University Transportation Research Center - Region 2

Final Report

Value Pricing and Traffic Reduction Incentives

Performing Organization: New Jersey Institute of Technology

NJIT

July 2012

Sponsor:
Research and Innovative Technology Administration / USDOT

University Transportation Research Center - Region 2

The Region 2 University Transportation Research Center (UTRC) is one of ten original University Transportation Centers established in 1987 by the U.S. Congress. These Centers were established with the recognition that transportation plays a key role in the nation's economy and the quality of life of its citizens. University faculty members provide a critical link in resolving our national and regional transportation problems while training the professionals who address our transportation systems and their customers on a daily basis.

The UTRC was established in order to support research, education and the transfer of technology in the field of transportation. The theme of the Center is "Planning and Managing Regional Transportation Systems in a Changing World." Presently, under the direction of Dr. Camille Kamga, the UTRC represents USDOT Region II, including New York, New Jersey, Puerto Rico and the U.S. Virgin Islands. Functioning as a consortium of twelve major Universities throughout the region, UTRC is located at the CUNY Institute for Transportation Systems at The City College of New York, the lead institution of the consortium. The Center, through its consortium, an Agency-Industry Council and its Director and Staff, supports research, education, and technology transfer under its theme. UTRC's three main goals are:

Research

The research program objectives are (1) to develop a theme based transportation research program that is responsive to the needs of regional transportation organizations and stakeholders, and (2) to conduct that program in cooperation with the partners. The program includes both studies that are identified with research partners of projects targeted to the theme, and targeted, short-term projects. The program develops competitive proposals, which are evaluated to insure the mostresponsive UTRC team conducts the work. The research program is responsive to the UTRC theme: “Planning and Managing Regional Transportation Systems in a Changing World.” The complex transportation system of transit and infrastructure, and the rapidly changing environment impacts the nation’s largest city and metropolitan area. The New York/New Jersey Metropolitan has over 19 million people, 600,000 businesses and 9 million workers. The Region’s intermodal and multimodal systems must serve all customers and stakeholders within the region and globally.Under the current grant, the new research projects and the ongoing research projects concentrate the program efforts on the categories of Transportation Systems Performance and Information Infrastructure to provide needed services to the New Jersey Department of Transportation, New York City Department of Transportation, New York Metropolitan Transportation Council , New York State Department of Transportation, and the New York State Energy and Research Development Authorityand others, all while enhancing the center’s theme.

Education and Workforce Development

The modern professional must combine the technical skills of engineering and planning with knowledge of economics, environmental science, management, finance, and law as well as negotiation skills, psychology and sociology. And, she/he must be computer literate, wired to the web, and knowledgeable about advances in information technology. UTRC’s education and training efforts provide a multidisciplinary program of course work and experiential learning to train students and provide advanced training or retraining of practitioners to plan and manage regional transportation systems. UTRC must meet the need to educate the undergraduate and graduate student with a foundation of transportation fundamentals that allows for solving complex problems in a world much more dynamic than even a decade ago. Simultaneously, the demand for continuing education is growing – either because of professional license requirements or because the workplace demands it – and provides the opportunity to combine State of Practice education with tailored ways of delivering content.

Technology Transfer

UTRC’s Technology Transfer Program goes beyond what might be considered “traditional” technology transfer activities. Its main objectives are (1) to increase the awareness and level of information concerning transportation issues facing Region 2; (2) to improve the knowledge base and approach to problem solving of the region’s transportation workforce, from those operating the systems to those at the most senior level of managing the system; and by doing so, to improve the overall professional capability of the transportation workforce; (3) to stimulate discussion and debate concerning the integration of new technologies into our culture, our work and our transportation systems; (4) to provide the more traditional but extremely important job of disseminating research and project reports, studies, analysis and use of tools to the education, research and practicing community both nationally and internationally; and (5) to provide unbiased information and testimony to decision-makers concerning regional transportation issues consistent with the UTRC theme.

Project No: 49111-11-23

Project Date: July 2012

Project Title: Value Pricing and Traffic Reduction Incentives

Principal Investigators: Dr. Harold Deutschman, NJIT

Performing Organization: New Jersey Institute of Technology

Sponsors: Research and Innovative Technology Administration / USDOT

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Value Pricing and Traffic Reduction Incentives

Prof. Harold Deutschman

New Jersey Institute of Technology

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16. Abstract

As traffic congestion grows in cities and suburban areas throughout the United States, the cost of traveling is directly affected and increased. A new concept for combating congestion is the idea of Value Pricing, also known as congestion pricing. The Value Pricing theory involves altering the pricing of transportation facilities, so that it can lead to improved service for transportation users, leading to a more productive use of existing transportation capacities.

