

PUBLIC CONVENIENCE & NECESSITY

A CURRENT REPORT 2013

PRESENTED TO THE SAN FRANCISCO MUNICIPAL TRANSPORTATION AGENCY

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Chapter 1 – Introduction and Overview

Demand for taxis in San Francisco far exceeds supply. This shortage is due to regulatory inertia by the San Francisco Municipal Transportation Agency (SFMTA) in not allowing a continual flow of new and unrestricted medallions. This study is presented to the SFMTA to encourage the agency to immediately issue over 500 medallions and put in place a proper regulatory system that, among other things, ensures the supply of medallions continually keeps pace with demand and that cab companies are not victims of continued regulatory lag in terms of mean-gate adjustments. These subjects are discussed in this paper.

Using actual operating data from dispatch and meter devices for the period January 2011 through May 2012, it is clear that Yellow Cab Cooperative (YCC) and Luxor Cabs (Luxor) require an additional 289 “regular” medallions in order to meet current customer demand. YCC should be issued **185** and Luxor **104**. These numbers do not take into account the additional “color scheme” leased medallions awarded to the two companies by the San Francisco Municipal Transportation Agency (“SFMTA”) in September 2012. These leased medallions (YCC received 42 and Luxor 41) are not included because the leases have relatively short terms (three years), they are subject to cancellation by the SFMTA without the need for a showing of cause, the leased taxis are operationally limited (they may not pick up fares at the San Francisco International Airport, for example) and the legality of this new kind of medallion is being challenged in court.

A recent agreement by the California Public Utilities Commission (CPUC) with Lyft, an e-hail provider of ride-sharing services, could allow every private car in California to operate as a taxi surrogate. The CPUC states that it has transportation jurisdiction over public highways and streets. The state constitution reinforces this claim. Local regulatory authorities appear subject to the state’s wishes. The emergence of this type alternative taxi is a direct byproduct of the existing shortage of regular taxi medallions.

The SFMTA assumed regulatory control over San Francisco taxis on March 1, 2009 when it absorbed the functions of the former Taxicab Commission. The advent of competitive services such as those provided by Lyft is a normal political-economic byproduct of over and/or stochastic regulation. The SFMTA must adapt and adapt quickly.

Taxis in San Francisco have always faced competition from alternative modes of transport, including illegal cabs, CPUC-regulated limos, airport shuttles and the like. This competition has increased considerably with the proliferation of technologies featuring computerized GPS-phone applications. A permissive CPUC entry-policy could seriously dilute SFMTA’s regulatory oversight, interfere with its ability to factor taxis into the City’s emergency and transit-first policies and decrease the capitalized value of the traditional medallion. This jurisdictional fight could end up in the courts, unless the CPUC and SFMTA (and other local regulatory authorities throughout California) come to a firm understanding as to jurisdictional boundaries and the need for regulatory coordination and consistency.

In April, 2011, an article appeared in San Francisco’s *Westside Observer* entitled “The Medallion Muddle.” This article was written in response to numerous city-wide complaints from riders about cab unavailability, especially in the outlying areas of the City. The article recommended, based on empirical data (dispatch [20%] and street-hails [80%]), customer-feedback and observation that the demand for

cabs in the City could easily accommodate an additional 1,000 regular taxi-medallions to better serve outlying neighborhoods as well as the lucrative Financial/Tourist districts.

A GPS-generated snap shot of San Francisco taxis (see Table 5 below) shows typical Friday night peak-time concentration of taxi-cabs in the north-east quadrant. The average productivity (total time carrying passengers divided by total available time) of the San Francisco taxi fleet on Friday and Saturday nights is nearly 40 percent higher than the average on non-peak days. The City Controller, reporting to the Taxicab Commission, issued biannual Taxi Industry Reports. In these reports the Controller found that San Francisco taxis averaged 30 rides per day. Statistical evidence obtained through GPS meter-clicks shows that the largest cab company (YCC) averages 44 rides per day. Taxis have become very efficient. There are just not enough of them.

One interpretation of Say's Law is that supply creates its own demand. This idea seems to have great legitimacy and relevance in San Francisco, given its unmet demand for taxis. The issuance of more regular taxi medallions would disperse the downtown cluster phenomenon into other San Francisco neighborhoods. If the SFMTA continues its current incremental experimentation with restricted quasi-medallions, over which the agency retains considerable control, it will permanently open the flood gates for taxi alternatives.

This report's conclusion -- that an immediate and substantial increase of regular medallions is needed -- finds considerable support in the flood of illegal-cabs, limos and CPUC-sanctioned quasi-taxis into the City. The market has clearly identified unmet taxi-demand. If the SFMTA does not act quickly and decisively by adding 500 to 1000 new regular medallions to the taxi fleet, the current concept of the City's taxi industry, with all its positive externalities for San Francisco, will disappear. SFMTA will in effect have brought about its own demise.

Decades ago, the CPUC allowed intrastate airlines in California to experiment with scheduling and pricing. These experiments accelerated the demise (1978 Kennedy-Kelly Act) of the regulatory control over all U.S airlines by the federal Civil Aeronautics Board (CAB). The CAB's rigid adherence to antiquated rate making, its inertia in regulating entry, exit and equipment choice and its restrictions on city-pairing made it possible for entrepreneurial intrastate competitors to grab market share at the expense of federal regulation-encumbered interstate carriers. A technological change, in the form of mid-sized jets (DC9s), also spurred this regulatory revolt. Today, the CPUC's laissez faire attitudes, coupled with the emergence of mobile phone dispatch applications, threaten to erode the SFMTA's ability to ensure a continuation of San Francisco's current taxi fleet model. San Francisco citizens and policy makers will be worse off with the demise of the current taxi setup.

The SFMTA has failed to respond to its core regulatory function of putting in place a transparent, systematic and non-discretionary system for marrying demand to supply in the taxi market. When the Board of Supervisors passed Ordinance 303-08 in 2008, thereby transferring the powers and duties of the Taxi Commission to the Municipal Transportation Agency, it did not enact that legislation to encourage opportunistic ways of squeezing revenue from the taxicab industry in order to reduce the

SFMTA's chronic budget deficits. Rather, that legislation was intended to implement, as spelled out in Proposition A (November, 2007), policies that provide incentives for "excellence" and "accountability."

A major first move in regulating taxis by the SFMTA was to set up a "short-term" pilot project to allow senior medallion holders to sell their medallions at a fixed price of \$250,000. Twenty-percent of this amount went to the SFMTA, with fifteen-percent going directly to the agency and the remaining five-percent deposited in a Driver Fund. This program also allowed the SFMTA to sell up to sixty-medallions and to use the resulting revenue to pay down the agency's debt. No rigorous asset valuation process was utilized in setting the \$250,000 sale price. It lacked any mathematical or economic underpinnings and appeared to serve a non-quantifiable concept of "affordability". At best, as is the current \$300,000 price, it was an M&M-coated guess. These transfers fees and direct sales effect an involuntary transfer of taxi revenues to other parts of the financially-challenged SFMTA.

Meter rates have been increased once by the SFMTA. The allowable "gate" (the consideration paid by a driver to operate a vehicle and a taxi medallion) has not changed since 2007. There has been no proper public convenience and necessity (PC&N) hearing on these matters. The last gate increase in 2007 was tied to the cab companies committing to making large investments of capital in order to "green the fleet" by use of fuel efficient and environmentally friendly vehicles. Prior to this gate increase, it was estimated that the two major cab companies lost over \$70 million (capitalized value 1999-2012) by the gate failing to keep pace with even the benign consumer price index (CPI). Current regulatory lag, 2008-2012, has cost the taxi-companies millions. This overall and persuasive regulatory inertia has also catalyzed an increase in non-traditional competition. Loss of the current taxi-model will be a major loss for San Francisco.

In late 2012, the SFMTA allowed certain medallion holders who were 60 years of age and older to sell their medallions to eligible drivers for \$300,000 each. The SFMTA advised that these funds would be used for transportation initiatives and for the taxi industry. The SFMTA collects thirty-percent of each sale. Approximately 300 medallions have been sold in this manner over the last several years.

The SFMTA cannot continue along its current path of micromanaging a highly entrepreneurial and self-sustaining industry. The SFMTA must not make the same mistake the CAB made. Regulatory haze and inertia will create a vacuum that will be irreversibly filled by a completely different business model. The City will lose control over a valuable policy adjunct. Green cabs, utilizing taxis in emergencies, etc., will be lost. Systematic regulation short of repetitive regulatory meddling is a positive social and economic externality for the citizens of San Francisco.

Attached to this report as appendices are copies of previous studies prepared with the expectation that the City would establish a regulatory system that would do justice to one of the finest cab systems in the world. While these studies are labeled "appendices", they are part of this PC&N submission:

Appendix No 1 "Regulating San Francisco Taxis. This study was presented to SFMTA staff in 2009 to assist the agency in putting in place a fair, systematic and transparent regulatory system.

Appendix 2 – “Regulating the San Francisco Taxicab Gate Cap.” This 2006 study discusses the history of the gate cap and why regulatory lag has cost certain cab companies millions of dollars. This issue is also addressed in Chapter Four.

Appendix 3 “A New Approach to Allocating Taxicab Medallions in San Francisco.” This paper pointed out the economic and social gains of allowing the market to determine medallion values. It is nearly 180 degrees opposite to what is currently being implemented. It addressed every major issue from asset valuation to resolving the wait list “problem” by what economists call a Coasian solution. In writing this paper, there was no consideration of market interference and price setting by regulators. The path taken by the SFMTA, in the context of this paper, is inefficient and subjective, and it imposes unfair financial burdens on taxicab companies which have no responsibility for recurring SFMTA budget deficits.

Appendix 4 -- “1998 Public Convenience and Necessity Hearing Report for Taxicab Medallions to the Police Commission, City and County of San Francisco”. This PC&N report, while not perfect, is the last systematic PC&N report produced by City staff. The SFMTA is yet to put in place anything resembling a normal PC&N process.

Chapter 2 - Demand Quantified and Traffic Analyzed

YCC and Luxor have analyzed their computerized databases in order to answer two questions important to the PC&N process governing taxicab service in San Francisco: first, how much unmet demand for taxi service does each company experience, and second, how many additional taxicabs would each company need to satisfy that unmet demand?

The taxi-riding public, the business community and numerous elected and appointed officials have complained for years about the shortage of taxicabs in San Francisco. This shortage has allowed the expansion and emergence of taxi "alternatives" ranging from traditional limousines, on the one hand, to technologically innovative (though largely unregulated) GPS-directed vehicles on the other. Now the real possibility exists that the CPUC will permanently open the way for private vehicles to become quasi-taxis. These customer complaints, and the consequent increase in para-taxi transportation systems, are symptomatic of the failure of our regulatory system to match cab supply to demand through a normative PC&N process.

This study serves dual purposes. First, it performs an analysis of market demand and supply conditions (entry and exit) and demonstrates what every informed consumer already intuitively knows -- San Francisco needs more cabs. Second, it amounts to a plea for meaningful change in how San Francisco regulates taxicabs. Not since the days when the San Francisco Police Department presided over the medallion-issuance process (see Appendix No. 4) has the City performed a real PC&N study.

A study by a consultant is not a process. It is, instead, input to a process, as is this study. The PC&N process, by contrast, is a public, transparent effort to make reasoned decisions as to how to "right-size" the taxi fleet so it can properly serve the demand for taxi-services.

Unless City regulators conduct PC&N hearings on a regular basis, they will further contribute to the breakdown and erosion of a vital part of the City's public transportation system. Process does determine outcome. The current upheaval by drivers and investors (color schemes) in San Francisco is a direct result of an indeterminate and unclear regulatory system.

Study

The purpose of this report is to provide quantitative and qualitative input to the SFMTA as part of the PC&N process mandated by the San Francisco Transportation Code. This study focuses on the two largest taxi companies in San Francisco, YCC and Luxor, because their experiences best mirror the supply and demand functions of a PC&N process and because they also operate the most sophisticated data-collection systems among the score of color schemes currently in operation.

Table 1 summarizes in qualitative bullet points why more taxis are required immediately. Tables 2, 3, and 4 show the factors that input taxi efficiency. Economists have long used the Paris Metro as an example of diminishing returns to scale. Double the size of the Paris Metro and ridership will not double. The change in size will butt up against existing infrastructure limitations and traffic congestion. YCC and Luxor are very efficient carriers, creating between 41 and 44 rides per day (2 shifts). This means that about 39 percent of each shift is devoted to conveying revenue-generating passengers. The down time is due to normal logistical constraints, such as start-up, checking-in, searching and so forth. In performing this study we looked at the two busiest (peak) 3-hour periods on representative Friday and Saturday evenings. During these peak periods, taxi- efficiency rose to approximately 53 percent (Table 4).

Study Outline

- I Define study goals
- II Collect reliable and relevant data
- III Employ a quantitative methodology to measure unmet demand and the number of additional medallions needed to fill that demand
- IV Provide a brief review of the City's taxi history to better understand current industry operations
- V Discuss the impact on the taxi industry of continuing regulatory uncertainty, and
- VI Validate, test, forecast and provide recommendations for an ongoing regulatory model

These steps are shown visually in the Methodological Flow Chart included immediately at the end of this chapter. This chart was used as the roadmap for producing this study. It is based on an approach used for modeling passenger aircraft capacity and served as the guide to integrating operations research and econometrics into fleet size optimization. As automated taxi data becomes more widely available, this approach will be expanded for future omnibus PC&N hearings covering all economic aspects of taxi regulation.

I - Define Goals

The principal goal of this study is to quantify existing demand for taxi service and calculate the number of cabs YCC and Luxor would need to satisfy that demand.

San Francisco has adopted a transit-first policy, and taxis are an important component of that policy. They serve as a major and flexible means of public transportation available on a 24/7 basis. Taxis are cost effective and, in recent years, have become increasingly environmentally friendly. Taxis also reduce stress on the City's limited supply of parking spaces, and they both complement and augment the City's emergency and first-responder systems.

The data displayed in this report are derived from and based upon average passenger use experienced by YCC and Luxor over a seventeen month period. This is analogous to building a dam to control average floods. The SFMTA, however, would be wise to understand that the numbers contained in this study are likely an under-estimate -- they do not account for the 100-year flood outlier (emergency) phenomenon. Hospital planners do not provide beds for average demand but attempt to forecast and meet extraordinary demand needs. So should the SFMTA when it comes to taxi industry planning. Taxi availability and timely arrival are positive differentiations which directly affect the willingness of consumers to use taxis rather than resort to more costly and often illegal alternatives. It is for these reasons that it is imperative for regulators to bring taxi supply into alignment with taxi demand.

II – Data

Obtaining accurate taxi data has always been a challenge. The integration of GPS and dispatch automation has greatly improved taxicab database development and the reliability of the data contained in the databases. YCC and Luxor furnished the author with manual and automated dispatch data as well as separate GPS data. Voluminous data, often from real-time micro-events, were aggregated into manageable macro amounts within set time frames. Data collected for this study came from the January 2011 through May 2012 period. YCC reports were provided on a weekly basis, while the data from Luxor came in monthly batches. The demand equation works for both systems.

Visual data in the form of charts and graphs are a positive byproduct of this multi-phased approach (manual, automation, GPS) to data collection and analysis. For example, Table 5 is a snap-shot of taxi concentration on a typical Friday night during this period in the Financial District. *Say's Law* -- "supply creates its own demand" -- is definitely not economic dogma. But Table 6 suggests that additional cabs would have the positive external effect of pushing more taxis out of traditional areas in the City as drivers seek riders; especially those areas where residents claim they are underserved by cabs. Simply put, the combination of Say's Law and territorial expansion will be yet another positive externality from adding more medallions/taxis.

In order to allow the merging of two data systems from the two companies, a computer algorithm was developed to ensure accuracy and ease of data manipulation. These processes are ongoing and continually being refined. The computer model is well-specified (step-by-step explanations in simple English and basic algebra) to ensure ease of continuity and regulatory transparency. Data are from dispatch automation, manual transcription and meter-based GPS input.

III - Methodology

In order to determine whether YCC and Luxor are unable to meet demand for taxi services with their current fleets, we first focused on measuring mean (average) demand. Next, we calculated a distribution around this mean. Finally, we quantified passenger turn-away as a function of the limited size of each company's taxi fleet. This approach to measuring expected turn-away is used in numerous other applications, particularly in transit systems, e.g. where an airline looks at its average demand (and demand variations around this mean) in selecting aircraft size/type to maximize profitability. As noted, the numbers generated are for average demand and do not, at this point, address the probabilistic turn-away problem that taxi riders experience at peak-times and in specific locations in the City (e.g. Financial District vs. "the neighborhoods").

The linear estimation equation used in this study is shown below. This equation utilizes an industry standard approach presented by Tomas Smith, YCC's communications and IT Manager, on August 13, 2010 in a paper entitled: "Yellow Cab San Francisco, Taxi Medallion, Supply and Demand."

$$RC = DCLC + E \times HAILS + PROB$$

Where:

RC	=	Number of cabs required to service unmet demand
NCAB	=	Service calls not filled by available cabs
E	=	Estimated percent of street hails not filled
HAILS	=	Hails or street fares, total passengers boarded less passengers boarded by dispatch
TOC	=	Total orders created by dispatch system
Y	=	Percent calls by agents
OCA	=	Orders created by agents (Y x TOC)
CAB	=	Abandoned calls (Capacity constraint)
OPCAL	=	Ratio of agent-created orders divided by total orders created (ACO/TOC)
PROB	=	Probable orders from abandoned calls (CAB x OPCAL)

Our calculations, illustrated below, utilize daily data from both YCC and Luxor. All supporting data are in the tables included in the index. Data from both YCC and Luxor was derived for the same period (Jan 2011-May 2012). Both data sets were reported by day and by shift to create the common denominator used to determine the total number of additional cabs required.

	Daily Averages	
	YCC	Luxor
Total daily meter fares	20,650	6,757
Dispatched passengers	3,969	1,829
Hailed passengers	16,682	4,573
Average fleet size (rounded)	521	224
Trips per day per cab	40	30
Trips per shift per cab	20	15
	Supply Shortages Quantified	
Dispatched passengers not picked up	696	1,454
Abandoned calls not serviced	1,614	320
Thirty (30%) percent of hails	5,004	1,372
Total Unmet demand	7,315	3,146
Unmet demand divided by avg. trips/day	185	104
Number of cabs required to satisfy unmet demand	185	104

IV - Taxi History in San Francisco

In 1976, San Francisco's taxi regulator (the San Francisco Police Commission at the time) had authorized 839 motor vehicle for hire permits (oftentimes called "medallions"). In 1977, as a result of the financial collapse of the "old" Yellow Cab Company, the number of authorized permits was reduced to 711. In 1984, the number of permits was increased to 811 to meet, among other things, demand anticipated from the Democratic Party's presidential convention in the City. In 1994, another 100 permits were added, raising the taxi fleet to 911. Then, in 1998-99, based on recommendations from a Taxi Task Force appointed by Mayor Willie Brown, an additional 500 permits were issued. During the tenure of San Francisco's Taxi Commission (roughly, 1998-2008) and the SFMTA (2008-present), additional permits were issued, bringing the citywide fleet to approximately 1700.

In 1978, the medallion-issuance process, and the overall regulation of taxicabs, was profoundly changed by the enactment of what became known as "Proposition K." Under that initiative ordinance, medallions could no longer be transferred. Permits could only be issued to natural persons, and the number of permits in the hands of corporations was to be gradually reduced by formula. Individuals interested in receiving a medallion filed an application with the City, and their names were placed on a waiting list. Generally speaking, permits returned to the City on the death of the permit

holder, supplemented by the issuance of new permits, were issued to persons in order on the waiting list upon payment of a modest application and processing fee. From 1978 through 1998, the San Francisco Police Department followed orthodox PC&N procedures in assessing whether additional permits were needed to meet excess demand for taxi services.

In 1998, the authority of the Police Commission over taxis was transferred to a voter-created Taxi Commission. This Commission, with the assistance of the Controller's Office, assumed responsibility for setting fares and ensuring that taxis met established levels of safety and service. The Commission was composed of seven members drawn from various stakeholder groups and appointed by the Mayor.

In November 2007, the voters approved the passage of Proposition A, a Charter amendment. Among other things, that measure gave the Board of Supervisors the option of abolishing the Taxi Commission and transferring its authority over taxis to the SFMTA. The Board of Supervisors exercised that option. As of March 1, 2009, the Taxi Commission ceased to exist and the SFMTA assumed regulatory responsibility for the City's taxi industry.

The SFMTA was given a broad mandate under Proposition A, including the authority to enact ordinances changing any and all regulatory rules adopted pursuant to Proposition K. The SFMTA has, for example, authorized certain permit sales and transfers and, very recently, created a new permit category (so-called "color scheme permits") which are not issued to individuals but instead leased by the SFMTA to taxicab companies like YCC and Luxor. To date, the SFMTA has not conducted a structured PC&N review of the adequacy of the current taxi fleet. In 2012, it commissioned a Canadian consultant to perform a PC&N-based study about the adequacy of taxi service. It remains unclear if the SFMTA sees the consultant's work as the entire PC&N process versus input into a PC&N process yet to be conducted.

V - Current Regulatory Uncertainty

The SFMTA regulates all aspects of the taxi-business. It controls entry (medallion issuance), exit (by death or transfer), fares, gates (per-shift or per-month cap on leasing cost to drivers), and the agency has adopted many non-economic rules and regulations. The Transportation Code mandates that the SFMTA follow a non-discretionary and transparent system of governance vis a vis its management of the entire taxicab fleet. Regulatory lag, however, combined with a lack of clarity in taxicab governance has created, among other things, an unsettled environment for drivers, owners and prospective investors (i.e. persons interested in purchasing a permit).

YCC and Luxor previously outlined an approach to taxi governance that we believe would benefit all players in the San Francisco taxi industry. See Appendix No. 1. The system proposed by YCC and Luxor is modeled on the regulatory model adopted by the California Public Utilities Commission. YCC and Luxor have also proposed an auction-based model for the issuance/transfer of medallions that would have reduced if not eliminated much of the current uncertainty in the industry -- while still meeting SFMTA financial goals. We stand ready to resubmit this plan.

See also <http://www.sfmta.com/cms/xproj/documents/BrianBrowne.pdf>.

VI -Testing

Initially, data from YCC and Luxor were considered separately. All data series were tested for statistical significance. The equation (Section III above) produces similar results for both companies. This model

can generate a number of different and useful taxi industry-related reports. This predictive model, when used independently for both YCC and Luxor data, generates similar results. It was used to test data stability (central tendency statistics) and to ensure that times-series data were of significance and had sufficient value to be used as described above. Luxor data had some restrictions. Not all Luxor cabs have the electronic recording devices. These devices are being implemented throughout its entire fleet. YCC has been fully electronic since 2007.

VII – Graphical Support

Chapter 2

Methodological Flow Chart

Table 1 - Why more cabs now

Table 2 - Efficiency utilization

Table 3 - Efficiency Utilization – Day of Week and Maximum Periods

Table 4 - Efficiency utilization – Tabular Format

Table 5 - Reproduction of taxicab cluster in Financial District

Table 6 - Say's Law – Supply creates its own demand – dispersion phenomenon

Table 7 Comparison of YCC & Luxor day of week passengers carried

Table 8 - Normal distribution curve and comparison of YCC v Luxor passengers carried

Chapter 3

Table 9 – Gate and gas regulatory lag

Table 10 – Updating and capitalizing regulatory lag through 2011

Chapter 4

Table 11 – Dispatch and hail – Total Trips 2011-2012

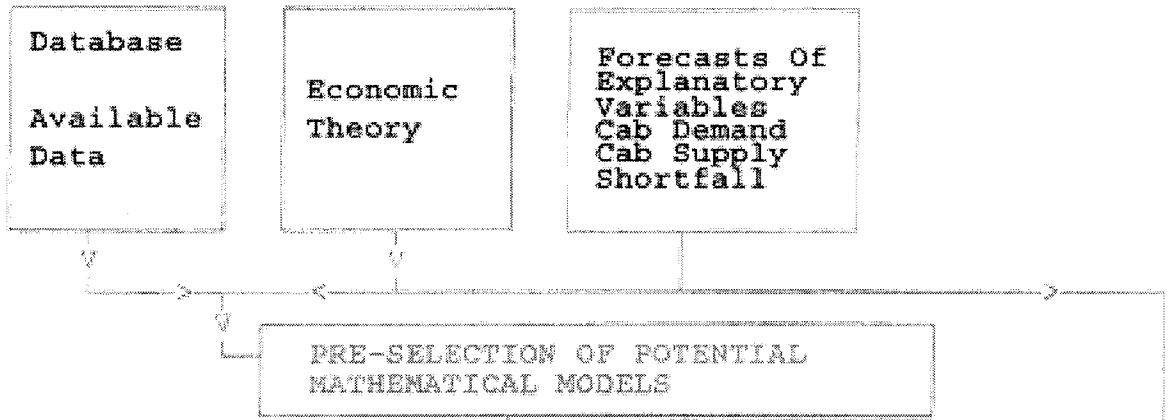
Table 12 – Meter Clicks per Week

Table 13 – Average Time per Ride

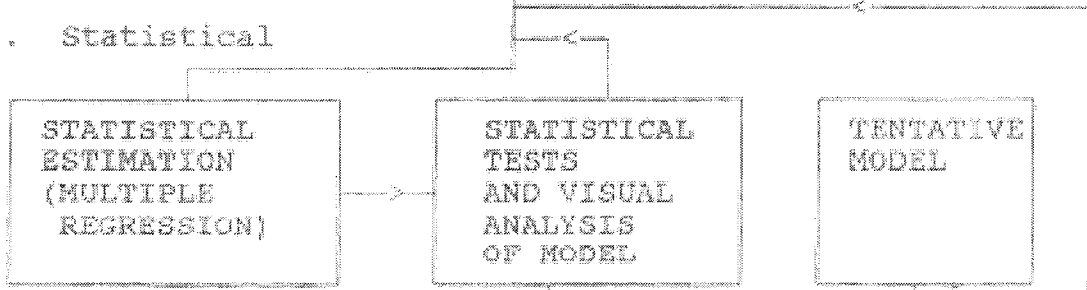
Table 14 – Average Fare

METHODOLOGICAL FLOW CHART

Phase 1. Preliminary



Phase 2. Statistical



Phase 3. Validation



Phase 4. Application

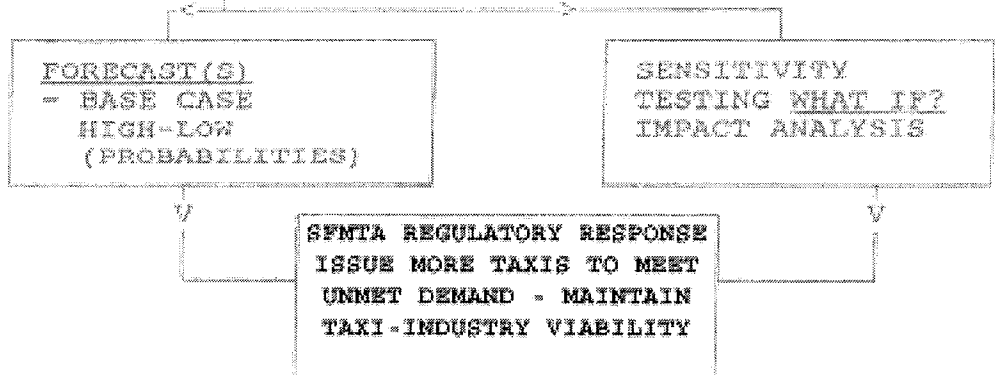


TABLE 1

PC&N STUDY SUBMISSION

OVERVIEW

- Why more cabs now – summarized points

Why more cabs now?

- Increase taxi-rider expectations in the SF taxi-system
- Increase the expected probability of all SF taxi riders getting a cab within a certain time frame at anytime
- Extend this expected probability to all sectors of the City.
- Complement San Francisco's social, emergency, and economic planning with more cabs.
- Increasing expectations will increase the demand and reliance on this vital transit sector.

TABLE 2

PC&N STUDY SUBMISSION

OVERVIEW

- Efficiency/Utilization

Efficiency/Utilization

- This gross approach is based on comparing different transit modes. Steam trains were less than 5% efficient. Diesel approximately 80%.
- Vehicle efficiency is a multivariate function – fueling, cleaning, breakdowns, human requirements, job-search (relatively random within given probability limits), shift changeovers, etc.
- Calculating a viable efficiency level, based on expected real world constraints (controlled entry) is a good approximation for estimating the supply function of a taxi-fleet.
- Demand and supply in taxis may be equated with how many passengers demand certain trips of varying distance. And how many passenger miles may a taxi fleet of a fixed number of medallions be reasonably able to sustain (supply) – Demand equals revenue passenger miles. Supply equals revenue passenger miles. This way supply and demand may be equated.
- 53 percent efficiency is only sustained for a three-hour period. It is estimated that maximum (average fleet) sustainability is probably – including all “logistical” situations is probably closer to 39 percent

TABLE 3

PC&N STUDY SUBMISSION

OVERVIEW

- **Efficiency/Utilization – Day of Week and Maximum Periods (YCC Data)**

Efficiency was calculated by dividing actual carry-passenger driving time per day in minutes divided by minutes (1200) in two 10-hour shifts.

YCC calculations were based on actual data (see attached tables). The Luxor fleet does not have full meter-GPS capability and server interface as does YCC. Luxor was calculated using their average time per ride times an estimate of 41 trips per shift divided by 1200. The 41 trips per shift were based on Luxor input, available data, and YCC's comparable average of 45 fares per two-hour shift. Luxor data will be revised as full automation becomes available.

A partial survey by an independent consultant for the two max-period periods for cab use on Friday and Saturday showed that during these two-anticipated 3-hour peak demand periods cabs increased efficiency to approximately 50-percent. The lower number shown above for the entire daily shift period seems consistent with the multivariable factors that go into driving a cab. Time series analysis of YCC and Luxor indicates that these efficiency levels are high.

The Controller in his Taxi Industry Reports, prepared for the Taxi Commission estimated the entire San Francisco taxi fleet averaged 30 passengers per cab per two-shifts (20 hours). Luxor's estimated 41 fares per 20 hour day exceeds this estimate by a factor of 1.37 and YCC's actual hard-wired, automatic quantification of 45 passenger rides per 20 hour double shift exceeds the Controller's estimated fleet average of a factor of 1.5.

Day of Week and Two Max Periods

Relative Efficiencies

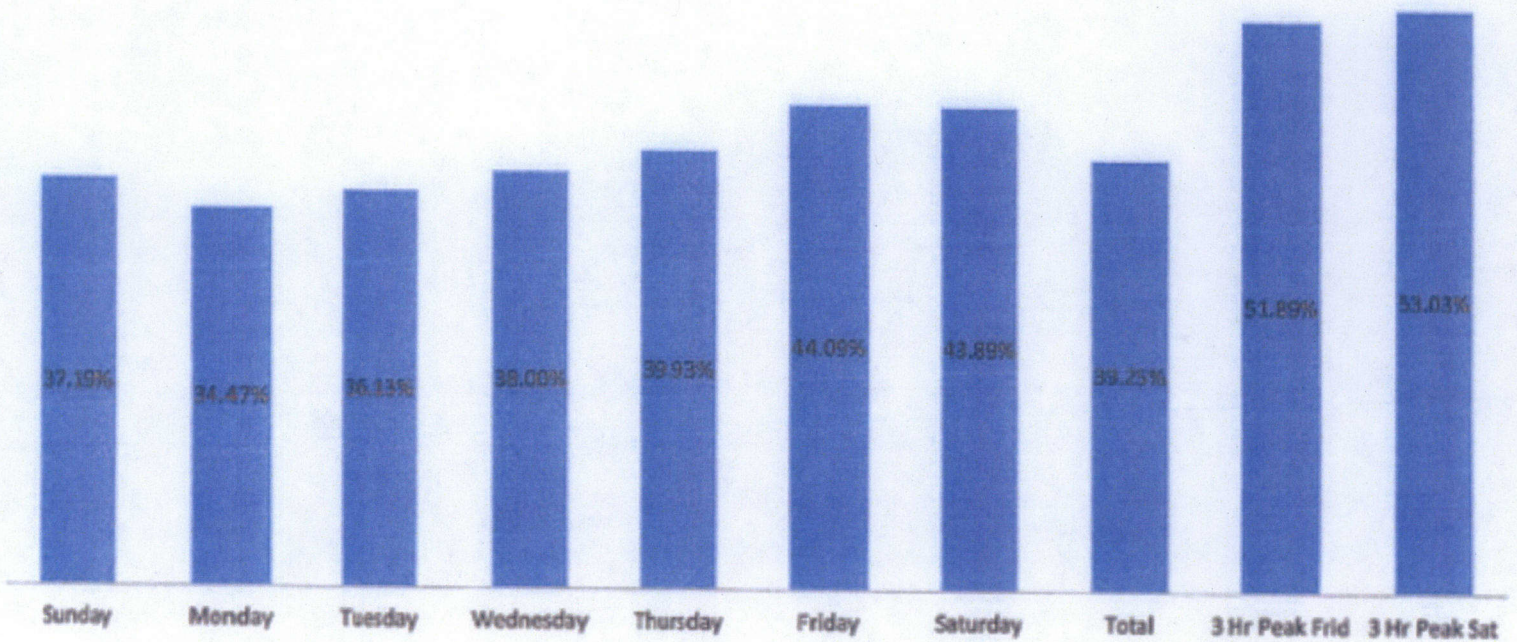


TABLE 4
PC&N STUDY SUBMISSION
OVERVIEW

- Efficiency/Utilization – Day of Week

What Can the Cab Fleet Sustain?

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total	3 Hr Peak Frid	3 Hr Peak Sat
37.19%	34.47%	36.13%	38.00%	39.93%	44.09%	43.88%	39.26%	51.89%	53.03%

- Took two peak periods
- Friday night 6 through 9 (6,7 and 8)
- Saturday night 9 through midnight (9,10 and 11)
- Estimates total times in producing Revenue Passenger Miles (RPM) and total times available
No. Cabs X 60 X 3.

TABLE 5

PC&N STUDY SUBMISSION

OVERVIEW

- Cab cluster in Financial District

Say's Law - Friday Night Concentration

"Supply creates it's own demand"

More Cabs would force marginal operators to seek alternative markets and improve availability.



