City and County of San Francisco
**DEPARTMENT OF PUBLIC HEALTH**

Gavin Newsom, *Mayor*
Mitchell H. Katz, M.D.,
Director of Health

**OCCUPATIONAL & ENVIRONMENTAL HEALTH**

June 5, 2006

David Seward
Chief Financial Officer and Environmental Review Officer
University of California, Hastings College of Law
200 McAllister Street
San Francisco California, 94102-4978

**Re: Comment on Hastings Parking Garage Project DEIR**

Dear Mr. Seward:

As you know, Hasting's College of Law has proposed to build a 430 space an eight story parking garage on the corner of Golden Gate Avenue and Larkin Street. The San Francisco Department of Public Health Environmental Heath Section would like to offer the following comments for the project's environmental analysis.

In summary, the proposed parking garage would exist in an area already dense with diverse local and regional transit services, including the Civic Center Bart Station, calling into question the need for increased personal parking. The DEIR does not provide any evidence to substantiate the rationale for the stated project objectives. For example, there is no evidence that failure to build this parking lot will negatively affect the mission or programs of UC Hastings College of Law. In contrast, the construction of parking in this area would reduce the relative travel costs (time, money, convenience) for automobile drivers relative to other modes and thus would be likely to induce a travel mode shift from public transportation to automobile. Such a travel mode shift would contribute cumulatively to the adverse health and environmental costs due to vehicle use already occurring in the area. Overall, the project appears to be inconsistent with both the San Francisco Transportation Element, ongoing area community transportation planning efforts and the 2003 State of California Environmental Goals and Policy Report. The DEIR has also failed to adequately analyze a number of potential adverse environmental impacts of project related traffic, including adverse effects on the area's pedestrian injury rate. Finally, the DEIR fails to consider a comprehensive transportation demand management plan as a potential project alternative.

**Comment 1 The project's environmental analysis should provide evidence to substantiate the project's stated objectives.**

The project objectives are stated on page II-6 of the DEIR. They include:

- Increasing operational flexibility by providing additional parking for students, faculty, and patrons of Hastings sponsored events
- Promote greater utilization of campus facilities and the surrounding community in the evening hours by providing safe, secure, and convenient parking.

- Increase … additional parking and improved access to Hasting by students, faculty, and staff, particularly those with poor access to public transportation.

The Supplemental DEIR provides some data on current capacity of area parking facilities; however, the estimated capacity of parking facilities is typical for many existing San Francisco garages. Maintaining garages at relatively high levels of capacity is consistent with local goals to prioritize the use of public transportation.

The DEIR provides no other evidence relevant to the above objectives. We believe justification of the above objectives would benefit answers to the following questions:

1. What are the car ownership and travel behaviors of current Hastings students, faculty, staff, and patrons?
2. What are the documented impacts on Hastings programs and services due to the current absence of a parking garage (e.g., students missing class)?
3. What is the utilization of area parking resources by Hasting's students, faculty and staff?
4. What evidence exists for the effects of an increase in parking supply on travel behavior?
5. What evidence exists for the effects of an increase in parking supply on the utilization of Hasting's programs and services?

Hastings could assess the above questions via surveys and other evidence gathering tools. We note that in the absence of substantiating evidence, the project objectives cannot be over-riding social, economic, or environmental considerations used to justify the project.

**Comment 2 The project does not appear to be consistent with San Francisco's Transit First Policies.**

Primary influences on utilitarian travel behavior include distance between the origin and destination, monetary costs (e.g., tolls, parking, fuel), convenience (available parking, available automobile, available public transport) and travel time. The construction of parking facilities has material natural and economic resource costs. Increases in the parking supply also reduce the effective cost of driving a personal vehicle and thus induce mode shift to personal vehicle travel.

Any action that reduces the effective costs of driving may aggravate well-known transportation related environmental and health impacts including noise, air pollution and traffic injuries. Any addition to the parking supply in areas already well served by public transit thus is not justified from the standpoint of access alone and is contrary to with San Francisco's Transportation Element which in general aims to:

> *Establish public transit as the primary mode of transportation in San Francisco and as the means through which to guide future development and improve regional mobility and air quality.*

The DEIR implies that local plans or policies have no authority over the project and therefore do not require consideration in the DEIR. The University of California does create long range facilities plans but the State does not create separate land use plans for the cities in which it has facilities. To ignore San Francisco's General Plan because the City and County of San Francisco does not have jurisdiction over

the State facilities may be legally defensible but does not appear to be consistent with the spirit and purpose of State planning law, policy, and practice.