The problem often faced in value pricing experiments is an increase in congestion on the remaining "Slow Lanes". Monetary traffic reduction incentives will solve this problem. A portion of the money generated by value lane users will be used to fund an off-peak incentive program. Daily drivers of the slow lanes will be offered a monthly reward to ensure that their daily commute occurs before or after peak hours. If administrated properly, peak hour volume will decrease in the slow lanes to a manageable size, and highway efficiency will increase as user costs accumulated by lost time are reduced. This program may be monitored by EZ-Pass to ensure driver cooperation.

This research examines through a hypothetical example, the effects on congestion in the slow lanes when additional toll revenues (Value Pricing) are combined with Peak Traffic Reduction (Incentives). This methodology is designed to use incentives to change the time/travel patterns of a portion of the highway users, while greatly reducing congestion.

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Disclaimer

<u>Value Pricing and Traffic Reduction Incentives</u>

In the urban and suburban regions of the United States, most Americans would agree that highway congestion is an increasing problem. Many of the highways in these regions are outdated and functionally inefficient. As a result, they are crammed far over capacity during peak morning and evening hours, causing massive delays and very high user costs.

Attempts are being made to control the traffic problem, but actions taken are often too little and too late. Highway expansion projects by DOT and private highway authorities are costly and often take years if not decades to implement. By the time these projects are completed, the highway traffic has in many cases already grown beyond the capacity of the new highway, only reducing the problem and not eliminating it. Ramp metering projects have proven effective in many metropolitan areas, but as traffic continues to increase, queues at access ramps will grow uncontrollably and will obstruct local roads. The traffic problem cannot simply be reduced, it must be solved.

A solution is possible. That solution is the joint implementation of value lanes and monetary traffic reduction incentives.

Value lane implementation is a simple concept, already tried in the United States with promising results. Highways would reserve one lane separate from other traffic, restricted from other lanes by concrete medians or traffic delineators. This lane will be guaranteed to flow below maximum operating capacity, providing fast service during all hours. To access this lane, users must pay a fee via EZ-Pass or a comparable substitute. As traffic increases in this "Value Lane", the price to access the lane increases as well. As traffic decreases, the access fee is reduced. This ensures a constant flow of traffic approaching but not exceeding capacity, and a constant additional income to the highway authority.

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This research is innovative in that it combines additional toll revenues (Value Pricing) with Peak Traffic Reduction (Incentives). It is designed to be utilized in the planning and managing of state and regional highway systems. It is futuristic in that it uses incentives to change the time/travel patterns of a portion of the highway users, while greatly reducing congestion.

Value Pricing or Differential Tolls, in its operation, has demonstrated that sufficient drivers are willing to pay a premium toll to avoid congestion and thus travel seventy miles per hour in a separate lane of a three lane highway. However, Value Pricing does not reduce congestion on the three lane highway. By limiting traffic on the speed or hot lane, to 1800 veh/hr, it causes the slow lanes to experience extreme congestion. Overall, the average speed of the three lane highway decreases dramatically, with over 2/3 of the total traffic in the slow lanes, operating at much lower speeds.

This research utilizes money incentives to induce a portion of the slow lane drivers to travel off peak on the same highway. Using EZ-Pass records, letters would go out to participating slow-lane drivers, along with incentive monthly dollars to travel off peak. EZ-Pass would then monitor their daily usage. At the end of a qualifying month, the user would receive the award. The money for the incentive awards would come from a portion of revenues generated from the Hot Lane.

Let us assume that we have a three lane highway, in one direction, with a peak volume of 6400 veh/hr, and a toll of $1.00 per vehicle. The average speed is 48 mph, utilizing Chart 1 a linear speed/volume representation. Converting this three lane facility to a Hot Lane, that only allows a 1800 veh/hr capacity, and two slow lanes, with a capacity of 2000 veh/hr, the Hot Lane travels at 70 mph, and the resulting two slow lanes, carry 2300 veh/hr each lane with a speed of 21 mph. Now the difference in speed is 49 mph.

Now we have 4600 veh/hr on over two slow lanes. If you move 300 of these vehicles to off peak by money incentives, we would have an average volume of 4300 veh/2 lanes or 2150 veh/lane, producing an average speed of about 45 mph.

The result is positive in that it reduces the peak traffic, while benefiting the Hot Lane drivers, at no cost to the slow lane drivers in terms of speed or time.

The hypothetical relationships would become actual relationships when this proposal is put into action. This proposal would be a minimum cost project, with tremendous impact, readiness, and affordability. It would impact congestion, safety, and the environment. The incentive award could also have greater impact if it were tax free. In the urban and suburban regions of the United States, most Americans would agree that highway congestion is an increasing problem. Many of the highways in these regions are outdated and functionally inefficient. As a result, they are crammed far over capacity during peak morning and evening hours, causing massive delays and very high user costs.

