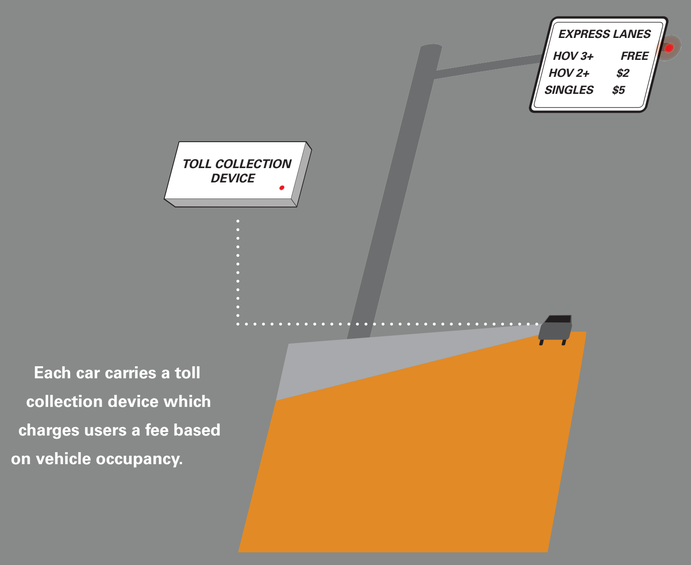
EXPRESS

I-580

EXPRESS LANES **EFFECTIVENESS** AND IMPACTS

HOW IT WORKS

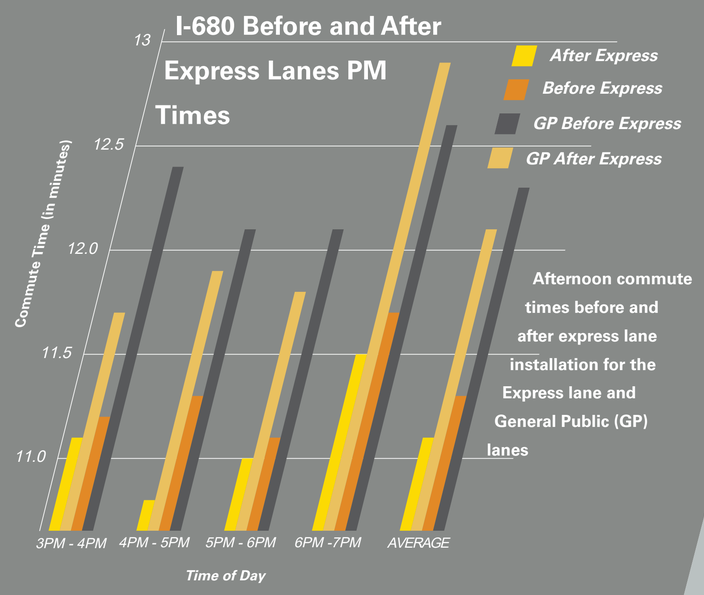
In 2016, a new traffic management system will be introduced on the I-580 highway corridor in the East Bay region of the San Francisco Bay Area, called the I-580 Express Lanes. The I-580 Express Lanes use a system of traffic management called High Occupance Toll (HOT) lanes which uses occupancy and price restrictions to limit access, which ideally creates a free-flowing lane of traffic even on during periods where the highway is otherwise congested. Typically, use is restricted to paying single motorists, High Occupancy Vehicles (HOVs), and public transportation vehicles. HOVs are categorized into vehicles carrying two or more passengers (HOV 2+) and vehicles carrying three or more passengers (HOV 3+). In most cases, HOT lanes offer free or reduced-rate access for HOV users; however, HOV 2+ users have never been allowed free access to date.



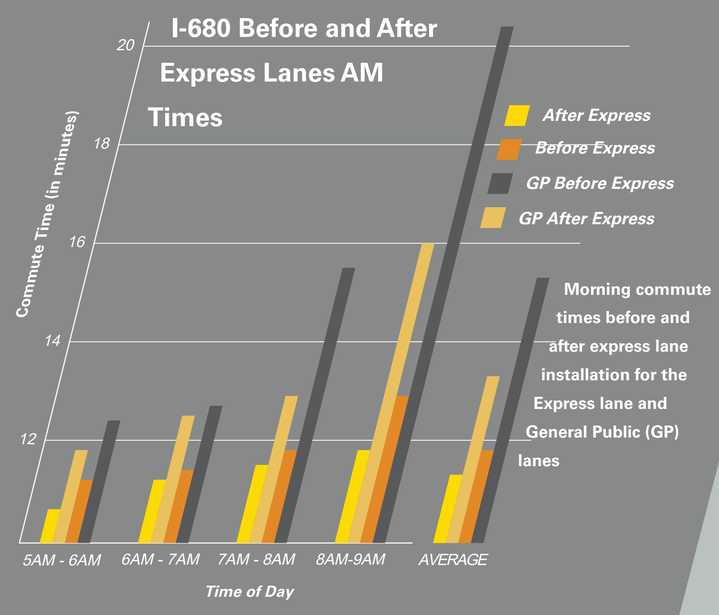
Each car carries a toll collection device which charges users a fee based on vehicle occupancy.

Toll collection is generally performed using Electronic Toll Collectors (ETC), as seen above. Some highways use Congestion Pricing, while some charge flat fare, and others use a per-mile or distance system. In the case of the new I-580 lanes, a congestion system will be in place, and FasTrak, the Bay Area's ETC system, will handle the tolls with a new corresponder which allows users to mark vehicle occupancy.