**Comment 3 The project appears to be inconsistent with California State Environmental Policy Goals; analysis of conformity with these goals is a current legislative requirement.**

In the analysis for Impact A.2 on page II.A.9, the DEIR states that there exist no relevant land use plans or policy goals of an entity or agency with jurisdiction over with the project. This statement is not correct.

California Assembly Bill 857 (Wiggins, 2002) required the Governor's Office of Planning and Research (OPR) to prepare a new State Environmental Goals and Policy Report (EGPR) every four years. The purpose of the Report is to provide a "clear framework of goals and objectives" for state functional plans and to "serve as a basis for judgments" about major programs, capital projects, and budget priorities (AB 2070, Wilson, 1970). The State Environmental Goals and Policy Report must contain a 20- to 30-year overview of growth, along with goals and objectives for land use, population growth and distribution, development, natural resources conservation, and air and water quality. AB 857 required the revisions to the State Environmental Goals and Policy Report to promote equity, strengthen the economy, protect the environment, and promote public health and safety. After January 1, 2004, revisions to the Goals and Policy have to be consistent with the following three overarching state planning priorities.

1. To promote infill development and equity.
2. To protect environmental and agricultural resources.
3. To encourage efficient development patterns.

AB 857 bill also requires criteria used by the administration to select State funded infrastructure project to be consistent with the state planning priorities set by AB 857, and requires state agencies to specify how the infrastructure projects they request are consistent with the state planning priorities set by AB 857. In addition, State Law requires the Environmental Goals and Policy Report (EGPR) to serve a guide for public expenditures.

The Governor's Office of Planning and Research transmitted a revised *Environmental Goals and Policy Report* to the State Legislature on November 10, 2003 consistent with the state planning priorities enumerated in Government Code Section 65041. The Report articulates state goals and policies related to land use, population growth and distribution, development, conservation of natural resources, transportation, and air and water quality.

While the EGPR takes no specific position on the construction of parking garages, it does contain several goals and policies relevant to transportation and the Hastings Parking Garage Project. These include:

- Providing greater transportation choice with reference to public transportation, walking and bicycling
- Reduction of air pollution emissions;
- Reducing the use of fossil carbon as an fuel and energy source;
- Preventing inequitable environmental burdens on low income and minority communities

The construction of a parking garage in a lower income residential neighborhood which is well served by public transit appears to contradict these State EGPR policy and consistency requirements.

**Comment 4 The Project and its DEIR does not take into account ongoing MTC funded transportation planning in the Civic Center area**

The Tenderloin-Little Saigon Community Transportation Study is a community-based transportation planning effort funded by a Metropolitan Transportation Commission (MTC) grant program to advance transit needs in economically disadvantaged communities throughout the San Francisco Bay Area, and address Environmental Justice concerns. The MTC adopted the Community-based Transportation Planning Program Guidelines to serve as a blueprint for program implementation. The Tenderloin-Little Saigon Community Transportation Study will identify, prioritize, and develop conceptual cost estimates for near and medium term transportation and access improvements in the Civic Center area, in particular the Little Saigon and Tenderloin neighborhoods south of Geary Boulevard between Van Ness and Mason. The community-based transportation planning program is designed to be a collaborative process to ensure the participation of key stakeholders, such as community-based organizations (CBOs) that provide services within low-income neighborhoods and neighborhood improvement organizations.

Over 50 people attended the first community workshop for the planning study. Attendees were primarily residents of the Tenderloin, and included a wide array of ethnicities and incomes. Clear priorities that emerged from the workshop included better public transportation services and improving pedestrian safety. Participants expressed clear priorities about whether to make driving or walking easier in the Tenderloin. Every respondent except one stated they preferred increasing the ease of walking over increasing the ease of driving in the neighborhood.

Attendees felt unsafe on the street in the Tenderloin, and requested a variety of efforts be taken to make them feel safer. Specific physical infrastructure for pedestrian safety included: a countdown signal at the intersection of Larkin and Eddy; more pedestrian bulb-outs; more crossing guards; extra pedestrian safety devices around schools; reduced speed limits; and reduced traffic in general.

Workshop participants did not identify specific intersections as problem spots; rather, they identified a few corridors as problematic. The key corridors identified as problematic were the North to South corridors of Larkin, Hyde and Leavenworth, as well as, the East to West corridors of Eddy and Ellis. A large majority of responses were located in the area, bordered by Larkin, Golden Gate, Jones and Geary, corresponding to the area with the highest concentration of residents.