Attempts are being made to control the traffic problem, but actions taken are often too little and too late. Highway expansion projects by DOT and private highway authorities are costly and often take years if not decades to implement. By the time these projects are completed, the highway traffic has in many cases already grown beyond the capacity of the new highway, only reducing the problem and not eliminating it. Ramp metering projects have proven effective in many metropolitan areas, but as traffic continues to increase, queues at access ramps will grow uncontrollably and will obstruct local roads. The traffic problem cannot simply be reduced, it must be solved.

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Long term, this concept, Value Pricing with Incentives, could be the model for new value pricing initiatives, such as the Hot Lane.

We are looking at five different volumes concerning a three lane highway. The volumes are 6400 and 6300 Vehicles per lane. We will be calculating the speed for the different volumes. To calculate the speed we will use our volume vs. speed graph. We will also look to see what the revenue would be if we added a hot lane. The revenue is calculated using our Speed vs. Toll graph. If we add a hot lane it will impact the traffic flow for the two remaining lanes so we will have to calculate the new speed. We need to calculate our delta speed which is the speed in the hot lane minus our speed in the slow lanes. This will give us our toll price. Our expected volume in the hot lane is going to be 1800 Vehicles per hour, so our revenue can be calculated by multiplying toll*volume*peak hrs*work days per year. Once we have calculated the speeds and revenues we will look at two different scenarios where we entice two hundred and three hundred drivers to drive during off peak hours. The goal with enticing drivers is to bring the traffic down in the two slow lanes to increase the speed for the other drivers. We will also calculate a new toll price for the hot lane. We will calculate the speed with both scenarios and also find the cost for the incentives per driver and the total cost. To find the incentives cost we need to first calculate the percentage of drivers diverted and the use of our traffic diverted vs. cost graph. This will give us our cost per driver per year. Lastly we will find our delta revenue which is the revenues generated from our toll (from our value pricing with incentives) minus the yearly incentive cost.

