CITY OF MILPITAS

455 EAST CALAVERAS BOULEVARD, MILPITAS, CALIFORNIA 95035-5479
GENERAL INFORMATION: 408-586-3000, www.ci.milpitas.ca.gov

03/20/2012
Agenda Item No. 1

ATTACHMENTS AND/OR ADDITIONAL MATERIALS RELATED TO AGENDA ITEM AFTER AGENDA PACKET DISTRIBUTION

Susan Barrett

From: Bronwen Lacey <blacey@ci.milpitas.ca.gov>
To: Huy Bui <duchuybui@yahoo.com>
Cc: Mary Lavelle <mlavelle@ci.milpitas.ca.gov>
Sent: Thursday, February 2, 2012 1:24 PM
Subject: RE: Copy of Decision for you

Mr. Bui,
Thanks you for your very detailed comments. I apologize for not getting back to you sooner. I have been out sick.
Although relative to the decision, the percentages of the NOI and minor typos do not change the substance of the Boards decision, which was to deny the requested rent increase. We will make your email part of the official record of the Friendly Village Mobil Home Estates petition hearing.
Thank you again for your participation in the Board.
Sincerely,
Bronwen Lacey

From: Huy Bui <duchuybui@yahoo.com>
To: Bronwen Lacey <blacey@ci.milpitas.ca.gov>
Cc: Mary Lavelle <mlavelle@ci.milpitas.ca.gov>; Donna Biles <dbiles@ci.milpitas.ca.gov>
Sent: Monday, January 30, 2012 10:26 AM
Subject: Re: Copy of Decision for you

Dear Ms. Lacey,

There are the typos in the Board's Written Decision again :
1) On line 10 of page 3 (item 10), the "CIP" should be "CPI" (Consumer Price Index).
2) On line 13 of page 3 (item 11), the same typo as I mentioned in last meeting, the rent increase should be "to" $875 rather than "of" $875.

Btw, in item 10 (page 3) the "approximately 70 percent of the CPI" is not quite clearly mentioned . Basically, it is the percentage increase (48.3%) of NOI (Net Operating Income) from 1990 to 2010 over the percentage increase (68.5%) of CPI during the same period.
If the proposed rent increase (to $875 per month per space) was granted, it would be approximately 189.15% (129.57% vs. 68.5%).
{129.57% ≈ [$1,167,575 (2010 NOI) + $639,744 (granted rent increase) - $787,249] / $787,249 (NOI in 1990: base year in fair return specified in ordinance III-30-22.3)}.
It'd be highly excessive compared to the inflation adjustment percentage (60%) of CPI set forth in III-30-22.11 (e)

Sincerely,

Huy Bui

CITY OF MILPITAS

OFFICE OF THE CITY ATTORNEY
TEL: (408) 586-3040 FAX: (408) 586-3056
455 EAST CALAVERAS BOULEVARD, MILPITAS, CA 95035-5479

March 8, 2012

VIA U.S. Mail

Anthony Rodriguez
Law Offices of Anthony C. Rodriguez
1425 Leimert Boulevard, Suite 101
Oakland, CA 94602

A. Alan Berger
Law Offices of A. Alan Berger
95 S. Market Street, Suite 300
San Jose, CA 95113

Re: Appeal of Mobile Home Park Rental Review Board Decision

Dear Messrs. Rodriguez and Berger:

As you have been notified, a hearing has been scheduled before the City Council to hear the appeal of Santiago Communities, Inc., of the Decision of the Mobile Home Park Rental Review Board rendered on January 27, 2012. As you are aware, the Council is limited to review of the administrative record, a copy of which will be provided to each of the Council members. A copy will also be available for public review at the City Clerk's Office. I believe both sides already possess all of these documents. An index is enclosed for your review.

Because no new evidence may be introduced, the parties will be relegated to making arguments regarding the correctness of the Board Decision under the criteria set forth in Municipal Code section III-30-19.00. I will recommend that the Mayor limit arguments to 5 minutes per side, with no rebuttal. Either party may request additional time for argument at the hearing if necessary.

Please contact me if you have any questions.