Only one participant at the workshop prioritized additional parking. For the most part, attendees wanted pedestrian safety prioritized over parking, were opposed to more parking garages being added to the neighborhood, and desired residential parking permits for the Tenderloin.

SFDPH believes the decision to build or not to build the parking garage should respect community planning priorities for the area. A decision to approve or not approve this project might productively be deferred until after the completion of the Tenderloin-Little Saigon Community Transportation Study.

**Comment 5 Comprehensive transportation demand management and parking management practices should be evaluated as a project alternative or as part of the no-build alternative. In combination, they could mitigate any existing unmet demand for off-street parking, avoiding the need to construct a parking facility.**

A combination of the best practices in Transportation Demand Management (TDM) could provide an effective and feasible means of meeting the stated project objectives, mitigating the need to build a parking garage and potentially allowing the site to be used for other needs.

A comprehensive TDM plan might include:

1. A no-cost shuttle to BART;
2. A student, staff, and faculty subsidy for mass transit;
3. A tax incentive for mass transit;
4. Enhanced bicycle parking and changing facilities for bicyclists
5. Preferred car pool parking at existing facilities;
6. Charging employees and faculty for parking at existing facilities with the following parameters:
   - Minimum parking prices should exceed the unsubsidized cost of transit fares
   - Set prices at par with market price for area all day parking facilities
   - No discount for long-term passes
7. Not allowing any reserved parking spaces for individual employees at existing facilities

A comprehensive TDM plan should be evaluated as either a project alternative or a component of a no-build alternative in the course of CEQA review for this project. The analysis of TDM plan should include estimates of effectiveness and cost-effectiveness of TDM best practices based upon available empirical research.

Publications by Donald Shoup and Todd Litman have summarized research on the effectiveness of various TDM measures.[1] The Metropolitan Transportation Agency, the Bay Area Air Quality District, the South Coast Association of Governments may have useful public resources for judging the effectiveness of TDM measures. Vehicle emissions programs such as URBEMIS also allow the estimation of effectiveness of TDM measures. The project sponsor could also survey Hastings faculty, staff, and student in order to directly gauge the employee travel behaviors expected in response to TDM plan measures.

If the DEIR needs to demonstrate the economic feasibility of these measures, feasibility should be judged considering (A) savings due to not building the off-street parking facility including annualized future construction and operations cost; (B) revenues from any implemented market based employee parking pricing; and(C) revenues or proceed from an alternative use for the site, such as a mixed-use housing project.

**Comment 6 CEQA regulations, current national standards for pedestrian safety, and empirical traffic safety research, require that effects on the rate of pedestrian injuries related to changes in vehicle volume must be analyzed as a potential significant adverse effect on the environment.**

***Environmental changes that affect human health are potentially significant environmental effects under CEQA*** CEQA guidelines section 15126.2, subdivision (a) requires an EIR to discuss "health and safety problems caused by the physical changes" that the proposed project will precipitate." CEQA

1 Shoup D. The High Cost of Free Parking. Planners Press 2005.; Victoria Tranportation Policy Institute. Online TDM encyclopedia. 2005.

Guidelines Section 15065 is more specific, all environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly, as mandatory findings of significance.

> A lead agency shall find that a project may have a significant effect on the environment and thereby require an EIR to be prepared for the project where any of the following conditions occur: (d) The environmental effects of a project will cause substantial adverse effects on human beings, either directly or indirectly.

Health and human impact assessment within environmental review traditionally includes effects due to noise, and such hazardous environmental agents as air pollutants. However, consistency with past practice does not alone establish an adequate environmental analysis. An EIR must use available evidence and methods of analysis to study any reasonably likely significant adverse environmental effect. Understanding these effects may require using inter-disciplinary skills and analysis not previously used in an EIR. [2]

***The US Department of Health and Human Services (USDHHS) has established National objectives for the rate of pedestrian injuries.***[3] The Federal Department of Health and Human Services defines the *pedestrian injury rate* as the number of injuries per unit time in a population of a standard size (e.g. injuries per year per 100,000 people).