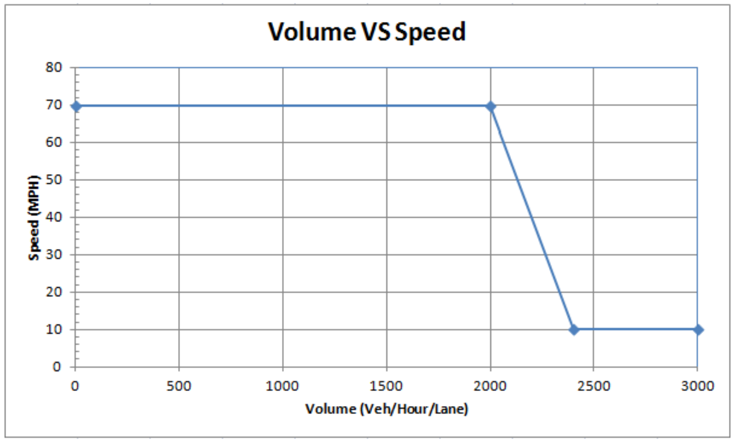

Chart 1

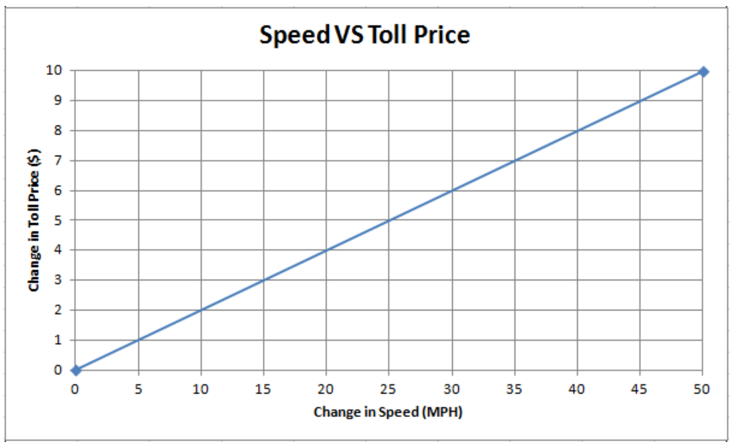

Chart 2

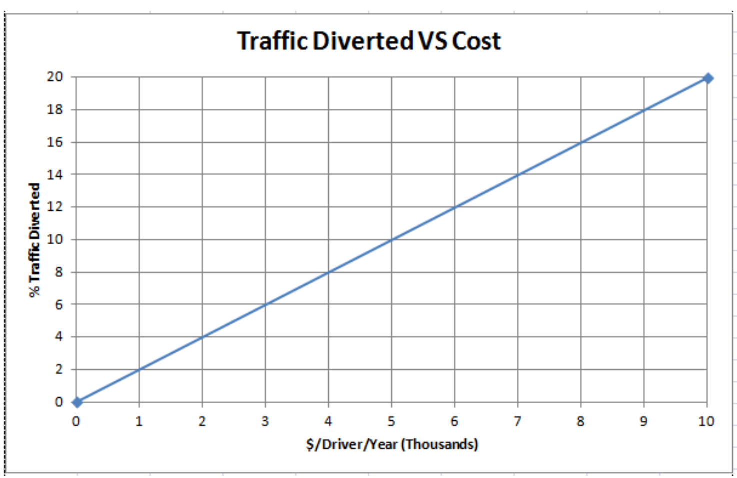

Chart 3

Scenario A) 6400Veh/hr

[redacted]	6400
Vehicle/Lane/Hour	2133
Speed(MPH)	48
[redacted]	
Speed Hot Lanes(MPH)	70
Vehicle in HL/hr	1800
Speed Slow Lanes(MPH)	21
Vehicle in SL/hr	2300
Δ Speed	49
Toll	9.8
Δ Revenue	$17,550,000
Value Pricing With Incentives	
Entice 300 Drivers	
Vehicles in SL/hr	2150
Speed Slow Lanes(MPH)	46
Δ Speed	24
Toll	4.9
Revenue of Tolls	$8,775,000
Percent Diverted	6.52%
Incentive Cost Per Drive	3261
Incentive Cost Total	$1,956,522
Δ Revenue	$6,818,478
Entice 200 Drivers	
Vehicles in SL/hr	2200
Speed Slow Lanes(MPH)	38
Δ Speed	33
Toll	6.5
Revenue of Tolls	$11,700,000
Percent Diverted	4.35%
Incentive Cost Per Drive	2174
Incentive Cost Total	$869,565.00
Δ Revenue	$10,830,435

As we can see without a hot lane the speed is going to be 48 MPH because we are still over capacity. Once we add a hot lane we increase the volume in the two remaining lanes. If we increase the volume in the other lanes we could generate over $17M in revenue. Once we add the hot lane we can expect our speed to be reduced, in this case it's reduced to 21 MPH. To increase the speed we need a method to get drivers off the road during peak hours. To do this we will use value pricing with incentives to see what the impact would be if we removed 200 to 300 drivers. When we entice 300 drivers our speed is increased to 46 MPH and our toll revenue is about $9M. Our incentive cost $3261 per driver for a total of about $2M. Our total revenue for 300 drivers our speed is increased to 38 MPH and our toll revenue is about 12M. Our incentive cost $2174 per driver for a total of about $1M.

Scenario B) 6350 Veh/hr

[redacted]	6350
Vehicle/Lane/Hour	2117
Speed(MPH)	51
[redacted]	
Speed Hot Lanes(MPH)	70
Vehicle in HL/hr	1800
Speed Slow Lanes(MPH)	25
Vehicle in SL/hr	2275
Δ Speed	49
Toll	8.9
Δ Revenue	$16,087,500
Value Pricing With Incentives	[redacted]
Entice 300 Drivers	
Vehicles in SL/hr	2125
Speed Slow Lanes(MPH)	50
Δ Speed	20
Toll	4.1
Revenue of Tolls	$7,312,500
Percent Diverted	6.59%
Incentive Cost Per Drive	3297
Incentive Cost Total	$1,978,022
Δ Revenue	$5,334,478
Entice 200 Drivers	[redacted]
Vehicles in SL/hr	2175
Speed Slow Lanes(MPH)	42
Δ Speed	28
Toll	5.7
Revenue of Tolls	$10,237,500
Percent Diverted	4.40%
Incentive Cost Per Drive	2198
Incentive Cost Total	$879,121.00
Δ Revenue	$9,358,379

Our total revenue for 200 drivers would be $11M.

In this scenario I feel we would want to entice 300 drivers because we would have a max speed of 46 MPH and generate enough revenue to justify the incentive costs.

Scenario C) 6450 Veh/hr

[redacted]	6450
Vehicle/Lane/Hour	2150
Speed(MPH)	46
[redacted]	
Speed Hot Lanes(MPH)	70
Vehicle in HL/hr	1800
Speed Slow Lanes(MPH)	17
Vehicle in SL/hr	2325
Δ Speed	53
Toll	10.6
Δ Revenue	$19,012,500
Value Pricing With Incentives	[redacted]
Entice 300 Drivers	
Vehicles in SL/hr	2175
Speed Slow Lanes(MPH)	42
Δ Speed	28
Toll	5.7
Revenue of Tolls	$10,237,500
Percent Diverted	6.45%
Incentive Cost Per Drive	3226
Incentive Cost Total	$1,935,484
Δ Revenue	$8,302,016
Entice 200 Drivers	[redacted]
Vehicles in SL/hr	2225
Speed Slow Lanes(MPH)	33
Δ Speed	37
Toll	7.3
Revenue of Tolls	$13,162,500
Percent Diverted	4.30%
Incentive Cost Per Drive	2151
Incentive Cost Total	$860,215.00
Δ Revenue	$12,302,285