TABLE 6

PC&N STUDY SUBMISSION

OVERVIEW

- Say's Law – Supply creates its own demand

**More Medallions, will bring better service
to other parts of the City**

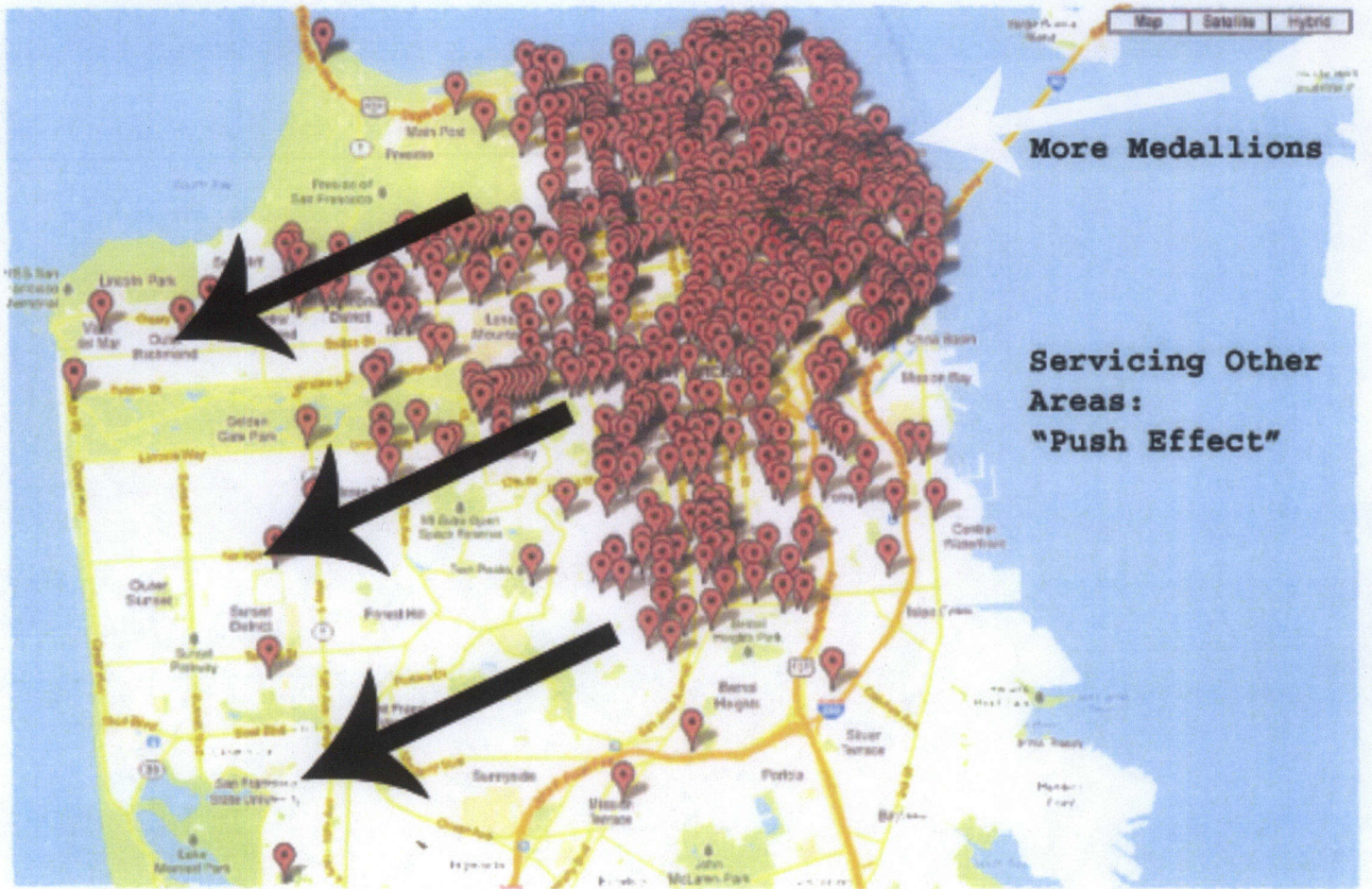


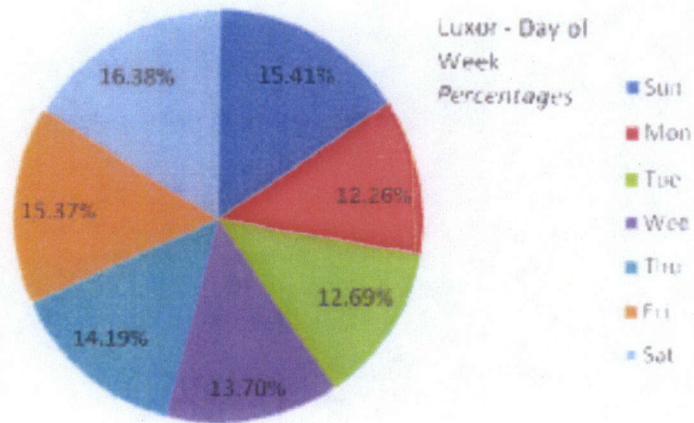
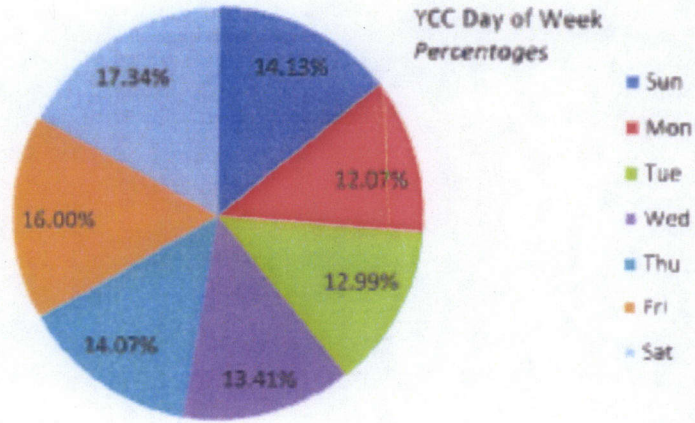
TABLE 7

PC&N STUDY SUBMISSION

OVERVIEW

- Demand is more or less evenly distributed across the days of the week, supporting the conclusion “peek time cabs” are unnecessary and/or redundant.

Comparison YCC & Luxor of Day of Week Passengers Carried - August 2011 – May 2012



	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Week/Total
Yellow	14.13%	12.07%	12.99%	13.41%	14.07%	16.00%	17.34%	100.00%
Luxor	15.41%	12.26%	12.69%	13.70%	14.19%	15.37%	16.38%	100.00%

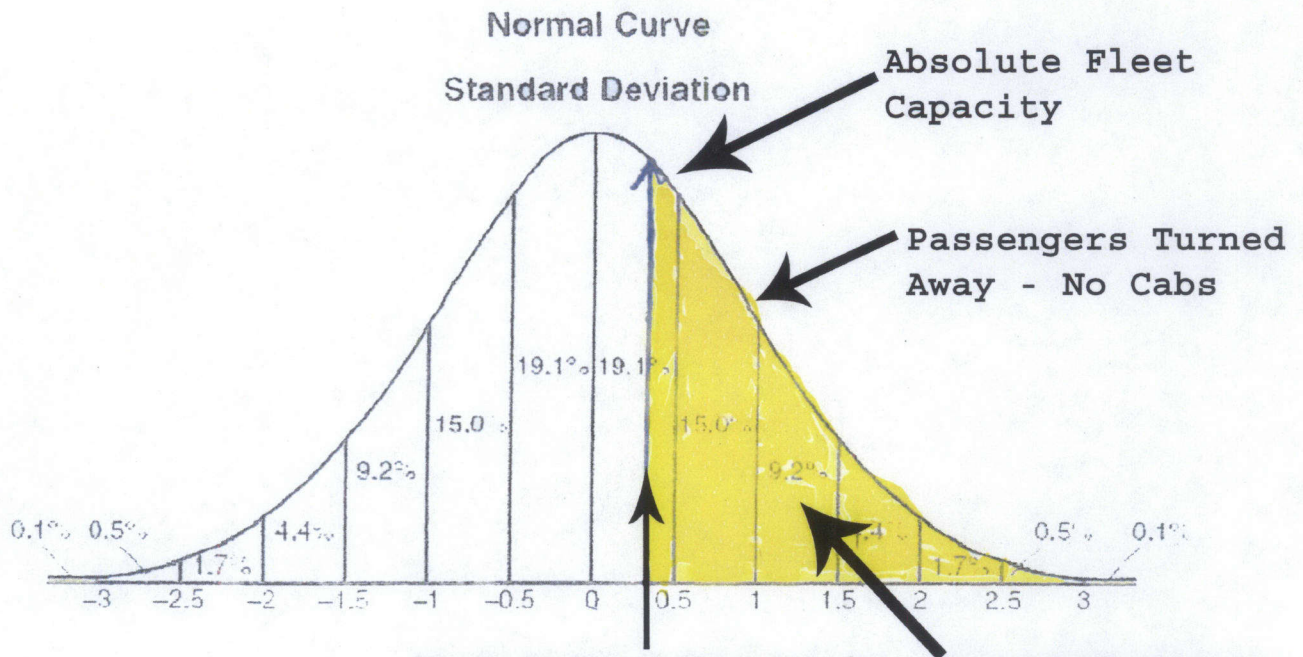
Demand is more or less evenly distributed across the days of the week, supporting the conclusion peak time cabs are unnecessary and/or redundant.

TABLE 8

PC&N STUDY SUBMISSION

OVERVIEW

- Turn-away estimation. Number of cabs should be such that turn-ways equate to marginal cost = marginal revenues (not the average – as presented – which mathematically is an underestimation)
Comparison of totals – graphics and tabular
Luxor and YCC



Mean Demand For Taxis

Max Number Cabs
Marginal Revs
= Marginal Costs
Integral Calculus

Comparison of YCC and Luxor
Average Passenger Trips
August 2011 through May 2012

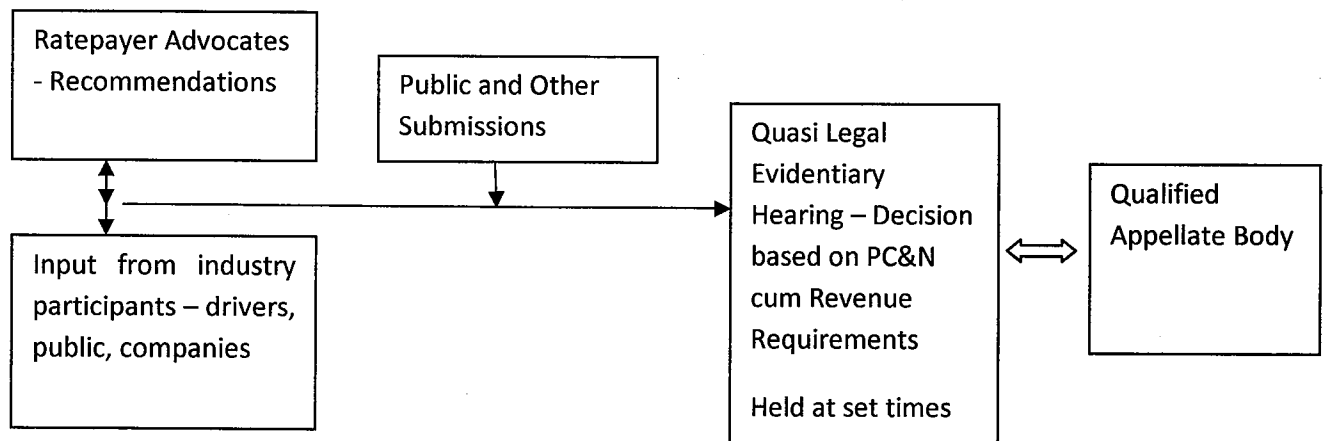
Chapter 3 - The Economic Cost of Regulatory Lag

The San Francisco Municipal Transportation Agency (SFMTA) has the mandated authority to regulate all economic and non-economic attributes of the taxi-industry in San Francisco. These regulations cover exit, entry, ratemaking (fares and gates), vehicle-types, operating rules etc. With these regulatory powers come responsibilities; namely, to keep the industry economically vital. Drivers must be allowed to cover their competitive marginal use value (opportunity cost) and taxi companies must be allowed to generate sufficient revenues to cover reasonable and allowable operating and capital costs (gates and gas).

Most orthodox regulatory authorities in the U.S. and around the world meter all these multivariate factors via regularly scheduled hearings, oftentimes referred to as PC&N hearings. These hearings may be general rate cases that consider all regulatory matters or special interim hearings to deal with ongoing industry dynamics. Many regulatory bodies allow interim rate changes equal to an appropriate inflation index.

A normal model for regulatory review would have a schema as shown below. These hearings must be held at regular intervals. Interim adjustments accounting for special situations should follow the same format and be held only after issues to be considered are made clear and available to members of the industry and public at large i.e. a public convenience and necessity format. Popping surprises on the public is not a recipe for efficient regulation.

Orthodox Regulatory PC&N Schema



Town hall (information gathering) meetings can augment this process, but not replace regular hearings. Proper regulatory oversight requires a proven process. Staff reports and staff generated consulting studies, like this report, may only be input to the PC&N process and must never replace a proper PC&N process. A proper hearing has definite milestones and timelines and the watchwords are transparency and consistency.

Integral to any hearing is the determination of rates. Since the regulators have replaced the market for rate determination, they must explain their process and criteria for rate-making. They must never hide from the market. Market forces are extremely powerful. A regulator must work with the market and not try to devise ways to avoid the clear signals that markets send. Winners and losers must not be created by regulatory fiat.

Regulated industries have their rates (fares, gates, etc.) set to cover all necessary and allowable costs. This approach is known as the revenue requirements process. While regulated ratemaking will not generate the less costly signal of open supply and demand exchanges, rates set in sunshine, following the format discussed above, which use the formula described below will be more acceptable, less uncertain and a closer proxy to what the “invisible hand” would determine.

In an earlier report (Electric Power Research Institute study, May 1998, 3-5), the author presents a workable equation for setting gate and gas caps which also could be used as a guide to calculate competitive fares for drivers. In a non-regulated setting, these productive factors would be rewarded by the interplay of market forces. In a regulated industry such as the San Francisco taxis, applying the following equation (albeit modified), at regular and well noticed PC&N hearings would act as a stimulus for investors by removing the economic uncertainties associated with the current “chaos” approach.

Revenue Requirements Equation

$$R = O + D + T + rB$$

Where B = Rate base (historical costs minus accumulated depreciation)

R = Revenue requirements

O = Operation and maintenance expenses

D = Depreciation charges

T = Taxes

R = Allowable and reasonable weighted average cost of debt and equity capital.

Depending on the time between formal rate or PC&N hearings, most regulators allow for annual increases based on the consumer price index (CPI) or a more relevant industry-particular index.

An example of regulatory lag under the SFMTA for gate and gas – utilizing the CPI:

The CPI is not a good index for taxi companies because of its reliance on products more related to producer and oil-based products. The last adjustment of gate and gas in San Francisco was made in Ordinance 26-08 signed into law by Mayor Gavin Newsom on March 6, 2008. This ordinance allowed full-service companies (i.e. YCC and Luxor) to set gates on one of two tiers: if the vehicle did not meet the City’s green cab criteria, the gate could not exceed an average of \$96.50 per shift; taxis meeting these green cab criteria were given an extra \$7.50 surcharge on the base gate. The bifurcated rate

structure was thus \$96.50 and \$104.00. Parenthetically it must be noted that if regulatory inertia causes the SFMTA to lose effective control over ratemaking, then these well-meaning social goals of these efficient and low emission vehicles will also be lost.

Regulatory Lag

Historical

Between 1999 and 2006, it was estimated that the capitalized losses by YCC and Luxor were approximately \$54 million because the gate did not keep pace with the CPI. In another study by YCC, these amounts were capitalized into 2011 dollars. The capitalized loss of gate revenues for YCC and Luxor, due to regulatory lag, was approximately \$70 million by 2011. This amount is exclusive of losses incurred from regulatory lag since the 2007 green-the-fleet increase (see figure below). The 2007 adjustment was both an acknowledgment of regulatory lag and an inducement to have the cabs switch to a green fleet to meet environmental goals. No effort was made, by the then regulators, to play “regulatory catch-up” so that taxi companies could recover losses already incurred due to rate inertia.

Current

As shown below, just using the CPI (setting the CPI = 100 in 2008) for both fuel efficient and less-fuel efficient cabs would have allowed their gates to keep pace with the CPI. This has not happened. There has been no gate relief under the SFMTA.

Numbers below are for one shift. A quick calculation shows that taking the inflationary erosion for both gate tiers [\$96.50 (\$7.36) and \$104 (\$7.93)], multiplying both by 750 (half the then SF taxi fleet) x (shifts per day) x 365, and adding the two resulting figures together, gives a total loss to the gate and gas sector of \$8,368,778.12 due to the regulatory lag caused by failing to hold PC&N hearings or having automatic inflation-based adjustments. These amounts are illustrative and do not show the exact fleet composition by gas-saving type vehicle, nor do they impute the loss of the opportunity cost of capital on an annualized basis. This example demonstrates why San Francisco taxi regulations require orthodoxy and consistency to avoid further economic losses. Failure to make gate adjustments acts as a disincentive to invest in the industry. Again, it cannot be stressed too much that the CPI most probably an underestimates real taxi company costs.

	CPI	Year	Index of CPI Rebased	Percent Change Yr/Yr	\$96.50	\$104.00
2008	222.767	2008	100.00	NA	\$96.50	\$104.00
2009	224.395	2009	100.73	0.73	\$97.21	\$104.76
2010	227.469	2010	102.11	1.37	\$98.54	\$106.20
2011	233.39	2011	104.77	2.60	\$101.10	\$108.96
2012	239.75	2012	107.62	2.73	\$103.86	\$111.93
Change			7.62%		\$7.36	\$7.93

On August 2, 2011, the SFMTA approved a fare increase. Meter starts (flag drop) went from \$3.10 to \$3.50, rates per 1/5th mile from \$0.45 to \$0.55 and per minute stops by the same amount. Selected data indicate that revenues from taxis rides have increased while the number of actual rides has decreased. There are insufficient data points to draw a conclusion as to demand elasticity or whether this reflects a reaction by independent contactors (most drivers in the San Francisco taxi model) in trading off marginal increases in leisure for potential increases in income. If indeed this phenomenon is long-term and result of demand being inelastic, then this fact would sustain the argument for more cabs.

Daily average changes in YCC meter trips, average time per fare and average fare are shown below for the period from January 2011 through May 2012, including the pre-fare increase period (January 2011 through July 2011) and the post-fare increase period (August 2011 through May 2012). These data are also found in the labeled tables and were thus not assigned a specific table number.

Total Meter Trips YCC - Averages								
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total
Average	20,308	17,493	18,743	19,411	20,418	23,178	25,001	144,552
Average Before	21,537	18,730	19,969	20,766	21,908	24,821	26,607	154,339
Average After	19,422	16,600	17,860	18,435	19,343	21,994	23,843	137,497

Total Trips YCC – Average Time of Ride								
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total
Average	11.37	12.22	11.93	12.13	12.10	11.77	10.88	11.77
Average Before	11.47	12.59	12.05	12.16	12.18	11.81	10.82	11.87
Average After	11.30	11.95	11.84	12.11	12.04	11.74	10.92	11.70

Total Trip YCC – Average Fare								
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total
Average	\$14.23	\$15.45	\$14.58	\$14.59	\$14.57	\$13.94	\$12.42	\$14.25
Average Before	\$12.71	\$13.78	\$13.08	\$13.06	\$13.02	\$12.48	\$11.16	\$12.76
Average After	\$15.32	\$16.66	\$15.66	\$15.69	\$15.69	\$14.99	\$13.34	\$15.33

This perception of demand elasticity may well be what pseudo-taxi services assume: the higher the price, the lower the demand. The two “laws” of demand may be summarized in this way: “the longer a higher price stays in effect, the more people will seek substitutes, and demand will become more elastic.” If regular PC&N hearings were held, these economic parameters could be analyzed frequently in order to optimize fleet size and ensure that the SFMTA maintains effective control over the taxi-fleet.

Notes on tracking devices and automation

Luxor does not have the same degree of automation as YCC. Luxor is adding GPS devices every year. Its goal is 100 percent electronic. YCC achieved this level of automation in 2007. Its devices record every time a taxi-meter is turned on or off, and a record is created on a host server (ISP). This record includes:

- Cab number
- GPS coordinates of the cab
- Identifies source (dispatch or hail [by default])
- Fares
- Street miles traveled
- Time of day

Future PC&N studies of San Francisco taxi companies will be based on 100 percent computerized databases. No effort should be made by the SFMTA to take over these functions from the individual cab companies. This type of investment should not be a public (tax supported) sector expenditure. Plus, the data developed from these devices is not only integral to PC&N hearings, it is a management tool.

YCC operational metrics are all derived from aggregating millions of events into daily, weekly and monthly statistics. This is all computerized. Luxor has similar statistics for its expanding fleet of computerized vehicles, but the less than 100 percent implementation gap means that certain non-automated calculations must be made to derive key operating statistics. All algorithms and assumptions are transparent.

The lack of 100 percent computerized data for Luxor does not impact all areas of quantitative analysis. One key area that is impacted is efficiency. There are many ways to define efficiency. One metric is to look at the percent time a cab spends in carrying revenue paying passengers originated by dispatch, on the one hand, and street-hails on the other. The numerator is the actual time in rides expressed in minutes and the denominator is 1200 minutes based on two 10 hour shifts ($10 \times 2 \times 60 = 1,200$). This is an average over the entire double shift period. Other comparative efficiency measures will be forthcoming over time as computer implementation goes to 100 percent for all cab companies.

The problem for comparative analysis is how to compare a fully automated system (YCC) with a partially automated system (Luxor).

For example, Luxor reported that it averaged 41 fares per cab per day. Based on partial data, it appears the average Luxor fare lasted 11 minutes. Thus 41×11 (total minutes in passenger activities) divided by 1200 (total minutes in two 10-hour shifts) = 37.58 percent. This calculation seems accurate in terms of the fully automated YCC database which reflects an efficiency percentage of 38.70.

Table 9 shows the regulatory lag impact on YCC and Luxor from 1999 through 2007. This was submitted to the Board of Supervisors in 2007. It led to a gate increase tied to the cab companies making a substantial investment in green and energy efficient technology. This is the last gate increase granted

cab companies. There has been no effort since to ensure that ongoing O&M costs are covered and that capital investments made by the companies receive an equitable weighted average cost of capital return

Table 10 updates the economic impact of regulatory lag, due to gate inertia, through 2011. .

TABLE 9
PC&N STUDY SUBMISSION
OVERVIEW

- Gate and Gas Regulatory Lag

**Gate and Gas Regulatory Lag
1999-2007
Presented to BoS**

Revenue Losses

	Yellow Cab (475 Medallions)	Luxor Cab 122 Medallions
1999 - Present		
At 5% (2007 \$)	\$42,692,000	\$10,965,000
At 6% (2007 \$)	\$43,953,000	\$11,289,000

TABLE 10

PC&N STUDY SUBMISSION

OVERVIEW

- Updating Regulatory Losses for Period 1999-2007 @ 6% Capitalization expressed in \$2011

Updating Regulatory Losses for Period 1999-2007
@ 6% Capitalization expressed in \$2011

- Yellow Cab – $\$43,953,000 * 1.06^4 = \$55,489,649$ Lost due lag
- Luxor Cab - $\$11,289,000 * 1.06^4 = \$14,252,102$ Lost due lag
- These amounts do not include regulatory lag for period 2008 to present (2011)
- These are non-recoverable funds due to the regulators at least adjusting the gate and gas to reflect changes in the CPI. These funds could have been plowed back into the industry.
- Regulatory lag for economic parameters requires the CCSF/SFMTA to adopt regular omnibus PC&N (see website) hearings and to ensure annual adjustments to gate, gas, and fares by automatic CPI adjustments.
- Regulatory dysfunction cannot be “carried” by such a small industry that requires less – not more stochastic regulations.

Chapter 4 - Production and Efficiency

Cabs produce revenue passenger miles. Unlike buses, trains, planes, ships and other forms of travel, cabs rely on dispatch and street hails. YCC and Luxor data show that the ratio of street-hails to dispatch (all formats) is 4 to 1. Eighty percent of passenger revenues come from street hails. Twenty percent of taxi rides come from dispatch. Taxi drivers in San Francisco are in large part independent contractors who seek riders from both dispatch and search.

Three key operating tables are presented below for YCC in Tables 11 through 14.

Table 11 – Dispatch and hail – Total Trips 2011-2012

Table 12 – Meter Clicks per Week

Table 13 - Average Time per Ride

Table 14 – Average Fare

Productivity – Cab companies on average are 39 percent efficient. This efficiency quotient includes start-up time, shut-down time, comfort stops, refueling time, search costs and miscellaneous others. An independent consultant took the peak-time periods (meter clicks) on a Friday and Saturday and calculated that efficiency, using the above algorithm, rose to approximately 51 percent. These two three- hour time periods are coveted by drivers, and it is assumed that they eliminate normal downtime to accommodate this demand surge.

By allowing any qualified vehicle to become a taxi, the CPUC will ensure that drivers will be deprived of this currently anticipated boost in income via the peak shaving activities of these quasi-cabs. Quasi-cabs often provide a potentially inferior transportation service as compared to regulated taxis, including considerations of safety, insurance coverage and the availability of back-up vehicles to mention a few. Unless the SFMTA allows additional full-medallions, the cab industry as a whole will face continual erosion of its market share. All the positive externalities that an efficient cab system brings to a vibrant economy like San Francisco will be lost.

By authorizing additional cabs, the SFMTA must not use an average figure. As alluded to earlier, economists know that doubling the size of the Paris Metro will not double its output, a phenomenon also known as “diminishing marginal productivity”. The figures produced for this study did not impute decreasing marginal productivity. This phenomenon, and the probabilistic turn-away problem of a fixed supply constraint, is a subject for further investigation.

Table 11 Dispatch and Hail – Total Trips 2011-2012

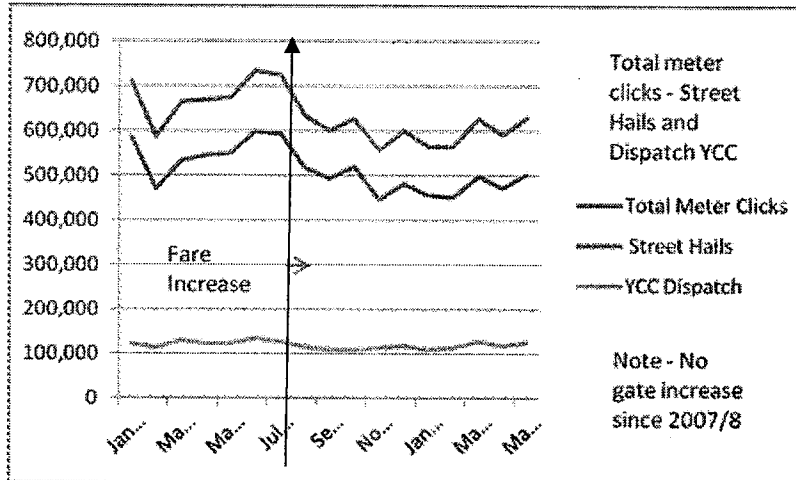


Table 12

**Meter Clicks per Week – Day of Week
(Statistics summarized)**

YCC Week	Meter on							Total
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
1/2/2011	14,521	14,864	15,546	16,635	18,071	21,581	22,536	123754
1/9/2011	20,663	19,910	21,403	20,550	21,103	22,446	24,120	150195
1/16/2011	21,363	16,117	18,161	18,282	19,556	22,773	24,169	140421
1/23/2011	19,206	13,393	17,630	19,416	20,528	23,272	24,833	138278
1/30/2011	18,421	15,632	17,225	17,850	19,463	24,127	25,932	138650
2/6/2011	22,388	17,997	17,652	18,397	20,131	23,600	25,409	145574
2/13/2011	20,104	19,966	21,314	21,110	21,590	23,432	25,025	152541
2/20/2011	22,004	16,485	18,131	19,024	20,771	24,042	25,227	145684
2/27/2011	19,974	17,868	20,024	20,947	21,989	23,735	24,771	149308
3/6/2011	19,065	17,279	18,290	19,131	20,621	23,350	25,509	143245
3/13/2011	19,686	17,614	19,848	19,991	23,539	25,574	25,907	152159
3/20/2011	19,135	18,028	19,010	19,713	22,102	26,792	29,428	154208
3/27/2011	22,962	19,466	18,893	20,281	22,928	28,323	27,465	160318
4/3/2011	22,244	21,274	19,323	21,992	21,478	30,325	31,801	168437
4/10/2011	24,450	23,141	21,581	21,051	20,986	23,239	24,632	159080
4/17/2011	20,687	18,043	18,365	19,064	20,418	23,027	24,333	143937
4/24/2011	19,435	17,807	18,563	19,376	20,788	23,488	24,816	144273
5/1/2011	20,117	17,360	18,443	19,915	22,279	24,969	25,093	148176
5/8/2011	19,044	17,462	19,235	20,410	21,156	24,234	27,301	148842
5/15/2011	26,899	21,962	22,256	20,590	21,056	23,227	25,470	161460
5/22/2011	20,955	17,877	19,205	20,123	23,490	25,690	26,979	154319
5/29/2011	23,403	18,028	20,920	23,224	23,578	26,440	29,817	165410
6/5/2011	23,935	19,668	20,660	24,610	24,087	28,866	30,010	171836
6/12/2011	24,019	20,996	21,807	25,062	26,117	26,565	30,635	175201
6/19/2011	22,984	19,501	22,514	23,260	23,563	25,806	29,674	167302
6/26/2011	27,219	21,869	23,504	20,854	24,062	22,910	25,338	165756
7/3/2011	21,516	21,399	24,434	24,721	22,341	25,599	27,902	167912
7/10/2011	23,744	21,455	24,744	23,823	24,389	26,005	27,930	172090
7/17/2011	20,395	18,860	20,132	21,067	22,261	25,029	27,046	154790
7/24/2011	22,358	18,000	20,530	21,817	21,576	25,186	26,797	156264
7/31/2011	24,755	21,320	19,688	21,456	23,140	25,796	28,927	165082
8/7/2011	22,151	17,411	18,244	18,654	20,174	22,637	23,681	142952
8/14/2011	20,352	17,697	17,716	18,249	19,465	22,019	23,451	138949
8/21/2011	18,674	17,232	17,608	18,409	19,483	22,202	23,844	137452
8/28/2011	19,222	17,915	19,630	19,450	21,651	23,169	23,137	144174
9/4/2011	20,855	15,456	16,434	17,781	19,182	21,896	24,356	135960

9/11/2011	19,801	18,162	19,071	19,366	19,807	22,403	24,389	142999
9/18/2011	19,886	16,863	17,556	17,888	20,310	22,858	24,352	139713
9/25/2011	21,384	17,678	17,653	18,083	19,068	21,917	24,697	140480
10/2/2011	21,339	18,423	19,403	19,058	19,703	21,896	25,183	145005
10/9/2011	20,813	17,142	17,052	18,020	19,778	22,981	25,002	140788
10/16/2011	21,220	17,393	17,415	17,784	19,068	22,021	24,838	139739
10/23/2011	20,322	17,506	18,371	18,622	19,004	21,826	24,862	140513
10/30/2011	20,473	17,037	19,071	18,284	19,708	22,554	24,256	141383
11/6/2011	19,176	18,078	19,398	19,902	20,461	25,078	24,924	147017
11/13/2011	20,034	15,966	16,848	18,450	19,059	21,914	24,500	136771
11/20/2011	17,931	15,200	15,896	16,579	11,256	12,820	16,991	106673
11/27/2011	15,418	15,383	16,090	18,018	20,880	25,467	26,015	137271
12/4/2011	20,583	17,385	18,802	19,996	20,494	24,281	27,099	148640
12/11/2011	18,731	17,058	18,507	19,415	20,561	24,867	25,188	144327
12/18/2011	21,531	16,416	19,060	19,111	18,411	17,023	13,245	124797
12/25/2011	8,520	10,548	14,038	16,555	16,541	19,397	25,145	110744
1/1/2012	19,832	10,757	13,588	13,589	15,513	19,214	19,680	112173
1/8/2012	17,068	17,961	19,641	19,448	19,141	21,363	24,843	139465
1/15/2012	19,914	16,463	17,313	17,287	18,483	21,380	22,727	133567
1/22/2012	21,184	16,249	16,293	17,188	18,347	21,209	22,532	133002
1/29/2012	16,974	14,696	16,183	17,391	18,443	21,231	22,571	127489
2/5/2012	18,516	16,248	18,196	19,888	21,383	23,812	23,555	141598
2/12/2012	17,916	16,026	18,388	18,500	18,772	22,400	24,732	136734
2/19/2012	21,293	14,771	16,698	17,328	18,507	21,774	23,235	133606
2/26/2012	18,511	17,164	18,804	19,440	20,672	21,824	23,301	139716
3/4/2012	18,565	17,304	19,358	20,006	19,938	21,987	23,605	140763
3/11/2012	17,391	15,740	18,414	19,247	19,545	22,044	25,414	137795
3/18/2012	19,282	16,458	17,371	18,753	20,372	21,960	26,593	140789
3/25/2012	18,949	17,966	19,447	17,897	19,432	22,408	25,354	141453
4/1/2012	19,383	18,786	20,279	19,231	21,127	22,705	22,112	143623
4/8/2012	17,661	15,394	17,221	17,230	19,146	22,539	23,446	132637
4/15/2012	18,751	16,867	18,372	19,512	20,126	21,972	23,971	139571
4/22/2012	18,641	16,118	16,871	18,255	19,045	21,678	26,743	137351
4/29/2012	21,339	18,348	20,206	20,472		23,020	26,256	150327
5/6/2012	20,935	18,026	19,582	20,287		24,644	24,786	149140
5/13/2012	19,119	17,907	17,285	18,758		22,691	24,487	140415
5/20/2012	24,209	17,179	17,704	18,066		21,197	21,976	139499
5/27/2012	21,314	15,434	16,907	17,253		21,449	24,166	135308
Average	20,308	17,493	18,743	19,411		23,178	25,001	144,552
Std Dev	2,671	2,207	2,056	1,995		2,458	2,714	13,335
Max	27,219	23,141	24,744	25,062		30,325	31,801	175,201
Min	8,520	10,548	13,588	13,589	11,256	12,820	13,245	106,673
Spread	18,699	12,593	11,156	11,473	14,861	17,505	18,556	68,528

Table 13
Average Time per Ride per Week
(Statistics summarized)

YCC Week	Time							Average Time
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
1/2/2011	11.42	12.12	12.07	11.48	11.42	11.19	10.34	11.43
1/9/2011	11.17	11.59	11.1	11.35	12.15	11.86	10.74	11.42
1/16/2011	10.81	11.73	12.29	12.11	11.81	11.46	10.52	11.53
1/23/2011	12.59	16.04	11.99	12.04	11.94	11.49	10.79	12.41
1/30/2011	11.15	12.09	11.61	11.94	12.18	11.41	10.44	11.55
2/6/2011	10.89	12.24	12.12	12.12	11.78	11.75	10.89	11.69
2/13/2011	11.38	12.25	11.66	11.79	12.04	12.3	11.15	11.8
2/20/2011	11.17	11.7	11.9	11.66	12.27	11.52	10.41	11.52
2/27/2011	11.25	12.27	11.47	11.6	11.66	11.71	10.61	11.51
3/6/2011	11.06	12.82	11.66	11.96	11.81	11.32	10.95	11.65
3/13/2011	11.56	12.61	12.12	12.27	12	11.7	10.62	11.84
3/20/2011	11.32	12.09	12.19	12.44	12.42	11.76	10.49	11.82
3/27/2011	11.02	12.37	11.88	12.07	12.45	12.27	10.53	11.8
4/3/2011	11.35	12.49	12.16	12.37	12.42	11.85	10.92	11.94
4/10/2011	11.38	12.46	11.93	12.16	11.98	11.71	10.68	11.76
4/17/2011	11.52	12.15	12.07	13.21	12.39	11.77	10.61	11.96
4/24/2011	11.41	12.25	12.09	11.93	12.02	11.79	10.83	11.76
5/1/2011	11.5	12.24	12.1	12.23	11.92	11.58	10.94	11.79
5/8/2011	11.49	12.31	12.45	11.95	12.36	11.92	11.35	11.97
5/15/2011	11.28	11.52	11.67	12.23	12.6	12.37	11.36	11.86
5/22/2011	11.46	21.06	12.06	12.04	12.4	11.73	10.75	13.07
5/29/2011	11.23	11.67	12.34	12.03	11.94	11.79	10.59	11.66
6/5/2011	11.55	12.1	12.21	12.18	12.02	11.99	10.81	11.84
6/12/2011	11.93	12.45	12.31	12.56	12.23	12.08	11.01	12.08
6/19/2011	11.88	12.65	12.59	12.7	12.72	12.02	11.58	12.31
6/26/2011	12.19	12.22	12.46	12.3	12.8	12.08	11.27	12.19
7/3/2011	11.16	11.49	12.2	12.37	12.22	12.04	10.98	11.78
7/10/2011	11.72	12.4	12.22	12.61	12.87	12.02	10.93	12.11
7/17/2011	11.97	12.67	12.82	12.93	12.37	11.97	10.8	12.22
7/24/2011	12.07	12.06	11.91	11.9	12.15	11.79	10.86	11.82
7/31/2011	11.61	12.16	12	12.32	12.37	11.93	10.79	11.88
8/7/2011	11.36	12.54	11.94	13.73	12.3	12.31	11.47	12.24
8/14/2011	12.2	12.69	12.07	12.17	12.1	11.88	11.07	12.03
8/21/2011	11.41	12.36	12	12.27	12.28	12.22	10.94	11.93
8/28/2011	11.24	12.54	12.23	12.08	11.94	11.88	10.72	11.8
9/4/2011	10.65	11.36	12.57	12.12	12.13	12.2	10.96	11.71

