic toll-collecting system and toll booths already in place. However, charging the fee at the bridge plaza would mean those continuing on to Park Presidio Boulevard and not Doyle Drive would pay the Doyle Drive fee. According to Figure 1, about one third of the peak hour vehicles coming off the bridge branch off to Park Presidio Boulevard. Additionally, the fifteen percent of Doyle Drive users who travel from points within San Francisco would escape the toll (Spotswood 2007).

If the fee were collected on Doyle Drive itself, all users of Doyle Drive would be tolled and no one would be unnecessarily tolled. A system of overhead sensors and cameras would either subtract tolls from a FasTrak toll tag or snap a photograph. License plates would be cross-checked with state motor vehicle records to send out bills.

According to Tilly Chang, deputy director of planning for the Transportation Authority, the toll-collection apparatus wouldn't require drivers to slow down (Cabanatuan 2007) and people would be able to pay online or at participating retail outlets (Nelson 2007).

4. Public Support

In the 1990's congestion pricing was proposed for the Bay Bridge. Similar to the Doyle Drive congestion pricing proposal, this test project received federal funding and would have priced a major San Francisco entryway. During the mid 90's funding crisis, as the price of the replacement Bay Bridge skyrocketed, congestion pricing revenue was viewed as a potential solution. The congestion pricing attempt failed, and in 1998 a flat toll increase was used to fund the replacement Bay Bridge (Frick 2007). Even though the Bay Bridge congestion pricing attempt was unsuccessful, the lessons learned are applicable as the Doyle Drive pricing plan moves forward. Additionally, there are strategies for gaining support presented in the various pricing literature.

The first hurdle for a congestion pricing program is getting public support. This can be done by sending the messages that pricing has been done before, pricing creates ongoing congestion reduction, pricing can be revenue neutral, there are no alternatives to pricing, and that pricing can be equitable. Alongside the general public, businesses and politicians need to be convinced that congestion pricing is a good idea.

Convincing the General Public

Pricing has been done before

The Bay Bridge pricing attempt was a first of its kind event. One of the reasons for its failure in the 1990's was that at the time congestion pricing was a new and untested idea. In 2007 congestion pricing has become more prevalent and the public can

turn to examples of successful pricing programs worldwide. Additionally, there is a sense of competition with cities such as New York regarding which city can be the most progressive, attaching a sense of pride with being the first to implement congestion in the US.

Pricing creates ongoing congestion reduction

A part of convincing the public that congestion pricing is a good idea is educating them about the dual goals of managing congestion and raising funds. In an August 2007 editorial, Marin Independent Journal reporter, Dick Spotswood writes that the “first flaw is that any Doyle Drive toll will last forever. The projected toll should raise about \$30 million annually. Construction bond financing costs aside, the funding gap will be paid within six years” (Spotswood 2007). Spotswood thinks of variable pricing solely as a revenue generating strategy. The second goal of managing congestion is the reason for the variable pricing not being phased out after the construction costs have been paid.

Pricing can be revenue neutral

Pricing an existing facility presents the challenge of public perception that roads that have already been paid for should be free. In California, freeways got their name because they were free of intersections and traffic signals, but to most Californians, the word freeway has come to mean free of charge, “and this misperception may prove a formidable obstacle to the broader application of congestion pricing” (Frick 1996). This obstacle can partially be overcome by creating a revenue neutral program.

A lesson learned from the Bay Bridge pricing attempt was that “revenue neutrality, demonstrating that raising money is not the sole objective of congestion pricing is essential for garnering public support” (Frick 1996). This can be done through

returning a substantial portion of the revenues to the public, either in the form of cash or coupons (Harrington 2001), or offering off-peak discounts (Frick 1996). Revenue neutrality is not part of the current Doyle Drive pricing plan, as the revenue is needed to fund the rebuilding of Doyle Drive. In the Bay Bridge case, people saw pricing as a “thinly disguised tax increase designed primarily to raise money for cash-short transit agencies” (Frick 1996). However, they might be more open to pricing as a thinly disguised tax increase designed primarily to raise money for cash-short Doyle Drive rebuilding as they will directly benefit from the new road and the public is comfortable with tolls to fund new construction.