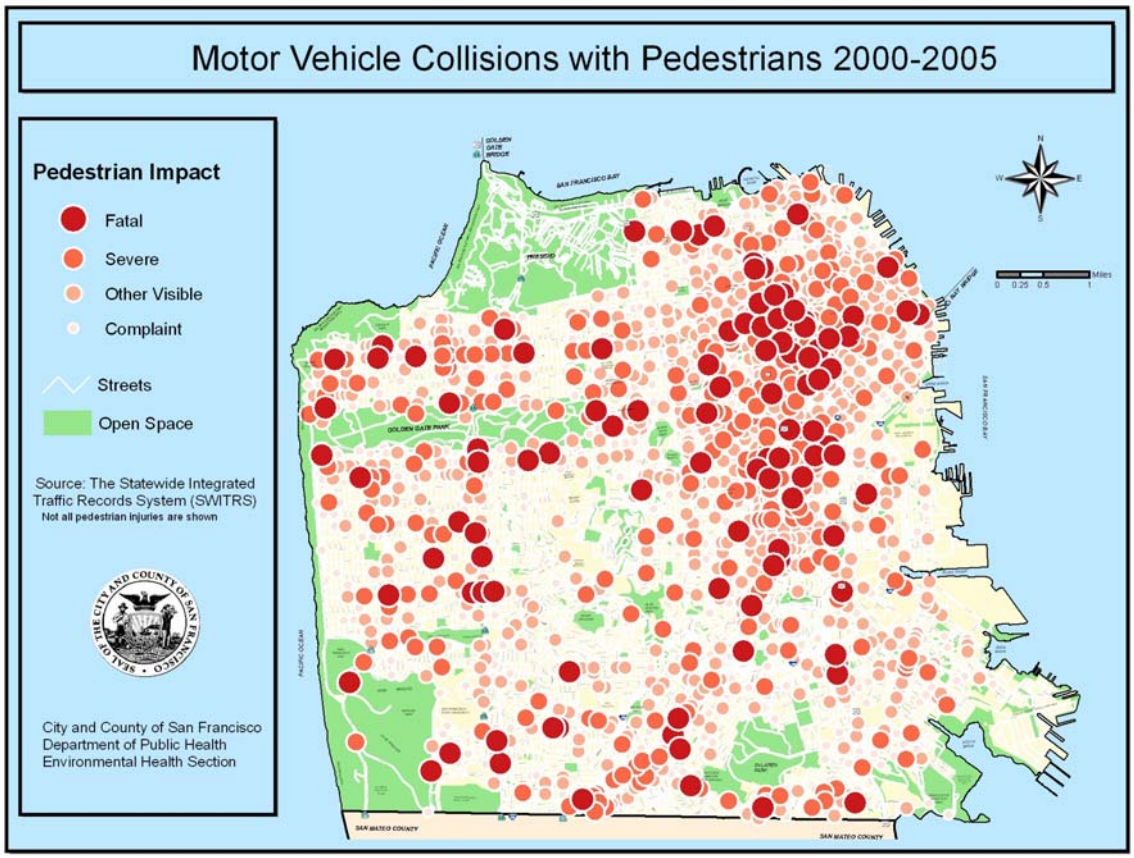
- A rate of non-fatal vehicle injuries to pedestrians no greater than 19 injuries per year per 100,000 people.
- A rate of fatal vehicle injuries to pedestrians no greater than 1 injury per year per 100,000 people.

***The project area experiences a high rate of pedestrian Injuries*** Each year, 80 000 to 120 000 pedestrians are injured and 4600 to 4900 die in motor vehicle crashes. Children aged 5 to 9 years have the highest population-based injury rate, and people older than 80 years have the highest population-based fatality rate. The elderly and the very young populations are more vulnerable to vehicle injuries while walking because of slower walking speeds or slower reaction times.

San Francisco residents suffer approximately 800 pedestrian injuries every year. This rate of injuries is about 5 times the USDHHS standards. A significant number of pedestrian injuries occur in the South of Market and Tenderloin Area. (See map of pedestrian injuries). Furthermore, the neighborhoods surrounding this project contain sensitive populations more vulnerable to impacts on pedestrian safety, including; children, people with chronic disease, the elderly, walking-dependent, and the low-income transit-dependent.

2 According to the 1997 California Department of Transportation Guidelines for Community Impact Assessment, "Many people in California, including some decision-makers, [still] harbor the general belief that CEQA addresses only purely "environmental" issues, not social, demographic, or economic issues often raised by proposed projects. This is erroneous. The assumption however is understandable due to the complex linkage that must be demonstrated between the physical, social, and economic environment, and the determination of 'Significance'."