9/11/2011	11.69	12.22	11.98	12.74	12.31	12.12	10.91	12
9/18/2011	12.02	12.31	11.92	12.77	12.41	11.74	10.76	11.99
9/25/2011	11.17	12.19	12.25	12.53	12.4	12.27	17.55	12.91
10/2/2011	12.41	12.4	11.7	16.37	13.01	12.1	11.05	12.72
10/9/2011	12.04	12.01	12.24	12.34	12.6	12.44	10.98	12.09
10/16/2011	11.51	12.27	12.15	12.11	12.26	11.86	11.43	11.94
10/23/2011	11.38	12.03	11.95	12.36	12.32	11.7	12.48	12.03
10/30/2011	11.14	11.46	12.13	11.73	12.39	12.02	10.92	11.68
11/6/2011	11.22	12.3	12.34	12.4	12.43	12.23	10.95	11.98
11/13/2011	11.74	12.53	12.15	12.26	12.46	12.15	10.53	11.97
11/20/2011	10.94	11.87	11.86	12.09	11.03	10.33	10.51	11.23
11/27/2011	11.2	12.21	12.11	11.84	11.65	11.53	10.52	11.58
12/4/2011	11.27	12.09	11.77	11.75	12.08	11.76	10.7	11.63
12/11/2011	10.69	11.66	11.51	12.02	12.02	12.06	10.87	11.55
12/18/2011	10.73	12.36	11.57	11.81	11.93	11.33	10.63	11.48
12/25/2011	10.81	11.25	11.51	11.29	11.32	10.95	10.13	11.04
1/1/2012	11.3	11.52	11.66	11.92	11.48	11.08	10.37	11.33
1/8/2012	13.4	11.26	10.88	11.15	12.18	11.66	10.56	11.59
1/15/2012	10.41	11.39	12.04	11.92	11.95	12	10.72	11.49
1/22/2012	11.27	12.27	11.47	11.89	11.8	11.5	10.53	11.53
1/29/2012	11.03	11.84	11.19	11.61	11.72	11.36	10.6	11.34
2/5/2012	10.77	12.28	12.52	11.99	11.61	11.66	11.13	11.71
2/12/2012	11.28	11.69	11.37	11.71	12.31	11.26	9.98	11.37
2/19/2012	10.16	10.88	11.45	11.44	11.49	11.51	10.59	11.07
2/26/2012	11.33	12.12	11.55	11.3	11.82	11.65	10.5	11.47
3/4/2012	11.12	11.42	11.43	11.61	11.65	11.54	10.67	11.35
3/11/2012	11.13	11.88	11.51	12.21	11.92	11.68	10.72	11.58
3/18/2012	12.55	12.01	11.82	11.82	11.9	11.55	10.3	11.71
3/25/2012	10.85	11.6	11.65	11.8	11.82	11.6	10.27	11.37
4/1/2012	11.2	12.04	11.65	12.19	11.96	11.01	10.24	11.47
4/8/2012	10.76	11.82	11.62	11.38	11.77	11.68	10.68	11.38
4/15/2012	11.2	12.04	11.79	12.01	12.03	12.26	10.86	11.74
4/22/2012	11.47	11.66	11.7	11.91	12.15	11.85	10.72	11.64
4/29/2012	11.12	11.7	11.98	11.97	12.03	11.54	10.71	11.58
5/6/2012	11.2	11.99	11.41	11.72	12.4	11.93	10.59	11.61
5/13/2012	11.49	12.46	12.2	12.23	12.46	12.14	11.37	12.05
5/20/2012	11.15	12.1	12.08	12.25	12.1	11.65	10.39	11.67
5/27/2012	10.92	11.3	11.99	11.75	11.75	11.59	10.81	11.45
Average	11.37	12.22	11.93	12.13	12.10	11.77	10.88	11.77
Std Dev	0.52	1.21	0.37	0.66	0.36	0.37	0.87	0.37
Max	13.40	21.06	12.82	16.37	13.01	12.44	17.55	13.07
Min	10.16	10.88	10.88	11.15	11.03	10.33	9.98	11.04
Spread	3.24	10.18	1.94	5.22	1.98	2.11	7.57	2.03

Table 14
Average Fare per ride per Week

YCC	Fare							Average Fare
Week	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Average Fare
1/2/2011	\$13.30	\$14.13	\$13.05	\$12.53	\$12.10	\$11.58	\$10.95	\$12.52
1/9/2011	\$13.26	\$13.29	\$11.90	\$12.34	\$13.27	\$12.70	\$11.04	\$12.54
1/16/2011	\$11.61	\$13.49	\$13.50	\$13.20	\$12.73	\$12.31	\$10.95	\$12.54
1/23/2011	\$12.66	\$13.62	\$12.98	\$13.07	\$13.06	\$12.16	\$10.80	\$12.62
1/30/2011	\$12.37	\$13.34	\$12.09	\$12.31	\$12.87	\$12.21	\$10.57	\$12.25
2/6/2011	\$11.89	\$13.98	\$13.25	\$13.08	\$12.59	\$12.46	\$10.84	\$12.58
2/13/2011	\$12.78	\$12.85	\$12.45	\$12.60	\$12.70	\$12.84	\$11.21	\$12.49
2/20/2011	\$11.63	\$13.10	\$13.26	\$12.73	\$12.63	\$12.07	\$10.89	\$12.33
2/27/2011	\$12.99	\$13.95	\$12.57	\$12.22	\$12.62	\$12.27	\$10.81	\$12.49
3/6/2011	\$12.31	\$13.46	\$12.57	\$13.09	\$12.63	\$12.09	\$11.14	\$12.47
3/13/2011	\$12.63	\$13.73	\$12.81	\$13.28	\$12.74	\$11.95	\$11.05	\$12.60
3/20/2011	\$12.69	\$13.82	\$13.06	\$12.83	\$12.58	\$12.50	\$10.77	\$12.61
3/27/2011	\$12.28	\$13.79	\$12.72	\$12.81	\$12.80	\$11.93	\$10.78	\$12.45
4/3/2011	\$12.84	\$13.74	\$12.81	\$12.90	\$12.90	\$12.27	\$10.93	\$12.63
4/10/2011	\$12.55	\$14.12	\$12.77	\$13.37	\$13.29	\$12.45	\$11.15	\$12.81
4/17/2011	\$12.49	\$13.51	\$12.84	\$13.04	\$12.98	\$11.93	\$10.70	\$12.50
4/24/2011	\$12.31	\$13.93	\$13.46	\$13.06	\$13.05	\$12.50	\$11.09	\$12.77
5/1/2011	\$13.01	\$14.07	\$13.38	\$13.15	\$12.54	\$12.17	\$11.50	\$12.83
5/8/2011	\$13.09	\$14.45	\$13.26	\$13.16	\$13.65	\$13.05	\$11.79	\$13.21
5/15/2011	\$12.48	\$12.85	\$12.70	\$13.75	\$13.78	\$13.02	\$11.72	\$12.90
5/22/2011	\$13.21	\$14.18	\$13.29	\$12.94	\$13.35	\$12.78	\$11.15	\$12.99
5/29/2011	\$11.61	\$13.86	\$14.17	\$13.23	\$13.19	\$12.42	\$11.40	\$12.84
6/5/2011	\$13.43	\$13.85	\$13.30	\$12.98	\$13.07	\$12.83	\$11.52	\$13.00
6/12/2011	\$13.55	\$14.55	\$13.46	\$13.69	\$13.10	\$12.81	\$11.37	\$13.22
6/19/2011	\$13.53	\$14.30	\$13.49	\$13.30	\$13.38	\$12.72	\$11.34	\$13.15
6/26/2011	\$12.72	\$13.93	\$12.99	\$13.40	\$13.39	\$12.99	\$11.37	\$12.97
7/3/2011	\$11.62	\$12.74	\$13.61	\$12.83	\$12.70	\$12.52	\$11.39	\$12.49
7/10/2011	\$13.54	\$14.52	\$13.40	\$13.57	\$13.93	\$13.09	\$11.63	\$13.38
7/17/2011	\$13.38	\$14.05	\$13.79	\$13.79	\$13.42	\$12.63	\$11.23	\$13.18
7/24/2011	\$13.45	\$14.10	\$13.28	\$13.28	\$13.35	\$12.61	\$11.54	\$13.09
7/31/2011	\$12.91	\$13.97	\$13.23	\$13.34	\$13.38	\$12.95	\$11.22	\$13.00
8/7/2011	\$13.06	\$15.19	\$13.30	\$13.57	\$13.49	\$13.18	\$11.83	\$13.37
8/14/2011	\$13.70	\$14.90	\$13.54	\$13.27	\$13.36	\$12.66	\$11.65	\$13.30
8/21/2011	\$13.04	\$14.36	\$13.38	\$13.35	\$13.49	\$12.76	\$11.44	\$13.12
8/28/2011	\$12.78	\$14.93	\$13.76	\$12.80	\$14.70	\$15.88	\$13.66	\$14.07
9/4/2011	\$13.73	\$16.67	\$17.65	\$16.22	\$16.00	\$15.66	\$14.06	\$15.71
9/11/2011	\$16.25	\$17.39	\$16.19	\$16.98	\$16.64	\$15.79	\$13.79	\$16.15
9/18/2011	\$16.69	\$17.56	\$16.14	\$16.88	\$16.36	\$15.38	\$13.38	\$16.06
9/25/2011	\$15.63	\$17.04	\$16.25	\$16.19	\$16.21	\$15.77	\$15.05	\$16.02

10/2/2011	\$17.71	\$16.48	\$15.34	\$16.03	\$17.33	\$15.51	\$13.35	\$15.96
10/9/2011	\$15.38	\$16.77	\$16.87	\$16.77	\$16.73	\$16.09	\$13.76	\$16.05
10/16/2011	\$15.91	\$17.60	\$16.51	\$16.43	\$16.37	\$15.62	\$14.13	\$16.08
10/23/2011	\$16.47	\$17.02	\$16.01	\$16.96	\$16.61	\$15.13	\$13.09	\$15.90
10/30/2011	\$15.52	\$15.96	\$16.87	\$15.98	\$16.36	\$16.02	\$13.47	\$15.74
11/6/2011	\$16.32	\$17.60	\$16.72	\$15.98	\$16.41	\$15.55	\$13.75	\$16.05
11/13/2011	\$16.70	\$17.85	\$16.60	\$16.63	\$16.56	\$15.71	\$13.21	\$16.18
11/20/2011	\$14.95	\$15.63	\$15.31	\$15.74	\$15.77	\$13.45	\$13.86	\$14.96
11/27/2011	\$16.99	\$18.35	\$16.75	\$15.99	\$15.29	\$14.54	\$12.98	\$15.84
12/4/2011	\$15.71	\$16.80	\$15.71	\$15.47	\$15.58	\$14.80	\$13.06	\$15.30
12/11/2011	\$15.05	\$16.21	\$15.39	\$15.87	\$15.48	\$15.11	\$13.46	\$15.23
12/18/2011	\$14.04	\$15.80	\$15.00	\$15.31	\$15.51	\$15.49	\$14.71	\$15.12
12/25/2011	\$15.69	\$15.92	\$16.17	\$15.11	\$14.59	\$14.26	\$12.76	\$14.93
1/1/2012	\$14.48	\$17.73	\$17.41	\$15.21	\$14.78	\$13.95	\$13.15	\$15.24
1/8/2012	\$16.85	\$16.05	\$14.33	\$15.15	\$16.69	\$15.43	\$13.54	\$15.44
1/15/2012	\$14.10	\$16.30	\$16.43	\$16.04	\$15.27	\$15.07	\$13.71	\$15.28
1/22/2012	\$15.21	\$17.74	\$15.67	\$15.99	\$15.72	\$14.97	\$13.05	\$15.48
1/29/2012	\$15.37	\$16.65	\$14.84	\$15.77	\$15.61	\$14.80	\$13.21	\$15.18
2/5/2012	\$14.94	\$17.59	\$16.58	\$15.71	\$15.12	\$14.88	\$13.90	\$15.53
2/12/2012	\$15.95	\$15.95	\$14.53	\$15.79	\$15.92	\$14.80	\$12.71	\$15.09
2/19/2012	\$13.36	\$16.21	\$15.99	\$15.30	\$15.33	\$14.93	\$13.06	\$14.88
2/26/2012	\$16.20	\$17.38	\$14.87	\$15.17	\$15.66	\$15.31	\$13.18	\$15.40
3/4/2012	\$16.07	\$16.10	\$15.39	\$15.20	\$15.60	\$15.15	\$13.56	\$15.29
3/11/2012	\$15.91	\$16.93	\$14.76	\$15.82	\$15.94	\$14.74	\$13.42	\$15.36
3/18/2012	\$15.86	\$17.12	\$16.05	\$16.01	\$15.89	\$15.03	\$13.02	\$15.57
3/25/2012	\$15.40	\$16.59	\$15.13	\$16.36	\$15.84	\$14.69	\$13.00	\$15.29
4/1/2012	\$15.55	\$16.74	\$14.94	\$15.86	\$15.54	\$14.04	\$12.77	\$15.06
4/8/2012	\$14.78	\$16.69	\$14.92	\$15.37	\$15.14	\$15.24	\$13.32	\$15.06
4/15/2012	\$15.79	\$17.14	\$16.03	\$16.30	\$15.96	\$15.64	\$13.39	\$15.75
4/22/2012	\$15.95	\$16.81	\$15.90	\$15.68	\$16.14	\$15.29	\$13.39	\$15.59
4/29/2012	\$15.55	\$16.40	\$15.89	\$16.00	\$15.64	\$15.15	\$13.35	\$15.43
5/6/2012	\$15.58	\$17.52	\$15.37	\$15.59	\$15.59	\$15.28	\$13.40	\$15.48
5/13/2012	\$15.97	\$17.01	\$15.59	\$16.18	\$16.58	\$15.83	\$14.22	\$15.91
5/20/2012	\$15.02	\$17.24	\$16.43	\$16.93	\$16.27	\$15.08	\$13.23	\$15.74
5/27/2012	\$13.75	\$16.33	\$16.75	\$15.66	\$15.45	\$14.95	\$13.40	\$15.18
Average	\$14.23	\$15.45	\$14.58	\$14.59	\$14.57	\$13.94	\$12.42	\$14.25
Std Dev	\$1.61	\$1.60	\$1.53	\$1.51	\$1.50	\$1.41	\$1.21	\$1.40
Max	\$17.71	\$18.35	\$17.65	\$16.98	\$17.33	\$16.09	\$15.05	\$16.18
Min	\$11.61	\$12.74	\$11.90	\$12.22	\$12.10	\$11.58	\$10.57	\$12.25
Spread	\$6.10	\$5.61	\$5.75	\$4.76	\$5.23	\$4.51	\$4.48	\$3.93

APPENDIX

NO. 1

REGULATING SAN FRANCISCO TAXIS 2009

PRESENTATION TO SFMTA TAXI STAFF

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REGULATING SF TAXI CABS

Regulations

- Economic Regulations
 - Establishing a regulatory system to ensure transparency and consistency. This includes setting fares and fares, by a systematic, transparent non-discretionary system that avoids regulatory lags and allows all participants to have meaningful input. This also includes making decisions on auctions and transferable rights.
- Non-economic rules and regulations
 - Establishes rules of operations and levels of service. Exit and entry rules are part of both the economic and non-economic “regulations” and must not be uncoupled.
- A New Approach to allocating medallions is presented first in the context of recently adopted Proposition A and the increasing shortfalls in City and SFMTA budgets. It is a conservative approach that is illustrative of the type revenues the city may expect by allowing a moderate use of a constrained (set price) market approach.

A New Approach To Allocating Taxi Medallions

Helping the SFMTA Reduce Its
Projected Budget Deficit

SFMTA PROJECTED BUDGET DEFICITS

July 14, 2009 SFMTA Meeting

Net Income Stream SFMTA - Budget						
	2010	2011	2012	2013	2014	2015
\$mm						
	Expressed in nominal or current dollars					
Item	2010	2011	2012	2013	2014	2015
Revenue	768	768	768	768	768	768
Expense	768	844	890	970	1080	1122
Deficit	0	-76	-122	-202	-312	-354

Assumptions

Scenario 1

- City sells 100 permits with transferability at \$250,000 each immediately
- Every year thereafter city sell 40 similar permits at \$250,000 (adjusted for inflation)
- City allows current permit holders to buy transferability rights at \$200,00 (adjusted for inflation)
- Assume 100 transfer rights are purchased each year.
- The City charges a 10 percent fee on transfers.
- Assume 100 such transfers each year
- What is the impact on the SFMTA projected budget deficits?

Revenues Generated Using Scenario 1 Assumptions City Sells Medallions (Inflation @ 3%)

	Number of Permits	Price		Revenues	
		Constant \$	Price in Current \$	Constant \$	to SF
Initial Year	100	\$250,000	\$250,000	\$25,000,000	\$25,000,000
Year + 1	40	250,000	257,500	10,300,000	10,300,000
Year + 2	40	250,000	265,225	10,609,000	10,609,000
Year + 3	40	250,000	273,182	10,927,270	10,927,270
Year + 4	40	250,000	281,377	11,255,088	11,255,088
Year + 5	40	250,000	289,819	11,592,741	11,592,741
Year + 6	40	250,000	298,513	11,940,523	11,940,523
Year + 7	40	250,000	307,468	12,298,739	12,298,739
Year + 8	40	250,000	316,693	12,667,701	12,667,701
Year + 9	40	250,000	326,193	13,047,732	13,047,732
Year + 10	40	250,000	335,979	13,439,164	13,439,164

Revenues Generated Using Scenario 1 Assumptions City Sells Transfer Rights (Inflation @ 3%)

Initial Year	Number of Permits	Exchange Price		Revenues to SF
		Constant \$	Exchange Price in Current \$	
Initial Year	100	\$200,000	\$200,000	\$20,000,000
Year + 1	100	200,000	206,000	20,600,000
Year + 2	100	200,000	212,180	21,218,000
Year + 3	100	200,000	218,545	21,854,540
Year + 4	100	200,000	225,102	22,510,176
Year + 5	100	200,000	231,855	23,185,481
Year + 6	100	200,000	238,810	23,881,046
Year + 7	100	200,000	245,975	24,597,477
Year + 8	100	200,000	253,354	25,335,402
Year + 9	100	200,000	260,955	26,095,464
Year + 10	100	200,000	268,783	26,878,328

Revenues Generated From Intra-Industry Transfers

	Number of Permits	Exchange Price		Revenues in Exchange Fees/10%
		Constant \$	Exchange Price in Current \$	
Initial Year	100	\$200,000	\$200,000	\$2,000,000
Year + 1	100	200,000	206,000	2,060,000
Year + 2	100	200,000	212,180	2,121,800
Year + 3	100	200,000	218,545	2,185,454
Year + 4	100	200,000	225,102	2,251,018
Year + 5	100	200,000	231,855	2,318,548
Year + 6	100	200,000	238,810	2,388,105
Year + 7	100	200,000	245,975	2,459,748
Year + 8	100	200,000	253,354	2,533,540
Year + 9	100	200,000	260,955	2,609,546
Year + 10	100	200,000	268,783	2,687,833

Total Revenues Flowing to San Francisco from Scenario 1 Approach

	Permit Sales	Transfer		Total Rev to SF Scenario 1
		Rights	Fees	
Initial Year	\$25,000,000	\$20,000,000	\$2,000,000	\$47,000,000
Year + 1	10,300,000	20,600,000	2,060,000	32,960,000
Year + 2	10,609,000	21,218,000	2,121,800	33,948,800
Year + 3	10,927,270	21,854,540	2,185,454	34,967,264
Year + 4	11,255,088	22,510,176	2,251,018	36,016,282
Year + 5	11,592,741	23,185,481	2,318,548	37,096,770
Year + 6	11,940,523	23,881,046	2,388,105	38,209,673
Year + 7	12,298,739	24,597,477	2,459,748	39,355,964
Year + 8	12,667,701	25,335,402	2,533,540	40,536,643
Year + 9	13,047,732	26,095,464	2,609,546	41,752,742
Year + 10	13,439,164	26,878,328	2,687,833	43,005,324

Impact of Scenario 1 Approach on SFMTA Budget

SFMTA APRIL 2009 BUDGET PROJECTIONS

(Estimated in nominal or current dollars (the budget deficit has since been increased))

\$MM	2010	2011	2012	2013	2014	2015
ITEM						
REVENUE	768	768	768	768	768	768
EXPENSE	768	844	890	970	1080	1122
Deficit	\$0.00	\$76.00	\$122.00	\$202.00	\$312.00	\$354.00
Scenario 1 Contribution	\$47	\$33	\$34	\$35	\$36	\$37
Change in Deficit	\$47	(\$43)	(\$88)	(\$167)	(\$276)	(\$317)

Note: Scenario benefits continue beyond 2015

Valuing an Asset

Methods

- Free market system – exchanges, auctions, etc. Let the “invisible hand” determine value by trade and exchange. Individual traders via market transactions generate value information.
- Use a preset price based on the capitalized value of projected net income streams (see next slide)
- Use a combination of market and controlled trades and exchanges, wherein the city internalizes initial values and thereafter places a surcharge on market exchanges. See Scenario 1. This mixed approach visualizes a fixed price and many of the Prop K attributes. This approach was used in presenting Scenario 1. It is not a full asset (medallion) capitalization approach.
- Maintain the current system. Calculating the value of a medallion would remain the same, however, life expectancy, driving requirements, and lack of transferability would lower the calculated capitalized value.

Estimating a Value for a Medallion

Strong private property rights allow an individual to capitalize (internalize) with greater certainty the benefits of both present and future net revenues. The present value of an asset is its discounted future net revenue stream. The simple discrete (v continuous) equation for computing present value is expressed below:

$$PV = \sum_{i=1}^t \frac{(R_i - C_i)}{(1+r)^i}$$

Where

PV = Present value

t = Time (number of years)

i = 1 to t

R_i = Revenues in year i

C_i = Costs in year i

∑ = Greek Sigma used to denote the summing operation.

^ = Raise to the power to allow intertemporal (time) discounting

r = Discount rate to equate present with future values

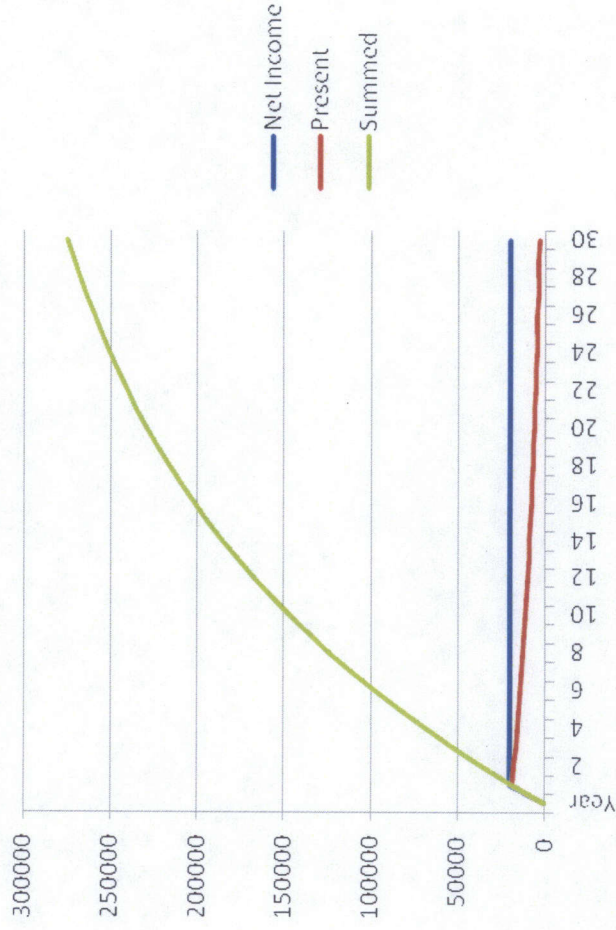
Many subjective factors come into play which impact how different individuals will calculate the present value of a medallion to buy or sell albeit establish their reservation price or price range. Auctions, and open, transparent markets are often more efficient calculators than a priori calculations.

Valuing a Medallion with a Fixed Term (1 to 30), Constant dollar net income of \$20K and A discount Rate of 6%

Y Axis = \$ (dollars)

X Axis = Time in years (t = 1 to 30)

- * Summed = Accumulated present value at various points in time. Max = 30 years
- * Present = Present value of \$20K at different points in time
- * Net income = \$20K in constant dollar terms
- * Note how present value of future \$20K decreases



Present Value of Holding a Medallion for Different Time Periods

- Assumptions:
- Only a perpetual income stream represents a full private property right. The others are constrained; i.e. as with Prop K. which prohibits exchanges, and is time dimensioned by a driving requirement and/or demise.

t = 1 to infinity (albeit a perfectly transferable private property right)

r = .06 (6%)

Annuity (net income stream) = \$20,000 \$c

Present	Present	Present	Present	Present Value
Value @ 5 years	Value @10 years	Value @20 years	Value @ 30 years	@ infinity (Full PPR)
\$84,247	\$147,202	\$229,398	\$275,297	\$333,333

Underlying Requirement

- The regulators under any regulatory system have major obligations to ensure that they act in the context of a well defined and well understood regulatory system that has no surprises and functions such to allow the regulated to subsume non-random regulatory behavior. This means controlling exit and entry, setting reasonable and enforceable non-economic rules and regulations and having an economic model that is not discretionary, transparent, and has a viable system for stakeholder input.
- The pre-Proposition A system was implosive and indeterminate. This implosive system is diagramed in a following slide. This system cost both drivers and cab companies millions due to regulatory lag; wherein the regulators failed to stay current with contemporary economics. The cost of this lag to Yellow, Luxor, and Desoto is quantified in a following slide.
- A regulatory model that would work for the SF cab industry is one that mirrors the California Public Utilities regulatory system. This model and the proposed adaptation is shown on following slides.

The Morass of the Pre-A Regulatory System

E. Summary of San Francisco Regulatory System

Figure 4
Current and Suggested Taxicab Regulatory Review

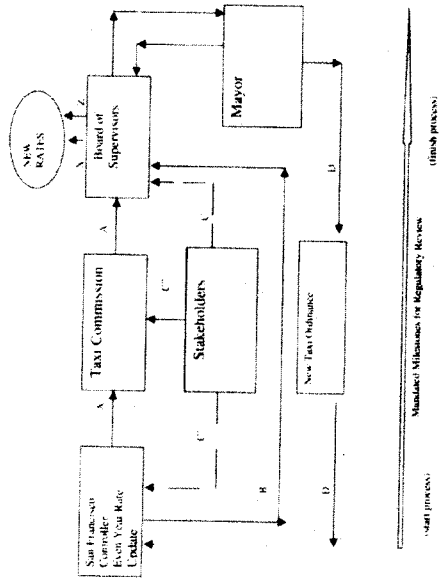


Figure 4 summarizes the current process and highlights possible ways to improve it. It shows the current every-year mean gate adjustment process. The main participants in the regulatory process are the Controller, Taxi Commission, Board of Supervisors, and Stakeholders. The stakeholders include the public, mediation holders, drivers, taxi companies, and any other interested party.

**Revenue Differences, Capitalized at Percent = If Gate
Caps Kept Up With CPI = Regulatory Lag**

Regulatory Lag at 6 percent capitalization

	Yellow \$ Cap. Value	Luxor \$ Cap Value	Desoto \$ Cap Value	Total of 3 Full Service Cabs
1999	\$799,500.40	\$314,557.53	\$196,598.46	\$1,310,656.39
2000	\$1,934,320.05	\$761,043.95	\$475,652.47	\$3,171,016.47
2001	\$3,421,228.48	\$1,346,057.11	\$841,285.69	\$5,608,571.27
2002	\$3,752,705.04	\$1,476,474.11	\$922,796.32	\$6,151,975.47
2003	\$2,513,120.86	\$988,768.86	\$617,980.54	\$4,119,870.26
2004	\$2,361,364.09	\$929,061.28	\$580,663.30	\$3,871,088.67
2005	\$2,718,526.44	\$1,069,584.17	\$668,490.11	\$4,456,600.72
2006	\$3,288,641.14	\$1,293,891.60	\$808,682.25	\$5,391,214.98
2007	\$2,994,336.59	\$1,178,099.64	\$736,312.28	\$4,908,748.51
Total Cap. Val Reg. Lag	\$23,783,743.07	\$9,357,538.26	\$5,848,461.41	\$38,989,742.73

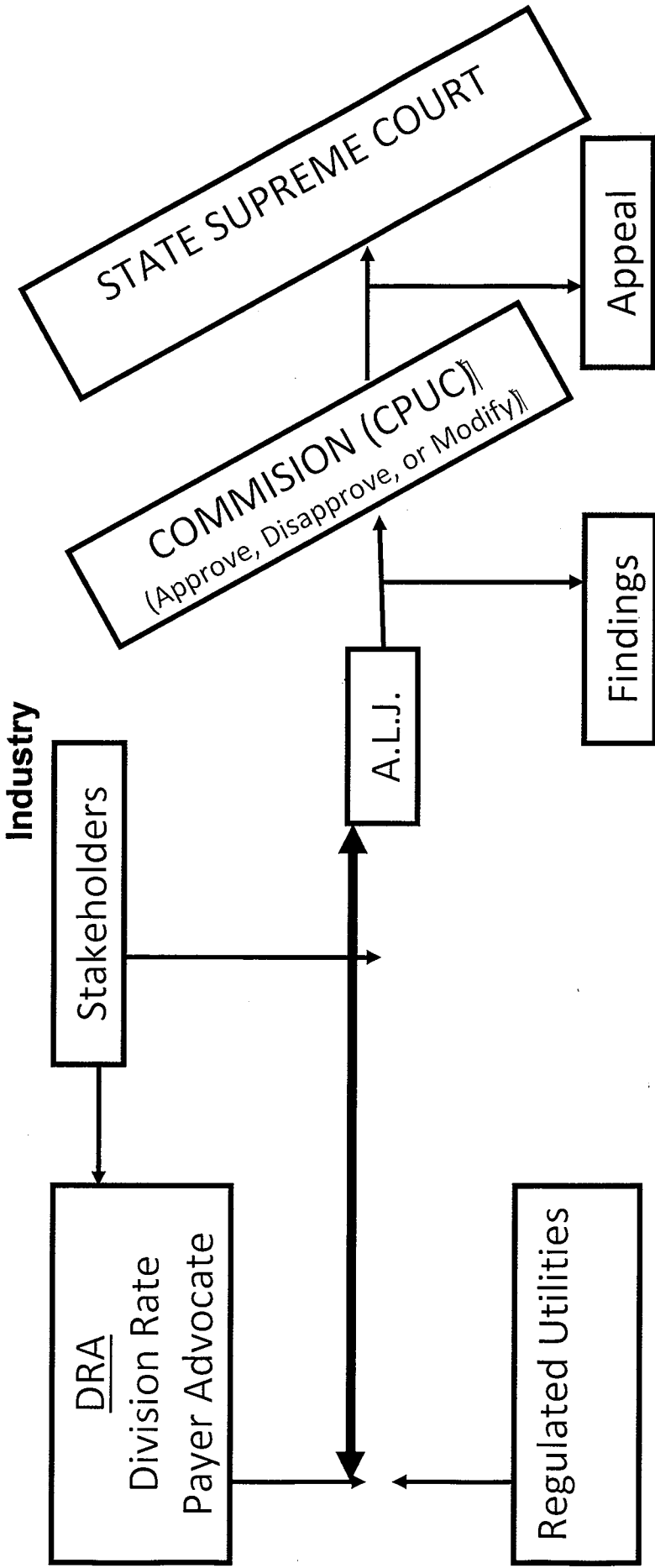


Negative Economic Impacts of Pre-Prop A Economic System for San Francisco Cabs

- Indeterminate and discretionary – Investment expectations by all industry participants (human and non-human capital decisions) uncertain
- No formal regulatory process with well defined benchmarks (actions), milestones (time constraints), and formula-approach for rate making (fares and gates), based on setting revenues equal to reasonable and allowable costs exist in SF.
- Application of the CPI must be non-discretionary.
- Regulatory lag, over politicization, and opportunistic law suits are endemic to the current system.
- These explicit and implicit costs are internalized by owners, drivers, and medallion holders
- A better system based on how the California Public Utilities Commission (CPUC) regulate investor owned utilities in California.

GENERAL RATE CASE

CPUC Approach for SF Cab Industry



SET PERIOD FOR PROCESS TO RESOLVE

("X" WEEKS / MONTHS)

"A Process that Yields an Outcome"



A California Public Utilities Commissions (CPUC) Type System Required

with:

- BENCHMARKS
- MILESTONES
- TRANSPARENT
- NON-DISCRETIONARY
- “FORMULA APPROACH”

- Revenues Must Cover Allowed And Reasonable Costs Including
Return On Investment
- Rate Design Must Be Fair
- Regulatory Lag Eliminated
- Incremental Annual Increases To Avoid Past Inertia, CPI, PPI, ETC.



CPUC RATEMAKING

REVENUES = ALLOWABLE COST & ROI

$$R = O + D + T + rB$$

R = Revenues Required

O = O & M COSTS

D = Depreciation

T = Taxes

r = Rate of Return = Weighted Average Cost of Capital

B = Rate Base = Historical Cost less Accumulated Depreciation
+ Working Capital (other.)