<u>Scenario D) 6300 Veh/hr</u>

[redacted]	6300
Vehicle/Lane/Hour	2100
Speed(MPH)	54
[redacted]	
Speed Hot Lanes(MPH)	70
Vehicle in HL/hr	1800
Speed Slow Lanes(MPH)	29
Vehicle in SL/hr	2250
Δ Speed	41
Toll	8.6
Δ Revenue	$14,625,000
Value Pricing With Incentives	[redacted]
Entice 300 Drivers	
Vehicles in SL/hr	2100
Speed Slow Lanes(MPH)	54
Δ Speed	16
Toll	3.3
Revenue of Tolls	$5,850,000
Percent Diverted	6.67%
Incentive Cost Per Drive	3333
Incentive Cost Total	$2,000,000
Δ Revenue	$3,850,000
Entice 200 Drivers	[redacted]
Vehicles in SL/hr	2150
Speed Slow Lanes(MPH)	46
Δ Speed	24
Toll	4.9
Revenue of Tolls	$8,775,000
Percent Diverted	4.44%
Incentive Cost Per Drive	2222
Incentive Cost Total	$888,889.00
Δ Revenue	$7,886,111

Scenario E) 6500 Veh/hr

[redacted]	6500
Vehicle/Lane/Hour	2167
Speed(MPH)	43
[redacted]	
Speed Hot Lanes(MPH)	70
Vehicle in HL/hr	1800
Speed Slow Lanes(MPH)	13
Vehicle in SL/hr	2350
Δ Speed	57
Toll	11.4
Δ Revenue	$20,475,000
Value Pricing With Incentives	[redacted]
Entice 300 Drivers	
Vehicles in SL/hr	2200
Speed Slow Lanes(MPH)	38
Δ Speed	33
Toll	6.5
Revenue of Tolls	$11,700,000
Percent Diverted	6.38%
Incentive Cost Per Drive	3191
Incentive Cost Total	$1,914,894
Δ Revenue	$9,785,106
Entice 200 Drivers	[redacted]
Vehicles in SL/hr	2250
Speed Slow Lanes(MPH)	29
Δ Speed	41
Toll	8.1
Revenue of Tolls	$14,625,000
Percent Diverted	4.26%
Incentive Cost Per Drive	2128
Incentive Cost Total	$851,064.00
Δ Revenue	$13,773,936

All Scenarios

[redacted]	6400	6350	6450	6300	6500
Vehicle/Lane/Hour	2167	2117	2150	2100	2167
Speed(MPH)	43	51	46	54	43
[redacted]					
Speed Hot Lanes(MPH)	70	70	70	70	70
Vehicle in HL/hr	1800	1800	1800	1800	1800
Speed Slow Lanes(MPH)	21	25	17	29	13
Vehicle in SL/hr	2300	2275	2325	2250	2350
Δ Speed	49	45	53	41	57
Toll	9.8	8.9	10.6	8.1	11.4
Δ Revenue	$17,550,000	$16,087,500	$19,012,500	$14,625,000	$20,475,000
Value Pricing With Incentives	[redacted]				
Entice 300 Drivers					
Vehicles in SL/hr	2150	2125	2175	2100	2200
Speed Slow Lanes(MPH)	46	50	42	54	38
Δ Speed	24	20	28	16	33
Toll	4.9	4.1	5.7	3.3	6.5
Revenue of Tolls	$87,750,000	$7,312,500	$10,237,500	$5,850,000	$11,700,000
Percent Diverted	6.52%	6.59%	6.45%	6.67%	6.38%
Incentive Cost Per Drive	3261	3297	3226	3333	3191
Incentive Cost Total	$1,956,522	$1,978,022	$1,935,484	$2,000,000	$1,914,894
Δ Revenue	$6,818,478	$5,334,478	$8,302,016	$3,850,000	$9,785,106
Entice 200 Drivers	[redacted]				
Vehicles in SL/hr	2200	2175	2225	2150	2250
Speed Slow Lanes(MPH)	38	42	33	46	29
Δ Speed	33	28	37	24	41
Toll	6.5	5.7	7.3	4.9	8.1
Revenue of Tolls	$11,700,000	$10,237,500	$13,162,500	$8,775,000	$14,625,000
Percent Diverted	4.35%	4.40%	4.30%	4.44%	4.26%
Incentive Cost Per Drive	2174	2198	2151	2222	2128
Incentive Cost Total	$869,565.00	$879,121	$860,215	$888,889	$851,064.00
Δ Revenue	$10,830,435	$9,358,379	$12,302,285	$7,886,111	$13,773,936