3 U.S. Department of Health and Human Services. Healthy People 2010 Objectives.




Vehicle injuries to pedestrians have significant economic costs beyond their physical toll on victims. A recent analysis of California data concludes that in 1999 economic costs resulting from 5634 fatal and non-fatal vehicle injuries to pedestrians resulted in over $3.9 billion in direct and indirect costs ($692,000 per injury). California Highway Patrol estimates of economic costs of vehicle injuries to pedestrians disaggregated by injury severity are provided in the table below.

| Pedestrian Injury Severity | Economic Cost per Injury |
|---|---|
| Fatal Injury | $ 2,709,000 |
| Severe Injury | $ 180,000 |
| Visible Injury | $ 38,000 |
| Complaint of Pain | $ 20,000 |

***Environmental Factors Causing Pedestrian Injuries*** The rate of pedestrian injuries in an area is dependent on several environmental factors such as vehicle volume, vehicle type (truck vs. car), vehicle speed, pedestrian volume, roadway width, vehicle speed, pedestrian facilities (sidewalk width, driveway conflicts, buffers), intersection design (crossing distance, signal phasing and timing, corner radii, cross walk treatments, median islands, curb extensions), lighting, and weather.[4 5 6 7 8]

4 La Scala EA, Johnson FW, Gruenewald PJ. Neighborhood Characteristics of Alcohol-related Pedestrian Injuries. Prevention Science. 2001: 2:123-134.

5 Taylor M, Lynam D, Baruay A The effects of drivers speed on the frequency of road accidents. Transport Research Laboratory. TRL Report 421 Crowthorne, UK, 2000.

6 Morrison DS, Petticrew M, Thomson H. What are the most effective ways of improving population health through transport interventions? Evidence from systematic reviews. Journal of Epidemiology and Community Health 2003:57:327-333.

Public health and transportation safety research consistently demonstrates that vehicle volumes are an independent environmental predictor of pedestrian injuries.[9] [10] [11] [12] In other words, all things being equal, when the number of vehicle trips increases, the number of vehicle injuries to pedestrians will also increase. A national study of pedestrian injuries and crosswalks found that higher average daily traffic and multi-lane roads were significant and independent environmental risk factors for vehicle-pedestrian crashes in multi-variate analysis.[13] The magnitude of effect of vehicle volume on injuries is significant. For example, a study of nine intersections in Boston's Chinatown, researchers calculated an increase in 3-5 injuries per year for each increase in 1000 vehicles.[14]

***Available Analytic Methods*** The DEIR acknowledges that vehicles entering and exiting the proposed garage at the driveway to the proposed parking garage represent a hazardous condition for pedestrians. The project proposes an audible pedestrian warning system to mitigate this hazard.

The DEIR also acknowledges that the project will result in over 1600 project generated vehicle trips. The Project's EIR analyzes in detail how changes in traffic volume affect travel delay; however, it fails to analyze effects on pedestrian injury associated with the same environmental change. .

The increase of vehicle volume on area roadways will result in greater pedestrian—vehicular conflicts. Intuitively, when the number of vehicle trips increases, the number of vehicle injuries to pedestrians will also increase because the frequency of vehicle—pedestrian conflicts will increase. The DEIR should analyze this potentially adverse impact on humans.

Traffic impact models based on empirical research are available to estimate the effects of vehicle volume on pedestrian injury rates. Formally, the relationship between vehicle volume and injury rates or counts is called the road safety function. A common parametric form of the injury-vehicle volume relationship (the road safety function) is a power function with the following form:

$$\textbf{Injuries} = \alpha \textbf{ X (Average Annual Daily Trips)}^{\beta} \textbf{ ; typically where } \beta < 1 \quad [15]$$

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7 Evidence shows that pedestrian and bicycle injuries vary with the 0.4 power of the proportion of trips made by walking or bicycle. Jacobsen PL. Safety in numbers: more walkers and bicyclists, safer walking and bicycling. Injury Prevention. 2003: 9: 205-209.

8 Leden L. Pedestrian risk decrease with pedestrian flow. A case study based on data from signalized intersections in Hamilton, Ontario. Accident Analysis and Prevention. 2002: 34:457-464.

9 LaScala EA, Gerber D, Gruenewald PJ. Demographic and environmental correlates of pedestrian injury collisions: a spatial analysis. Accident analysis and Prevention. 2000; 32:651-658.

10 Roberts I, Marshall R, Lee-Joe T. The urban traffic environment and the risk of child pedestrian injury: a case-cross over approach. Epidemiology 1995; 6: 169-71.

11 Stevenson MR, Jamrozik KD, Spittle J. A case-control study of traffic risk factors and child pedestrian injury. International Journal of Epidemiology 1995; 24: 957-64.

12 Agran PF, Winn DG, Anderson CL, Tran C. Del Valle CP. The role of the physical and traffic environment in child pedestrian injuries. Pediatrics. 1996; 98: 1096-1103.