Very truly yours,

MICHAEL J. OGAZ
City Attorney
City of Milpitas
455 E. Calaveras Blvd.
Milpitas, CA 95035
(408) 586-3040

Enclosure: Index of Record of Proceedings
cc: Felix Reliford, Acting Planning & Neighborhood Services Director
Tom Williams, City Manager
Mary Lavelle, City Clerk

CITY OF MILPITAS

MOBILEHOME PARK RENTAL REVIEW BOARD

In Re: FRIENDLY VILLAGE MOBILE HOME PARK PETITIONS FOR/AGAINST RENT INCREASE	**PROOF OF SERVICE**

In Re: Friendly Village Mobilehome Park Petition for Rent Increase/Tenants' Petition to Stop Rent Increase

PROOF OF SERVICE

I, Susan Barrett, the undersigned, declare: I am now, and at all times herein mentioned have been, a citizen of the United States and a resident of the County of Santa Clara; I am over the age of eighteen years and not a party to the within action; my business address is 455 E. Calaveras Blvd., Milpitas, California 95035-5411. On March 16, 2012, I served on the party(ies) below a copy of the following document(s):

- **Correspondence from Michael Ogaz to Anthony Rodriguez dated March 16, 2012, with copy of Index of Record of Proceedings**

[x] **By email or electronic transmission.** Based on a court order or an agreement of the parties to accept service by email or electronic transmission, I caused the document(s) to be sent to the persons at the email addresses listed below. I did not receive, within a reasonable time after the transmission, any electronic message or other indication that the transmission was unsuccessful.

SERVICE LIST

Anthony C. Rodriguez,
Attorney for Friendly Village Mobilehome Park
455 E. Calaveras Blvd.
Milpitas, CA 95051
Email address: arodesq@pacbell.net

A. Alan Berger
Law Offices of A. Alan Berger
95 S. Market Street, Suite 300
San Jose, CA 95113
Email address: aabtwo@aol.com

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on March 16, 2012, at Milpitas, California.

Susan Barrett

Susan Barrett

From: Susan Barrett
Sent: Friday, March 16, 2012 1:56 PM
To: 'arodesq@pacbell.net'
Cc: Mike Ogaz; 'aabtwo@aol.com'
Subject: Friendly Village Mobile Home Park Appeal; Index of Record of Proceedings
Attachments: Appeal Administrative Record Index.pdf; 031612 ltr to Rodriguez.pdf

Good afternoon Mr. Rodriguez:

Please see the attached correspondence from City Attorney Michael Ogaz. Also attached is the Index of Record of Proceedings. Hard copies to follow via U.S. Mail.

Kind regards,

Susan Barrett, Legal Assistant

City of Milpitas, City Attorney's Office

455 E. Calaveras Blvd.

Milpitas, CA 95035-5411

sbarrett@ci.milpitas.ca.gov

(408) 586-3044 direct

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Notice: This communication is intended solely for the individual or entity to whom it is addressed and may be confidential and/or attorney-client privileged. If you are not the intended recipient and have received this communication in error, please notify us at (408) 586-3040.

CITY OF MILPITAS

OFFICE OF THE CITY ATTORNEY
TEL: (408) 586-3040 FAX: (408) 586-3056
455 EAST CALAVERAS BOULEVARD, MILPITAS, CA 95035-5479

March 16, 2012

VIA EMAIL/U.S. MAIL
Anthony Rodriguez
1425 Leimert Boulevard, Suite 101
Oakland, CA 94602

RE: Friendly Village Mobile Home Park Appeal of Decision of Mobile Home Park Rental Review Board/Record of Proceedings

Dear Mr. Rodriguez:

Thank you for your letter Dated March 16, 2012. In response to your request, enclosed with this letter is the Index of Record of Proceedings. It is being sent by email and by U.S. mail to both you and Mr. Berger. As you have been informed by my Legal Assistant, Ms. Susan Barrett, a transcript of the proceedings has not been made. Instead, a copy of the videotaped proceedings before the Mobile Home Park Rental Review Board has been provided to the Council and is available on the City Website. Please contact Susan if you have any trouble accessing the video.

Best Regards,

MICHAEL J. OGAZ
City Attorney
City of Milpitas
455 E. Calaveras Blvd.
Milpitas, CA 95035
(408) 586-3040

Enclosure: as cited

cc: A. Alan Berger, Esq.
File

CITY OF MILPITAS

455 EAST CALAVERAS BOULEVARD, MILPITAS, CALIFORNIA 95035-5479
GENERAL INFORMATION: 408-586-3000, www.ci.milpitas.ca.gov

03/20/2012
Agenda Item No. 2

ATTACHMENTS AND/OR ADDITIONAL MATERIALS RELATED TO AGENDA ITEM AFTER AGENDA PACKET DISTRIBUTION

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SACRAMENTO, CA 95814-4721
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FAX: (916) 444-6209

March 19, 2012

VIA EMAIL

The Honorable Jose Esteves, Mayor
and Members of the City Council
City of Milpitas
455 East Calaveras Boulevard
Milpitas, California 95035
Email: mlavelle@ci.milpitas.ca.gov