There are no alternatives to pricing

The Bay Bridge pricing attempt found that alternatives to pricing as a means of managing congestion must be exhausted before one can get the support of the public and elected officials (Frick 1996). For Doyle Drive there could be capacity increases to attempt to reduce congestion, but because congestion on Doyle Drive is directly related to congestion on the Golden Gate Bridge, and bridge capacity is limited, it can be said that there are no alternatives to congestion pricing in this corridor. Bridge capacity could be increased by increasing transit service, but this wouldn't placate the motorists who would be upset by congestion pricing and unwilling to shift to a different mode. In addition to showing that there are no alternative ways to reduce congestion, it might also help to show that there are no alternative ways to fund the rebuilding of Doyle Drive. The rebuilding project has been delayed until now because of a lack of funds, and it was the variable nature of the pricing project that made it eligible for federal funds.

Pricing can be equitable

The Bay Bridge pricing attempt found that the equity issue is not a fatal flaw. Congestion pricing can be more equitable than current regressive gasoline and sales taxes as it “tends to affect wealthier peak-period drivers disproportionately and can be used to finance transit services on which low-income workers rely” (Frick 1996). Additionally, the equity issue can be dealt with through “lifeline tolls” that charge low-income users lower fees.

However, geographic equity around the Bay Area must be considered as well (Frick 1996). Where the Bay Bridge plan would have primarily affected East Bay residents, the Doyle Drive plan would primarily affect North Bay residents. Dianne Steinhäuser, executive director of Marin's transportation authority, has expressed concern about an added toll for Marin residents (Spotswood 2007). In addition to having to pay more, North Bay residents object to the entities that would control the Doyle Drive toll. In his August editorial, Dick Spotswood writes, “Historically, North Bay residents have chafed at the Golden Gate Bridge board's arbitrary tendencies, but at least Marin and Sonoma have a say in its affairs. Does anyone really want travel to the city to be at the mercy of San Francisco's famously erratic Board of Supervisors?” (Spotswood 2007). Another objection is that a toll on Doyle Drive would hurt the Golden Gate Bridge District's ability to look at toll increases (Nelson 2007).

One way to placate the North Bay would be to charge the Doyle Drive toll on Doyle Drive and not at the Golden Gate Bridge toll booths. During the AM peak hours, 85 percent of the trips on Doyle Drive are from the North Bay, and during the off peak that number is 70 percent (Bent 2007). Therefore, if the charge were imposed on Doyle Drive instead of at the Golden Gate Bridge toll plaza, at least some of the vehicles paying

the congestion charge would be from places other than the North Bay. Charging the fee at the bridge toll plaza would mean only vehicles from the North Bay would be charged.

Strategies Not Used

Not all the strategies laid out by pricing literature and the Bay Bridge Design Task Force are being used in the Doyle Drive program. These include initiating compensatory service before the toll is imposed and pricing only part of the facility.

A problem encountered in the Bay Bridge experience was that the public lacked trust that the revenues would be spent in ways that clearly benefited those paying the toll (Frick 1996). In their paper, King et. al describe how congestion pricing has broadly distributed costs and benefits, but “lacks a constituency who will derive concentrated benefits that exceed their costs” (D. King, et. al 2007). One lesson learned from the Bay Bridge experience is that future efforts should initiate compensatory service before the toll is imposed (Frick 1996), helping to create a constituency of strong advocates. Here this compensatory service is the rebuilding of Doyle Drive. However, the Doyle Drive project is not taking this advice as Jose Luis Moscovich has said, the TA is “not going to wait until Doyle Drive is reconstructed to put a toll on it” (Eslinger 2007).

Another way to make congestion pricing more attractive to the motoring public is to apply congestion pricing to only part of a roadway, leaving motorists free to choose between free lanes and toll lanes (Harrington 2001). However, the plan for Doyle Drive is to price the entire facility.

Building a Coalition

A lesson learned from the Bay Bridge experience is that a pricing proposal needs the support of a wide range of groups including officials on the political right and left, and representatives from both the business and environmental communities (Frick 1996). Currently, this coalition does not exist in support of pricing Doyle Drive. City business leaders are wary and could use their political and financial clout to try to apply the brake (Gordon 2007). Looking to London's Chamber of Commerce representatives who lamented the loss of business and jobs after congestion pricing went into effect there four years ago, San Francisco's Union Square Association is afraid that congestion pricing will drive business elsewhere (Gordon 2007). In an attempt to create a coalition, the TA has set up advisory groups with representatives from business associations, regional transit agencies, and environmental organizations and began holding public workshops in October 2007.