Conclusion

Looking at the five different scenarios we can see that the higher the entry volume, obviously the lesser the speed of the slow lanes. The speed in our highest situation, (6500 veh/hr) was 43 MPH and in our lowest (6300 veh/hr) was 54 MPH. Once we added a hot lane (capped 1800 veh/hr) our speed dropped drastically with a low of 13 MPH and a high of 29 MPH. When we offered value pricing with incentives we were able to increase speed and revenue without having to build more roads. Our highest revenue gained under value pricing with incentives is about $10M when we entice 300 drivers, to travel off peak, and installed a hot lane. We had the highest revenue but yet our speed in the slow lanes is still at 38 MPH. If we look at the highest speed in the slow lanes we can get a max speed of 54 MHP but we are only generating about $4M in revenue. What we need to do is find a happy medium which balances speed with revenue. The research demonstrated that Value Pricing with incentives can bring the original speed of the slow lanes back to its speed without the constraint of one lane at 1800 veh/hr.

Summary of Value Pricing Studies

As traffic congestion grows in cities and suburban areas throughout the United States, the cost of traveling is directly affected and increased. Implementing new concepts to combat the excessive wastes associated with traffic congestion is necessary in order to allow the United States' most dominant form of transportation to continue to operate. One of the new concepts for combating congestion is the idea of Value Pricing, otherwise referred to as congestion pricing. The Value Pricing theory involves altering the pricing of transportation facilities, so that it can lead to improved service for transportation users, leading to a more productive use of existing transportation capacities. This will lead to a reduced need for future capacity expansion. The Value Pricing program has gained governmental support and a pilot program was created under Section 1216(a) of the Transportation Equity Act for the 21^{st} Century, otherwise referred to as TEA-21. This pilot program was introduced to support efforts being made by State and local governments, as well as other public authorities, to establish, monitor, and evaluate the Value Pricing method. With the evolving state of the TEA-21 pilot program, the Federal Highway Administration (FHWA), has authorized cooperative agreements with up to 15 states to allow for the testing of Value Pricing. The FHWA has allowed the TEA-21 pilot program to set up partnerships with local governments and private parties, inducing an agreement to install a multitude of Value Pricing concepts. These entities are allowed to use tolls to enforce the Value Pricing system, and have been permitted to employ high occupancy vehicle (H.O.V.) lanes as a way to reserve a lane for cars with more than two occupants. The Value Pricing project has also attempted to accommodate drivers with low incomes by providing a budget to cover mitigation efforts. With congestion growth becoming an increasing problem, cities and suburban areas around America are in need of new traffic control concepts. The idea of Value Pricing has serious potential to help decrease congestion on the nations' roadways and has gained the support of the FHWA, which has worked with local governments and private partners to try and enact Value Pricing concepts to help combat road congestion.

The need for a reduction in congestion is getting more prevalent by the day. To further state this problem, in 1997, the Texas Transportation Institute determined that 4.3 billion hours of traffic delay were due to congestion, wasting 6.6 billion gallons of motor fuel as a result. These large numbers of delays have lead to losses of up to $72 billion in 68 urban areas that were surveyed in these results. These numbers are a massive indication that Value Pricing is a concept that needs to be implemented to help reduce these unnecessary wastes. By introducing Value Pricing to the nation's road systems, it will help reduce this congestion by allowing travelers to pay to travel with less congestion, which can better use the unutilized H.O.V lanes that are across the country.

Funding for TEA-21 in 1999 was set at a maximum of $7 million and a maximum of $11 million for 2000-2003 fiscal years. For local programs, the federal matching share was set at 80% for those years. Any funds allocated by the Secretary of State would be available to a chosen state under Section 1216(a) three years after the last day of a fiscal year. However, if the available funds exceed $8 million, that money will be redistributed to every state as a part of the Surface Transportation Program. Money for this program can be used for pre-project study activities as well as the costs for project pricing implementation. Under Section 1216(a) does allow for cost reimbursement for the following: costs for planning, setting up, managing, operating, monitoring, evaluating, and reporting on local Value Pricing pilot projects. In 2000, the state of California and the Transportation Corridor Agencies implemented the use of peak period pricing for tolls during the peak hours of congestion. This was implemented in order to examine the effect of the provided funds on the different tolls that were in effect.

The implementation of congestion pricing starts with the FHWA administering the pilot program. The participation of states and localities is solicited through notifications and other public outreach activities authorized by the Federal Register. The FHWA would also acquire support from the Federal Interagency Review Group that had previously assisted in the implementation of congestion pricing under the ISTEA. The Federal Interagency Group is a conglomeration of representatives from several Department of Transportation agencies, the Environmental Protection Agency, and the Department of Energy. Their main purpose is to implement the congestion pricing by providing review and comment on applications to the program and drafts of various program documents. To reach a broader audience, the FHWA published a program brochure listing reasons for public interest in Value Pricing by delineating the kinds of pricing activities that can be supported by federal funding.