13 Zegeer CV, Steward RJ, Huang HH, Lagerwey PA. Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations: Executive Summary and Recommended Guidelines. Federal Highway Administration, 2002.

14 Brugge D, Lai Z Hill C, Rand W. Traffic injury data, policy, and public health: lessons from Boston Chinatown. Journal of Urban Health 2002; 79: 87-103.

15 Lord D, Manar A, Vizioli A. Modeling crash-flow density and crash-flow-V/C ratio relationships for rural and urban freeway segments. Accident Analysis and Prevention 2005; 37: 185-199.

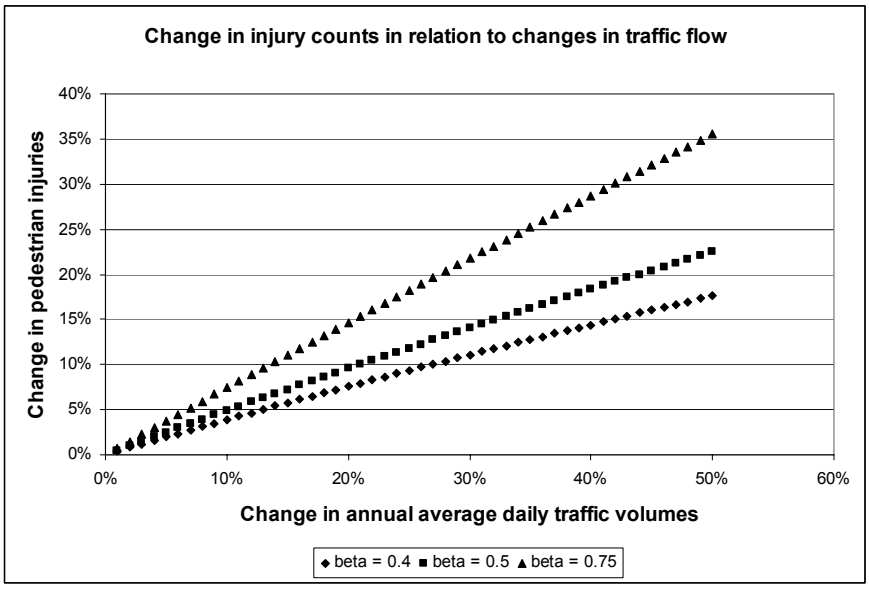
Based on a power function with $\beta$ < 1, the rate of pedestrian injuries will increase consistently as vehicle volume increases even though the increase in the rate will be attenuated at higher vehicle volumes. Empirical evidence suggests that 0.5 is a reasonable parameter for $\beta$ in the equation above; in other words, pedestrian injuries rate on a roadway are proportional to the square root of vehicle volume.[16] The change in the number of pedestrian injuries after the project can be estimated simply as:

**% Change in Injuries = [(Future AADT /Baseline AADT)$^{1/2}$ – 1] x 100**

The figure below graphically illustrates the relationship between change in vehicle volume and the change in the number of injuries. The middle line represents the annual change in the number of injuries base on a power function with Beta set to equal 0.5. Based on this function, a 10% increase in traffic volume on a street or at an intersection should be expected to produce an approximately 5% increase in the number of pedestrian injuries. A 50% increase in traffic volume would translate into an approximately 22% increase in the number of pedestrian injuries. The upper and lower lines provide a reasonable upper and lower bound on this volume—injury relationship with Beta set at 0.4 and 0.75 respectively.

The project includes a pedestrian warning system to address pedestrian-vehicle conflicts at the driveway ingress-egress from the structure. However, no pedestrian safety mitigation measures are proposed for intersections and road facilities outside the immediate project area even though the project will increase traffic volume on area roadways.

The above method is one feasible way to estimate changes in pedestrian injuries based on changes vehicle flow on the roadways affected by the project. Baseline pedestrian injury data for the area is available from the California Highway Patrol. The DEIR for the Hasting's Project should supplement its transportation analysis with an analysis of project related effects on pedestrian injuries.




If the analysis finds that the project adverse impacts on the pedestrian injury rate require a comprehensive countermeasure plan in the adjacent neighborhoods and planning and implementation of safe routes between the project and upland neighborhoods. A countermeasure plan should be based on further analysis of pedestrian safety hazards and mitigations on specific streets and intersections with significant increases in traffic volume. If implemented, the Hastings Parking Garage Project should provide funding for the implementation of these pedestrian safety countermeasures in proportion to the

16 Lee C, Abdel-Aty M. Comprehensive analysis of vehicle-pedestrian crashed at intersections in Florida. Accident Analysis and Prevention 2005; 37: 775-786.

project's contribution to traffic volume in this District. Appropriate and effective pedestrian safety mitigations to consider might include the following:

1. Provide countdown pedestrian signal heads, bulb outs, and center median refuge islands at high-volume multi-lane intersections where cumulative traffic volume increases exceed 5%;
2. Provide pedestrian warning signs or lights at all crossings or cross walks without traffic signal lights;
3. Institute speed limit reductions to less than 20mph in mixed-use residential areas adjacent to the project;
4. Widen sidewalks or provide buffers between sidewalks and vehicle lanes on busy roadways with significant pedestrian traffic.