CPUC RATE DESIGN

- FIXED CHARGES
- COMMODITY CHARGES

➤ CABS (FARES)]

FIXED = FARE FLAG DROP

COMMODITY = MILES/MINUTES

➤ CAB GATES

JUST A FIXED RATE CHARGE

ESTIMATE THE WEIGHTED COST OF CAPITAL(WACC)

IN A REGULATORY SETTING

	Percent	<u>Capital Cost</u>
DEBT CAPITAL = 4,000,000	40%	4%
EQUITY CAPITAL = 6,000,000	60%	6%
Total Capital (Debt + Equity)		\$10,000,000,

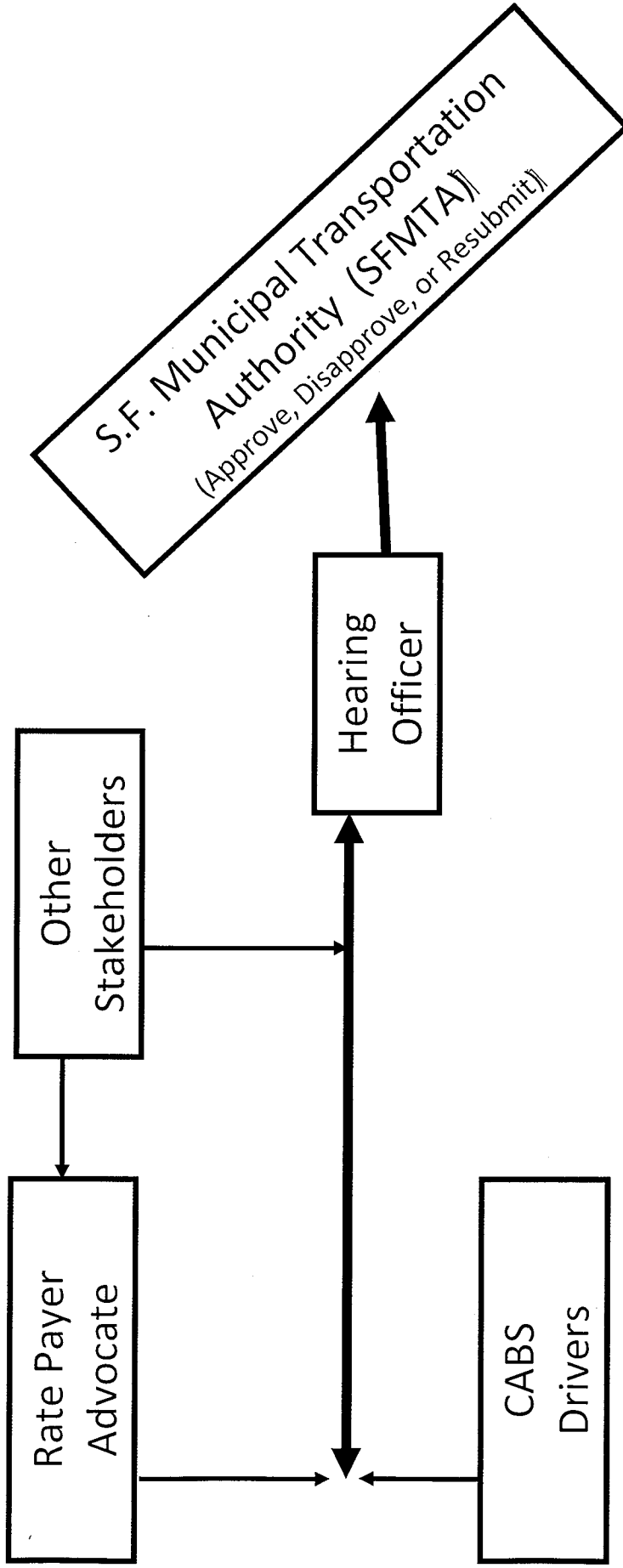
Example calculation: WACC

$$.4 \times 0.4 + .6 \times .06$$

$$1.6\% + 3.6\% = 5.2\% = \text{WACC}$$



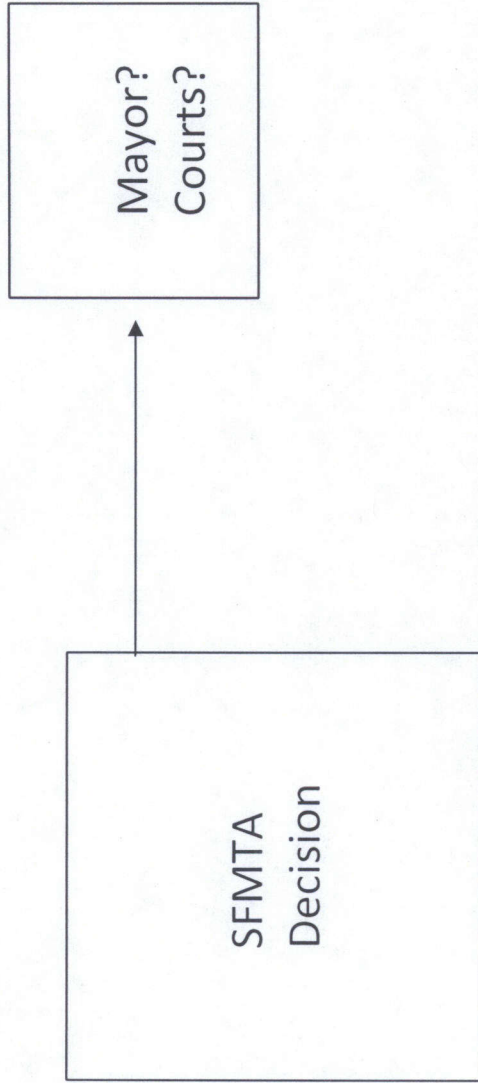
SAN FRANCISCO TAXI REGULATORY SYSTEM BASED ON CPUC MODEL



Clearly established bench marks (filing requirements) and milestones (time) for regulatory process to resolve ("X" weeks/months)



Appeal Process



Note:
CPUC decisions may only be appealed to the Supreme Court of California



APPENDIX

NO. 2

REGULATING THE SAN FRANCISCO TAXICAB GATE CAP

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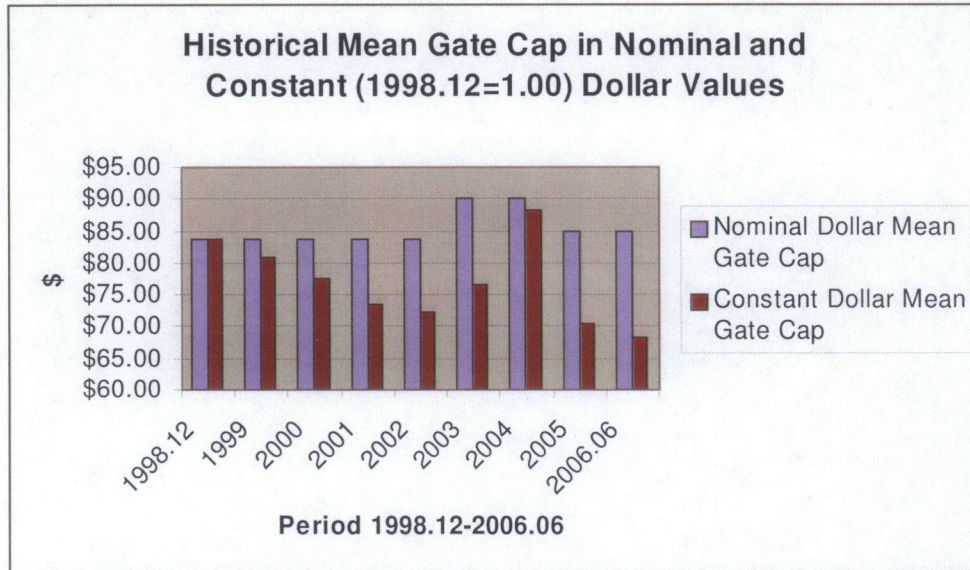
TAXI STUDY III
REGULATORY LAG—THE SAN FRANCISCO MEAN TAXI GATE CAP

EXECUTIVE SUMMARY

In his August 4, 2006, *Taxi Industry Report*, the Controller proposes a \$92.00 mean gate cap for San Francisco taxicabs. A \$92.00 cap, however, will neither stop nor remedy continued inflationary erosion of the value of a taxicab operating permit. Indeed, a \$92.00 gate cap, effective November 1, 2006, is years too late and over ten dollars short of a fair and reasonable regulatory ceiling for taxicabs in the San Francisco transportation market.

Ordinance No. 362-98 (December 18, 1998) set the mean gate cap at \$83.50 for a shift of 10 hours or longer beginning January 1999. According to the Controller, the gate cap as of June 2006 was \$85.00 in nominal (i.e., current) dollars. In adjusted constant dollars, however, a gate cap of \$85.00 in 2006 equates to \$68.29 in constant 1998 dollars. Accordingly, the mean (average) gate cap for San Francisco taxicabs has dramatically failed to keep up with inflation as measured by the CPI for San Francisco-Oakland-San Jose as determined by the United States Bureau of Labor Statistics (BLS).

Figure 1
 Historical Comparison of Average Annual
 Mean Gate Cap, Nominal vs. Constant Dollars



(1998.12=1.00)

Figure 1 illustrates the annual erosion of the gate cap in constant \$1998.12 dollars vs. the nominal (current) dollar gate fee. The inflation-adjusted constant dollar gate cap never regains parity in purchasing power with the initial mean gate of \$83.50 established in December 1998.

Similarly, Table 1 compares the annual real (expressed in \$1998.12 dollars) gate cap vs. the nominal value of the gate cap. The table also calculates at what level the gate cap would have to be set in order to maintain purchasing power equivalency with the original gate cap of \$83.50 in December 1998.

Table No. 1
Comparison of Annual Nominal, Real/Constant and CPI Adjusted Gate Caps

Average Year	Current Nominal	1998.12=1.00 Real	No CPI Lag with Gate Cap
1998.12	\$83.50	\$83.50	\$83.50
1999	\$83.50	\$80.92	86.18
2000	\$83.50	\$77.42	90.08
2001	\$83.50	\$73.49	\$94.87
2002	\$83.50	\$72.39	\$96.31
2003	\$90.00	\$76.66	\$98.03
2004	\$90.00	\$88.33	\$99.25
2005	\$85.00	\$70.37	\$100.87
2006.06	\$85.00	\$68.29	\$103.93

In Appendix B to the *2006 Taxi Industry Report*, the Controller analyzes three alternatives for setting a November 2006 mean gate cap.

- In the first scenario, utilizing the CPI the Controller increases the initial mean gate cap of \$83.50 (1998) through June 2006 for an estimated gate cap of \$104.30.
- In the second scenario, the higher (\$90) of the two mean gate caps referenced in Ordinance No. 228-02 is increased by the CPI through June 2006 for an estimated new gate cap of \$97.41.
- In the third scenario, the lower (\$85) cap mentioned in Ordinance No. 228-02 is increased by the CPI through June 2006 (June 2006.06) for an estimated mean gate cap of \$92.00.

Under Scenario No. 1, a new gate cap of \$104.30 would begin to recover the inflationary erosion of the 1998 gate of \$83.50. Also, \$104.30 in nominal 2006.06 dollars is more or less equal to an \$83.50 gate in constant dollars.

In a standard regulatory framework, where rates and charges are set or limited by the regulator (in this case San Francisco), once rates and charges are initially established, they are then adjusted over time so that the regulated party can recover reasonable operating costs including (in a transportation business) maintenance and repair expenses, depreciation, insurance, workers compensation, and capital investment costs (e.g., purchase of new automobiles). In addition, the rate or charge must allow for a reasonable return on investment capital (i.e., profit). In this way, a taxicab company can operate efficiently over an extended period of time,

providing a quality transportation product to its customers and regular work for its employees and drivers.

Against this background, the Controller's recommended mean gate cap of \$92.00 (Scenario No. 3, above) is a radical departure from the orthodox regulatory model, and it perpetuates persistent "regulatory lag" between actual cost increases in taxicab operations and a company's ability to secure enough revenue to satisfy its obligations and reasonably compensate its investors (i.e., medallion-holders).

In his *2006 Taxi Industry Report*, the Controller discusses what he terms "return on equity" in the taxi industry. How the numbers displayed by the Controller are defined and calculated is not explained in the report, nor does the Controller comment upon the role that the "return on equity" calculation plays in setting a mean gate cap. Again, in a standard regulatory framework, the regulators are required to specifically define terms such as "return on equity," "weighted average cost of capital" (debt/equity capital and related tax implications), and "allowable capital costs" *before* utilizing such concepts to set a rate or charge. The Controller's use of such terms, and evident (yet unexplained) reliance on them in formulating his recommended gate cap, is another departure from the orthodox regulatory model used in many jurisdictions and agencies.

Investors in taxi companies (usually medallion-holders) need to be assured that their continued investment in San Francisco's regulated taxi industry will be subject to a systematic, transparent, and relatively nondiscretionary regulatory process. Their voice must be heard at every step of the regulatory process, along with those of other stakeholders. There is a finite limit to the amount of cost that investors in this sector, as currently structured, can internalize. Opportunistic and politically driven add-ons that promote further erosion of profitability, and the elasticity of rider demand, must be discussed and analyzed through a rigorous give-and-take process within a more structured regulatory process.

The taxi industry has a number of immediate needs: (1) Rate relief (a realistic gate cap and an immediate fuel surcharge) to mirror the changes taking place in the market place, and (2) A real and responsive regulatory process that is rooted in orthodox economics, responsive to all stakeholders, and based on an established and workable regulatory model. As of the writing of this report, neither of these industry needs are or have been met.

The current San Francisco model for regulating taxicabs is dysfunctional and disjointed. It does not utilize orthodox economic analyses, does not require long-term strategic plans, and is not cogent, transparent, systematic, or disciplined. There

is no real system (process) per se. We recommend that the City look to establishing a system similar to those used by the California Public Utilities Commission (CPUC) in regulating investor-owned enterprises.

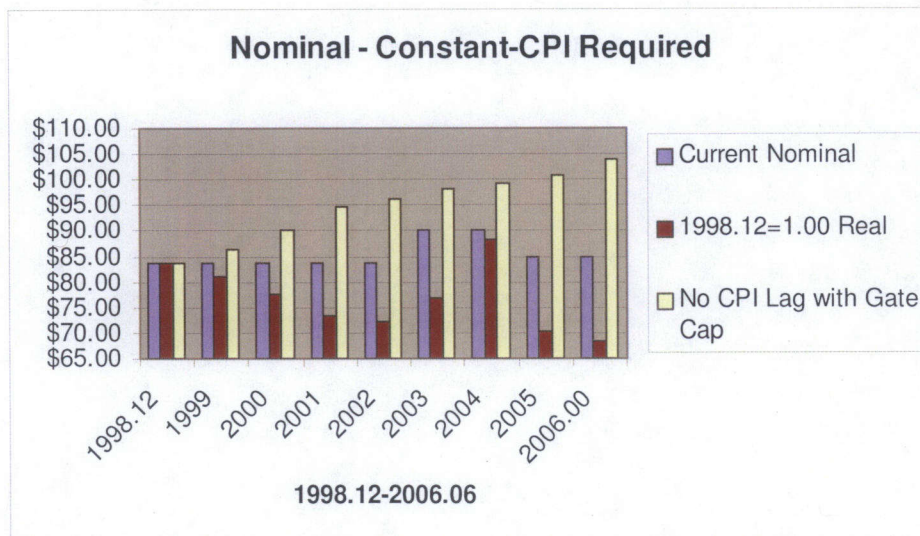
In the meantime, since the industry can never recoup the “lost years” of revenue loss caused by the regulatory lag, at a minimum the mean gate cap should be set at \$104.30, Scenario No. 1 of the Controller’s report. Any other decision seriously threatens the continued viability of the taxi companies that organize and deliver the vast majority of taxi service to San Francisco’s residents and tourists.

Is the taxi-industry unique in the regulatory framework? Are other regulated sectors so mismanaged? To put this gate cap analysis in perspective, other key regulated sectors were studied (rents and utilities). The research (see below) indicated that the regulatory morass of the San Francisco taxi industry is not unique. Other San Francisco regulatory processes are as dysfunctional as the regulatory process for taxis. The results of this research, hopefully, will lead to immediate relief for the taxi sector and catalyze legislators to develop more efficient regulatory processes for the City’s regulated sectors.

Executive Summary Endnotes

Figure 2

Historical Comparison of Average Annual Mean Cap Nominal vs. Constant Dollars and Nominal Dollar Annual Average Amounts to Keep Current Mean Gate Cap Equal to Initial Mean Gate Cap of \$83.50



The Controller's 2006 *Taxi Industry Report* presents three scenarios for setting a mean gate cap as of November 2006. The mean gate cap is based on calculating the average or mean gate for a week. The mean gate cap is the average, or mean, that cannot be exceeded during a 14-shift week. Some gates fees will be higher and some gate fees will be lower. Gate caps are not static at the mean gate cap; rather, trades between drivers and companies should yield an average no higher than the mean (average) gate cap.

Figure 3

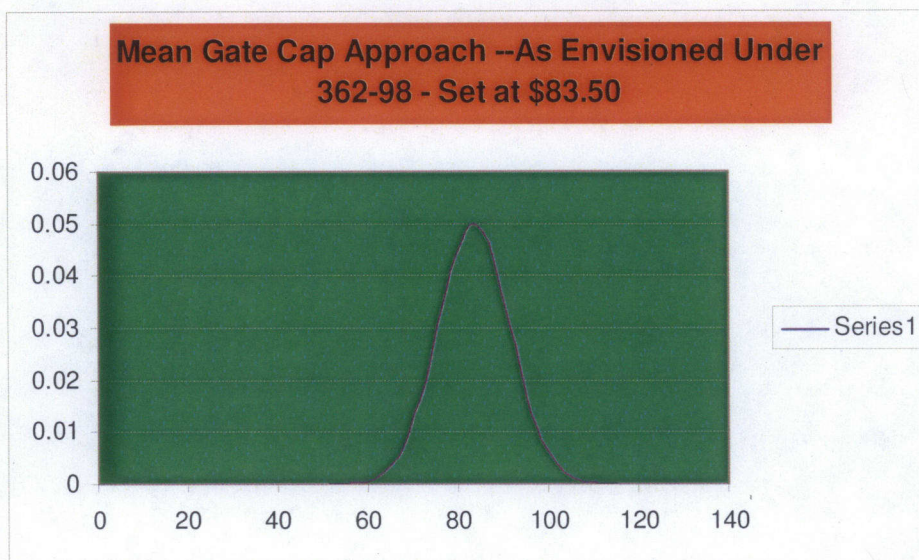


Figure 3 shows a hypothetical bell-shaped distribution around a mean gate cap of \$83.50 with an assumed standard deviation of +/- \$8.00. In the original concept, assuming a normal bell shaped, distribution function, 68% of the gate fees range between \$75.50 and \$91.50. The likelihood of trades (assuming \$83.50 did represent a market clearing price, on average) above or below \$91.50 and \$75.50 would decrease significantly. The curve does not actually touch the X-axis. Using actual data, the curve may be shaped differently. However, the concept of a mean gate cap with distributed higher and lower gate prices expresses the mean/average concept envisioned under Ordinance No. 362-98 is illustrated by Figure No. 3. The mean gate cap is not a static, take-it-or-leave it figure

The use of an inflationary index to express current or nominal prices in constant dollar amounts is helpful in seeing if the regulators have responded to and remedied the inflationary erosion of real purchasing power in a timely manner. This is done by setting a base year index equal to 1, i.e. December 1998 (1998.12=1.00) and thereafter rebasing all future inflation to this new base of 1.00. This is shown in Table 2, in which:

In Table 1:

- Columns 1 and 2 define the year and month.
- Column 3 includes is the CPI series presented by the Controller in Appendix B of his 2006 *Taxi Industry Report*.
- Column 4 shows the rebased CPI index created by dividing the entire series in Column 1 by 167.40, the CPI level used by the Controller as of December 2006.
- Column 5 shows the nominal dollar gate required to equate to the initial gate cap of \$83.50 at various future periods. The rebased index is multiplied by the \$83.50.
- The Controller's CPI numbers were used throughout this report, albeit rebased to 1998.12=1.00.

Table No 2
Rebasing CPI Index

Year	Month	CPI	Index 1998.12=1)	\$83.50 in nominal dollars
1998		167.40	1	\$83.50
1999	Feb	169.40	1.01	84.50
	Apr	172.20	1.03	85.89
	June	171.80	1.03	85.69
	Aug	173.50	1.04	86.54
	Oct	175.20	1.05	87.39
2000	Dec	174.50	1.04	87.04
	Feb	176.50	1.05	88.04
	Apr	178.70	1.07	89.14
	June	179.10	1.07	89.34
	Aug	181.70	1.09	90.63
2001	Oct	183.40	1.10	91.48
	Dec	184.10	1.10	91.83
	Feb	187.90	1.12	93.73
	Apr	189.10	1.13	94.32
	June	190.90	1.14	95.22
2002	Aug	191.00	1.14	95.27
	Oct	191.70	1.15	95.62
	Dec	190.60	1.14	95.07
	Feb	191.30	1.14	95.42
	Apr	193.00	1.15	96.27
2003	June	193.20	1.15	96.37
	Aug	193.50	1.16	96.52
	Oct	194.30	1.16	96.92
	Dec	193.20	1.15	96.37
	Feb	197.70	1.18	98.61
2004	Apr	197.30	1.18	98.41
	June	196.30	1.17	97.92
	Aug	196.30	1.17	97.92
	Oct	196.30	1.17	97.92
	Dec	195.30	1.17	97.42
2005	Feb	198.10	1.18	98.81
	Apr	198.30	1.18	98.91
	June	199.00	1.19	99.26
	Aug	198.70	1.19	99.11
	Oct	200.30	1.20	99.91
2006	Dec	199.50	1.19	99.51
	Feb	201.20	1.20	100.36
	Apr	202.50	1.21	101.01
	June	201.20	1.20	100.36
	Aug	203.00	1.21	101.26
2006	Oct	205.90	1.23	102.70
	Dec	203.40	1.22	101.46
	Feb	207.10	1.24	103.30
2006	Apr	208.90	1.25	104.20
	June	209.10	1.25	\$104.30

I. Regulating the San Francisco Mean Gate Cap

A. Introduction

This study focuses on the mean gate cap. Recommendations for a fuel surcharge and a new system for allocating taxicab medallions were covered in two prior studies. Although this study does not address paratransit issues, the Controller believes that a paratransit surcharge on both the gate cap and the meter rate “holds harmless” both drivers and taxicab companies. The analysis of incident (where it falls) and impact (who pays) for such add-ons is not addressed herein. These add-ons should be treated as a supply tax in studying the economics of taxi regulations.

B. Mean Gate Cap

A mean gate cap was first adopted in December 1998 in Ordinance No. 362-98. It was initially set at \$83.50. Ordinance 362-98 states, “The mean gate fee charged drivers by a taxicab company may not exceed \$83.50 for a shift of 10-hours or longer.” This approach was revised slightly in Ordinance 228-02: “The mean gate fee shall be determined by adding together the gate fees charged by the company for all available shifts during the week.”

The mean gate cap is the maximum average that taxi companies may charge operators for a 10-hour (plus) shift. It can be viewed in the form of a bell-shaped curve: some charges will exceed the mean gate cap while others will be less. These plus and minus charges must balance out to the prescribed average, or mean. See Figure 3 above.

Although the mean gate cap is mandated by ordinance, over a week of 14 shifts the cap may change to reflect market shifts based on such factors as time of day, day of week, ambient conditions, time of year, and other factors that impact the supply and demand for taxicabs in San Francisco. Gate charges do vary.

Table No 3, reproduced from the Controller’s *2006 Taxi Cab Industry Report*, summarizes the dates, amounts, and related legislation pertaining to the gate cap from December 1998 through June 2006.

Table No. 3
History of Gate cap

Start Date	End Date	Gate Cap Base	Gate Gap Add-On	Gate Cap minus Paratransit	GC Plus Paratransit	Total Gate	Legislation. & Impact
1-18-99	1-1-03	\$83.50		\$83.50		\$83.50	Ord.#362-98
1.04.03	8-1-03	83.50	6.50	\$90.00	1.50	91.50	Ord. #228-02
8.02.03	11.1.03	83.50	6.60	\$90.00	1.50	91.50	Ord.#204-03 3 month. ext. on GC
11.2.03	3.01.04	83.50	6.60	\$90.00	1.50	91.50	Ord.#2256-03 4 month. ext. on GC
3.02.04	9.01.04	83.50	6.60	\$90.00	1.50	91.50	Resolution #173-04, 5 month. ext. on GC
9.02.04	12.31.05	85.00				85.00	Sunset of Gate Cap to \$85.00
1.01.06	6.30.06	85.00				85.00	Ord. #118 – 6 month ext. on paratransit
7.01.06						\$85.00	Sunset of paratransit provisions

C. The Problem

The mean gate cap has not kept up with industry inflation. Nor has it kept up with the CPI. Figure No 3 compares, for the period 1998.12 through June 2006.06, the annual nominal value of the mean gate cap, the annual real/constant inflation-adjusted value of the mean gate cap, and the annual nominal value of the mean gate cap required to ensure that in CPI-adjusted nominal dollars the mean gate cap does not lag behind inflation. These numbers were also presented in Table No. 1 above.

Both Figure 3 and Table 1 illustrate how the mean gate cap has failed to maintain purchasing parity with inflation as embedded in the weighting of the CPI. The column labeled “No CPI Lag with Gate Cap” reflects the required annual adjustments necessary to keep the mandated gate cap on a purchasing parity with changes in the CPI. Ordinance 228-02 mandated that the Controller in every even year make adjustments to the mean gate cap based on the CPI. There was no report in 2004 and in 2006 the Controller’s baseline recommendation was to set the gate cap at \$92.00 as of November 1, 2006. This number utilized the CPI, but it assumed a base cap of \$85 and a beginning date of 2003, both of which bear no relation to economic reality.

Taxicab companies have costs that increase faster than the general consumer inflation index as measured by the BLS-CPI. In the Controller’s 1994 and 1996 Reports, the CSAA auto index was used. Since these reports were written, taxicab companies have incurred many additional and faster-escalating costs including, but not limited to, worker’s compensation, higher liability insurance premiums, the cost of City-mandated newer automobiles and many other costs not included in the CPI.

Clearly with costs such as insurance and worker’s compensation, mandated under law, increasing by multiples of the CPI, the mean gate cap, the source of 96 percent of taxicab company revenues, is probably 50 percent of what it really should be, even assuming a November 2006 mean gate cap of \$92.00. The Controller has not accounted for either the increase in the CPI or the real and special revenue requirements needed to cover normal operating costs of doing business by these taxicab companies.

The confusion regarding the estimation of the gate in the 2006 Controller’s report occurs because Ordinance 228-02 authorized a mean gate cap of \$90.00 if certain actions are taken by companies, i.e., financial data are provided by taxi companies, they provide worker’s compensation coverage and acknowledge the need for a universal health plan for drivers. The default, if they refused to do this, was a cap of \$85.00. At this point the matter of sustaining the higher gate cap was taken out of the hands of the companies. It was a discrete relationship: comply and receive the higher gap of \$90.00 or don’t comply and get the lower gate of \$85.00. The sunset provision was a regulatory problem and not a consequence of any action by any complying taxi cab company.

The Controller was mandated by Ordinance 228-02 to report in 2004 as to the feasibility of a driver health plan. The Controller’s October 2003 report, *Health*

Benefits for San Francisco Taxi Drivers, does not specifically delineate a particular health plan and/or state it would be either feasible or infeasible.

The Controller's 2003 study, however, did question whether fare elasticities (revenues generated) would support rate increases to fully fund any such plan. This ambiguity meant that taxi companies that had fully complied with all requirements of Ordinance 228-02, through no failure to act, were required, according to some, to accept a mean gate significantly lower than that set by Ordinance 362-98 in November 1998. This was a problem caused by regulatory inaction and should not be internalized as a wealth loss to companies acting in good faith.

The Controller did not present a taxi driver universal health feasibility plan in 2004 as mandated by Ordinance 228-02. This failure exacerbated the ambiguity of Ordinance 228-02. In real dollar purchasing power, the taxi companies were well aware that even the \$90.00 allowed by 228-02 was less than the first cap of \$83.50 set four years earlier.

Taxi companies that provided financial data as mandated under the Ordinance 228-02, instituted a worker's compensation program and were prepared to cooperate in developing a health plan were then confronted with a claim by some regulators and stakeholders that in September 2004 the mean gate cap of \$90.00 should sunset back to \$85.00. In September 2004 a nominal gate cap of \$90.00 had a constant \$1998.12 value of \$76.92. A mean gate cap in nominal dollars of \$85.00 as of September 2004, had a constant (real) dollar value \$72.65 (\$1998.12).

Thus, in August 2004, the \$90.00 mean gate cap was already \$6.58 below the mean gate cap of \$83.50 established in December 1998. Under the "sunset approach," a mean gate cap of \$85.00 in September 2004 was in inflation adjusted terms \$10.85 below the original gate cap of \$83.50. The regulated did not suspect that the regulators would knowingly inflict such a wealth loss on their good faith investments in the San Francisco taxi industry and thus assumed a continuation, in nominal terms, of the \$90.00 gate cap, while aware this \$90.00 gate cap was well below the value of the initial gate of \$83.50 set in December 1999.

Both major ordinances (362-98 and 228-02) have created problems for operators, taxicab companies and passengers. They do not establish a clear regulatory system for setting and adjusting fares, gate caps and leases. These two ordinances have basically created an industry in search of a regulator. The Controller issues reports, and the Taxi Commission debates. Political forces eventually catalyze the Board of Supervisors to act. As in all political bodies, these actions often lead to

ambiguous laws commingling both social and economic mandates with deference to who will pay and who will bear the costs.

Taxicab companies that complied with all mandates of Ordinance 228-02 now find themselves in jeopardy of being sued for overcharges with respect to gate fees. This come about because the regulators did not provide clear directions as to which companies could have \$85.00 as a cap and which companies could have \$90.00 as a cap. There was no clarifying report by the Controller in 2004 as mandated by Ordinance No. 228-02.

Missed dates for producing reports (Controller's 2004 report on the feasibility of implementing or not implementing a health care program for taxicab operators) and regulatory inaction have a high economic cost in terms of alternatives forgone. Currently there is confusion as to what the present gate and flag-drop are. In the latter case, the City Attorney rationalizes that operators can continue to use \$2.85, but escalation calculations will be based on \$2.75. Years of escalating gasoline price hikes associated with increasing world demand for hydrocarbon products, political instability, and Federal Reserve policy have not yet been addressed via an immediate gasoline surcharge.

The major actors in this regulatory dance are the Controller, Taxi Commission and Board of Supervisors. The Taxi Commission has not exhibited an understanding of the fundamentals for setting fares and conditions of service. Regulated companies have to provide services as defined by the regulators. This is the basic revenue requirement approach to setting tariffs and rule making.

If a health plan is mandated, the regulators must figure out what will be delivered under this plan, how much will it cost, and who will pay and when. Like mandating hybrid-autos, such an action is not a free good. Someone must pay. Unfortunately in San Francisco there is no real formalized process for doing this and the process implodes. The Taxi Commission, like the Rent Board (more formal process) and San Francisco Public Utilities Commission (SFPUC), seems ignorant of the basics of revenue requirements and the presence of real world budgetary constraints.

A degree of difficulty creeps into a two-layered regulatory system such as the San Francisco system where gate caps, leases, and fares are simultaneously regulated. Fares set the ultimate ceiling on mean gate and lease caps. This requires that regulators coordinate their efforts to ensure that the revenues from regulated fares will cover mandated gate cap fees.

D. The Solution

The Controller's even-year reports need to be more comprehensive and based on revenues required by taxicab companies to provide the best quality service at the lowest possible cost. The revenue requirement approach to ratemaking in a utility environment is discussed in Section II. A. and elsewhere. Taxicabs must be allowed to recover all mandated and allowable costs in the rates set by the regulators. Gate fees represent approximately 95 percent of the revenues realized by taxicab companies. Orthodox ratemaking sets rates to cover reasonable costs (including a competitive return on capital) to the provider, while ensuring that the taxi rider receives the best service at the lowest possible fare. The mean gate cap has not kept up with consumer inflation.

We estimate that, in a perfect world, the mean gate cap should be on the order of \$150 and that, simultaneously, a gasoline surcharge of \$1.25 would be implemented immediately. The elimination of regulatory lag and the current eclectic system of ratemaking should be the prime outcome of these hearings, should San Francisco hope to maintain a viable taxicab sector.

The current San Francisco taxicab regulatory process should have mandated action milestones. The Controller's biannual report should be developed in a formalized context, wherein key stakeholders, prior to the report being written, submit written and oral presentations. The Taxi Commission should immediately place the report on its agenda for detailed discussion and recommendations within two weeks of the issuance of the report.

There should be a nexus between economic precepts that guide regulatory processes. This does not appear to be the case with Ordinance 228-02. It offers two mean gate caps \$85 or \$90.00. Prior reports by the Controller and the enabling legislation Ordinance 362-98, et al, all point toward ensuring a level economic playing field in a relatively clear manner.

The Taxi Commission should be mandated to either accept the report or recommend specific changes. This should be done no later than the first meeting after Labor Day. These recommendations should be forwarded to the Board for its consideration. The only way the current regulatory morass can be circumvented is to mandate action milestones in a formalized, transparent, and accessible process. Taxi regulators should set nondiscretionary rates via an established process.

Such a process avoids risks for operators, riders, and companies in making future plans. Regulators should use the economic concept of feasibility, which establishes required spending trade-offs, as a function of budgetary constraints. If social-welfare functions are to be part of a rate structure, the incident and impact of such costs must be studied and quantified prior to regulatory action. Ordinance 228-02 is the poster ordinance for how not to regulate a major sector of the City's economic infrastructure. It muddies up economics and social welfare functions without adequate analysis of either concept.

The taxicab industry of San Francisco requires a systematic approach to setting rates and terms of providing services. Formal rate hearing cases should be heard at specified and mandated times. There must be milestones for gathering input from stakeholders and writing recommendations by both the Controller and Taxi Commission. The Taxi Commission must accept its responsibility as a regulator. In so doing, its recommendations should not be lightly overturned by appeal to the Board of Supervisors. Its decisions must be based on quantitative analysis using a standard regulatory method, which subsumes the use of orthodox economic analysis. Its decisions must not be faith-based, but rather based in disciplined and organized analysis.

Section II of this study considers a theoretical approach to ratemaking and setting terms and conditions of service (rules, regulations, and other tariff attributes) that the Taxi Commission and Board might consider in revisiting the current regulatory morass. Implementing this type process could actually be the solution. Section II also reviews the CPUC, SF Rent Board and the SFPUC.

E. Summary of San Francisco Regulatory System

Figure 4
Current and Suggested Taxicab Regulator Review

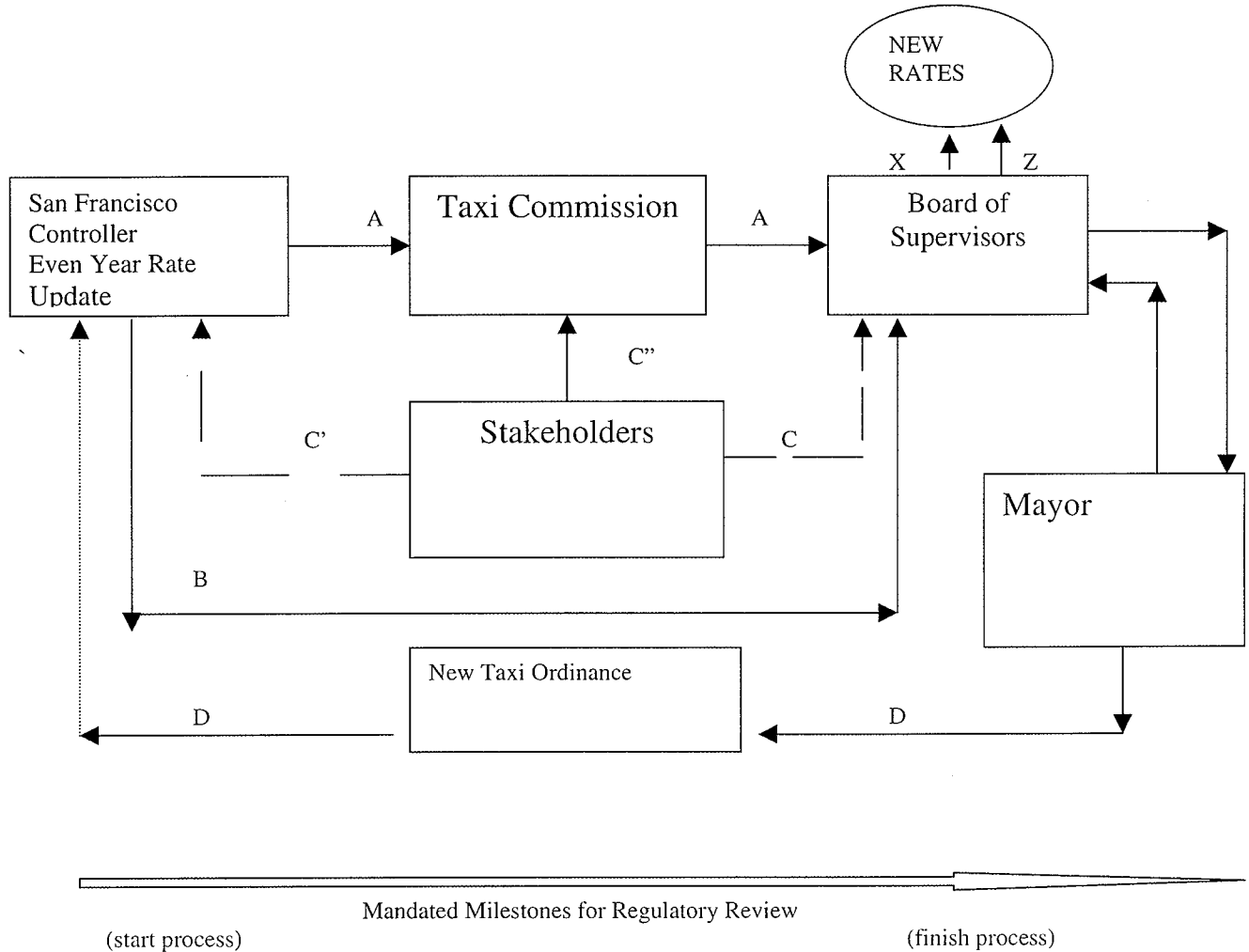


Figure 4 summarizes the current process and highlights possible ways to improve it. It shows the current every-even-year mean gate adjustment process. The main participants in the regulatory process are the Controller, Taxi Commission, Board of Supervisors, and stakeholders. The stakeholders include the public, medallion holders, drivers, taxi companies, and any other interested party.