In 2000, states and localities showed great interest in the pilot program for TEA-21 through direct participation in FHWA's regional value pricing workshops and by submitting sketches and plans to the FHWA, outlining possible Value Pricing projects and projects to be enacted immediately. The FHWA reported, that for the year 2000, approximately $2 million dollars of the TEA-21 Pilot Program was used for local and statewide Value Pricing planning and pre-implementation activities. At the time of the report for Congress, the states found to be likely candidates for this program were Maryland, Texas, California, Florida, New Jersey, New York, Missouri, Connecticut. In the case of Maryland, the state's Department of Transportation recognized that adequate Value Pricing strategies would benefit a large number of corridors between the Washington D.C. and Baltimore area, which suffer from high quantities of congestion on a regular basis. The corridors that were of the most interest were I-270 from I-495 (Capital Beltway) to I-70 (Frederick County), I-495 (Maryland portion of Capital Beltway), MD 210 (I-495 to MD 228 Connector), US 50 (Capital Beltway to US 301), and I-95 (between Washington and Baltimore Beltways). Tolls that were also examined were the Baltimore Harbor Crossings, Fort McHenry Tunnel (I-95), Baltimore Harbor Tunnel (I-895), the Francis Scott Key Bridge (I-695), US 50/US 301 (William Preston Lane Memorial Bay Bridge), and I-95 (between Baltimore's Fort McHenry Tunnel and Delaware). These corridors were examined, and different types of value pricing strategies and sketch planning, along with other various information, were used to narrow down the best pricing options.

The availability of funding for transportation programs, such as Value Pricing, shows that these can be an important part of transportation financing programs. States have taken the generated revenue from Value Pricing to support other forms of public transportation, such as the express bus service offered on the I-15 corridor in San Diego. In County SR-91, revenues from its Value Pricing operation has been used in order to create they're express bus line.

Public accessibility also contributes to what Value Pricing options can be taken. For the highest reduction of traffic congestion, ideas such as Express Lanes and Express Bus services were implemented. These new options have gained much support from the public because these innovative ideas were not available to the public. Cities such as San Diego use a system called FasTrack, which is a system of express lanes that allow traffic to move in a much more efficient manner. This is possible by utilizing the under capacity H.O.V lanes by providing an extra toll for drivers to be able to travel congestion free. The toll charge can be altered and is monitored by the amount of cars using the lanes to determine its price point. Other States and cities have incorporated similar methods, such as the “LeeWay”, located in Lee County, Florida Houston, Texas’s “QuickRide”.

Throughout numerous tests of the Value Pricing program, driver behavior and effects on traffic conditions were monitored and measured by the organizations that established each individual concept. In San Diego, toll road I-15 incorporated express lanes, causing the traffic congestion levels to drastically vary. This has led to an improvement in the use of the available H.O.V lane to better reach its capacity without exceeding the capacity in order to reduce congestion. This occurs while also reducing congestion in the slow lanes by allowing a portion of it into the H.O.V lanes. The increased use of the H.O.V lane for Value Pricing has generated large revenues to better support express bus service in the corridor. This analysis determined that during the inception of the Value Pricing concept, traffic on the I-15 H.O.V lanes have increased substantially since and the number of vehicles using the H.O.V lanes increased by 46% over a three year period. It was also found that in the a.m. peak hours, the two-lane H.O.V lanes carried between 2,300 to 2,400 vehicles per hour at a free flowing, acceptable commuting speed, which was up from 1,600 vehicles that previously used the lane. It was also discovered that the daily traffic volume on the express lanes averaged 15,800 vehicles in early 2000, which was a daily increase of 4,100 vehicles since the FasTrak Value Pricing program was established. In mid-2000, about 21% of all traffic on this roadway where using the FasTrak program. This FasTrak program has also seen a large growth in carpools which grew by 30% in the three year time period. Finally, even though the percentage of

FasTrak usage has been increasing with the distribution of transponders, the majority of FasTrak customers are not daily users, with less than 10% of FasTrak customers using their FasTrak account on a daily basis.