Analysts for this DEIR should review the National Cooperative Highway Research Program's recent State of the Knowledge Report on crash reduction factors for traffic engineering. The report summarizes the best evidence on the effectiveness of diverse interventions. Other studies also evaluate the efficacy of pedestrian safety engineering measures. For example, international studies demonstrate that on average traffic calming interventions in residential areas reduce accident rates by 15%.[17]

**Comment 7 The DEIR does not adequately evaluate noise from either automobiles or the pedestrian warning system on community annoyance or sleep disturbance**

***Health Effects of Noise*** The health impacts of environmental noise depend on the intensity of noise, on the duration of exposure, and the context of exposure. Long term exposure to moderate levels of environmental noise can aversely affect sleep, school and work performance, and cardiovascular disease.[18] Noise affects sleep both by waking people up and reducing the quality of sleep. According to the WHO, reductions of noise by 6-14 dBA result in subjective and objective improvements in sleep. Chronic road noise can affect cognitive performance of children including difficulty keeping attention, concentrating and remembering, poorer reading ability, and poorer discrimination between sounds.[19] The combination of noise and poor quality housing can have additive effects. In one study, a combination of these factors was associated with higher stress and stress hormone levels.[20] A comprehensive synthesis of the noise heath effects and control is contained in the World Health Organization's Guidelines for Community Noise.[21]

According to the WHO Community Noise Guidelines average healthful daytime noise outdoors in mixed-use residential areas should be less than 50 dBA. Average evening and nighttime noise outdoors in mixed-use residential areas should be less than 55 dBA.

***Project Area Noise Levels*** The project is located in an area with levels of noise already substantially above those considered to be healthful. The DEIR estimates that environmental noise in the project area

17 Morrison DS, Petticrew M, Thomson H. What are the most effective ways of improving population health through transport interventions? Evidence from systematic reviews. Journal of Epidemiology and Community Health 2003:57:327-333.

18 Dora C and Phillips M. Transport, Environment, and Health reviews of evidence for relationships between transport and health World Health Organization 1999.

19 Noise and Health: Making the Link London Health Commission 2003 http://www.phel.gov.uk/hiadocs/noiseandhealth.pdf

20 Evans G, Marcynyszyn LA. Environmental Justice, Cumulative Environmental Risk, and Health among Low- and Middle-Income Children in Upstate New York. American Journal of Public Health 2004;94: 1942-1944.

21 Available at: http://www.who.int/docstore/peh/noise/guidelines2.html.

averages Ldn 68 dBA. The San Francisco Department of Public Health receives numerous complaints about noise related sleep disturbance in this and similar neighbors; noise complaints are frequently attributed to night time and early morning use of waste disposal and street cleaning vehicles and similar short term noise sources.

***Project can analyze of Noise Related Effects on Sleep Disturbance*** The DEIR concludes that the small change in the average noise level would not lead to a significant noise related effect. However, the hours of operation between 6 am to 12 pm fall within the usual time of sleep for some area residents. The San Francisco Police Code, Section 2909, identifies night time as between the hours of 10 PM and 7AM. The DEIR analysis does not provide any estimates of short term levels of noise produced by the audible warning system. Furthermore, it ignores the possibility that single bursts of high amplitude noise may result in health-relevant sleep disturbance.

Historically, the Department of Public Health has received many complaints regarding audible warning systems located at other parking garages throughout San Francisco. The DEIR should include a description of the alarm noise level and its associated day time annoyance and night time sleep disturbance to nearby residential, commercial, and law school receivers. A discussion of various mitigations to the audible alarm should also be included.

The DEIR should use single event noise levels and the estimate the proportion of resident who may be awakened by project noise. The U.S. Federal Interagency Committee on Noise has found that the relationship between sleep disturbance and noise can be estimated as follows[22].

$$\%Awakening = (7.079 \times 10^{-6}) \times \mathrm{SEL}^{3.496}$$

Analysts should note that the housing in the area typically does not include acoustical insulation and most windows are operable due to needs for ventilations. We estimate that with windows open the exterior to interior building attenuation would be about 10 dBA.