Convincing Legislators

The major hurdle standing in the way of congestion pricing implementation is the fact that legislative authority is still needed to access federal grant funding. As shown by the Bay Bridge experience, gaining the support of the general public is not always enough to get the support of politicians. While solo commuters in the Bay Bridge corridor displayed the most hostility towards the Bay Bridge pricing proposal, many opinions were softened when given information about time savings and transit improvements in focus group meetings. A 1995 poll showed 59 percent of respondents favored pricing on the Bay Bridge (Frick 1996). However, state legislators and local officials were still skeptical, expecting public opposition even when it did not exist and fearing "repercussions from peak-period commuters come election time" (Frick 1996).

Thus, a recommendation from the Bay Bridge Design Task Force was to focus future efforts on putting the proposal before the voters, removing the perceived threat to politicians. Unfortunately, at this point the Doyle Drive proposal is dependent on state approval to move forward. There are some political advocates, but they are not state-level politicians. Supervisor Jake McGoldrick supports congestion pricing as a way to manage traffic and help fund transit, and sees it fitting well into San Francisco's "transit first" policy (Gordon 2007). Mayor Gavin Newsom is not the "strongest advocate" for congestion pricing but acknowledges that increased congestion requires that the idea be studied. He has said that, "a toll on Doyle Drive was not yet a done deal" (Eslinger 2007).

5. Conclusion & Recommendations

Doyle Drive's congestion pricing proposal has the dual goals of managing congestion as well as generating revenue to fill a financing gap for the reconstruction of Doyle Drive. Additionally, it is a pilot project for a larger San Francisco congestion pricing program. Through the federal government's Urban Partnership Program, the Bay Area has received a grant to fund the implementation of congestion pricing. However, state legislative authority is required to both access this money and give final approval for the congestion pricing program. Thus, the support of both the general public and the state legislature is needed before further steps can be taken.

In reviewing the congestion pricing literature and the lessons learned from the Bay Bridge Design Task Force, I have a number of recommendations for the Doyle Drive congestion pricing proposal. These recommendations address public opinion, the program itself, and further studies.

1. *Show the public that congestion pricing has been successfully done before.* People are wary of anything new, but with multiple examples of successful congestion pricing, these fears can be allayed.
2. *Emphasize the competition to be the first US city to implement congestion pricing.* The Urban Partnership program has already created a competitive atmosphere in which cities “win” federal funds. San Francisco likes to think of itself as a progressive city and would be proud to be the first city in the United States to implement such a “European” program.
3. *Price Doyle Drive high enough to reduce delay.* The variable congestion price on Doyle Drive needs to be high enough to deter enough cars in the peak period to create significant delay reduction.
4. *Address concerns of the North Bay.* Ideally, if San Francisco is going to price its entryways it should price them all at the same time to avoid geographic equity issues. Given that one pricing program is going to be first, the concerns of the North Bay need to be addressed. This can be done by targeting community outreach to the North Bay, highlighting the delay reduction benefits received by the North Bay, and noting that a certain percentage of Doyle Drive’s users are not from the North Bay. The North Bay’s residents might be open to a compromise. This could be a variable toll charged at the bridge toll plaza to pay off reconstruction of Doyle Drive, after which, a certain portion of the congestion charge revenue will be controlled by the Golden Gate Bridge District which was considering a toll increase anyway to offset a projected deficit (Spotswood 2007).

5. *Call it what it is!* If the congestion toll is charged at the toll plaza, it's a bridge toll. If it's charged just on Doyle Drive, it's a Doyle Drive charge. If the location of the fee collection does not correspond to the name of the charge, users will feel like somehow they are being cheated.

6. *Present accompanying programs as a cohesive package.* Congestion pricing needs to be accompanied by improvements to transit and alternative modes to give people options other than automobile travel, but the accompanying projects that were included in the Urban Partnership agreement appear random and disconnected. None are presented as simply adding more bus seats or bus lines, which are examples from London and Stockholm's programs.