The Controller issues his *Taxi Industry Report* by September 1. This report is distributed to the stakeholders and Board and Taxi Commission and is available to the public. Without any action by the Board, the Controller's recommended increases become effective November 1.

One possible route for regulatory oversight is that suggested by the line marked A. This line goes through the Taxi Commission and then to the Board. The Taxi Commission hears the Controller's recommendations in public session. They may take action, no action or promise future action.

Line B denotes a situation where the Taxi Commission might not schedule hearings on the Controller's recommendations. In this case Line C from the stakeholders to the Board would be the only method by which stakeholders would have a chance to impact the final rate outcome.

If the Board does not take any action, line Z from the Board to the box marked "New Rates" represents the path to an automatic increase as recommended by the Controller on November 1. The Board may take action, denoted by line X, which may or may not change the nominal value of the mean gate cap (oval).

Line A also represents a way in which the Taxi Commission could take a lead role as a regulator. The Taxi Commission could hold formal hearings and consider written and oral arguments, in the context of the even-year report, as to the merits of the Controller's proposed rate recommendations. The Taxi Commission could then deliberate and make a strong recommendation to the Board in support of the report, and/or some variance, based on an objective and in-depth review of stakeholder concerns.

Line C^{//} represents any strategy wherein the stakeholders appeal directly to the Commission. Line C[/] represents any strategy wherein the stakeholders appeal to the Board of Supervisors. This could be done while simultaneously presenting a case to either or both the Controller and/or Taxi Commission.

Line D represents a situation in which a new law is enacted (triggering line Z) which restarts the process in a manner similar to the current biannual review and recommendations by the Controller.

While not advocating a CPUC-type regulatory structure per se, the current process needs to be improved. Some suggestions:

- Stakeholders should meet with the Controller prior to his reports being issued. These stakeholders should present economic and operating data that support their positions as to rate changes required to keep San Francisco's taxi industry viable. These meetings could be both informal and formal. The Controller has made it clear that these exchanges would be welcome. Line C (broken) suggest these exchanges be initiated prior to the writing of the mandated, even-year *Taxi Industry Report*.
- The Taxi Commission should scheduled hearings both prior to the report's issuance and immediately thereafter.
- The Taxi Commission should make a recommendation to the Board based on its perceptions as to the viability of the Controller's recommendations. This report should reflect a normative regulatory approach and show that the regulator (TC) has used the tools of orthodox economics in submitting its report to the Board. This report must subsume the major economic issues raised by the stakeholders.
- A timeline for this process must be established and maintained. During odd-numbered years, the Taxi Commission and Controller should review industry economics and, if necessary, recommend to the Board required rate adjustments. Regulatory lag, such as the delayed implementation of a gasoline surcharge and the inflationary erosion of the real purchasing parity of the mean gate cap, must be avoided.

II. Regulatory Approaches

A. The Revenue Requirement Approach to Ratemaking and Setting Conditions of Service.

Mathematics of regulatory ratemaking for investor-owned utilities uses a revenue requirement approach. Municipalities are self-regulating in most states and often use a similar but modified approach, as shown below.

Briefly, the traditional revenue-requirement approach to ratemaking (setting cab fares) for an investor owned utility (a taxicab company in San Francisco) can be expressed mathematically:

$$R = O + D + rB$$

Where:

B = Rate Base (V-d)

V = Rate Base Evaluation

d = Accumulated Depreciation

R = Revenue Requirements

O = Operation and Maintenance Expenses

D = Annual Depreciation Charges

T = Taxes

r = Permitted Rate of Return (Cost of Capital)¹

Where:

r = rate of return

k = cost of equity capital

E = total equity capital

i = cost of debt capital (a weighted average subsuming tax implications)

I = total debt capital

C = total equity and debt capital

¹ Brian Browne, EPRI – Municipal Water and Wastewater Program "Competition in the Water and Wastewater Industries," Section 3, page 5. See discussion on weighted average cost of capital.

The basic revenue requirement formula for self-regulating municipal utilities (i.e. San Francisco Public Utilities Commission) generally follows a modified revenue-requirement formula as illustrated below.²

$$R = O + T + D + C$$

Where:

R = revenue requirements,

O = operation and maintenance expenses,

T = tax equivalents,

D = debt-service payments (interest charges and principal), and

C = Capital expenditures not financed by debt.

The difference in the two approaches inheres in the way capital expenditures are treated. In the investor-owned model, capital expenditures are handled through depreciation and rate-of-return components. Before allowing fares and gate caps to persist below normal consumer price increases in inflation (CPI), San Francisco taxicab regulators must follow a consistent schema similar to that outlined above. They must also explain their calculations and publish backup data that equate allowable costs to required revenues including equity and debt capital returns.

Capital improvements are ordinarily expensed over time and annualized into the rate structure. For example, Yellow Cab has built a new facility costing \$500,000 to provide alternative fuels for its fleet. This would, in an orthodox regulatory environment, be treated like a mortgage payment. Money expended during construction would be capitalized at a regulatory-determined interest rate, consistent with market conditions, and passed on in the form of an addition to the rate cap over the term of the payback period.

Capitalizing work-in-progress expenditures, and then amortizing them, is consistent with the way the CPUC, SFPUC, and Rent Board treat such pre-approved (mandated) capital improvements. There should be a mechanism within the San Francisco taxicab regulatory system to handles these situations. The laborious tying of all company expenses to a fraction of the largely irrelevant CPI is regulatory

² The National Regulatory Research Institute, Meeting Water Utility Revenue Requirements: Financing and ratemaking alternatives, November 1993, pp. 64-65.

evasion, a situation that must be addressed immediately. This can be done only under the umbrella of a real regulatory system.

The proposed November 2006 gate of \$92.00 is not supported by this type of transparent workup. The proposed \$92.00 cap could not be sustained in a formal regulatory process. At a minimum, it should be \$104.30 with a rider for odd year increases based on the CPI.

The revenue requirement approach to fare setting (ratemaking) should be consistent with how investor owned utilities are regulated in California by the California Public Utilities Commission (CPUC). The CPUC generally has a two-step approach to ratemaking. First, rates are completely reviewed as General Rate Cases (GRC) every few (three plus) years. Second, an interim mechanism is put in place to avoid regulatory lag. The interim, or bridge, mechanism is to tie interim rates to key cost indicators such as those reflected in the CPI.

In the case of taxicabs and other regulated enterprises in the transportation sector, a gasoline cum automobile index should also be used to track the current volatility in insurance risk, worker's compensation, automobile parts, and gasoline prices, allowing for quicker regulatory responses.

During a GRC, a regulated industry is required to provide a long-term strategic plan for its future operations. This plan includes a best effort farsighted forecast of demand for services and reasonable industry costs. An econometric demand model being developed for the San Francisco Taxi Association will provide valuable information to the Taxi Commission, the Board of Supervisors, the Police Department, and other regulatory authorities regarding demand elasticities (price and nonprice variables) to ensure that gap cap and fare increases do not fall behind real-world market conditions. With this model, the taxicab stakeholders (companies, investors and drivers) and regulators will be able to work together to develop demand forecasts for taxicabs under various fare and nonfare scenarios.

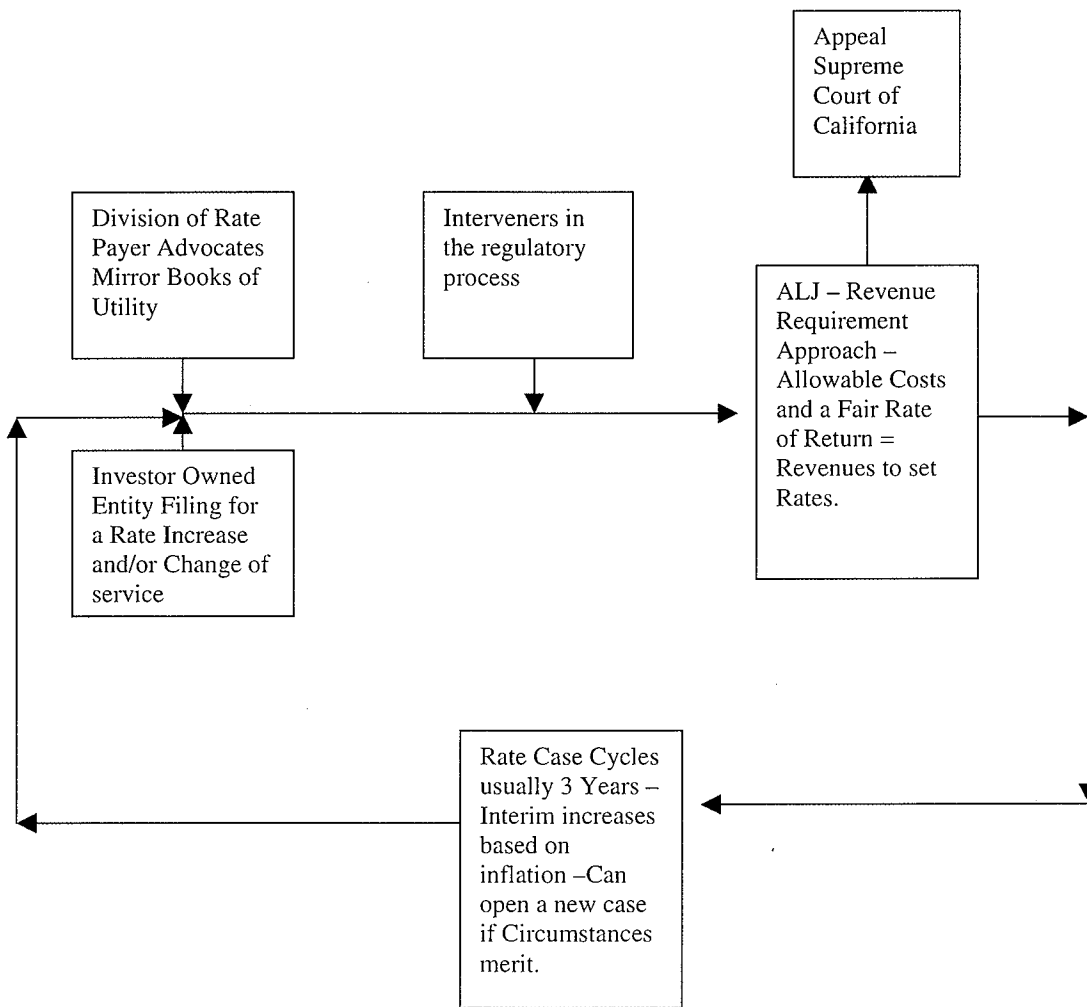
The San Francisco regulatory mechanism for tariff-setting that is noted in Section I of the 2006 Controller's Report states that "automatic increases based on the Consumer Price Index (CPI) that will go into effect on November 1, 2006 unless the Board takes subsequent action."

The role of the Taxi Commission in the San Francisco process seems unclear. At the September 13, 2006 Taxi Commission meeting, when the Controller presented his report, members did not agree on a specific recommendation to make to the Board. The Taxi Commission does not appear to have a formal process for

collecting data, analyzing it and coming up with deterministic recommendations. The axiom “process determines outcome” certainly is applicable in the context of ratemaking for taxicabs in San Francisco.

B. The CPUC approach utilizing the revenue requirement approach

Figure 5
CPUC Regulatory Flow



The CPUC uses the revenue-requirement approach to rate making in the investor-owned utility sectors. General rate cases are approximately three years apart. Interim annual adjustments are often tied to an inflationary index. Figure 5 is a simplified schema of the CPUC regulatory process.

A utility files a comprehensive justification for seeking a rate increase. It must include all costs (capital, O&M, and weighted average cost of capital) and a long-term strategic plan. Additionally it must calculate the fares for each customer class (i.e. residential, commercial, industrial, etc.) Any taxicab company filing for a rate increase under a CPUC-type system would have to calculate the average (mean gate cap) times the number of gates to generate sufficient revenues to keep the company economically viable. Approved capital charges, such as a natural gas facility, would be blended into the rate structure along with other allowable costs. The normal impact of inflationary pressures on allowable costs is a permitted passthrough in a CPUC rate case.

As shown in Figure 5, the State of California has created within the CPUC a Division of Ratepayer Advocates (DRA) that maintains mirror books of the utility and will support, remain neutral, or oppose a regulatory submission by an investor owned company. The DRA normally represents those groups that would otherwise not be represented [An Office of Ratepayer Advocates was funded for San Francisco, but it never became operational]. Others may intervene. Individual interveners are usually significant stakeholders.

The rate cases are decided in a legalistic setting by well-trained administrative law judges (ALJ). Decisions made by the CPUC may be appealed only to the Supreme Court of California. As noted, inflationary pressures that build during an inter-case period are generally calculated in and/or admitted as an annualized rate increase. The CPUC does set a firm rate of return on invested capital and closely meters the weighted-average cost of capital. The return on equity capital is set. The revenue requirement approach does not guarantee a profit. It makes a profit possible under a regulatory umbrella.

The following is a quote from the CPUC mission statement:

PUC Mission:

The California Public Utilities Commission (PUC) regulates privately owned telecommunications, electric, natural gas, water, railroad, rail

transit, and passenger transportation companies. We are responsible for ensuring that customers have safe, reliable utility service at reasonable rates, protecting against fraud, and promoting the health of California's economy.

In pursuing these goals, we:

- Establish service standards and safety rules, and authorize utility rate changes;
- Monitor the safety of utility and transportation operations, and oversee markets to inhibit anti-competitive activity;
- Prosecute unlawful utility marketing and billing activities, govern business relationships between utilities and their affiliates, and resolve complaints by customers against utilities;
- Implement energy efficiency and conservation programs and programs for the low-income and disabled;
- Oversee the merger and restructure of utility corporations, and enforce the California Environmental Quality Act for utility construction;
- Work with other state and federal agencies in promoting water quality, environmental protection, and safety;
- Intervene in Federal proceedings on issues that affect California utility rates or services.

C. San Francisco Rent Board

San Francisco regulates the rents for most dwellings built before 1979. The Rent Board is established along lines similar to the CPUC (discussed above). There seems to be a significant disconnect, however, between enabling ordinances and their implementation. If the ordinances create an unjust wealth transfer from either the renter or landlord, the only remedy, as with taxicab gate caps, is to seek relief through legislation. A big difference between the Rent Board and the Taxi Commission is that the Rent Board has broad powers to interpret what is meant by a “pass-through.”

The Taxi Commission, Controller, and Board use the CPI to adjust fares and rates on an even-year basis. These increases, as noted in the text, are in dispute as to when the increases should apply. The Rent Board has automatic rent increases based on the CPI. It also allows for capital improvement pass-throughs and power pass-throughs. Propositions A and E in 2002 allowed for water and wastewater pass-throughs, based on the current repair Hetch Hetchy capital improvement program, wherein the landlord and tenant would share these pass-throughs on a 50/50 basis.

The following case studies merit attention and are presented to show how San Francisco has difficulty in applying an orthodox regulatory model and using the tools of normative economics to obtain just results.

Section 4.11 – The PG&E power pass-through.

The energy price increases of the early 1980s catalyzed the enactment of a power pass-through. Landlords with master meters were allowed to choose from 2 methods.

Method 1

For the pass-through year (n), the landlords were allowed to apportion their net costs, on a room per dwelling basis, based on the difference between the comparison year (n-1) and the tenant's move-in year.

This system is only used for dwellings without individual metering capabilities. The landlord calculates his/her own common area. The base year is not adjusted for inflation.

Base-Year Calculation:

Assume a tenant moved into a complex in 1980. Assume further that the landlord had a gross master meter-charge of \$229,824.19 and calculated his/her common area charges as \$11,822.50. The base-year amount for use in the above mentioned calculation would be \$218,001.69.

Comparison-Year Calculation:

Assume the landlord is applying for a 2006 pass-through. The landlord must calculate net power costs similar to the net costs calculated for the base year. Assuming that utility power costs increased at the CPI, the gross PG&E cost would be \$616,090.98, the common area costs \$31,692.64, and the net costs for pass-through equal \$584,398.34.

The pass-through amount is the net cost expressed in \$2005 less the net costs expressed in \$1980. The net difference is \$366,396.65. Into this economically irrelevant number, the landlord divides the number of rooms in the building. Assume for calculation purposes this apartment building has 1,273 rooms. The pass-through

per room per month for the 2006 PG&E surcharge is \$25.46 (or \$101.86 for a representative 4-room apartment).

This pass-through mechanism ignores the fact a dollar in 1980 cannot be equated to a dollar in 2005. It also ignores the fact that people, not rooms, throw power switches, the impacted population is long-term and aging and tenants were promised PG&E services in their leases.

Rents, on the other hand, are increased as a function of the CPI. The CPI includes utility services such as those provided by PG&E. If PG&E services increased proportionally to the CPI, and apartment common-area power remain at a stable relationship to tenant use, a person moving into a complex in 1980, with a landlord using Method 1 of Section 4.11, would overpay in capitalized valuation approximately \$37,375.96 at an interest rate of 6.2 percent (Rent Board).

If a tenant moved in at age 45 and died at age 96, under Method 1 (assuming the high correlation with reality of the above assumptions) the tenant would overpay the landlord in capitalized value \$247,260.83. If the objective of the Rent Board is to conceptually misuse the CPI in the context of Method 1 of Section 4.11, it is doing a good job.

For the period 1980 to 2006, rent increased by a factor of 2.48. During that same period, the power bill increased by a factor of 2.48. Leases promised that residents would receive power as part of their embedded rent. The 2006 passthrough for a one-bedroom apartment is approximately \$100 per month. The passthrough for two-bedroom for residents with a move in year of 1980 is \$120. If the landlord received rental increases exactly in proportion to his PG&E charges, these tenants, especially the older residents, cannot understand why any passthrough is allowed.

This rent-regulation example is curiously the same for taxi regulations because companies (gate fees) and drivers (gas surcharge) are being taxed unequally due to regulatory failure. If the City wishes to chase older tenants out, Section 4.11 is doing that effectively. If the City wishes to chase efficient and viable taxi companies out, similarly it is doing an excellent job as a result of regulatory failure.

In Weiss vs. Golden Gateway Center, many of the above economic factors were presented to the Rent Board. The Rent Board is well aware that aging renters are being taxed as a function of living longer. The Rent Board, however, does not make the appropriate recommendations to the Board. Its inaction is similar to that of the Taxi Commission in failing to maintain the purchasing-power parity of the

original mean gate cap for taxi companies. Its imputation of social welfare functions are highly correlated with the political forces driving the process, rather than any semblance of a normative regulatory process and the use of orthodox economics to create equality of treatment under law.

Method 2

This method uses the same approach to calculating net power for pass-through. Method 2, however, uses n-2 as the base year and n-1 for the comparison year, where n is the pass-through year. This is still somewhat illogical, but less lethal than Method 1, which ensures, via ignoring the inflationary adjustment of the base year, double dipping and imposition of a regressive tax on the aged.

Capital Improvement Pass-throughs:

The Rent Board allows for the landlord to begin capitalizing upon approval of a capital-improvement pass-through. If the approval and expenditures are coterminous, this action is neutral. In a recent case, a landlord had a pass-through of \$1.7 million approved but did not begin the capital improvements for nearly a year. During the interim period, while the increased rents accumulated in the account of the landlord, capitalized at 6.2 percent, and then this expanded capitalized amount was amortized and passed through to the tenants.

The warping and morphing of the San Francisco regulatory system merits an immediate overhaul. Older tenants are subsidizing landlords that have found a loophole in the law, limousines capture taxi market share, single folks subsidize corporations and landlords are reselling utility services without regulation. At the same time, taxicab companies, acting in good faith, are being held to gate caps that do not keep up with inflation, and the companies are additionally threatened with punitive legal actions for trying to remain in business under difficult circumstances.

These are just a few issues that show why San Francisco requires a comprehensive review of its entire regulatory system.

D. San Francisco Public Utilities Commission (SFPUC):

The SFPUC issues are immense. The money involved is on a par with the GDP for many small nations. This section is offered to show that the taxicab regulatory morass seems normal rather than an aberration in the way San Francisco approaches regulations.

In its own words, “The San Francisco Public Utilities Commission (SFPUC) is a department of the City and County of San Francisco that provides water, wastewater, and municipal power services to San Francisco. Under contractual agreement with 28 wholesale water agencies, the SFPUC also supplies water to 1.6 million additional customers within three Bay Area counties. The SFPUC system provides four distinct services: Regional Water, Local Water, Wastewater (collection, treatment and disposal), and Power.”

As noted earlier, the CPUC by law must regulate investor owned utilities in California. California self-regulating municipalities may surrender control per section 2901 et seq. of the PU Code. In the August 2004, Reason Foundation Policy Brief, No. 30, “Western Water Wars – Efforts to Take Over the Hetch Hetchy Systems,” it is recommended that San Francisco submit to CPUC regulations, at least during the period of its current capital improvement program (CIP).

If the City’s largest enterprise submitted to a more disciplined regulatory system, such as the CPUC, it could prove an inspiration for other City regulators to get it right, apply a normative regulatory model, and use, not misuse, economic theory and economic indicators.

As noted, California regulates investor-owned utilities. Municipalities are self-regulating with respect to setting rates and conditions of service. San Francisco, however, “owns” the seventh largest multi-utility in the United States, serving over 2.4 million wholesale and local retail customers with water, wastewater and power. San Francisco has historically given water to a number of public entities.

The 29 suburban resellers who in large rely on the SFPUC for a percentage (varies by customer) of their water supply were so frustrated in 2002 that they had passed three major pieces of legislation that are thinly veiled “shape up or we will take you over” laws

- 2002 AB1823 – This law sets two firm milestones for completion of the \$4.3 billion Hetchy Hetch capital improvement system.
- 50 percent by 2010
- 100 percent by 2015
- 2002 AB2058 – This established the Bay Area Water Supply and Conservation Agency, an equivalent to the Metropolitan Water

District of Southern California. SFPUC is invited to join. If it joins, it cedes approximately 67 percent governance of the Hetch Hetchy system.

- 2002 SB1870 – This established the Regional Funding Authority, which is empowered to issue debt, based on bills that the suburban customers must pay the SFPUC. It was designed as a fall back measure in case Proposition E failed in 2002.
- 2002 Proposition E transferred the right to issue revenue bonds from the voters to the Board of Supervisors. Proposition E passed and the Board, as with the Taxi Commission, Rent Board, etc., became the ultimate regulator for SF economic life. AB2058, and Proposition E, probably make the RFA redundant in the grand scheme of running the Hetch Hetchy system.

The SFPUC has the responsibility to set local water and wastewater rates and to also negotiate the Master Water Sales Agreement (MWSA) with its suburban customers.

Water and wastewater rates are set using a revenue requirement approach (as described above) with some unique San Francisco nuances. These nuances include such attributes as a lifeline sewer rate (based on an ascending block rate tied to the size of residential lawns) and separate charges for residential and commercial customers. These charges are not set in any formal hearings analogous to the CPUC system.

One example of this disjointed system was when the SFPUC announced an 11 percent increase in sewer charges to apartment complexes. Apartment complexes had their sewer charges calculated as 90 percent of the water intake, which is metered, while sewer output is not, and thus sewer rates merely are estimated as a percentage of water takes. At the same time as it announced the 11 percent sewer rate increase, the SFPUC increased the output/input ratio from 90-percent to 95 percent.

Clearly the sewer increase was greater. The calculation should have been $(1 + [5/90]) * (1.11) = 1.172$ or 17.2 percent $[(1 - 1.172) * 100]$. The latter number is more indeterminate than it appears in that the conservation-oriented ascending, block, lifeline rate might not be fully used by a consumer. As noted in the Rent Board example, using a commingling of all meters might indeed generate a 17.2 percent sewer rate increase that under the arm's-length billing arrangement used by certain

landlords (wherein all master-meter charges are summed and apportioned to tenants 50/50 on a per footage and number of registered residents basis) would probably represent a full 17.2 percent increase. Failure to subsume these nuances in the regulatory process changes the outcomes from desired policy to skewed policy impacts. Regulators in this loose and poorly structured system that prevails throughout San Francisco do not appear cognizant of the dichotomy between incident (where the charge/tax is levied) vs. impact (who actually pays).

The SFPUC is also commencing a multi-billion dollar sewer restoration and improvement project. The costs of this plan have not been fully quantified. The Hetch Hetchy CIP plan will more than quadruple the cost of water by 2015, the estimated time for completion. This number depends on cost and delivery assumptions.

In 2000 the mayor appointed a multidisciplinary task force to reviews the operation of the SFPUC. The Taskforce deliberated for two years and came up with significant recommendations for developing a better business model and implementing a dynamic long-term strategic plan. The SFPUC did not accept the task force recommendations and instead created its own blue ribbon committee and hired a consultant to counterbalance the Taskforce report (see www.h2oecon.com), which basically said that the SFPUC was not capable, at that time, of planning and implementing a then \$3.8 billion capital improvement program.

III. Recommendations and Summary

It is imperative that the gate cap immediately be adjusted from \$90.00 to \$104.30. This is a stop gap measure at best and understates the revenues required by taxi companies to provide the best service at the lowest cost. The CPI is an inappropriate measure of the costs that must be internalized by cab companies. The CPI should only be used as an interim adjustment between rate cases. Other transportation-specific indicators of inflation should be considered.

The taxi industry is not alone in its insecurity because of the stochastic regulatory processes used in San Francisco. The entire regulatory system requires an overhaul. A CPUC-type process must be implemented. Skilled regulators should be hired to apply normative regulatory processes utilizing the tools of orthodox economics. The current regulatory disarray is causing economic hiccups, stakeholder dismay, economic inertia, and great anxiety among many vital segments of this community.

APPENDIX

NO. 3

A NEW APPROACH TO ALLOCATING TAXICAB MEDALLIONS IN SAN FRANCISCO

THE NEW PROPOSITION K

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EXECUTIVE SUMMARY

San Francisco currently does not allow the sale or resale of the existing stock of taxi medallions. New medallions are issued as a function of public convenience and necessity. Many older operators who acquired medallions both before and after 1978 (the year Proposition K was passed) are encountering difficulties meeting medallion -operating standards. This is a problem for both drivers and taxicab patrons. New medallions are issued on a queue basis at virtually no cost to the recipient. Existing medallions cannot be transferred. Human and non-human resources are arbitrarily constrained by a well-meaning, but now outdated piece of legislation, 1978's Proposition K.

The market mechanism must be used to allocate the existing stock of medallions and provide information to regulators as to how many new medallions should be issued and when. Using the market mechanism does not create a contradiction with an efficient and fair regulatory system. *Au contraire*, the use of market-forces complements such a system by ensuring that the riding public will have an adequate stock of available taxicabs and at the same time encourage capital-investors that have special skills in this mode of transport. Resources will be bid to their highest and best use.

A proposed piece of legislation ("the new taxi ordinance") addresses many of the economic efficiency issues that were created by Proposition K. In 1978, Proposition K locked in resource mobility. Proposition K forbade resources from being bid to their highest marginal value in use. This concept of mobility and/or strong exchangeable private property rights is one of the strongest underpinnings of a market system for allocating resources. Alchain and Allen argue that a system with strong private property rights and market exchanges performs two major functions: optimizing social wellbeing and, second, directing resources to their highest and best uses.

The new taxi ordinance is not designed to interfere with the current regulatory structure used in San Francisco to regulate the taxicab industry. Instead, it addresses inequity issues for older drivers, especially those who invested in a taxicab medallion prior to 1978 in the expectation that the privilege of holding a medallion would remain a transferable (subject to all regulatory oversight) capital asset. This expectation was thwarted by the enactment in 1978 of Proposition K.

The proposed proposition does not change any of the major regulatory attributes such as fare setting, entry/exit, medallion issuance, qualitative criteria, etc. Rather, this proposed proposition authorizes the City to auction new and repossessed medallions and keep the proceeds. It also allows qualified and licensed individuals (under strict regulatory supervision) to transfer medallions among a qualified population of operators. These transfers would be subject to a fee that would generate additional revenues for the City. The City is thus transferring to the individuals involved the costs (responsibilities) associated with determining the value of the taxi medallion "privilege."

This study is divided into three sections:

1. Section 1 will be a short-review of the current structure of the San Francisco taxicab industry and how the changes proposed under the new taxi ordinance will be beneficial to the citizens, public coffers, and operators, and compatible with the current regulatory structure. This section will look at the economic underpinnings of how these proposed changes will enhance public welfare and be a pillar of good public policy. Under the proposed legislation, the City will not cede ownership of any medallions. Instead, new public revenues generated from auctions and transfer fees will offset both administrative (implicit) and other (explicit) costs associated with the taxicab industry.
2. Section 2 will discuss comparable city systems that have adopted market driven approaches to allocating taxicab resources. The experience of the New York City (NYC) taxicab industry will receive special attention. NYC taxicabs are administered by the NYC- Taxi & Limousine Commission (TLC). NYC has a direct auction, allows transfers (set at a percentage of market value) and provides for individual ownership of taxicab medallions. The new taxi ordinance retains the City's ownership of all medallions. It does envision longevity of permitting, subject to recall upon failure to comply with all rules and regulations. Other than that, the NYC experience holds possible clues as to how enactment of the proposed legislation will impact San Francisco from both social and economic perspectives.

3. Section 3 will discuss asset valuation in terms of acquiring a taxicab medallion in San Francisco by either auction or transfer. Both prospective buyers and sellers develop "reservation" prices based on a multivariate analysis of the net income stream derived from transferring (buying/selling) and/or acquiring through auction a taxicab medallion. This is an important matter. The 2005 NYC-TCL Annual Report notes: "In 2005 medallion sales unexpectedly broke records on the open market, with the year closing at an average price of \$350,000 for Individual Medallions and \$391,000 for Corporate Medallions." These run-ups, in excess of 35 percent, occurred during the second year of a three-year program to increase by 300/year the number of NYC medallions, increasing from 12,187 to 13,087 medallions.

Revealed preferences occur when people actually exchange dollars for a medallion (buyer/seller-auction). Section 3, reviews orthodox capital-theory techniques used for valuing the potential marketability of acquiring a medallion. Estimating future medallion valuation, using standard capitalization techniques, is a planning approach for evaluating potential economic impacts associated with the proposed legislation.

SECTION 1

SF Now and Proposed Ordinance

On June 6, 1978, Proposition K, an ordinance providing for the regulation of taxicabs and other motor vehicles for hire, was approved by the voters of San Francisco. This ordinance, among other things, restructured San Francisco's approach to market exchanges of taxicab medallions.

This ordinance is described as:

An ordinance providing regulations, policies, and procedures relating to the issuance by the Police Commission of permits for taxicabs and other motor vehicles for hire in the City and County of San Francisco; regulating the times for operation under such permits, nontransferability of permits, surrender and exchange of existing permits, surrender and exchange of existing permits, provisions as corporate permittees, financial and accounting records, and certain aspects of taxicab rates; repealing various sections of Parts II and III of the San Francisco Municipal Code.¹

Proposition K² did not allow permits to be auctioned and/or transferred via the market mechanism. Other than a specific preference given to existing drivers at the time of passage, 1978 Proposition K limited the issuance of new permits to individuals (natural persons) based on the order applications were received by the Police Commission. Existing permits could not be bought and sold. New permits would only be issued based on "whether or not public convenience and necessity exist for the issuance of a permit...." Proposition K also established strict regulatory provisions for operating a taxicab and maintaining a medallion.

Regulation is a reaction to the concept of a natural monopoly. A natural monopoly is a firm whose costs decline as output increases, such that one firm is more efficient than two or more could be.³

¹ See <http://taxi-reg.home.att.net/prop-k.htm>.

² See Appendix J, Section I

³ Alchian and Allen, Exchange & Production, Competition, Coordination, & Control, Wadsworth Press, Belmont, California, 1977.

In 1897 the US Interstate Commerce Commission was created. Subsequently, regulatory authorities for transportation have been established at all jurisdictional levels. This formal regulatory structure was driven by the belief that competition could be ruinous (the classic example cited involved seven competing railroads between Omaha and Chicago).

Apparent market anomalies such as short-haul and long-haul price differentials raised questions of equity. Why pay more per ton to carry coal from Chicago to Peoria than to New York? Why are American drug companies gouging U.S. patients? There is a laundry list of economic and noneconomic indicators governing whether government intervention in certain industries is required. Regulators at all levels of government (federal, state and local) focus on such issues as number of competitors, entry and exit, requirements, conditions of service, and ratemaking (establish a just fare based on reasonable costs, generating sufficient revenues to encourage investment into regulated sectors).

Many neoclassical economists such as Demsetz, Hilton, Alchian, Allen, and Friedman have argued that "market concentration cannot be derived from theoretical considerations and is based on an incorrect understanding of the concept of competition and rivalry."⁴ Hilton argued that short-haul versus long haul differentials were explainable as a function of different market demands in different market nodes.⁵

In his article "Why Regulate Utilities?" (*Journal of Law and Economics*, April 1968), Demsetz, a leader in neoclassical thought, argues that the natural monopoly theory is weak and provides no basis for establishing a nationwide regulatory network. The concept of one efficient firm outing all competitive firms is questioned as is the ability of market forces to find a market clearing level between output and prices in the utility sector. Since Demsetz's article was published, many U.S. sectors have taken a more pro-market approach.

The Civil Aeronautics Board (CAB) was established in 1938. It was replaced by the deregulation of U.S. interstate airlines by the Kennedy-Kelly Act of 1978. One major reason for the demise of the CAB was the California Public Utilities Commission (CPUC) innovative approach to air-

⁴ Why regulate utilities? Harold Demsetz, *Journal of Law and Economics*, Volume. 11. No. 1 (April, 1968), pp. 55-65.

⁵ GW Hilton - Thesis Advisor 1966 - see above Journal - The Morass of the ICC.

fare regulation on the highly traveled Los Angeles-San Francisco (LAX/SFO) city-pair route for the upstart **intrastate** (regulated by the CPUC not CAB) carrier PSA. The CPUC allowed a more flexible pricing-regime than interstate carriers were authorized under CAB's stricter, ratemaking procedures. The result, on the intrastate city-pair LAX-SFO more passengers (load factors were higher) were carried at a lower yield (dollars per revenue mile). This example could not be ignored forever by commuters in other parts of the U.S., and their voices were heard in Washington DC. The California experience also catalyzed the demise of the overbearing regulatory powers used to implement the Australian Two Airline Policy.⁶

Monopoly power, according to Alchain and Allen, results from a seller having a negative sloped demand function (price seekers) for its goods or services. This model is different from the pure competitive model of atomic participants (price takers) that were obliged to accept the market price or go out of business. The Alchain and Allen definition, simply stated, is that a supplier can change the quantity demanded by varying the price and therefore has a monopoly. Alchain and Allen dichotomized monopoly pricing into open and closed monopolies. Open monopolies are monopolies where no government protection is afforded the participants. Closed monopolies exist where there are external limits (regulators) on entry and exit.

The short-haul/long-haul price differential was often cited as an example of monopoly price and abuse of market concentration. Economists have explained long-haul and short-haul differences as a function of wealth maximization by producers having different demands in different markets.⁷ Alchain would illustrate this phenomenon by showing that U.S. drugs sold at a premium in the U.S. v. foreign markets and that U.S. drug manufacturers wanted it to be a costly (forbidden) endeavor to re-import U.S. drugs back into the U.S. market.

The creation of long-haul and short-haul differences can often be explained by different demand schedules in the different locations. It can also be explained by marginal cost pricing. PSA charged a small fare to reposition aircraft between LAX and SFO. PSA initially charged a reposition fare, with CPUC approval, designed to recover the additional uplift per person

⁶ Brian Browne, circa 1975. "Australia's Two Airline Policy," unpublished. Contact author for a copy.

⁷ This situation is exacerbated when "re-importation" constraints restrict prices finding a "common level."

marginal costs for gas, etc. On those costs that would not otherwise have accrued without carrying passengers. The CPUC permitted this type experimentation (marginal cost pricing) not allowed by the CAB the U.S. trucking industry under the Interstate Commerce Commission (ICC) legislation of 1935.