CONGESTION



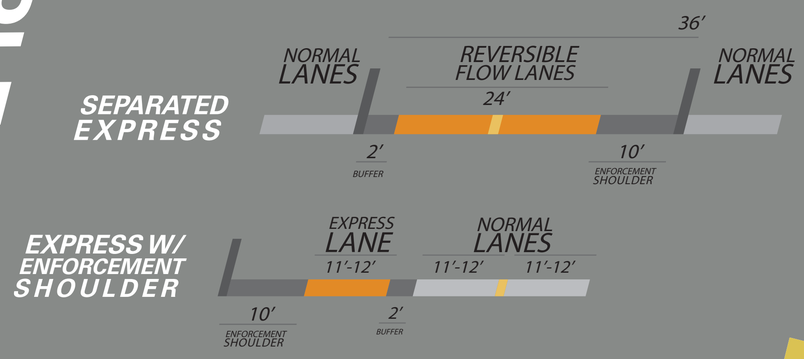
Afternoon commute times before and after express lane installation for the Express lane and General Public (GP) lanes



Morning commute times before and after express lane installation for the Express lane and General Public (GP) lanes

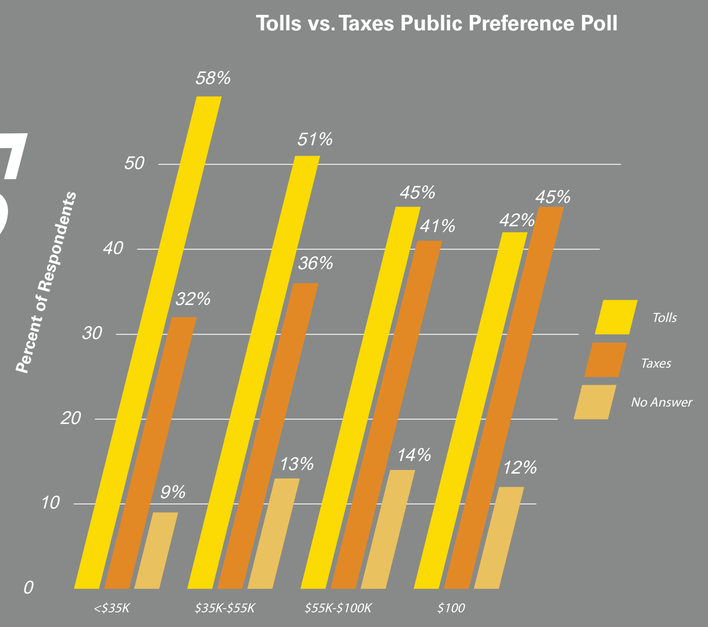
The charts above show improvement in most times and lanes during the AM and PM peak commute hours. During the 8AM - 9AM travel times, a 22% improvement is shown, while the average AM peak period travel time shows 13% reduction. PM peak travel times for general purpose lanes show only modest improvement. It can be assumed that these improvements are a relatively good predictor for the I-580 corridor's success due to the two highways' proximity.

IMPLEMENTATION

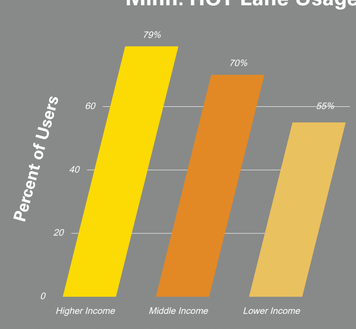


Above are the three most common types of HOT lanes. Separated express lanes are more difficult to implement and the least common; an example is the Seattle I-5 express lane. A standard express lane is particularly cost effective to implement as existing lane space can be repurposed;however, express lanes with enforcement shoulders are easier to enforce.

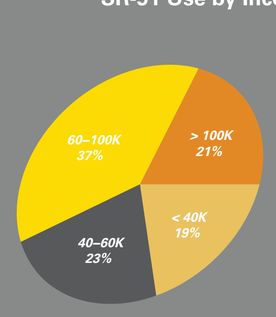
EQUITY AND ECONOMICS



Support for tolls versus taxes in King County, Washington. Low-income households prefer tolls over taxes.



Users of I-394 MnPass HOT lanes as a percentage of Minneapolis, MN, population.



Annual household income of peak-period travellers on Orange County's highway SR-91 in 1999.

While it initially appears that HOT lanes are socioeconomically imbalanced, closer inspection reveals that they are relatively fair. Above, graphs show a relatively even spread of use and higher rates of approval among those of lower economic standing. HOT lanes remove traffic from the rest of the highway system and allow users a choice to either carpool, pay more for speed, or wait in traffic. For hourly workers who can't afford to lose pay or employees whose timeliness keeps them employed, HOT lanes offer the choice to pay a small fee in order to avoid losing more money. Additionally, money from HOT lane systems goes to local governments who use it to develop further infrastructure.

52301 #12 Taylor Ridgway 5.3 Final
Taylor D. Ridgway DAI 523 - Trogu
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Data for all graphs and information found from links below:

http://www.alamedactc.org/files/managed/Document/11591/AlamedaCTC_I-680_After_Study_20130712.pdf

http://www.dot.ca.gov/newtech/researchreports/preliminary_investigations/docs/HOV_and_HOT_Lanes_Preliminary_Investigation_03-25-13.pdf

http://ops.fhwa.dot.gov/publications/fhwahop08040/fhwahop08040.pdf

http://www.ops.fhwa.dot.gov/publications/fhwahop13007/fhwahop13007.pdf

https://www.volpe.dot.gov/policy-planning-and-environment/economic-analysis/how-does-congestion-pricing-affect-household