7. *Justify why Doyle Drive was chosen as a congestion pricing pilot.* Right now, there is little information available regarding the severity of congestion on Doyle Drive. Pricing is being sold as a congestion-reducing measure, but really, revenue generation is a major part of it as well. Pricing is being considered first on Doyle Drive because pricing provides the needed revenue to rebuild Doyle Drive. If revenue generation wasn't an issue, there might have been a more appropriate alternative for where to start congestion pricing; out of the Golden Gate, Bay Bridge, and Peninsula Corridors, the Golden Gate Corridor generates the smallest total number of daily trips (Sims 2000).

8. *Create a plan to deal with potential diversion.* If congestion pricing is implemented on Doyle Drive itself instead of at the Golden Gate Bridge toll plaza there will be potential diversion to Park Presidio and Geary Boulevards.

9. *Create or publicize the expenditure plan.* The public will want to know what percentage of toll revenue will be used for reconstruction and for how many years. After

reconstruction is paid off, what percentage of toll revenue will be used for transit improvements, etc?

10. *Make sure pricing on Doyle Drive works.* Congestion pricing on Doyle Drive is being sold as a pilot project for a larger congestion pricing scheme. If pricing on Doyle Drive can't be sold to the public and to state legislators, the whole congestion pricing program might be stalled, or may never get off the ground.

6. References

ABAG Joint Policy Committee Agenda and Notes

<http://www.abag.ca.gov/jointpolicy/JPC%20Agenda%20Package%2009-21-07.pdf>

Alexander, M. 2004. Replacing Doyle Drive. *SPUR Newsletter*. January, p1.

http://www.spur.org/documents/040101_article_01.shtm

Bent, Elizabeth. 2007. Presentation- San Francisco Mobility, Access and Pricing Study, October

Cabanatuan, M. 2007. Toll for Golden Gate Bridge approach would go to fix Doyle Drive. *San Francisco Chronicle*. August 15

Eslinger, B. 2007. Federal funds lend a hand to S.F.'s ailing Doyle Drive. *The Examiner*. August 15

FHWA Public Lands Highways Discretionary (PLHD) Program REVISED Request for FY 2007 Project Applications

<http://www.fhwa.dot.gov/discretionary/plhcurrsol.cfm>, accessed October 15, 2007

Frick, Karen T., Steve Heminger, Hank Dittmar. 1996. Bay Bridge congestion-pricing project: lessons learned to date. *Transportation Research Record*. Volume 1558, pages 29-38.

Frick, Karen. 2007 Congestion Pricing Presentation, CP216 UC Berkeley, October 2007
Gordon, R. 2007. S.F. studying congestion pricing to ease traffic, promote transit. *San Francisco Chronicle*. September 19

Giuliano, Genevieve. 1992. An assessment of the political acceptability of congestion pricing. *Transportation*. Volume 19, Number 4, December pages 335-358

<http://www.springerlink.com/content/n270281605851266/>, accessed November 28, 2007

King, David., Michael Manville, Donald Shoup. 2007. The political calculus of congestion pricing. *Transport Policy* 14 (2007) 111–123

Nelson, E. 2007. Double toll may await Golden Gate Bridge users. *Marin Independent Journal*. August 14

SFCTA Doyle Drive Replacement Project website-

<http://www.sfcta.org/content/view/275/94/>, accessed December 2, 2007

SFCTA Mobility factsheet

http://www.sfcta.org/images/stories/Planning/CongestionPricingFeasibilityStudy/PDFs/mobility_factsheet_v3.pdf accessed October 2, 2007

Sims, Kent. 2000. San Francisco Economy- Implications for Public Policy. report prepared for San Francisco Planning and Urban Research Association (SPUR). July 10 http://spur.org/documents/pdf/000701_report_02.pdf

Spotswood, D. 2007. Doyle Drive must be fixed, but toll plan is flawed. *Marin Independent Journal*. August 25

Turnbull, Katherine F. 2004. Transportation partnerships in the parks: Cooperative initiatives serve visitors, preserve the environment. *TR News*. number 233 July–August <http://onlinepubs.trb.org/onlinepubs/trnews/trnews233.pdf>, accessed November 28, 2007

US DOT Urban Partnership Agreement
<http://www.fightgridlocknow.gov/docs/upafrfinal20061204.htm>, accessed October 5, 2007

Winston Harrington, Alan J. Krupnick and Anna Alberini. 2001. Overcoming public aversion to congestion pricing. *Transportation Research Part A: Policy and Practice* Volume 35, Issue 2, February, Pages 87-105