



ZONE PRICING FOR URBAN AREAS: COSTS, EARNINGS AND SAVINGS

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The Cost of Congestion in the U.S.

- For US cities with populations over 3 million, a 30 min. trip takes about 55 min. in the peak travel hours.
- Urban congestion (based on wasted time and fuel) costs about \$63.1 billion per year in the US.
- The average cost of urban congestion is \$794 per traveler.
- On average, individual congestion delay is about 40 hours per year.
- About 40% of daily travel takes place under congested conditions.



Travel Growth is Outpacing Transportation Investment

Americans spend much more on personal transportation than on transportation infrastructure

- Annual expenditures for personal autos is \$650 billion
- Spending on new and used car purchases totals about \$150 billion per year
- Household expenditures on transportation are \$8,000 per year, or 20% of the household budget
- Vehicle purchases are about \$4,000 per household per year



Congestion Pricing: Is it strategy for today?

Congestion pricing holds the promise of dual benefits – positive and effective demand management a new revenue source for funding transportation

- In the 1950's economist William Vickrey proposed congestion pricing for Washington D.C. designed to reduce auto traffic and increase the use of public transport.
- Only recently has the emergence of information and telecommunication technologies solutions enabled practical and effective application of Vickrey's principles
- The international pioneers of congestion pricing for metropolitan areas – Singapore, London and Stockholm have developed extensive and valuable knowledge on the practical issues associate with the introduction and operation of zone base congestion pricing.
- The federal Value Pricing Pilot and Urban Partnership programs encourage pricing as part of an overall strategy to manage transportation



International Examples

City	Singapore	London	Stockholm
Population (Urban Area)	4.2 million	8.5 million	1.2 million
Implementation Date	1998	2003	2006
Charging Area Size	6 km ² (2.3 mi ²)	22 – 41 km ² (8.5 – 15.8 mi ²)	22 km ² (11.5 mi ²)
Type of Charge	Variable Cordon Charge on Weekdays	Fixed Area Charge on Weekdays	Variable Cordon Charge on Weekdays
Charge Amount	\$0.32 - \$2.30 USD	\$16.00 USD	\$1.50 – \$3.00 USD
Traffic Reduction	13%	26%	22%
Traffic Speed Improvement	20%	39%	33%
Increased use of public transport	Not Available	18%	5%
Daily Transactions	280,000	240,000	104,000
Annual Gross Revenues (USD)	\$63 million	\$376 million	\$218 million
Annual Cost to Operate (USD)	\$10 million	\$183 million	Set up and operating costs for the 7 month trial 239 million
Initial Capital Investment (USD)	\$133 million (1998 ERP)	\$300 million*	



A Greener and Greater New York

- “Growth or Gridlock – The Economic Case for Traffic Relief and Transit Improvement for a Greater New York”.
 - Traffic congestion is not just an inconvenience, but that it results in \$13 billion of annual costs to businesses and users resulting in lost economic output and jobs lost.
- In April of 2007, Mayor Bloomberg proposed as part of his plan for sustainability that includes a plan for a 3 year congestion pricing trial implemented with federal funds.
 - According to Bloomberg, *“As the city continues to grow the costs of congestion – to our health, to our environment, and to our economy -- are only going to get worse. The question is not whether we want to pay but how do we want to pay. With an increased asthma rate? With more greenhouse gases? Wasted time? Lost business? And higher prices? Or, do we charge a modest fee to encourage more people to take mass transit?”*



Current U.S. Initiatives – San Francisco

- The San Francisco County Transportation Authority is conducting feasibility study of congestion pricing to be completed later this year
 - "The key issue here is if we can kill three birds with one stone – relieve congestion, clean up the air, and give money to Muni – we would have hit a home run." -- Jake McGoldrick, Chair SFCTA
- Today 17 minutes of the average 32 minute vehicle trip in the Bay Area is congestion delay
 - \$6.71 for every trip made by every individual traveling on the Bay Area roadways
- By 2030 the individual cost of delay is expected to increase to \$18.16 per trip.



Key Elements

■ A Problem -- Why

- Hypercongestion
- Scarcity of street space
- Balanced transportation goals
- Economic competitiveness
- Environmental policy goals

■ A Program -- How

- One size doesn't fit all
- Payment Policy
- Technology
- Enhancements to other modal options

■ Measurable Benefits -- What

- Travel time savings
- More reliable journey times
- Improvements to the environment
- Economic growth



Common Goals of Zone Pricing

- **Manage, not eliminate congestion**
 - Congestion is a positive indicator of economic vitality
 - A balance is needed that enhances mobility while not discouraging economic activity.

- **Pricing to inform travelers**
 - Incorporate the cost of external impacts
 - Encourage modal shift

- **Pricing supports reinvestment**
 - Net revenues after operations can be reinvested in transportation
 - Improve transit supply and reliability
 - Other transportation improvements (bike, walk, efficiency, safety).

- **Monitor the transportation system using performance based criteria**
 - Fine tune in accordance with performance goals
 - Communicate results



Cost, Savings & Earnings

■ What does it cost?

- Initial implementation cost is in the range of \$10 to \$15 million per km² depending on technologies used
- The total costs for London and Stockholm were \$300 million and \$239million, respectively

■ What does it save?

- Travel time and overall journey time reliability
- Travel speeds improve by 20 to 35%
- Traffic congestion decreases 15 to 25%
- Mode shifts to transit in the range of 5 to 20%

■ What are the earnings?

- Net revenues after operations for London and Stockholm were \$193 million and \$119 million, respectively
- New York projects about \$400 million for infrastructure improvements.



MeTrO Sketch Planning Model

MeTrO 2.1 Beta



Existing Conditions

Current Vehicle-Kilometers-Traveled: 797,896
 Current Vehicle-Hours-Traveled: 79,790

Public Benefits

Daily Auto Traffic Reduction: 30.2 %
 Daily Mobility Time Reduction: 26.8 %
 Annual Fuel Savings: \$4,749,077
 Annual CO Reduction: 608 tons
 Annual NOx Reduction: 47 tons
 New Traffic Speed: 14 km/h
 New Vehicle-Kilometers-Traveled: 556,673
 New Vehicle-Hours-Traveled: 40,758
 VKT Reduction: 30.2 %
 VHT Reduction: 48.9 %

Annual Costs and Revenues

Initial Investment: \$413,656,577
 Annual Revenue from Congestion Charging: \$338,688,000
 Annual Revenue from Enforcement Fines: \$145,152,000
 Total Annual Revenue: \$483,840,000
 Annual Operation Costs: \$161,390,880
 Annual Net Income: \$322,449,120
 20-Year NPV of Net Income: \$6,448,982,400

Congestion Charge:

Size of Zone: 50 km²
 Eligible Autos: 80 %
 Daily Traffic: 200000
 Current Traffic Speed: 10 km/h
 Charging Price: 12 USD
 Local Currency: (USD) 12

Congestion Area map:



City Information:

San Francisco had the most extensive public transit system on the West Coast and one of the most diverse in the country. With a metropolitan area population of over 7 million, the city has the highest population density of any major U.S. city aside from New York City. The city is one of the few cities in the U.S. that has opted for European style arterial thoroughfares instead of a large network of major highways



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