**Comment 8 The Hasting's Garage Project may adversely effect local area air quality.**

Health related air pollutants including fine particulate matter, are related to premature mortality, cardiovascular disease, asthma. Tropospheric ozone is a vehicle exhaust respiratory irritant associated with an increase in emergency room visits for asthma and impaired development of the lungs. Air pollution monitoring research has confirmed that exposure to particulate matter, nitrogen dioxide, and soot is much higher within 200 meters of freeways and other busy urban roadways. Epidemiologic studies have found consistent associations between living in proximity to a busy roadway and respiratory disease symptoms and lung function measures. [23] [24] Additional research supporting this finding includes:

22 http://www.fican.org/pdf/nai-8-92.pdf

23 Brauer M, Hoek G, Van Vliet P, Meliefste K, Fischer PH, Wijga A, Koopman LP, Neijens HJ, Gerritsen J, Kerkhof M, Heinrich J, Bellander T, Brunekreef B. Air pollution from traffic and the development of respiratory infections and asthmatic and allergic symptoms in children. American Journal of Respiratory and Critical Care Medicine. 2002;166:1092-1098.

24 Mikkelsen J. Effect of vehicular particulate matter on the lung function of asthmatic children in Fresno CA. Unupublished Manuscript.

- Reduced lung function in children associated with traffic density, especially trucks, within 1,000 feet and the association was strongest within 300 feet[25]
- Increased asthma hospitalizations associated with living within 650 feet of heavy traffic and heavy truck volume.[26]
- Increased asthma symptoms with proximity to roadways with the greatest risk within 300 feet. [27]
- Asthma and bronchitis symptoms in children associated with high traffic in a San Francisco Bay Area community with good overall regional air quality[28]

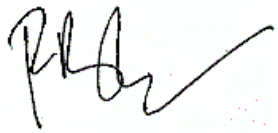
The Hastings Parking Garage DEIR includes an air quality analysis that estimates the contribution of project traffic impact on criteria air pollutants at the regional level using URBEMIS 2002. The EIR also estimates project area increases in exposure to Carbon Monoxide. On the basis of this analysis, the DEIR finds that that the project will have less than a significant impact.

However, the DEIR for the project did not analyze non-cancer chronic and acute health effects due to fine particulate matter pollution due to project related traffic. The 2005 California Air Resource Board land use and air quality handbook bases its land use guidelines both on the long term lung cancer risks as well as short term health effects, including reduced lung function[29], bronchitis, asthma, and cardiovascular mortality.[30] These non-cancer health effects are not related exclusively to diesel exhaust particulates but also to non-diesel particulates from gasoline fueled cars and trucks.

The DEIR of the Hastings Parking Garage does not include particulate matter measurements or modeled estimates of change in particulate matter levels. Given that the project area includes sensitive receptors (families with children, individuals with chronic disease, elderly individuals) we suggest that additional analysis estimate PM2.5 and PM 10 levels and any associated estimable effects on respiratory illness.

Thank you for your consideration of these comments and the suggested mitigations. Please do not hesitate to contact me at 252-3982 with any questions.

Sincerely,



Rajiv Bhatia, MD, MPH.

25 Brunekreef, B. et al. "Air pollution from truck traffic and lung function in children living near motorways." Epidemiology. 1997; 8:298-303.

26 Lin, S. et al. "Childhood asthma hospitalization and residential exposure to state route traffic." Environ Res. 2002;88:73-81.

27 Venn. et al. "Living near a main road and the risk of wheezing illness in children." American Journal of Respiratory and Critical Care Medicine. 2001; Vol.164, pp. 2177-2180.

28 Kim, J. et al. "Traffic-related air pollution and respiratory health: East Bay Children's Respiratory Health Study." American Journal of Respiratory and Critical Care Medicine 2004; Vol. 170. pp. 520-526.

29 Venn. etal. "Living near a main road and the risk of wheezing illness in children." American Journal of Respiratory and Critical Care Medicine. 2001: Vol.164, pp. 2177-2180

30 Peters, A , et al, "Increased particulate air pollution and the triggering of myocardial infarction." Circulation, 103:2820-2815 (2001)

CC:

Chris Daly, Board of Supervisors
Tilly Chang, San Francisco County Transportation Authority
Tom Radulovich, Transportation for a Livable City
Emily Drennan, Walk SF
Gabriel Metcalf, SPUR
Paul Maltzer, Department of City Planning
Stuart Cohen, TALC