The direct correlation between traffic congestion and the cost of travel have affected cities and suburban areas throughout the United States. Implementing new concepts that counteract the excessive fuel consumption and waste associated with traffic congestion is necessary in order to allow the United States' most dominant form of transportation to continue to operate. The need for a reduction in congestion is getting more prevalent by the day. To further state this problem, in 1997, the Texas Transportation Institute discovered that 4.3 billion hours of traffic delay due to congestion which led to a waste of $72 billion in 68 surveyed cities. Funding for TEA-21 in the year 1999 was set at a maximum of $7 million and a maximum of $11 million for 2000-2003 fiscal years. The implementation of congestion pricing starts with the FHWA administering the pilot program. The participation of states and localities is solicited through notifications and other public outreach activities authorized by the Federal Register. In 2000 states and localities showed great interest in the pilot program for TEA-21 through direct participation in FHWA's regional value pricing workshops, submitting sketches plans to the FHWA outlining values pricing projects that would like to be done, or to immediately initiate project activity. Public accessibility also contributes to what value pricing options can be taken. For high efficiency of reducing the congestion of traffic, ideas such as Express Lanes and Express Bus services were implemented. With congestion growth becoming an increasing problem, cities and suburban areas around America are in need of new traffic control concepts; the idea of Value Pricing has serious potential to help decrease congestion on the nations' roadways and has gained support through the FHWA, who has worked with local governments and private partners to try and enact the value pricing concept to help combat road congestion.

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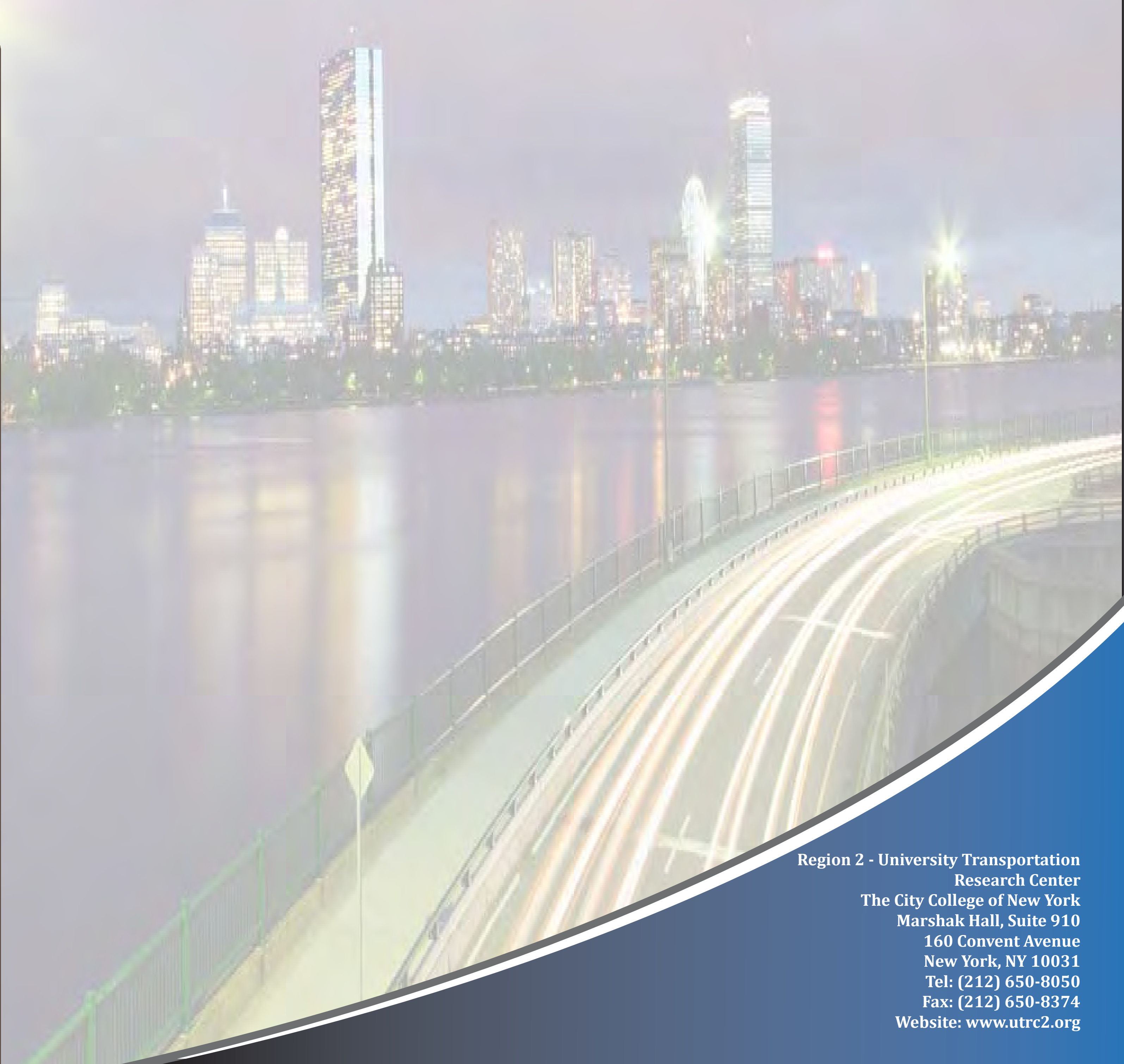

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