Many economists believe that the CPUC's more flexible application of the public convenience and necessity criteria, versus the stricter application by the CAB and ICC, led to the eventual demise of the federal agencies. Air and surface carriers are still subject to strict safety controls. It has been estimated that the restrictive policies of the ICC cost the U.S. approximately 3 per cent in cumulative GDP growth⁸.

By comparison, the San Francisco taxicab industry is offering to change Proposition K (1978). It is convinced that the time has come to loosen some aspect of regulatory control in the interest of economic and social wellbeing. An economic rent is "the price necessary to keep a good in existence; hence any price in excess of resource cost. Economic rents may however be necessary to allocate goods to their highest value use."⁹

An allowed market-transfer of the existing stock of San Francisco medallions would generate considerable information as to market value. Cab medallions would be assigned to those who value them more highly as capital goods, and by internalizing their own wealth, will produce a more socially viable product. These market prices would also act as an excellent signal to the San Francisco Taxi Commission as to when to add new taxis to the existing stock. The New York City (NYC) example of taxis selling at close to \$300,000 per medallion shows in the NYC market, on the margin, what the new medallions (900) are fetching. New York City is benefiting in two direct ways: (1) Every auction is paid directly into the treasury and, (2) every transfer transaction yields 5 percent to the City.

Laws (such as Proposition K) that unexpectedly curtail future market transactions cause a wealth loss to the owner of a capital resource such as a taxicab medallion (in this case, the owner is the City). The proposed proposition is not doing this. Proposition K did. The proposed proposition will allow resources to be bid to their highest and best use, without curtailing the tariff-setting (fares and quality of service attributes) and rights of the

⁸ G.W. Hilton, UCLA. Ph.D. program, Transportation Economics, 1968.

⁹ Alchain & Allen, Exchange and Production, 3rd Editions, Wadsworth Press, 1983, p 463.

SFTC to control exit and entry. The proposed legislation merely frees up resources to move from one registered and approved license holder to another approved and registered license holder based on "buyer/seller" asset marginal valuation.

The powers of the SFTC, Board, and Mayor are not diminished in any way. Instead, the market will be relied on to do what it does best and efficiently: allocate resources. Entry, exit, service attributes, and fleet levels remain in the hands of the public. Without cost to the public, the market will ensure taxicabs are operated by those who placed the highest marginal value on possessing a medallion. At the same time, the market will also generate – through auctions and transfer fees – revenues for the City and County of San Francisco, revenues not available under Proposition K.¹⁰

Capital markets in the U.S. are extremely well developed. Markets (banks, financial intermediaries) will bet on entrepreneurs (taxicab operators) that show promise. This applies to potential medallion holders. A qualified skilled operator will be able to obtain loans to assist in acquiring a permit. The proposed legislation while never ceding ownership from the City, as with the New York example, does provide a sufficient degree of finance collateral to make borrowing a reality.

Taxi finance specialists have developed in many U.S. cities (i.e. New York, Chicago, etc.) to assist potential owners/operators to acquire funding. These individuals specialize in the taxi industry and associated risk allocation. In addition, there are a vast number of other funding sources that will bet on an efficient operator with a strong quasi-private property right to a medallion. Ease of access to capital markets will be enhanced by the proposed legislation. Capital markets will subsume and charge for the risk differential between outright medallion ownership and the long-term, conditional lease (City still maintains ownership) envisioned by the proposed legislation.

The economics of a firm selling at different prices in different markets is illustrated by Figure 1.¹¹

¹⁰ For a deeper discussion on regulations – See: *Government Regulation and Business*, Allyn Douglas Strickland, George Washington University, Houghton Mifflin Press, Boston, 1980.

¹¹ Figures are not to scale. Representative only that an identical product into different markets will adjust price to maximize wealth whereby marginal cost equals marginal revenues. In this instance, marginal revenues are summed from both markets.

**Figure No. 1 – Wealth Maximization
Charging Different Prices for the Same Product in Different Markets¹²**

**TAXI STUDY
PRICING IN TWO DIFFERENT MARKETS**

**Marginal Cost Firm
& Summed Marginal
Reviewed USA & FC**

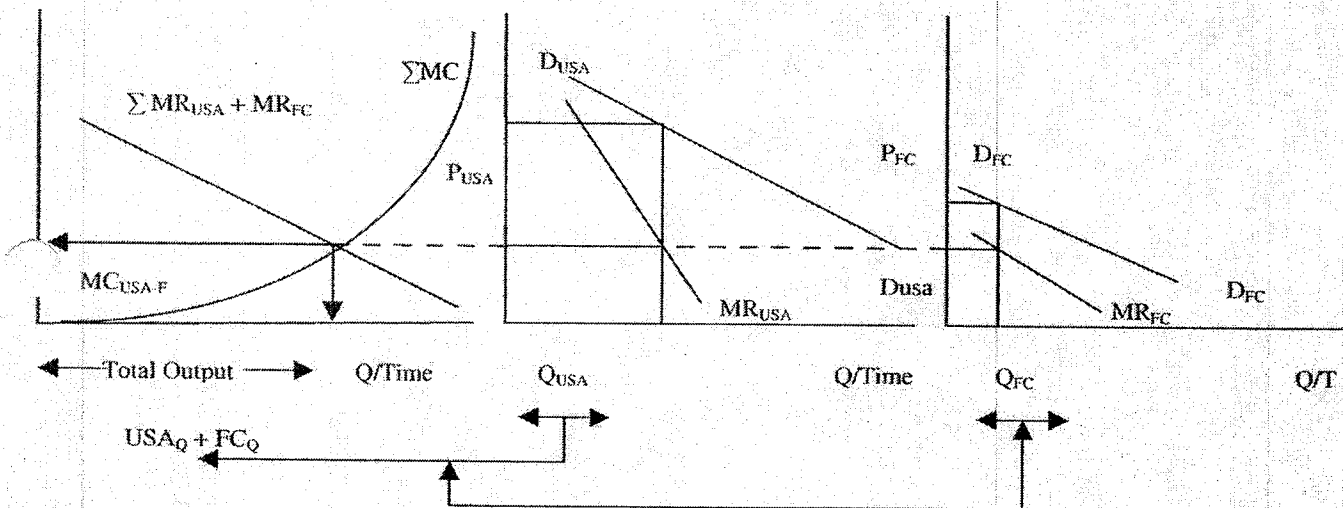
**Demand & Marginal
Revenue USA**

**Demand & Marginal
Revenue Foreign
Country**

\$ **FIG. A**

\$ **FIG. B**

FIG. C



- Figure A (subframe) is the marginal cost curve (supply curve/MC) for a U.S. drug manufacturer.
- Figure B (subframe) is the demand curve for the U.S. consumers and associated marginal revenue (MR) curve for U.S. demand.
- Figure C (subframe) is the demand curve for a foreign country (FC) and associated marginal cost (MC) curve for the foreign country.

By summing the marginal cost curves for the U.S. and the foreign country and adding to Figure A – a point where $MC=MR$ for the U.S. company is

¹² Figure 1 has three subframes Figure A, Figure B, and Figure C – Armen Alchian circa 1968. Wealth maximization is where the sum of the marginal revenues of the USA and Foreign Company = the Marginal Cost of the US Company. These figures are not to scale.

ascertained. Wealth maximizing output and pricing is obtained where $MC=MR$. Figure A tells us how much the US firm will produce. By extending to Figures B and C the intersection of the point where $MC=MR$ on figure A intersects, we can calculate a price and output in both the U.S. and a price and output in a foreign country. The sum of the outputs (B plus C) will equal the total U.S. firm output (Figure A). By reading up from where MC intersects MR for the U.S. – Figure B and the FC – Figure C it is possible to determine pricing (discriminatory) and output in the two segmented markets.

Figure 1 diagrammatically shows that the price in the U.S. is higher for the same product than in a foreign market. The explanation for the difference is that the U.S. has a higher demand for this product. This example was used to show why US drugs in foreign countries sell for less than in the US and why long-haul vs. short-haul price differences occur. Regulatory systems based on these differences, without regard to considering actual demand differences impinge and distort normal market transactions. U.S. drugs selling at a discount in Canada and Mexico can well be explained by demand differences and re-import restrictions.

Economists caution policy makers to look at the economic forces driving price differences before crafting restrictive policies that could be counter-productive to economic wellbeing. The proposed revisions to Proposition K attempt to commingle orthodox economic theory with the best objective goals of the existing San Francisco Taxicab regulatory system. Market forces, as discussed herein, are adapted to meet the traditional San Francisco goals of efficient and equitable service criteria.

This example can be adapted for ratemaking and fare-setting purposes and does show the limitations of regulatory powers. Some regulatory tasks are best left to market forces, as suggested by the proposed new taxi ordinance. Economists used to speak about cost-push inflation. This concept has been challenged by the neoclassical economists who believe in demand-pull, either direct or derived. They would argue that a NYC taxicab medallion is selling for close to \$300,000 because of the demand.

Ratemaking is one area where regulators have to monitor the ebb and flow of demand and supply. If the fare is set too low, there will be a perceived shortage of cabs. If the fare is set too high, there will be a perceived surplus

of cabs. Incorrect fiat-price signals could lead to wrong policy decisions in terms of optimizing the stock of San Francisco taxi medallions.¹³

In the Taxicab Industry Review of December 2005, it was suggested that the SF Taxi Commission develop a more formalized approach to fare setting and put in place a mechanism for more immediate adjustments. The real market price is difficult to simulate in a regulatory system. Economists suggest that the gasoline shortages of the 1970s and 1980s were a function of a regulatory structure that did not allow prices to adjust to multivariate factors, including but not limited to the “inventory” demand based on fear of an immediate oil boycott.

During the “shortage period,” in the Central Valley of California, where gasoline sellers had for some time been discounting from the official peg prices, they were able to use these credits (gallons under allowed for an offsetting volumetric-price over the peg) along U.S. I-5 to increase prices to clear the markets. Gasoline was available, but at a price. There were no lines and business was normal.

If the price is set above the market-clearing price, where the marginal social valuation equals the marginal cost, there will be a perceived surplus. More will be supplied at that price, than will be demanded. If the price is set below the market-clearing price, more will be demanded than will be supplied at that point on the summed marginal cost function, also known as the supply curve. The symptoms of a shortage are longer wait times and less courtesy service. *Au contraire* for a surplus.

Somewhere between Proposition K and complete deregulation, especially in an age of decreasing information and transaction costs, is a more efficient system for allocating taxicab permits in San Francisco. This system would use market prices as social coordinators where possible. The role of the regulatory agency would not be diminished. Rather, it would be enhanced. The criteria: whether or not public convenience and necessity exist for the issuance of a permit....” remains sacrosanct. The Taxi Commission would still regulate the number of competitors (medallions), entry and exit requirements, conditions of service, and ratemaking.

¹³ “Perceived” in that nonmarket prices generate demand and supply responses that are not in equilibrium. A market-clearing price is where marginal societal valuation is equal to the summed marginal cost. Demand equals supply.

The current San Francisco system for allocating permits is based on grandfathering and a medallion-queue system. The medallion fee charged is set to cover only administrative costs. One driver complained that he had been in this queue for fifteen years. Long queues indicate that the price is below the market clearing price.

The assertion that long queues indicate a nonmarket clearing price can be illustrated in Table No. 1 is reproduced from Chapter 4, Alchain & Allen (A&A), *Exchange & Production – Competition, Coordination, and Control*. This analysis is consistent with the first law of demand – the lower the price, the more will be demanded. The market demand is the sum of all individual demands at different common prices. This example sets forth the individuals A, B, C, and D with four different demand schedules for acquiring automobiles at different prices.

This analysis follows the first law of demand. “At any given price, there is some higher price at which less of a good is demanded.”¹⁴ Limiting the “population” to four does not change the explanatory power of this example to extrapolate for the entire taxicab industry of San Francisco. The supply (medallions are not produced by fiat) of cars, set initially at seven cars, is held constant for this static analysis.

This example, for simplicity, assumes a limited supply of seven automobiles and four traders with different demand schedules. By working through this example, regardless of the initial endowment of automobiles by trader, market exchanges will ensure that these automobiles are bid (re-allocated) to those that place the highest marginal value on possessing them.

There are many iterative paths to ensure final optimal market resource allocation. Information and transaction costs are internalized by the “traders” and not the taxpayers. As in New York, Chicago, and other centers around the world, persons who specialize in gathering information and lowering transaction costs (brokers) will probably emerge. Use of such specialists under the proposed legislation will be a matter of choice. The proposed legislation relies on market forces to allocate the new and existing stock of taxicab medallions. The City and County benefits by the auction proceeds and transfer fees. Buyers and sellers benefit by entering into mutually beneficial trades.

¹⁴ Alchain and Allen, *Production and Exchange*, p. 462.

Regardless of the initial endowment of economic goods, if trade and exchange is permitted (assuming transaction and information costs do not create an inertia barrier), goods will be reassigned to their highest marginal use values. Economists describe this process of utility cum wealth maximization as the marginal process toward hypothetical Pareto-optimality; "A condition in which one individual's total utility cannot be increased without taking utility from someone else."¹⁵ Movement toward hypothetical Paretian optimality shows (using different preference maps) trade and exchange enhancing the utility (wealth) of those involved.¹⁶ The concept of beneficial trades and movement toward a hypothetical stable solution underscores the viability of instituting an auction system for San Francisco taxi medallions.¹⁷

TABLE 1
REALLOCATION OF RESOURCES
DEMAND SCHEDULES

Price	Individual A	Individual B	Individual C	Individual D	Total Demand (Market)
\$1,000	2	0	1	1	4
900	2	0	1	1	4
800	2	0	1	2	5
700	2	0	1	2	5
600	3	0	1	2	6
500	3	1	1	2	7
400	3	1	2	2	8
300	3	1	2	3	9
200	3	1	2	4	10
100	4	2	2	4	12

Alchain and Allen used automobiles in their example. Automobiles could easily be exchanged for taxicab medallions and the conclusions would remain valid.

¹⁵ *Economics and Business Dictionary*, Erwin Esser Nemmers, Littlefield, Adam, 1981, p 340.

¹⁶ *Ibid.*

¹⁷ See pp. 431-441, *Microeconomic Theory*, C.E. Ferguson, Irwin Series, 1969..

The above schedule represents each individual's marginal valuation on acquiring an additional automobile. This example assumes that initially the amount supplied and available for distribution is fixed regardless of price. A&A show that by opening up this market to trades, automobiles will be exchanged in a way that will benefit society and ensure resources are bid to their highest marginal value in use. A&A describe one of many possible paths to achieve these twin goals. Their analysis begins with individual A owning seven cars. It would be difficult to improve on their explanation:

The following is one of many possible exchanges\sequences. A would sell four cars even if he could only get \$100 per car. And he could, because the other people have higher marginal use values on a car than he has for four of his seven cars. We can demonstrate this fact in several different ways. For example, if C and D extravagantly offer \$900 for a car, A will delightedly sell one to each. Then B more shrewdly offered only \$400 for a car; again A sells. This leaves A four cars, and B, C, and D have obtained one car each. C then offers to buy another car from A at say, \$300, less than its \$400 value to C – and A sells because he would rather have any amount over \$100 than a fourth car. Although D, who has one car, would have paid as much as \$800 to get a second car, he initially offers A only \$300 for a second car; A will say he has no cars to “spare” unless he can get \$700. B however if alerted to this negotiation, would offer his car to D for \$600, even though he just brought it. And C who values his second car at only \$400 would undercut B's price by asking for only \$500. Neither A nor B would undercut their prices that far. So C would sell to D at \$500.

Thus, A ends up with three cars, B with one, C with one, and D with two. Everyone given his/her preferences and initial wealth is content with the pattern of goods; there are no mutually acceptable revisions. This is the condition of market equilibrium.

Many economists believe that taxicabs should not be regulated pursuant to the natural monopoly theory. They argue that that cabs are not natural monopolies in that their marginal costs do not decrease as output increases. Notwithstanding the weakness of the natural monopoly theory (see above, Demsetz et al) Alchain and Allen (fn. Alchain and Allen, *Production*,

Exchange.... page 291) state "...nevertheless (taxicabs) are made into contrived monopolies by law and called public utilities." The proposed legislation, however, does not deregulate per se, but does allow a greater reliance on market forces for allocating San Francisco's existing and future stock of taxicab medallions. It can be argued that this change will produce greater efficiency in resource use and allocation. Market decision-making also leads to greater public wellbeing in the form of higher output. This is shown in the simple example below.

Alchian and Allen illustrated the optimization of societal wellbeing as a function of market allocation of resources in a simple, but powerful model. It is presented in Chapter 8 of *Production and Exchange* and reproduced from a landmark article, "Fishland." They assume that there is an island (model) with 1,000 similar people. These people do nothing but fish. If a person catches 4 fish (marginal productivity), the GDP of the island is 4,000 fish. An abandoned boat is discovered. The boat's marginal productivity schedule is shown in Table No. 2, Fishland (Column 3). If one person leaves the island and fishes from the boat, the marginal productivity of the first person on the boat is 6. The total number of fish caught and available to the inhabitants of the island is 4,002. The opportunity cost of fishing on the boat is a constant 4 fish per person. From the table is clear that when the marginal cost of fishing on the boat is equal to the marginal product of adding an additional fifth person to the boat, total output on the boat will be maximized at 38 fish.

**TABLE 2
FISHLAND**

Number of Men Onboard	Total Catch (on board)	Marginal Product (on board)	Average Product (on-board)	Net		Social Fish Caught on Island	Social Fish Caught on Boat	Social Total Fish Caught
				Marginal Product	Fish Caught on Island			
0	0	0	0.00	0	4000	0	4000	
1	6	6	6.00	2	3996	6	4002	
2	16	10	8.00	6	3992	16	4008	
3	24	8	8.00	4	3988	24	4012	
4	30	6	7.50	2	3984	30	4014	
5	34	4	6.80	0	3980	34	4014	
6	36	2	6.00	-2	3976	36	4012	
7	36	0	5.14	-4	3972	36	4008	
8	32	-4	4.00	-8	3968	32	4000	
9	27	-5	3.00	-9	3964	27	3991	
10	21	-6	2.10	-10	3960	21	3981	

Coincidence of Private and Social Maximization

The marginal product is the total output from the addition of one unit of input (fisherman), with all other inputs used in the production process held constant. To achieve the social maximum output, with no waste of resources, the optimal amount of people fishing from the boat is four because the marginal product with a fifth crew member on board would exactly offset the lost marginal product from fishing from the island. For convenience, the highest number, in this case 5, is used. Maximizing social output then requires that inputs (crewmembers) be added to the boat, until the marginal product on board equals the marginal product on shore. It is not a far leap to impute money and see that we are talking about the wealth maximizing market-solution for a firm where marginal cost equals marginal revenues. Adding additional people to the boat would produce a smaller social total, and "profits" on board the boat would decrease.

Scenario 1: Average vs. Marginal Solution – Avoiding this Type Regulatory Solution

If fish were allocated/regulated on an average basis the discoverer of the boat would not allow four people on the boat, because the average would fall from 8 to 7.5. Four people on the boat would cost 16 fish and provide a net profit of 14 fish. Three people on the boat would cost 12 fish and provide a net profit on the boat of 12 fish. Increasing the number of people on the boat from three to four to five would increase profitability on the boat and also increase net social product. A new member could buy his/her way onto the boat by offering the "founders" anything slightly in excess of what s/he would earn by fishing on the island. While the average on the boat would drop from 8 fish to 7.5 fish; the fourth entrant could pay the other 3 members 3 fish (average of 1 fish per grandfathered fishermen) – The fourth fisherman would have 4.5 fish (+.5 fish as opposed to fishing on the island) and the original fisherman would have 8.5 fish. Any fisherman getting a marginal catch on board in excess of fishing from the island will trade to improve his lot. The person will be better off and society will more efficiently use its resources.

The implications for the proposed auction legislation are clear. Allowing markets to work – where markets should work – will enhance societal and private wellbeing.

Scenario 2: Private Property Rights – Employment

If a person owns the boat and is allowed to enter into employment contracts, the owner will hire a crew. The owner will pay the crew. The owner will keep all fish (money) in excess of the wages paid. The wages must exceed 4 fish per employee. The owner will hire as many additional crewmembers, as possible, that increase total output onboard in excess of the 4 fish. The owner will thus be able to pay enough to induce the crew to leave the island and fish on the boat. In this simple example, this amount is 4 fish plus. Four or five crew members will be hired by the owner. No more or no less. The crew size is selected that maximizes the owner's wealth (profit) of fourteen fish. Coincidentally, this individual wealth-maximizing outcome also maximizes the societal output derived complementing shore fishing with boat fishing.

Scenario 3: Boat Renting

The boat owner could decide to retire and rent the boat. As shown above, the maximum rental will be fourteen fish. Four or five people will be the crew. Four people will catch 30 fish on the boat which is 14 fish (30 minus 16) more than they could have caught on the island. Five people will catch 34 fish, which again is 14 more fish than they could have caught on the island. The rental price will be 14 fish. Three people could not afford to rent the boat. It would cost them 14 fish to rent and the catch would be 24. The average per catch on the boat would be 3.3, less than the average of 4 fish they would catch on the island. Six people would catch 36 fish on the boat and have to pay 14 fish in rental fees. Their average net 6 catch on the boat would be 3.7 fish, less than the four they could have.

Scenarios 2 and 3 are nearly identical. Alchian and Allen in presenting "Fishland" as an explanatory example of wealth maximization by firms and nexus with societal wellbeing ask the rhetorical question:

Is there, then, no difference between Macys hiring clerks as employees and the clerks paying the owners of Macys rent for its building and facilities (inventory use-costs) out of total daily sales—leaving the clerks with the same income in either case? There indeed is no difference, if the anticipated output performance of the inputs can be predicted with certainty. But if

mistaken estimates of the anticipated products are made, someone must bear the consequences.

Scenario 4: The boat as Communal Property

For all input solutions other than 4 or 5 fishermen, social and boat wealth optimization are not obtained. Adding 6, 7 and 8 fishermen will ensure boat participants have an average catch equal to or in excess of the four they caught on the beach. Societal wellbeing will decrease and marginal costs (highest alternatives forgone) will exceed marginal revenues (fish). With communal ownership, difficulties will arise in metering performance and allocating resources and equally dividing the catch. Hardworking shore people possibly will not be happy to see their wealth decrease and will question the efficacy of investing in this boat for capital improvement programs etc to subsidize this income disparity.

Scenario 5: Government Intervention

As a result of Scenario 4, the government is asked to step in and maximize efficiency on the boat. Will the government official immediately call for a study? Hire consultants from a pool of preauthorized consultants? Establish a price control system? In the case of the boat, the way to achieve social and private wealth maximization is to allow the markets to work. In Scenario 5, the role of the government should be to ensure strong private transferable property rights.

This type approach is what is being recommended by the new ordinance. The development of a strong system of transferable private property rights, based on market exchanges, will ensure medallions are allocated to their highest use value, generate auction and transfer fees for San Francisco, and ensure that the best attributes of the current San Francisco regulatory system remain in place.

SECTION 2

Comparable City Models

Case Study – New York City¹⁸

New York City (NYC) has 12,779 taxicabs. NYC is expanding its fleet of yellow cabs by 900. Since 2003 the fleet has increased by 592 taxicabs. The goal of auctioning 300 medallions per year for three years is on track. There will be 308 more medallions auctioned by the New York City Taxi and Limousine Commission (NYC-TLC). The 900 medallions is the largest offering of licenses in New York for the last 70 years. The sale of 900 new taxicab medallions was subject to an environmental impact study.

The NYC-medallion system has its roots in the Great Depression era. High unemployment and public revenues in free fall catalyzed the passage of the 1937 Haas Act. At the beginning of the Great Depression, NYC had 21,000 cabs. By 1937 this number had fallen to 11,787. In recent times, including the new medallions, the number has edged up to 12,779 and will stabilize by the end of 2006 at 13,087.¹⁹

There are over 40,000 taxicab drivers in NYC. In 2003 NYC taxicabs carried 240 million passengers: an annual per taxicab carriage of 19,693 passengers and an annualized per driver carriage of 6,000 passengers. In 2004 the average medallion price for an individual cab was \$250,000. As of 2005 this price had increased to \$320,000. Similarly, corporate medallion prices went from \$280,000 to \$350,000. These prices varied by month, but the trend has been upward.

In 1999, San Francisco had 911 medallions and by 2006 this had increased to 1381. This represents an approximate 52 percent increase. The 900 additional medallions in NYC will represent a 7 percent increase over approximately the same period. The number of riders per cab in NYC is approximately 40 percent more than for the average San Francisco cab on an annual basis. Two factors might explain this difference: 1) longer trips per SF cab, and 2) a higher quality of service in San Francisco in terms of taxicab availability.

¹⁸ Extracted from , www.nyc.gov/taxi

¹⁹ See <http://www.schallerconsult.com/taxi2.html>

NYC-TLC believes that the advantages of buying a taxicab medallion directly from auction are lower prices and avoidance of the 5 percent transfer fee, noting "An ability to purchase a restricted medallion at a lower price."

NYC-TLC has a sealed bid system for its auctions. The bid must indicate the bidder's personal information and state if the bid is for a minifleet medallion or individual medallion and whether a clean-air fuel or wheelchair-accessible medallion is being sought. The bid package must include bid amount, certified check or money order for deposit, certified or approved TLC medallion license application, and letter of commitment or bond for 80 percent of the bid price. The NYC-TLC makes use of attorneys or brokers optional. The TLC licenses brokers but does not license attorneys.

In NYC, postauction transfers are taxed at 5 percent of the average transfer value. A postauction transfer for \$390,000 (at 5%) would generate \$19,500 for the City treasury under the proposed legislation, in addition to the entire initial auction price.

December 2005 S.F. Taxicab Study²⁰

NYC Taxicab Medallion

In NYC, the owner of a medallion is a license to operate a taxicab. It is also considered an asset that may be sold or pledged as collateral for a loan. Taxicab medallions in NYC give exclusivity to accept street hails. NYC taxicabs may only charge fares authorized by the NYC Taxi & Limousine Commission (TLC). The TLC regulates the fares that medallion holders may charge.

Ownership of a NYC Medallion

In NYC the owner of a corporate medallion owner must be 18 years of age, while individual medallion holders must be U.S. at least 19 years old. Medallion owners (ownership is a term used by the TLC) must be citizens or permanent residents of the U.S. (subject to a background check). Medallion owners must comply with all TLC rules and pay all required fees.

²⁰ 2005 NYC-TLC Study – Data series manually transposed from graph – reproduction in S.F. Medallion auction study – shown to replicate the direction and rate of change of asset valuation.

All individual medallion owners must possess a valid driver's license and have taken TLC specified courses for up to 80 hours. Medallion owners pay for these courses. Medallion owners must operate their taxicab at least 210 9-hour shifts (an average of 36 hours per week).

Corporate ownership attaches additional requirements: Vehicles must be operated 24-hours a day, 7 days a week. Owners may lease cabs only for specified amounts; i.e. \$112 for Thursday, Friday, and Saturday nights and \$103 for all other shifts.

Ownership and Management of a NYC Medallion

There are two main forms of medallion ownership and management.
Own and operate one medallion.

- Sole proprietor
- Partnership

Own and operate 2 or more medallions as a corporation.

- Self-manage
- Manage via an agent
- Manage through a fleet

NYC-TCL has defined the advantages of owning restricted medallions.
These are shown below

Wheelchair-Accessible Taxicabs

- Reduced opening bid prices
- Additional income from external advertising
- Eligible for up to 6 ½ years on the road

Alternative Fuel Taxicabs

- Reduced opening bid prices
- Greater fuel economy
- Eligible for up to 7 years on the road
- NYC subsidies may be available

The NYC-TLC, as shown in Table 3, presented the following cost/revenues for a representative taxicab in 2003. Table 4 titled an "Owner/Driver Cost and Revenue Analysis" is a representative break out of costs and revenues by the NYC-TLC.

**TABLE 3
OWNER/DRIVER COST AND REVENUE ANALYSIS**

Start-up Costs	
Medallion	Average Down Payment: \$50,000 (assuming a 20% down payment)
License & Fees	\$1,400 (2-year license)
Taxi Conversion	\$4,000
TLC Hack-up Fee	\$50
Medallion Tin	\$10

**TABLE 4
OWNER/DRIVER COST AND REVENUE ANALYSIS**

Annual Operating Costs	
Liability Insurance	\$3,700 (w/good driving record)
Vehicle Depreciation Cost	\$8,000
Maintenance	\$4,000
Gasoline	\$4,500
Motor Vehicle Tax	\$1,000
General & Administrative Costs	\$1,715
Medallion Loan	\$18,000 (1,500 per month) *Estimate rate price
Tires	\$300

OWNER/DRIVER COST AND REVENUE ANALYSIS

Start-up Costs
\$55,460

Gross Revenue as an Independent Medallion Owner
\$90,747

Operating Expenses
\$41,215

Net Income from Taxicab Operations
\$90,747 minus \$41,215 = \$49,532

Increase in medallion prices from 2002 to 2003
\$25,000

This systematic delineation of cost is essential input for the discussion of asset valuation in Section 3 of this report.

The above NYC-TLC cost/revenue data are summarized below in XLS format for a representative cab:

TABLE 5

New York Presentation

Start-Up Costs:	
Medallion Cost ²¹	\$50,000
License & Fees	1,400
Taxi Conversion	4,000
TLC Hack-Up	50
Medallion Tin	10
Total Start-Up Costs	55,460
Annual O&M	
Liability Insurance	3,700
Vehicle Depreciation & Cost	8,000
Maintenance	4,000
Gasoline	4,500
Motor Vehicle Tax	1,000
General and Administrative Costs	1,715
Medallion Loan	18,000 ²²
Tires	300
	41,215

²¹ Assumes 20% deposit. Acquisition price \$250,000 ($\$50,000/20 = \$250,000$)

²² Assumes annualized debt service of \$18,000. The discrete level annualized cost factor (LACF), inclusive of principal and interest. See Section 3.

Estimated Gross Revenues 90,747

Operating Revenues

Gross Revenues - O&M 49,532

NYC-TLC has provided two pieces of information that might help answer the question: how much would a San Francisco medallion sell for? This question was posed during Matt Gonzales's presidency of the San Francisco Board of Supervisors. In "To Ballot or Not to Ballot – Proposed Measure would Allow Sale to Drivers of Taxi Permit Rights," the comment was made "How much a San Francisco Taxicab permit would sell for is a matter of conjecture and controversy." In Section 3 – "Asset Valuation" – an analysis is presented as to how a capital good can be valued prior to any sale. Sellers and buyers rely on this technique to develop reservation and/or demand/buy prices.

The NYC-TLC has calculated the cost elements for a representative taxicab-operator. NYC-TLC has conducted actual medallion-auctions. Orthodox asset valuation of a capital good (taxicab medallion) calls for discounting the present value of the net income stream. This is not a perfect replication of a market exchange (actual revealed preferences), but the best assessment possible short of putting up a "for sale" sign.²³ NYC-TLC also has recorded actual prices generated from the sale of medallions. Comparing NYC-TLC actual sale prices and values estimated by using capitalization techniques (with their debt, cost, and revenue assumptions) reveals that there is a statistically correlative convergence.

The total fixed or start-up costs equal \$255,460.²⁴ These costs must be recovered through the revenue stream. To annualize these costs on a discrete basis, multiply \$255,460 by the level annualized cost factor (LACF). The LACF: $i \cdot (1+i)^t / (1+i)^t - 1$; where i is the annual discount/interest rate and t is the number of years. If a trader assumes a 10 percent discount/interest rate, the LACF would equal $.10 \cdot (1+.10)^t / (1+.10)^t - 1$; where \wedge is raised to the power and t equals the number of years and $*$ means multiplication and $/$ division. For $t = 20$ years and $I = .1$ (10%) the LACF equals 0.11746. Multiplying 0.11746 by

²³ Price seekers generate additional information as a function of service costs over time. When the anticipated marginal gain equates the marginal cost of an additional unit of search a transaction will occur.

²⁴ Table 3 start-up costs plus \$50,000/.20 amortized at an appropriate discount rate.

\$255,460 equals \$30,006. This amount will cover the opportunity forgone in interest and principal payments to offset an investment of \$255,460 at 10 percent for 20 years.

Table 6 shows the schedule (discrete discounting) of debt service for an initial investment of \$255,460, repaid over 20 years at a fixed-interest rate of 10 percent. This debt is figured into the equation for assigning a value to acquiring a taxicab. Both Tables 6 and 7 use NYC-TLC data to assess the value of a representative NYC taxicab medallion. All values are expressed in constant dollars. The discount (interest) rate is expressed in real terms. Implied future inflationary trends are not subsumed.

Table 6 shows the debt service required to amortize the total start up costs of \$255,460 over a 20-year period, at a 10 percent discount rate. Table 6 has five columns.

1. Year
2. Annual discrete debt service components
3. Interest payments/year
4. Amount applied to principal/year
5. Cumulative principal

Table 7 is a composite breakout by year for:

1. Year
2. Estimate gross revenues
3. Total O&M/year – variable costs
4. Annual debt service (fixed costs)
5. Fixed plus variable costs
6. Net gross revenues per cab
7. End-of-year (EOY) net present value at 10 percent²⁵
8. Cumulative present value
9. Table 5 assumes a 20-year vehicle life

²⁵ Yellow Cab Coop - XLS - Sheet 1

TABLE 6
Debt Service Retirement Schedule
10-percent for 20 years on \$255,460

Year	DEBT SERVICE	Interest	Principal	Total Principal Repaid
1	\$30,006	\$25,546	\$4,460	\$4,460
2	\$30,006	\$25,100	\$4,906	\$9,366
3	\$30,006	\$24,609	\$5,397	\$14,763
4	\$30,006	\$24,070	\$5,937	\$20,700
5	\$30,006	\$23,476	\$6,530	\$27,230
6	\$30,006	\$22,823	\$7,183	\$34,413
7	\$30,006	\$22,105	\$7,902	\$42,315
8	\$30,006	\$21,314	\$8,692	\$51,007
9	\$30,006	\$20,445	\$9,561	\$60,568
10	\$30,006	\$19,489	\$10,517	\$71,085
11	\$30,006	\$18,438	\$11,569	\$82,653
12	\$30,006	\$17,281	\$12,726	\$95,379
13	\$30,006	\$16,008	\$13,998	\$109,377
14	\$30,006	\$14,608	\$15,398	\$124,775
15	\$30,006	\$13,068	\$16,938	\$141,713
16	\$30,006	\$11,375	\$18,632	\$160,344
17	\$30,006	\$9,512	\$20,495	\$180,839
18	\$30,006	\$7,462	\$22,544	\$203,383
19	\$30,006	\$5,208	\$24,799	\$228,182
20	\$30,006	\$2,728	\$27,278	\$255,460
TOTAL	\$600,125	\$344,665	\$255,460	

TABLE 7
Estimated Annual and Cumulative Present Value

Year	Estimated Gross Revenues	Variable Total O&M Table 2	Fixed DEBT SERVICE	Fixed plus Variable	Net Gross Revenues Per Cab	End of Year	Cumulative Pre. Value
						Net Present Value at 10%	
1	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$17,751	\$17,751
2	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$16,137	\$33,888
3	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$14,670	\$48,558
4	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$13,336	\$61,894
5	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$12,124	\$74,018
6	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$11,022	\$85,040
7	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$10,020	\$95,060
8	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$9,109	\$104,169
9	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$8,281	\$112,449
10	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$7,528	\$119,977
11	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$6,844	\$126,821
12	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$6,222	\$133,043
13	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$5,656	\$138,698
14	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$5,142	\$143,840
15	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$4,674	\$148,515
16	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$4,249	\$152,764
17	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$3,863	\$156,627
18	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$3,512	\$160,139
19	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$3,193	\$163,331
20	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$2,902	\$166,234
TOTAL			\$600,125			\$166,234	

Table 7 combines annualized fixed and variable costs and evaluates the present value of a net income stream (total revenues minus [fixed + variable] total costs). These calculations (Section 3) do not assume inflation and use a real inflation rate. No effort is made to subsume tax and other income impacts.

The present value of a perpetual annuity of \$19,526 at 10 percent is \$195,200. This is higher than the present value calculated for 20 years of \$166,234 as shown in Table 6. A discount rate of 5 percent would increase the present value of a perpetual annuity of \$19,526 to \$390,520. A 20 year stream with a 5 percent discount rate would also cause the capitalized value of holding a taxicab medallion for 20 years to increase by a correlative amount.

TABLE 8

Combined Asset Valuation

Using NYC-TLC Numbers and assuming a 10 Percent Borrowing and Discount Rate

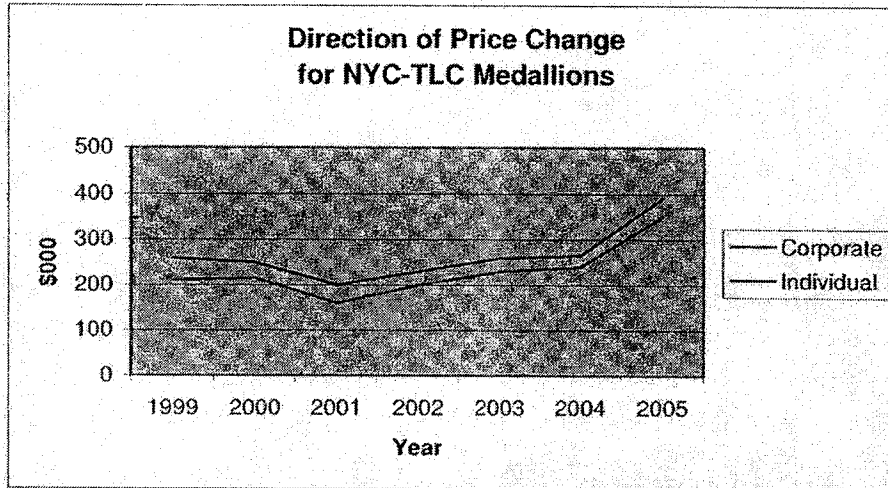
Year	Estimated Gross Revenues	Variable Total O&M Table 2	Fixed DEBT SERVICE	Fixed plus Variable	Net Gross Revenues Per Cab	End of Year Net Present Value at 10%	Cumulative Pre. Value 10%
1	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$17,751	\$17,751
2	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$16,137	\$33,888
3	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$14,670	\$48,558
4	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$13,336	\$61,894
5	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$12,124	\$74,018
6	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$11,022	\$85,040
7	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$10,020	\$95,060
8	-\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$9,109	\$104,169
9	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$8,281	\$112,449
10	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$7,528	\$119,977
11	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$6,844	\$126,821
12	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$6,222	\$133,043
13	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$5,656	\$138,698
14	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$5,142	\$143,840
15	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$4,674	\$148,515
16	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$4,249	\$152,764
17	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$3,863	\$156,627
18	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$3,512	\$160,139
19	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$3,193	\$163,331
20	\$90,747	\$41,215	\$30,006	\$71,221	\$19,526	\$2,902	\$166,234
TOTAL			\$600,125			\$166,234	

The capitalized value (bid/sell) is impacted by the borrowing rate, expected discount (interest) rate, forecasted fare-structures, expected cost-elements (gasoline, maintenance, etc.), anticipated fare/demand responses (elasticities) and numerous other multivariate factors. Auctions and market transfers (exchanges) are great mechanisms for lowering information and transaction costs and tend to be nondiscriminatory in selecting winners and losers.

The NYC-TLC auction and transfer system has some of the elements proposed in SF legislation. There are, however, significant differences and those differences are on the equity side that is valued as part of San Francisco's social welfare function. The proposed S.F. legislation does not permit the type of market-share concentration allowed in New York.

APPENDIX 1

Figurative Representation of NYC-TLC Historical Medallion Asset Value



SECTION 3

Asset Valuation of a Representative Cab What is the value of a taxicab?

The privilege of holding a taxicab medallion is a capital good. It is a durable good in that significant revenues are realized by the permit-holder over the life of the permit. Since Proposition K was enacted in 1978, permits have been issued essentially free of charge. Under Proposition K, medallions are not auctioned or traded. Medallions are issued based on public need and necessity and allocated on a queue basis. The charges for a medallion are limited to related administrative costs.

In 1998, Proposition K was partially amended upon the passage of Proposition D. Proposition D transferred the taxicab regulatory responsibilities of the Police Commission to a new Taxi Commission. The Taxi Commission is made up of seven commissioners:

- One member from the senior or disabled community
- One driver who does not hold a taxicab medallion
- One manager in a taxicab company (either a medallion holder or company representative)
- One member from the hospitality industry
- One member from the labor community
- One member from the neighborhoods
- One member from the general public not affiliated with any of the other categories²⁶

Detailed regulations are laid down by the Taxi Commission under Propositions K and D and in the San Francisco Municipal Police Code. These regulations create a broad regulatory framework, including but not limited to:

- Issuance of sufficient licenses to ensure public convenience and necessity, while keeping the taxicab industry a viable investment sector
- Response time goals
- Dispatch practices

²⁶ Summarized from *San Francisco Planning and Research Center, 2001 Report, Appendix C, Current Taxicab Service in San Francisco.*

- Training
- Vehicles
- Taxi sharing
- Ratemaking

By its failure to internalize the income associated with the privilege to hold a permit, the City and County is deprived of an opportunity to share the present value of the discounted future income streams associated with ownership of the medallion and thus fully recover the cost of taxicab regulations. By allowing taxicab auctions and a right to transfer, the City and County could benefit in two ways:

- By retaining the entire proceeds from the auction of a new or repossessed permit, and
- By receiving a transfer fee for every transfer-transaction involving an existing taxicab medallion.

The City and County would create an ongoing revenue source (the gift that keeps on giving), and taxicab medallions would be transferred so that market prices would act as social coordinators, allocating medallions to users who placed the highest marginal value on medallion-acquisition. In other words, the revenues to the City would be based on the asset value, not on merely covering the cost of program administration. The City and County would not sell these medallions. The privilege to hold a medallion by any natural person would be strictly regulated. These regulations are delineated in the attached "Ordinance Providing for Regulation of Taxicab Operations."²⁷

The privilege of holding a taxicab medallion endures conditionally over time. This makes it a capital good. Its value is derived from present and future income.²⁸ With an auction system and market transfers, the discounted acquisition price of a medallion would not be greatly different from the original purchase price. This section deals with use of capital theory, a subset of orthodox economic analysis, to place a value on the privilege of holding a City owned taxicab-medallion to provide taxicab services in San Francisco.²⁹

²⁷ See Section 1, Appendix 1 "Ordinance Providing For Regulation of Taxicab Operations."

²⁸ See case study of asset valuation in Section 2 using actual NYC-TLC data.

²⁹ Alchain and Allen, *University Economics*, 2nd Edition, Wadsworth Press, Belmont, Calif., 1967: Chapter 14 - *Cost and Output Programs*

A price is an exchange ratio. A price contains a lot of information. No *deus ex machina* will step forward to reveal a price. Value (price) can be approximated by use of present value capitalization techniques. The City and County in conducting an auction might set a reservation price (floor) for a medallion based on its estimation of capitalized value. Bidders will probably use the same type calculations in setting their bid prices. Bidders will estimate net revenues based on efficiency criteria, market projections, and cost assumptions, and discount these net revenues to a capitalized value using their own planning discount rates.

Bidding among the qualified buyers for the supply of available medallions will produce market prices. If these prices exceed the City and County's reservation price, the privilege to operate will be awarded to the highest qualified bidder.³⁰ The privilege will be exchanged for the highest approved bid price. This privilege can later be transferred among qualified operators. The owner and prospective transferee will most certainly set a reservation and offer price in a similar manner as described above. These potential exchange prices will subsume the transfer fee.

Throughout the world, where permitted, this "secondary market" has led to the emergence of taxicab-medallion brokers, who specialize in trading and exchanging medallions. Many people wishing to transfer medallions use these specialized brokerage services because they see them as cost effective in reducing transaction and information costs.

Auctions and personal transfer trades allow the market to do much of the heavy lifting in allocating these scarce resources (medallions) to the virtually unlimited market of prospective buyers with different subjective marginal valuations. The Taxicab Commission still maintains regulatory power in matters relating to ratemaking and service attributes.³¹ San Francisco benefits in perpetuity from this proposed system. Taxicab operators benefit because medallions are allocated to those who place the highest marginal value in use for such an acquisition. The efficiency and service criteria are best achieved when these functions are met through the market mechanism.

³⁰ It is assumed that the City would place a reservation/demand to hold price on medallions being submitted for auction.

³¹ Tariff means rates, but the definition can be expanded to mean rates and conditions of service, of which remains unchanged by the new proposition.

An asset is equal to its net present value (NPV). The NPV is current value of the future net stream of goods and services that an investment will yield. Discounting the net value of that stream at an appropriate interest (discount) rate derives the NPV. Three methods for discounting are presented below.

1. Discrete Discounting: Using the net income stream (revenues minus costs) and discounting on an annual (end of year), discrete basis.

Formula:

$$NPV = \sum_{t=1}^n \frac{R_t - C_t}{(1+i)^t}$$

Where:

NPV = Net Present Value

t = time in discrete years

n = Period of operation

i = Planning discount rate

R_t = Revenues generated in time t

C_t = Costs incurred in time t

Example:

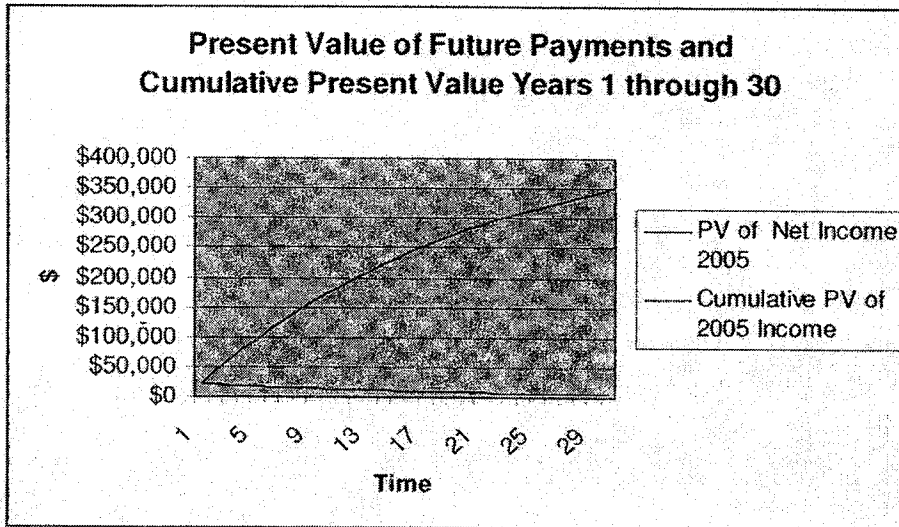
Using the Yellow Cab Cooperative, Inc. Audit Report of April 30, a per-cab net income of \$22,532 was calculated for 2005 (See Section 3, Attachment 1). Assuming a real discount rate of 5 percent and no inflation (see following discussion on appropriate discount rate and meaning of the term), Table 9 illustrates the present value per future payment and the cumulative present value of these future payments for years 1 through 30.

TABLE 9
Present Value, Annual Cumulative

	PV of Net Income 2005	Cumulativ e PV of 2005 Income
1	\$21,459	\$21,459
2	20,437	41,897
3	19,464	61,361
4	18,537	79,898
5	17,655	97,552
6	16,814	114,366
7	16,013	130,380
8	15,251	145,630
9	14,524	160,155
10	13,833	173,987
11	13,174	187,161
12	12,547	199,708
13	11,949	211,658
14	11,380	223,038
15	10,838	233,876
16	10,322	244,198
17	9,831	254,029
18	9,363	263,392
19	8,917	272,308
20	8,492	280,801
21	8,088	288,888
22	7,703	296,591
23	7,336	303,927
24	6,987	310,913
25	6,654	317,567
26	6,337	323,904
27	6,035	329,939
28	5,748	335,687
29	5,474	341,161
30	5,213	346,375

Figure 2 graphically illustrates the data in Table 9.

Figure 2
Present Value, Annual and Cumulative



2. Annualized perpetuity: An annualized perpetuity is a stream of payments over an infinite (very long) time period:

$$PV = \frac{NR}{i}$$

Using the Yellow Cab Cooperative, Inc. Audit Report of April 30 and a calculated per-cab net income of \$22,532, an infinite series would yield a present value of \$450,643.

Where:

NR = Constant net revenues (revenues minus costs)

i = Planning discount rate

3. Growing Perpetuity: Sometimes the payments in perpetuity are not constant but instead, increase at a certain growth rate (g) as depicted in the following time line:

$$PV = \frac{NR}{i_m - g}$$

Where:

i_m = Monetary discount rate

g = growth

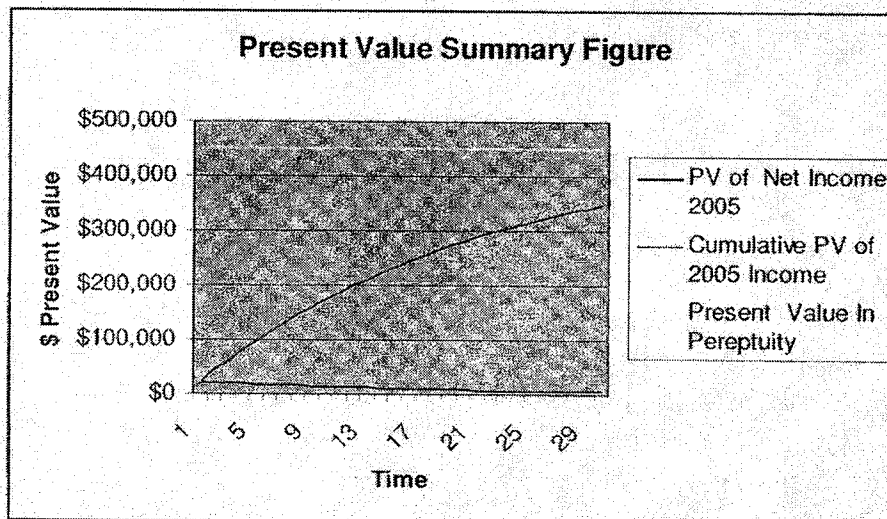
NR = Net Revenues

In this case, for simplicity, assume the growth is tied to general inflation and is 2 percent. This will increase (see discussion below) the monetary planning discount rate from 5 percent to 7 percent, to offset inflationary expectations.

The present value of a perpetual series will be $\$22,532 / (0.07 - 0.02) = \$450,643$.

Figure 3 summarizes the present value of holding a capital asset for different numbers of years. The perpetual annuity with growth and a monetary interest rate and the constant dollar amount using a real discount rate are shown (under the simplifying assumptions) to be equal. Figure 3 shows that the longer an asset is held, the closer the present value of a discrete annual series approaches the value of an infinite series³².

Figure 3
Present Value Summary Figure



³² See *Engineering Economy: A Manager's Guide to Economic Decision Making*, Third Edition, AT&T, McGraw-Hill Book Company, New York:1977, p. 421.

Interest rate/discount rate

Using a discount to capitalize future monetary income streams is fundamental to the concept that earlier availability is more valuable than later availability.³³ Alchian and Allen summarize:

The rate of interest is (a) a measure of the relationship between present amounts of a good and amounts of future goods for which they can be traded; (b) a measure of the maximal rate of growth of wealth; (c) a measure of the price of earlier availability of a good; and (d) the time premium paid for borrowed wealth.³⁴

The nominal interest/discount rate (i) reflects two considerations: the basic rate of interest (the rate of interest that would exist in the absence of any inflationary assumptions) and the adjustment for the anticipated rate of rise in the price level. The specific planning discount rate for any entity will depend on subjective valuations as to the projected paths of real and inflationary trends. These relationships are shown in the following Table Number 10.

³³ Alchian & Allen, *University Economics*, 3rd Edition, Wadsworth Publishing Company, Belmont, California, 1972, Chapter 11.

³⁴ Note – A reading of Chapter 11, *University Economics*, will help clarify why it is a misnomer to refer to the interest rate as merely the “time value of money.”

TABLE 10
Constant and Nominal (inflation) Values

Time	Net Income Constant Dollar	PV of Net Income	Cumulative PV of Income	2 Percent Inflated Dollar Income	Inflated \$ Income Discounted i_m	Cum PV of Inflated Discounted i_m
1	\$22,532	\$21,459	\$21,459	\$22,983	\$21,459	\$21,459
2	\$22,532	\$20,437	\$41,897	\$23,442	\$20,437	\$41,897
3	\$22,532	\$19,464	\$61,361	\$23,911	\$19,464	\$61,361
4	\$22,532	\$18,537	\$79,898	\$24,390	\$18,537	\$79,898
5	\$22,532	\$17,655	\$97,552	\$24,877	\$17,655	\$97,552
6	\$22,532	\$16,814	\$114,366	\$25,375	\$16,814	\$114,366
7	\$22,532	\$16,013	\$130,380	\$25,882	\$16,013	\$130,380
8	\$22,532	\$15,251	\$145,630	\$26,400	\$15,251	\$145,630
9	\$22,532	\$14,524	\$160,155	\$26,928	\$14,524	\$160,155
10	\$22,532	\$13,833	\$173,987	\$27,467	\$13,833	\$173,987
11	\$22,532	\$13,174	\$187,161	\$28,016	\$13,174	\$187,161
12	\$22,532	\$12,547	\$199,708	\$28,576	\$12,547	\$199,708
13	\$22,532	\$11,949	\$211,658	\$29,148	\$11,949	\$211,658
14	\$22,532	\$11,380	\$223,038	\$29,731	\$11,380	\$223,038
15	\$22,532	\$10,838	\$233,876	\$30,325	\$10,838	\$233,876
16	\$22,532	\$10,322	\$244,198	\$30,932	\$10,322	\$244,198
17	\$22,532	\$9,831	\$254,029	\$31,550	\$9,831	\$254,029
18	\$22,532	\$9,363	\$263,392	\$32,181	\$9,363	\$263,392
19	\$22,532	\$8,917	\$272,308	\$32,825	\$8,917	\$272,308
20	\$22,532	\$8,492	\$280,801	\$33,482	\$8,492	\$280,801
21	\$22,532	\$8,088	\$288,888	\$34,151	\$8,088	\$288,888
22	\$22,532	\$7,703	\$296,591	\$34,834	\$7,703	\$296,591
23	\$22,532	\$7,336	\$303,927	\$35,531	\$7,336	\$303,927
24	\$22,532	\$6,987	\$310,913	\$36,242	\$6,987	\$310,913
25	\$22,532	\$6,654	\$317,567	\$36,966	\$6,654	\$317,567
26	\$22,532	\$6,337	\$323,904	\$37,706	\$6,337	\$323,904
27	\$22,532	\$6,035	\$329,939	\$38,460	\$6,035	\$329,939
28	\$22,532	\$5,748	\$335,687	\$39,229	\$5,748	\$335,687
29	\$22,532	\$5,474	\$341,161	\$40,014	\$5,474	\$341,161
30	\$22,532	\$5,213	\$346,375	\$40,814	\$5,213	\$346,375
In perpetuity			\$450,643			\$450,643

Asset valuation can be calculated. The real value, however, will be known only if a medallion sells. Demand to buy and willingness to sell, establishing market prices, will be revealed only if actual trades take place. The best way to value a capital asset, such as a taxicab medallion *a priori* actual trades, is to use capital theory in conjunction with best effort assumptions as to future costs, revenues, and interest rates. These capitalized market-exchange simulations are only as good as the accuracy of the input assumptions.

A representative taxicab was valued. Four categories of assumptions were used:

- Costs
- Revenues
- Term interest structure (planning discount rates)
- Inflation

Individuals have different discount rates based on many factors such as age, gender, marital status, education, etc. In medieval times, the Anglo-Saxons were the borrowers. They placed a relatively higher value on current consumption, i.e., “eat, drink and be merry for tomorrow we die” versus the Scots who tended to be lenders because of their relatively higher valuation on future versus present consumption. Again, as noted in the text, the real interest rate is a function of time-preferences and time-productivity (exchanging present goods for future goods), while the monetary interest rate adds on the expected rate of inflation.

In addition to differing discount rates to value net future income streams, a myriad of other assumptions go into asset valuation. One might be an individual operator’s assessment of his personal productivity. The average number of paying rides per shift might be 20. Around the average is a distribution function. One driver might value his cab based on 20-fare paying rides per 10-hour shift another at 30 and yet another at 15. These individual assessments (along with their own perception of all other cost and revenue sources) will set individual net forecasted revenues, which when discounted by their own planning discount rates, will determine the subjective capitalized value of acquiring a taxicab medallion.

Asset valuations – informally or formally – are continually revisited. These valuations establish a demand to acquire and/or a demand to exchange taxicab medallions. The proposed legislation establishes the parameters for allowing medallions to be exchanged in a way that allows them to be bid to their expected highest use value, albeit, the “invisible hand” does the heavy lifting in terms of gathering and exchanging information and transaction costs.

City taxicab riders benefit because when medallions are bid to their highest use value, with regulatory established fares, operators will have an added incentive to increase service levels to ensure a steady flow of customers-

revenues to amortize all the fixed and operating costs associated with holding a medallion. The City will benefit from receiving the revenues generated through auction-sales of new and repossessed medallion so in addition, every medallion transfer will generate more revenue, ensuring a continual flow of money to the City.

A representative schema for an individual medallion holder to assess cab valuation (to hold or offer a medallion for sale):

Schema – Spreadsheet to Compute
Asset valuation – Medallion – Offer/Bid Price

	Yr. 1	Yr. 2	Yr. 3	Yr. N
Total Revenues					
Number of shifts					
Revenues per shift					
Total Revenues					
Costs					
Number of gallons					
Price per gallon					
Oil					
Other Maintenance					
Other Costs					
Insurance					
Depreciation					
Taxes					
Opportunity of medallion owner's time					
Debt Service					
Net Income					
Net Present Value at X%					

On January 8, 2004, *The Globe Investor*, reporting on Medallion Financial Corporation (NASDAQ: Taxi), noted:

“The last time New York auctioned taxi medallions, the bids were at or above the previous price levels and the market value for all medallions increased generally. “ The report goes on to state: “Over the past 70 years, taxi medallion prices have risen 13%, outperforming the Dow Jones Industrial Average over the same period, as well as many other long-term investment opportunities.”³⁵

Prior price increases in New York City and elsewhere will not necessarily repeat in San Francisco. However, it is clear that having the right to operate a taxicab with a medallion is a capital good. Adding the right to transfer this medallion, under appropriate regulatory constraints, enhances its value. While not making a medallion a purely transferable private-property right, the ordinance does give the owner and potential acquirer greater confidence that the future net revenue may be accrued/capitalized to the medallion holder.

The following discussion is taken from <http://www.netmba.com/finance/time-value/perpetuity/>

An annualized perpetuity is a series of equal payments over an infinite time period into the future. Consider the case of a cash payment C made at the end of each year at interest rate i , as shown in the following time line:

Perpetuity Time Line

0 1 2 3 4 5 6 7 8

PC C C C C C C C C

Because this cash flow continues forever, the present value is given by an infinite series:

³⁵ January 8, 2004: <http://www.globeinvestor.com/servlet/WireFeedRedirect...>

$$PV = C/(1+i) + C/(1+i)^2 + C/(1+i)^3 + \dots$$

From this infinite series, a usable present value formula can be derived by first dividing each side by $(1+i)$.

$$PV/(1+i) = C/(1+i)^2 + C/(1+i)^3 + C/(1+i)^4 + \dots$$

In order to eliminate most of the terms in the series, subtract the second equation from the first equation:

$$PV - PV/(1+i) = C/(1+i)$$

Solving for PV, the present value of perpetuity is given by:

$$PV = C/i$$

And/or

$$NPV = NR/i$$

Where NR = net revenues.

Thus, if a \$10 annuity was received forever, with an interest rate of 5 percent its present value would be equal to $\$10/.05 = \200 . With an interest rate of 10 percent the value of the perpetuity would be $\$10/.10 = \100 . For long-term investments, asset valuations can be well approximated by this technique. Price-seeking buyers and sellers can quickly determine the value of a cab-medallion, for a long-term investment, by dividing its expected net return (revenues minus costs) in equal amounts and apply a subjective discount rate.

For example a taxicab medallion, held as a long-term investment, with expected, constant net revenues of \$25,000 and discounted at 5 percent, would have a capitalized asset value of $\$25,000/.05 = \$500,000$. At 10 percent the asset valuation would be \$250,000.

The Present value of \$25,000 received in the future at 5 percent discount is shown on Figure 4.

Figure 4
 Present Value of \$25,000 received in the Future at 5 percent

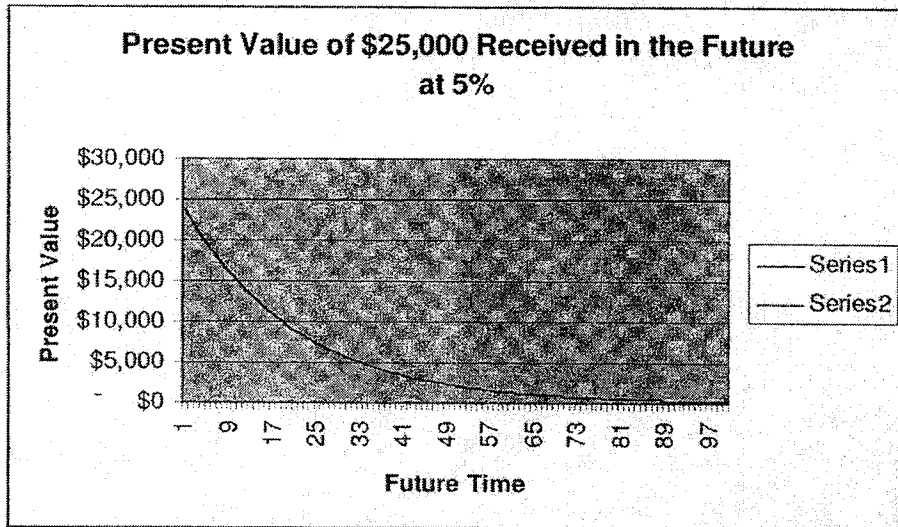
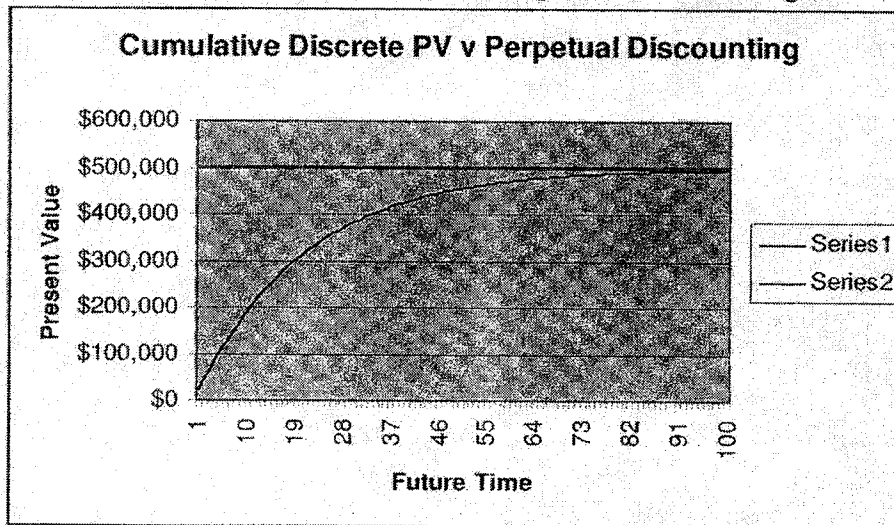


Figure 5 compares cumulative present value discounting with a perpetual discounting approach.

Figure 5
 Cumulative Discrete PV v Perpetual Discounting



Growing Perpetuities

Sometimes the payments in perpetuity are not constant but, instead, increase at a certain growth rate (g) as depicted in the following time line:

0	1	2	3	4
PV	C	$C*(1+g)^1$	$C*(1+g)^2$	$C*(1+g)^3$

The present value of a growing perpetuity may be written:

$$PV = \frac{C}{(1+i)} + \frac{C*(1+g)}{(1+i)^2} + \frac{C*(1+g)^2}{(1+i)^3} + \dots$$

To simplify this expression, first multiply each side by $(1+g)/(1+i)$:

$$PV * \frac{(1+g)}{(1+i)} = \frac{C*(1+g)}{(1+i)^2} + \frac{C*(1+g)^2}{(1+i)^3} + \dots$$

Then subtract the second equation from the first:

$$PV - \frac{PV*(1+g)}{(1+i)} = \frac{C}{(1+i)}$$

Finally, solving for PV yields the expression for the present value of a growing perpetuity:

$$PV = \frac{NR}{i - g}$$

When $C = \$25,000$

$$g = 2\%$$

$$i = 7\%$$

$$NVP = \$25,000 / (.07 - .02)$$

$$NVP = \$25,000 / .05$$

$$NVP = \$500,000$$

For this expression to be valid, the growth rate must be less than the interest rate, that is, $g < I$ ³⁶.

In New York City, there are two types of medallions:

- Individual medallion – sold in lots of one to prospective owner-drivers and fleets
- Fleet medallions sold only in pairs to fleet operators

Boston also auctioned a bunch of medallions in order to raise funds for a new convention center. Likewise Chicago has auctioned new medallions in recent years. Note: Chicago does permit license transfers. The transfer fee is based on historical values generated by recent historical sales

The Reason Foundation in a series of articles titled “Entrepreneurship and Regulation” (Footnote <http://www.Reason.org/ps277.html>) states that “the urban taxicab industry provides a unique lens through which the regulatory climate of a city can impact economic opportunity.” Adding: “The taxicab industry is one of the most heavily regulated low-skilled businesses in the Nation, a legacy in part, of its early treatment by city governments as a public utility.”³⁷

The Reason article notes “In practice most cities regulate industry to the point where entry is difficult, if not impossible.” Reason argues against “artificial scarcities”; adding “. . . the number of gypsy cabs plying the streets of Los Angeles is 4,000.”³⁸ Reason concludes this phenomenon (which brings no revenues to the city) is a direct result of strict barriers to entry.

Reason delineates the general methods employed by U.S. cities to regulate taxicabs; noting that many of these methods vary between regulatory jurisdictions:

- Twenty-four hour service recommended where taxicab companies are required to provide round-the-clock, seven-days per week service;

³⁶ See *Engineering Economy*, p. 421.

³⁷ See earlier discussion on public utilities especially comments by Alchian, Allen & Demsetz, et al.

³⁸ Dana Berliner, “Driving off Economic Opportunity” *Los Angeles Times* January, 31, 2000.

- Citywide service agreements that effectively prohibit part-time and niche companies from providing services to specific markets or neighborhoods;
- Public hearings for all new applicants to start a new business, where applicants bear the burden of proof to demonstrate that a market exists for these services, allowing anyone to object to the application, including the fledgling company's competitors;
- Zoning ordinances that prevent small businesses from operating out of their areas;
- Gaps on the number of vehicles permitted to operate;
- Minimum fleet sizes requiring new cab companies to invest in the substantial number of new cabs (often 15 or more) before they can begin providing a service;
- License fees which can range from as little as \$100 per company to \$1,500 or more; and
- Off-street parking requirements for out-of-service cabs that virtually eliminate the possibility of running a home-based business or micro enterprise.³⁹

Reason⁴⁰ believes taxicab regulations are different in different cities because of the political climate and pressure from interest groups specific to each particular jurisdiction. Reason briefly critiqued the regulatory system in a number of U.S. cities.

BOSTON

Taxicabs are regulated by the Massachusetts Department of Telecommunications and Energy (DTE).⁴¹

Boston has a three-tiered process to license cabs.

Step 1. The prospective cab company operation must obtain a medallion to obtain the legal right to own and operate a taxicab.

Step 2. A separate license must be obtained allowing him/her to operate a taxi company and hire or contract with drivers.

³⁹ Reason, *ibid* p.10 of 88.

⁴⁰ Reason, *ibid* p.12 of 88.

⁴¹ Denver taxicabs are also state regulated.

Step 3. The operator must obtain a license from the City of Boston to operate a taxicab and collect fares.

Boston separates ownership from possession of a medallion. In Boston, a medallion is an entitlement to apply for a license to operate a taxi company. The Hackney Division of the Boston Police Department enforces the medallion rule. Reason notes that most Boston cabbies are not owner/operators, but employees of contractor medallion owners.

DALLAS

Reason argues that the Dallas approach is stifling to business. According to Reason, entrepreneurs must apply to the Dallas City Council, have a minimum of 25 cabs ready to seek fares and specify that they will own, contract, or otherwise operate the proposed taxicab service. Reason concludes "The latter requirement ensures, in principle, that licenses are not sold to independent operators. In 2000, these licenses amounted to \$6,000/year. "Cab companies, according to Reason, said that the most odious regulatory start-up costs were those associated with the demand that Dallas cab operators use vehicles no older than five years. Reason stated that the vehicles were generally three or less years old to ensure operators would pass the three tests per year conducted by Dallas.

MADISON

In 1999, the city of Madison, Wisconsin, convened a Subcommittee on Taxicab Deregulation. The final report, issued in August 2000, recommended a few changes in the Madison regulatory structure. Reason noted that the overall effect of the recommended rule changes was that it became a near impossibility for single cab companies to be formed [Reason <http://reason.org/ps277.html>, footnote no. 33]. Peter Carsteusen, a professor of law at the University of Wisconsin, stated ". . . that the local regulations may violate provisions of the state antitrust laws, because, among other things, the city used regulations more intrusive than necessary to accomplish legislative goals."⁴²

⁴² Reason, *ibid.* and <http://www.taxi-1.org/papers.html>. deregulator.

Kramer and Mellor⁴³ quote a 1974 study by the United States Department of Transportation stating that "The U.S. DOT found that regulators restricting entry and preventing discounting of fares cost consumers \$800 million annually adjusted for inflation to 1992 dollars. Moreover removal of these restrictions would create 38,000 new jobs in the taxi industry.⁴⁴ These conclusions on economic loss as a function of regulatory interference mirror similar comments about the loss in GDP (GNP) points resulting from the creation of the ICC.⁴⁵

SUMMARY

There are opinions pro and con regarding how to regulate/deregulate the taxicab industry. Reason, for example, supports full reliance on market forces for every attribute of the taxicab industry. Others support more or complete regulation. This research concludes that complete deregulation would not be appropriate for San Francisco. The current SF regulatory structure for setting rules and rates can be maintained effectively, but San Francisco will benefit by allowing taxicab auctions and transfers to efficiently allocate medallions and also generate additional revenues for the City.

⁴³ <http://www.cascadepolicy.org/bgc/kramer.htm>

⁴⁴ Figures from A. Webster, E. Wiener and J. Wells, "The Role of the Taxicab in Urban Transportation, December 1974 . . ."

⁴⁵ See above discussion on G.W. Hilton, UCLA 1968.

APPENDIX

NO. 4

1998

PUBLIC CONVENIENCE AND NECESSITY
HEARING REPORT FOR
TAXICAB MEDALLIONS TO THE
POLICE COMMISSION
CITY AND COUNTY OF SAN FRANCISCO

1998

Public Convenience and Necessity

Hearing Report

for

Taxicab Medallions

to the

Police Commission

City and County of San Francisco

Submitted by

Captain John Ehrlich

Table of Contents

Introduction
History
Current Industry Operation
Theories of Regulation
Summary of Testimony
Analysis of Evidence
Alternatives
Recommendations

Introduction

The Police Commission is mandated to hold Public Convenience and Necessity (PC&N) Hearings to determine if there are a sufficient number of permits or medallions (metal plates that must be carried by all operating taxicabs) issued to assure adequate service to the public. As the Hearing Officer for the Police Commission I have held PC&N hearings on May 19, 1997 and April 27, 1998. I read the transcript of the November 14, 1996 PC&N hearing held by Captain Dave Maron.

As the Captain of Support Services I was a member of the Mayor's Taxicab Task Force which met from August of 1997 until April of 1998. The transcripts of the PC&N hearings, the final report of the Taxicab Task Force and all the written submissions are included with the exhibits. Given all the input I have received I shall try and analyze the situation to give you the tools to make an informed decision. I realize that most of the police Commissioners have not studied the industry so I will cover some important background information.

First I will give a short history of the taxicab industry. Next I will cover the current operation of the industry. Then I will explain theories of regulating taxicabs. The fourth section will outline the major points raised bearing on issuing more medallion and I will analyze economic and policy factors on the issues. Alternatives have been raised to issuing more taxi medallions and these issues will be examined. Finally I will make my recommendations.

History

The history of the taxicab industry starts with the hackney coaches of 16th century Europe (Gilbert & Samuels, 1982). Taxicab regulation started in 1635 in London when King Charles I restricted horse drawn carriages because of congested streets (LaGasse 1986). With the advent of the automobile at the turn of the 20th century, the taxi industry flourished. Taxi fleets owned by large organizations had high driver standards. John Hertz owned both a cab manufacturing plant and several large fleets. He was the first to paint taxis yellow and start telephone dispatch (Gilbert L Samuels, 1982). Even in these eras regulations existed in some jurisdictions in the following areas: maximum fares, posted fares or meters, insurance, drivers' licenses and limiting jitney operation (Kertz, 1986).

The start of the Great Depression led to large numbers of drivers entering the market. New car dealers would let people rent unsold cars. Many people lost their jobs and used their cars as taxis. The demand went down as the supply went up. This led to rates falling to levels that could not produce a return on investment. The public called for more regulation after severe problems with service surfaced: drivers with no insurance, fare gouging, unsafe driving and unsafe vehicles. Laws were passed in most cities controlling entry, fares, financial responsibility, condition of vehicles, and standards of service (Gilbert & Samuels, 1982). Some laws dealt with livable wages, setting fares to provide adequate return on investment and prohibiting leasing the cabs (Kertz, 1986).

The World War II years saw an expansion of the industry. After the war the economy initially contracted. Returning servicemen got the first chance at buying new automobiles. Many having no civilian jobs went into the taxi industry. Politicians

could not order a crack down without suffering at the ballot box. This led to another period of disruption in the industry leading to more regulation. After the post-war regulation the industry stayed the same through most of the 1970's.

In the late 1970's and early 1980's following airline and trucking deregulation a number of cities and the state of Arizona deregulated the cab industry. In Arizona there were no regulations except for insurance. Teal found that except for some contract service price reductions there was no decrease in price or increase in service in Arizona (1986). The results of deregulation were disappointing and many of the cities reregulated.

Existing alongside the official industry is a shadow system. Peter Suzuki did a study in 1995 of illegal taxicab operations in various cities in the United States. He found that most of these operated by and for minorities. They might operate out of a gathering place for members of that community like a barbershop, supermarket or via telephone. They would handle runs the official companies would refuse either because they were in undesirable areas or because the short hails were not profitable. With their lower costs and standards the illegal operators were able to operate and make a profit.

San Francisco

In San Francisco medallions were legally bought and sold. People could own more than one permit. The industry was dominated by the Yellow Cab Company that had 503 of the 711 permits to operate taxis. Yellow Cab of San Francisco was owned by a holding company, Yellow Cab of California, which was purchased in 1962 by the Westgate Corporation of C. Arnholt Smith. When in 1976 the Westgate Corporation went bankrupt the taxicab industry in San Francisco was sent into a crisis as two thirds of the service stopped. The Yellow Cab Cooperative of drivers purchased 185 of the permits and sold the rest to various other organizations and people.

This crisis led to two competing propositions on the November 1978 ballot. Proposition J, which was defeated, would have limited prices of medallions to \$7500 unless the seller had paid more. Prop. J also required new permits going to drivers. Proposition J was defeated.

Proposition K passed and continues to control the industry. All medallion permits owners had to turn them in to be replaced by permits owned by the City. The new permits could be held the same way as the old permits except that they could not be bought, sold or transferred. Corporate ownership of medallions would be allowed until more than 10% of the ownership changed at which point the permits would be revoked. New permittees could only hold one permit. They would have to drive the

taxicabs at least four hours a day for 75% of the days in the year of the cab's operation. People who held the old permits would not have to comply with the driving requirement. The Police Commission would issue more permits when the Public Convenience and Necessity (PC&N) mandated it.

In 1968 there were 849 authorized medallions. In 1976 the number fell to 711 after the former Yellow Cab Company was ordered to surrender 138 medallions by the bankruptcy court. Fifty more medallions were issued in both 1984 and 1987 bringing the number to 811. In 1994 forty-five more medallions were issued and an additional five Ramp taxi medallions. Ramp taxis are vehicles that have ramps that allow for wheelchair access. In late 1996 the Police Commission created 100 more standard medallions and 20 more ramp taxi medallions. The decision was made just before the 1996 PC&N hearing in November of 1996. It was decided to delay any decisions on more permits until the permits had been issued.

I held a PC&N hearing on May 19, 1997. Before I made recommendations to the Police Commission Mayor Brown held a town hall meeting, which I attended, on taxis. As a result he asked that no decision be made until the entire industry could be studied. He created the Mayor's Taxicab Task Force that was actively chaired by Supervisor Newsom. I was one of the members who met weekly from August 1997 until April 1998. I held a PC&N hearing on April 27, 1998 that lasted from 6:30 P.M. till almost midnight. Over 60 people spoke at the hearing and there were over 90 written submissions on this year's hearing.

Current Industry Operation

There are currently 981 medallions issued in San Francisco. There are 35 companies ranging in size from 314 permits at Yellow Cab to several companies with one permit. A company is also called a color scheme as all cabs are required to have distinctive markings indicating their company. Each cab has a number on it that indicates the number of the permit. Every company is required to have a 24-hour dispatch service. There are ten dispatch services, half serving more than one company. Most of the latter five dispatch companies are dominated by one color scheme. City Wide is an independent dispatch service serving 14 companies and 149 medallions.

All drivers must have a Driver Public Vehicle permit issued by the Taxi Detail of the Police Department. The drivers must take an independent class and then pass a class offered by the Police Department. Drivers are tested on geography, rules of the road, and the regulations pertaining to the taxi industry. Drivers in San Francisco may not refuse a fare unless the person is too intoxicated or too obnoxious.

While drivers were once employees of the companies most now have independent contractor status. The companies have limited control over independent contractor-drivers and the companies do not have to pay social security or benefits. Drivers lease the cabs for period of time usually a shift, a week or a month depending on the terms of their contract with the company. Drivers pay a "gate" fee ranging from \$65 to \$110 a shift depending on the company and shift. The drivers pay for gas and keep all money they collect during the shift.

Most medallion holders lease the operation of their medallions to companies or individuals. The price is set on the open market and ranges from around \$1800 a month to above \$3,000 a month. The leases vary greatly in the terms. A company will usually provide the car, its maintenance, drivers, administration and the dispatch service. Several individuals might lease directly from a medallion holder and split the driving between them. They will pay some amount to associate with a color scheme and dispatch service. A medallion holder who drives usually will get a higher quality vehicle and priority on shift assignments. Some companies will not charge them as high a gate fee but will figure that into the monthly lease fee. Medallion holders may also be allowed to own part of the company.

In San Francisco many different government agencies affect the taxicab industry. The Board of Supervisors sets fares and passes legislation controlling the industry within the guidelines of the voter approved Charter Amendment of Proposition K. The Chief of Police issues rules on the conduct of the industry, directs the Taxicab Detail and makes decisions on permits except for the medallions. The Police Commission decides who holds the medallions and how many there should be. Any permit decision may be appealed to the Board of Appeals. The Airport Commission decides on rules for taxis at the airport. The Bureau of Weights and Measures checks the taximeters. The Mayor appoints the Board of Appeals, the Airport Commission and the Police Commission. The California Public Utilities Commission has exclusive jurisdiction over the limousines that are competition for the taxi industry.

The Taxicab Detail of the Police Department has the most day to day regulation of the industry. They investigate complaints by the public, handle the administrative duties of issuing the various permits, go out on the streets and check to see if the cabs are in fact being operated correctly. They check that drivers have completed their waybills and that vehicles are in good working order. They enforce traffic violations. They train other police officers to enforce regulations.

Theories of Regulation

Open Markets

In economic theory a free market is in general preferred over regulation. The law of supply and demand will determine the cost and number of the goods and services in the market. If the demand for a good or service increases the price will go up. If the price goes up more people will be willing to supply the good or service at that higher price. In a perfect market buyers have enough information to choose to buy goods and services from those sellers who give them the best value. There should be government regulation only when there are imperfections in the market (Frankena & Paulter, 1986). Those imperfections might be the result of a monopoly, collusion, or the consumer not having enough information (Gilbert, 1992).

Purpose of Regulation

Gorman Gilbert is a University of North Carolina professor, the former Chairman of the New York City Taxi and Limousine Commission, and the past President of a large Los Angeles taxi company. In 1992 he talked about the goals of regulation. First, minimize the public expense of determining the regulatory levels and the cost of enforcing the regulations. Second, protect the customers from market imperfections so that they are safe and not cheated. Third, improve the city's public image with special attention paid to visitors. Next, give a fair rate of return to both drivers and companies or owners. Finally, allow it to be a way for disadvantaged people to join the mainstream. He goes on to say that good regulation enhances competition and encourages self-enforcement of good service (1992).

Dr. Jeremy Toner writes about the purposes of regulation as being the "optimal economic performance of the industry alongside public safety, consumer protection and congestion management" (1993,p 1). Public safety includes vehicle standards and driver licensing. Congestion concerns might limit the number of taxis or manner of service at an airport. Consumer protection looks at the relationship between a cab driver in a strong bargaining position versus a consumer who might be exploited (Toner & Mackie 1992). There may be several different price/service levels available in the open market. By controlling fares and the numbers of taxis the government might obtain the optimal price/service level for the public (Toner, 1993).

Types of Service

Before looking at the particular issues it is important to realize that there are five different kinds of taxi service: radio dispatch, cruising, taxi stands, airport, and contract service.

Contract service means an individual or company contracts with an individual or corporate customer to provide a certain kind of service according to contract terms. This might be a senior citizen center for shopping, a convention for rides to a party, an

airport for a franchise, or a government agency providing subsidized rides for the disabled. In theory there is little need for the government to regulate this type of service because the buyer is free to seek out another vendor. This service may still be regulated by other codes governing the transportation such as school children.

Radio dispatch is where a customer telephones in a request for a taxicab to respond to a particular place at a certain time and a taxicab is dispatched. What this means in San Francisco is that a run or order will be broadcast either by voice or computer and a taxi will volunteer for the order. Drivers are supposed to monitor the radio and handle an assignment; they are not in practice made to respond. In theory this portion of the industry does not need to be heavily regulated. A customer is free to bargain over the phone and call another service. In New York City lightly regulated "For Hire Vehicles" which can only respond to customers through dispatch exists along side heavily regulated taxis with no dispatch capability (Schaller & Gorman, 1995).

Cruising or hailing means that a taxicab drives around looking for fares and a customer hails them. In New York City they took radios out of cabs in the 1980's to increase cruising (Schaller & Gilbert, 1995). Cruising taxis are most often in a strong bargaining position as the customer has no idea how long it will be until another cab shows up (Cairns, 1996). This leads to the regulation of cruising taxi fares (Arnott, 1996).

A taxi stand is a location for cabs to park as they wait for customers. These are typically hotels, auditoriums, train or bus stations, or anywhere a large number of people might need taxi service. The general rule is the first one in line gets the first fare. A hotel doorman may control which cab the customer gets in leaving them little choice. A customer may not know that they can choose which cab to take. There are significant constraints on making an informed choice, which leads to regulation.

Airports generally own the land around the airport and so can manage taxi service in many ways. At SFO only San Francisco taxis can pick up fares though cabs from any jurisdiction can drop off fares. Airport service can be identical to taxi stands in the lack of consumer choice. Large airports need to be regulated because traffic flow problems prohibit the time needed for customers to shop or bargain for fares (Lupro, 1993). When a visitor arrives at an airport she/he is in no position to bargain. There may be confusion with currency, which leads to the newspaper stories about hundred-dollar overcharges on rides in from airports.

Fare Regulation

There is ample theory on whether fares should be regulated. In general it boils down to whether a customer has enough information and opportunity to make a choice

between various competing cabs. Contract services are not regulated per se as taxicab regulation as they are private contracts. The radio dispatch market is only partially regulated in some places. In San Francisco taxi fares are regulated while limousine fares are not regulated. As mentioned above with the FIFO systems at stands and airports and with the nature of the cruising market consumer choices are restricted and so fares should be regulated (Arnott, 1996, Cairns, 1996). Frankena and Paulter would only set maximum fares and let the free market allow fares to go lower (1986). In San Francisco only maximum fares are set and companies may file to operate at lower fares although no company has done so.

Medallion Regulation

The number of taxi permits allowed in a jurisdiction or entry regulation has been highly debated. There are traditionally two ways the number of medallions has been set; Public Convenience and Necessity or a formula. The first way is by Public Convenience and Necessity (PC&N) hearings as in San Francisco. A public hearing is held on the issue of whether more permits are needed to serve the public. The second way is through a formula that takes various factors into account: population, airport activity, tourists and conventions (LaGasse, 1986).

Taxi industry consultant Dan Hara presented a formula to determine whether a city had enough taxis at a taxi convention in 1997. He found that there were six key variables: population, fare levels, commuters, proportion of low income people, number of frost free days, and cost of running a private vehicle. The most interesting variable is that he found that low-income people are more likely to use taxis, as they may not have other options. Unfortunately hotel rooms are not part of his formula so it is of little use in San Francisco.

In the late 1970's and early 1980's after the airline industry and trucking industry were deregulated several cities tried deregulation of the taxi industry. This led to problems. According to Cairns the number of no-shows to radio dispatch increased along with complaints that drivers were refusing to convey fares (1996). He also said that decentralized markets are difficult to monitor especially with tourists who are in a poor position to bargain.

The taxi industry differs from other industries in that entry barriers are low for individuals (Teal, 1993). To buy or lease a car does not require a lot of money. The skills needed to be a driver are barely more than those needed for a driver's license. It does not require organization or management skills to be an owner-driver. The FIFO system at airports and stands means there is a guaranteed market (Teal, 1993). This led to the new entrants providing more low quality service in places such as the airport that didn't need more service. In order to achieve full public service, certain

segments of the market may have to subsidize other market segments (Toner, 1993). Radio dispatch services require substantial costs for office staff, equipment, and marketing (Hackner & Nyberg, 1995). Firms may have to be a certain size to be able to cover the radio dispatch area (Teal & Berglund, 1987). Teal argues that entry policies should aim at increasing the number of 24-hour, full-service organizations to compete on price and service as opposed to two independent owner-drivers sitting in line at an airport (1993).

Driver Quality

A study of New York City cab drivers citations found an inverse correlation between the number of citations and the years of experience (Schaller & Gorman, 1995). Hara found a direct relationship between driver quality and driver income (1995). Low wages lead to higher turnover lead to bad service as measured by complaints (Schaller & Gorman, 1996b). The barriers to be a taxi driver are very low so there is a ready pool of replacements (Teal, 1993). The method of employment of drivers from employee to independent contractor has caused drivers to lose benefits and their overall income to go down (Schaller & Gorman, 1996a). There is a benefit to the consumer to have experienced taxi drivers.

Summary of Testimony

In Favor

Representatives from the senior and disabled community spoke eloquently about trying to get cabs to respond. They are dependent on taxi service, as they may be unable to ride the MUNI or drive a car due to their physical condition. They said that getting rides from their homes could be difficult. Getting taxis to take them home could be a nightmare. Several seniors related stories of waiting at doctor's offices for hours waiting for a ride. Similarly getting rides back home from the market could be an exhausting experience. They felt that drivers knew that certain locations like markets would be a short ride for a small fare. Drivers would avoid these places in favor of the airport or hotels where the likelihood of a big fare was greater. Locations where seniors were known to live were sometimes ignored again because of the probability of a short trip.

Hotel managers and doormen said that their guests' main complaint was that they could not get a taxi. The problem was particularly severe going out to dinner or wanting to return from dinner. They noticed the problem from the late afternoon until the early evening. Some hotels had resorted to contracting with limousine services in order to meet their guests' needs. They said that if taxi service were available they

would drop the cost of the limousine contracts. Convention managers have indicated that the lack of taxi service will diminish the chance of conventions returning.

Restauranteurs spoke about the lack of service. They talked about the difficulty customers had getting a taxi to take them from a bar or restaurant. Managers said they made calls and no cab would show up. Service was worse for restaurants or bars located away from the downtown area. Employees said they sometimes had trouble getting taxis home after work. The owners felt that the unavailability of taxi service caused their business to drop.

Community groups from the neighborhoods said that service was slow and sporadic in the residential neighborhoods away from the downtown. The low-income neighborhoods said that they had a hard time getting taxis to take them there much less pick them up from their homes. There was a general feeling that the airport and the downtown had too many taxis while the neighborhoods were ignored. They felt that drivers would rather wait for hours at the airport than serve the neighborhoods. Suggestions were made to discourage taxis from serving the airport.

The managers of some of the largest taxicab companies said that they thought there was a need for more taxis. They said that they had drivers waiting to work shifts. They said they were overwhelmed with the number of telephone calls into their dispatch centers. They said that half of the taxicabs are providing the vast majority of the radio dispatch service.

Whitehurst Campaigns submitted a study in May of 1997 comparing San Francisco to eight other major cities. It compared the ratios of taxis to residents where San Francisco ranked next to last and to overnight visitors where San Francisco ranked last. It also looked at commuters and lifestyle and concluded that 500 more taxis would be needed. In December of 1997 the Golden Gate Restaurant Association evaluated the Whitehurst report and other factors and asked for 600 more taxis. Paul Gillespie compared San Francisco to 36 other cities and ranked San Francisco 10th in the ratio of cabs to the population.

Against more full-time cabs

The United Taxi Workers (UTW), the drivers' union, presented a study. The study looked at the same ratios as the above studies but compared them to West Coast cities. That study showed that San Francisco had the highest ratios of taxicabs.

People speaking against more medallions were either taxi drivers or medallion holders or both. They had several main arguments; inefficient dispatch, peak time need, and low drivers' wages.

Many drivers criticized the dispatch system. Companies have little incentive to invest in dispatch system because once the drivers have paid the gate fees and left for their shift the companies make the same amount of money whether it is a busy or slow night. They also said that dispatchers had to be tipped or they would not get the good runs. Not enough dispatchers or call takers are hired. Some customers call several dispatch systems and then take the first cab that shows up cleaving several drivers with a wasted trip. They also complained about no-goes, where customers call, but then are not there when the cab arrives. Many drivers felt that a centralized dispatch system would solve most of the problems.

Most drivers agreed that there were not enough taxis during the peak times but said that there were more than enough during other times. The drivers called for peak time permits to cover the rise in demand in the afternoon rush hour early evening period weekdays and during Friday and Saturday night. They said that to base the number of permits on the peak time demand was false. They said that restaurants and hotels fill up sometimes but staff isn't hired for just for those periods.

Drivers were mainly concerned that their income would fall 30% if the number of medallions were increased 30%. They said that the gate fees have gone from around \$65 in 1990 to around \$95 in 1998. Upward costs and stagnant income have squeezed their standard of living. They are required to pay gate fees for shifts where they may not break even. They pointed with pride to the good reputation of San Francisco cab drivers. If more medallions are added then the good drivers will have to leave the industry to be replaced by lower wage drivers. Those drivers will not have the experience or knowledge. The service level will fall, as there are more poor drivers.

Drivers also complained about less qualified drivers hanging out at the airport or going out to the airport without a fare to get the fare back. There were suggestions that this be banned.

Many complaints were voiced about illegal taxis and limousines. They felt that the Taxicab Detail should crack down on them. They cited various places where limousines poached on their customers.

Many drivers and medallion holders were concerned about the effects of a sudden 30% increase in medallions. Many called for a partial increase followed by more study. There was a fear that if the most skilled drivers left for other jobs because of plummeting income they would not return.

Taxi Detail Studies

The Taxi Detail conducted three surveys bearing on taxi availability. The first survey was on dispatch systems. The second survey looked at the taxi stands at hotels and the third survey examined the airport. All three surveys covered roughly the same three week period between March 11, 1998 and April 3, 1998.

For the dispatch study the Taxi Detail made 154 calls to dispatch systems requesting a cab. The dispatch systems were called in rough proportion to the number of cabs in their system. The overall chance of a taxi arriving after telephone call was under 57%. Between 8 P.M. and 10 A.M. there was above a 70% chance of the taxi arriving. Between 10 A.M. and 4 P.M. a cab would show up on between 52% and 64% of the runs. Between 4 P.M. and 8 P.M. a cab would arrive around 30% of the time. The arrivals per days of the week varied between 38% on a Thursday and 69% on a Friday. The average arrival time was 13 minutes.

The hotel taxi stand survey looked at the number of waiting cabs versus the number of waiting patrons. It showed that cabs were readily available for patrons between 6 A.M. and Noon. Between 4 P.M. and 10 P.M. hotel patrons were waiting for cabs. This essentially validated what the hotel people had said during testimony.

The study of the airport looked at how many cabs were staged at the airport and how many cabs departed with fares from the airport and at what hours and days of the week. There are a total of 212 spaces for taxicabs to wait at the airport. The Ground Transportation Unit of the Police Department checked the staging area 84 times and at no time found the lots full and found the lots empty on three occasions all at 4 P.M. on weekdays. The airport averaged 157 cabs an hour leaving with fares. The busiest times were weekdays 2 P.M. to 10 P.M. and Sunday from 2 P.M. to Midnight. The idea that taxicabs would go out to the airport and sit for hours is largely untrue between 8 A.M. and Midnight a cab going to the airport would not wait two hours and there were many hours that average over 300 trips. In reviewing the Monthly Taxicab Pick-ups since April of 1996 there is an increasing number of trips from the airport. The average looks to be increasing from the mid 80,000 level in 1996 to the low 90,000 level in the first half of 1997 to the upper 90,000 level.

Analysis of the Evidence

Almost all groups want more taxicabs including some of the taxi drivers. The general public will not participate in hearings such as these as they have a vague generalized interest. The people who have a large economic stake are likely to be over-represented. At these hearings I saw largely the same group of 200 people most of who were taxi drivers. The hotel, restaurant, taxicab company and medallion holders were well represented.

The drivers have good reason to be concerned. Driving a taxicab is one of the most dangerous professions. They have seen their real wages fall over the last few years while other segments of the economy have progressed. As San Francisco is a port of entry, immigrants continually arrive from countries with lower wages. The drivers bargaining power is limited by the availability of unskilled labor to get into their profession. Taxicab drivers do effect a visitor's view of the City. Studies have shown that full time experienced drivers have fewer accidents and complaints and generally give better service.

There have been studies of the effects of deregulation on taxicabs. Deregulation put no limit on the number of taxicabs operating in a jurisdiction which led to sudden increases in the number of cabs operating. Paul Dempsey wrote about an average increase of 23% in deregulated cities. The effects of deregulation were falling levels of service, increasing complaints about taxi drivers, reports of fighting over fares and little increase in service to those most needing it. The new workers did not have the skills to serve the neighborhoods or disadvantaged and some of the skilled drivers left the profession to find work that would pay better.

The driver's fear of a 30% drop in income is overstated. Everyone agrees that during peak times there is more than enough business. Even with a 30% increase their income during peak hours would remain the same. During their non-peak hours their income might drop. The drivers assume that the demand for taxis is fixed. Economists who have studied the industry share that assumption. I believe that is incorrect for San Francisco.

Everyone agrees that San Francisco is unique. This City has a combination of characteristics that do not appear other places. The City is one of the most densely populated in both people and vehicles in the United States. Finding places to park cars is not only a science but also an art. This would stimulate demand for taxis. It has a mass transit system that despite its faults carries a large number of people to all areas of the City. Vast numbers of commuters use mass transit which might again stimulate the use of taxis from terminals to job sites. Large numbers of people come into the City to shop, eat, attend cultural events, and nightclubs. These people form a natural market for taxis. San Francisco is a top destination for tourists from around the world. They are also heavy users of taxis. That is why studies showing what other cities do and their ratios may not be applicable here.

I believe that if number of taxis is increased the demand will also increase. In San Francisco there are tremendous disincentives to drive. The traffic is bad particularly in the downtown area. Parking can be expensive and time consuming. It is difficult to find convenient parking in many places in San Francisco outside the downtown. San Francisco has many residents whom because of difficulty parking by their home are

discouraged from going out. One bad experience in finding a taxicab to take a person home will outweigh many good experiences. The taxicab industry has not attempted to market itself. There is very little advertising. This is a sign that the demand has yet to be reached. Once the public gets the idea that taxi transportation can be relied upon demand should jump.

Driver's complaints about the unjustified rise in the gates are valid. The rise in gate fees can be directly tied to the taxi company competition for medallions. Taxi companies profit by the difference in the marginal cost of running an additional medallion versus the gate fees they collect. There are economies of scale to the companies of spreading their fixed costs over more medallions. The medallion holders have expressed some feelings that their lease rates should not be controlled. The medallions have value only because the City has restricted the number of medallions and made them a scarce commodity. The City has yet to restrict the number of restaurant permits and so while the restaurants businesses may be bought or leased the permits themselves are not traded. The Task Force has recommended lease controls for the Board of Supervisors to implement. This will help restrict future gate increases.

Driver's complaints about limousines taking fares from taxis are not significant. It is a sign that if the demand is there entrepreneurs will find a way to fill the need. If taxis were plentiful then the problem would largely disappear. Taxis are well marked and obviously available to transport customers. Limousines are generally thought to be already in use. It is much easier for a consumer to spot and take a taxi.

Alternatives

Centralized Dispatch

A continuing subcommittee of the Taxicab Task Force is currently investigating this. There are several advantages to this. There would be one number for consumers to remember. The whole fleet could be efficiently used. Customers would not have the frustrating experience of calling one company for a cab only to see an available taxi from another service drive past. Waiting time could drop there would be more potential customers for a cab driver who did want to service a neighborhood. Customers with special need could draw on the whole fleet. A customer who wanted a driver who spoke their language would have more drivers to draw upon. All of the above would stimulate demand.

There are disadvantages as well. There would be less differentiation between companies. While a customer could specify a company how many would take the first available taxi. This trend would lessen the company's incentives to maintain and

improve their fleet. Who would run the dispatch center? Who would staff it? Who would control it? Who would pay for it? With the current system if a dispatch system went down there are nine other dispatch systems available. Would all cabs have to use it? What rules would they have to follow? It will take a long time to work out all the problems.

Airport

Several different groups have complained about the service the airport receives. They feel that the airport drains the City and that untrained drivers gravitate there. The Taxicab Detail study of the airport indicates that this is not the case for large periods of time. The demand for taxis at the airport is rising. This is before the new terminal opens. The study shows that there are times when the airport is underserved. The airport has had problems with drivers refusing to take passengers to places nearby the airport because the fare will not be high enough for the driver. Many airports have taxis that are exclusively run to take passengers from the airport. This would allow the airport to more closely supervise the operation of the taxicabs and the drivers. As the airport expands in the near future there are likely to be times when there will be surges of demand as more flights come in to new gates. Each surge in demand will adversely effect the service in the City. The current logistics of issuing more medallions is time consuming.

There are several models that could be followed if it was decided to have a separate taxicab system for the airport. The first model would offer the current medallion holders the chance to exchange their current medallion for airport medallions. It could be done by seniority. The system would otherwise stay the same. A second model could have companies bid for the opportunity to run an exclusive franchise. Each time the contract came up for renewal it would go up for bid. It could be a non-exclusive franchise where companies would have to meet specifications to operate at the airport similar to what now happens with shuttle vans. They could be required to pay benefits to drivers. These alternatives would offer the airport more flexibility in meeting uncertain conditions in the foreseeable future.

Peak Time Permits

The Mayors Taxicab Task Force recommended peak time permits. This is advocated most strongly by drivers and medallion holders but has been endorsed by other groups as well. The idea is that demand goes up at certain times on certain days. Permits should be issued which would meet this need. Taxi companies maximize their profits by collecting as many gate fees as possible. Drivers say that the companies will give them a couple good shifts along with a couple bad shifts where it is difficult to make any money after paying gates and gas. If more medallions are issued there will be

more competition during off-hours. Companies usually split the peak period between the day and swing watch.

The peak demand period covers the afternoon rush hour on weekdays. Tourists and conventioners want to get back to their hotel. Workers want to get home and people want to go out to dinner. This is the time when vehicles are turned over to a new shift. At the time the demand goes up the actual supply goes down. In addition because of the traffic congestion the taxis can't serve the same number of customers because each trip takes longer.

The Taxi Detail studies confirm peak demand. The hotel taxi stand survey showed a peak time of 4 P.M. to 10 P.M. The Airport survey showed an increase in demand from 2 P.M. to 10 P.M. on weekdays and 2 P.M. to Midnight on Sunday. The dispatch survey showed higher demand from demand starting at 10 A.M. and peaking from 4 P.M. to 8 P.M. The surveys were not targeted to determine peak time issues and so do not have all the issues covered.

There are many questions that remain to be answered. How would peak time permits be regulated? What days of the week would they function and during what hours? Who would decide when a special event warranted the mobilization of those medallions outside their normal hours? Would they be economically feasible? How would the rules on the age of the vehicles apply?

Ramp Taxis

The disabled community has not been pleased with the service provided by the ramp taxis. They still have long waits for a ramp taxi to respond. While the new Chief's Rules can handle some of these issues the demand is larger than expected. The Ramp Taxis can seat four passengers beside the wheelchair. So they can provide regular service as well.

Recommendations

The most reliable instruments on which to base the recommendations are the Taxi Detail Studies. They are objective and relevant. I agree with the Mayor's Taxicab Task Force. Three hundred to four hundred more medallions should be issued. The types of medallions, and the issuance schedule, will be determined by appropriate decision makers.

PCN EXHIBIT LIST

Exhibits #1 thru 3 (1996 Submissions)

- Letter from Paratransit Broker
- Letter from Michael Hutton
- Letter Rom Faribors Golshan

Exhibit #4 - Letter &am John A Marks

Exhibit #5 - Report from Strategy Campaigns (Whitehurst Group)

Exhibit #6 - 1997 Letters (in favor for additional taxis]

- John Satre - SF Marriott Fisherman's Wharf
- Cecilia Metz - Golden Gate Restaurant Association
- James Chappell - SF Planning and Urban Research Association
- Mark Mcleod - Enrico's Restaurant
- Marsha Garland - North Beach Chamber of Commerce
- Allesandro Baccari - Fishermans Wharf Merchants Association
- Thomas W. Creedon - SF Restaurant Industry
- Jean H. Gabriel
- Lara Karakasevic - San Remo Hotel
- Jonathan Gould - Holiday Inn Select Union Square
- Wolfgang Hultner - Mandarin Oriental
- Eloise Walton - Rosa Parks Apartment
- Carolyn Baulsier - North Beach Neighbors
- Chris Stevri - Stanford Court Hotel-Renaissance
- Kathleen Harrington - Harrington's Bar & Grill
- Kathleen Mayeda - SF Senior Center
- John Simonich - Holiday Inn
- Harris Chan - Sheratons @ Fisherman's Wharf
- Obaid Afredi - Ana Hotel San Francisco
- Leonard Brant
- Mikhail Shubov
- Charles Speidel
- Sergio Alvarez - Andale Taqueria
- Mark J. Romeo - North Beach Chamber of Commerce
- J.A. Lew - Bret Harte & S.F. St. Neighborhood Association
- Ken Cleaveland - Bldg. Owners & Mgras Association of S.F.
- Jonathan Gould - Holiday Inn Select Union Union
- Thomas B. Mysknowski - Holiday Inn Golden Gateway
- Eloise Walton - Rosa Parks Apartment
- Jean H. Gabriel - Cafe de la Presse-Restaurant International
- Jason Mohny - Deja Vu Centerfolds
- August J.P. Longo

- Affordable Housing Alliance
- Burne Roche - Roaring 20's Love Boutique
- Kevin Piediscalzi - Lesbian & Gay Democratic Club
- Alessandro Baccari - Fisherman's Wharf Merchants Association
- Lu Van Chan - S.A.W. Entertainment Limited
- John Rincione - Garden of Eden
- John Liebenguth - Condor
- Danielle Ortega
- Steve Ecks - Palladium Dance Club
- Steve Kass - Casbah Cabaret
- Dean Alaric Von Boerner
- John M. Hutar - Hotel Nikko S.F.
- John M Hutar - Hotel Nikko
- Robert Migdal
- Wondewossen Mefbib

Exhibit #7-A - 1997 Letters (Opposed to additional taxis)

- Jerome Higgins
- Felix Jerry Droz
- Russell W. Williams
- Robert Henriquez
- Wayne L Swisher
- Brian Hoyt
- Christopher Allen Paul Fulkerson
- Adam
- Lawrence J. Kelley
- Lawrence J. Kelley
- Vladimir Zhubokrug
- Anonymous Report
- James Maddox
- Olivio Dallagiacoma
- Umar Randhawa
- Anonymous
- Richard Koehlz
- Mark Gruberg
- Carlene Jensen
- Charles Speidel
- John D. Kiernan
- Rich Powell
- Ed. Burke

- Keith Raskin

Exhibit #8 1998 Letters in favor of additional taxis)

- Kathleen Harrington - Golden Gate Restaurant Association
- A, Rahman
- John M. Hutar - Hotel Nikko
- John A Marks - S.F. Convention & Visitors Bureau
- Walter B. Derby
- Anonymous
- Abdul Rahman
- Amao Seknov
- Emad Shehdeh
- RAJ Sanwal
- Jamal Hassoun
- John A. Marks
- Ron Wolter
- Ramona Albright
- Julie Van Dam
- Olivo Dallagiacomma
- Helen Hobbs - Golden Gate Restaurant Association
- Ramona Albright - Twin Peaks Council
- James Nakamura
- William D. Peck
- Robert F. Begley
- Nathan Dwiri

Exhibit #9 1998 Letters (Opposed to additional taxis)

- Thomas Ferris
- Bernard Dethiers
- Mike Iverson
- The Night Cabbie
- David Fine
- Robert Allen
- Yellow Cab #7195
- Thomas Stanghilleni
- Russell Williams
- Anonymous
- David A Benfell
- Julian M Homwitz
- Alod W. Riggs

- Carl MacMurdo
- Brad Newsham
- Anonymous Cab Driver
- Carl MacMurdo
- Charles Korbel
- Matthew Jezlorski
- Marian L. Zaouk
- Howard A Williams
- Joseph Fleischman
- Barry Taranto
- Lovie Abdelia
- Joe Mirabile
- Al Hall
- Ruagh Graffis
- MTD
- Peter H.G. Witt
- Sean-Michael Normand
- Matthew Teziorski
- Marian L. Zauve
- Marian L. Zauve
- Rolph Jacobson
- Charles Korbel
- Lawrence I. Kelley
- Joe Mirabile
- Dennis J Korkos
- Charles Wadebaxter
- Keith Raskin
- Brently Pusser
- Ronald L Fishman

Exhibit #10 Golden Gate Restaurant Association Membership Survey of San Francisco's Taxi Service

Exhibit #11 Petition for More Taxicabs 1997

Exhibit #12 Petition for More Taxicabs...continues 1997

Exhibit #13 Signatures for More Taxicabs 1998

Exhibit #14 Continuation of More Signatures 1998

Exhibit #15 Letter from Ron Wolter-Veterans Cab 1997

Exhibit #16 Letter from the Golden Gate Association 1998, Helen Hobbs, Chair,
Public Affairs Committee

Exhibit #17 Letter &om United Taxicab Workers 1998

Exhibit #18 Signatures to Hon. Supervisor Gavin Newsom

Exhibit #19 San Francisco Taxi Permitholders and Drivers Association, Inc. (K
Owners' Association) Joseph Fleischman

Exhibit #20 Mayor's Taxi Task Force Final Report April 1998

Exhibit #21 Letter from Brian A. Foster June 1998

Exhibit #22 1996 Hearing transcript

Exhibit #23 1997 Hearing transcript

Exhibit #24 1998 Hearing transcript

Exhibit #25 Letter from Paratransit broker July 1998

Exhibit #26 Letter from MUNI Railway July 1998

Exhibit #27 Taxicab Detail PCN Survey Report

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