Re: Comments on Agenda Item XIV-2 Site Development Permit, Conditional Use Permit and Tentative Map Amendment for the McCandless Mixed Use Project

Dear Mayor Esteves and Council Members:

We are writing on behalf of the Milpitas Coalition for Responsible Development ("Coalition")[1] to comment on the Commission's consideration of the McCandless Mixed Use Project ("Project"). The Project proposes to construct 902 dwelling units in four mixed-use buildings with 90,000 square feet of commercial space ("District 1") and 203 townhouse dwellings ("District 2"). Integral Communities ("Applicant") has applied to the City of Milpitas ("City") for approval of a Conditional Use Permit, a Site Development Permit and a Tentative Map Amendment. The Applicant is also proposing to reduce the building setback from the northern and western property boundary.[2]

Instead of preparing an assessment of the environmental impacts of the proposed Project approvals pursuant to the California Environmental Quality Act ("CEQA"), the City is relying on the 2008 Transit Area Specific Plan Programmatic Environmental Impact Report ("PEIR"), the 2008 McCandless Mitigated Negative

[1] The Milpitas Coalition for Responsible Development is comprised of residents Ricardo Bauzon, Tot V. Tran and Albert Thompson of the City of Milpitas, Plumbers and Steamfitters, Local 393, the International Brotherhood of Electrical Workers, Local 332, Sheetmetal Workers, Local 104 and their members and their families and other individuals that live and/or work in the City of Milpitas.
[2] See Planning Commission Staff Report, p. 1.

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Declaration ("MND") and the 2010 Addendum. Even though the Project applications have been pending with the City for several months, on March 12, ten days after the Planning Commission reviewed the Project and one week before final City Council action, attorneys for the Applicant for the first time submitted a CEQA Checklist in an effort to support the City's reliance on the PEIR and MND.[3] This "eleventh-hour" submission purported to find that the Project would not cause any new significant impacts that had not been previously identified, analyzed and mitigated in the PEIR and MND. As discussed below, the conclusions stated in the CEQA Checklist submitted by the Applicant are erroneous and are not supported by substantial evidence in the record.

CEQA requires supplemental environmental review whenever new information shows a new significant impact that has not been previously analyzed. In this case, the Applicant has prepared a new Toxic Air Contaminants Study ("TAC Study"), which finds that the Project will have a new significant impact to future residents that was not analyzed and mitigated in the PEIR, MND and Addendum. New information in the November Traffic Study and expert opinion find that the Project will also cause a new significant impact to the intersection of Great Mall Parkway/S. Abel Street that was not analyzed and mitigated in the PEIR, MND and Addendum.

By failing to conduct supplemental CEQA review, the City has not considered the full range and effectiveness of Project alternatives and mitigation measures. We have reviewed the TAC Study and the November and March Traffic Studies with the assistance of technical experts Dr. Valorie Thompson and Tom Brohard, P.E. They have concluded that the analysis and recommendations in the TAC Study and Traffic Studies are not sufficient to disclose and reduce the Project's new significant impacts. Therefore, the City's reliance on the analysis and recommendations of the TAC Study and Traffic Studies in its Conditions of Approval does not cure the City's failure to proceed as required by law.

Because the City has not prepared a supplemental environmental review document pursuant to CEQA, any action by the City Council to approve the Project would be unlawful. For this reason, we respectfully request that the City Council order staff to conduct an ***independent*** review of the Project's environmental

[3] Email from Miles H. Imwalle, Attorney, Morrison & Foerster on behalf of Integral Communities, to Sheldon AhSing, Senior Planner, City of Milpitas (Mar. 12, 2012) (Attachment C).

impacts in a CEQA document that is circulated for public comment and presented to the Planning Commission and City Council for action and decision.

I. CEQA REQUIRES THE CITY TO PREPARE A SUPPLEMENTAL CEQA DOCUMENT PRIOR TO CONSIDERING PROJECT APPROVAL

The City must prepare a supplemental environmental review document before the City Council may consider the Project. Section 21166 of the Public Resources Code requires subsequent or supplemental review when "[n]ew information, which was not known and could not have been known at the time the environmental impact report was certified as complete, becomes available."[4] CEQA Guidelines section 15162 provides further direction and states that subsequent environmental review must be prepared when the new information shows that "[t]he project will have one or more significant effects not discussed in the previous EIR or negative declaration."[5]

Compliance with section 21166 and the CEQA Guidelines is necessary to effectuate informed decision-making and public participation, and to reduce a project's impacts to the environment and public health. In *Mira Monte Homeowner's Assn. v. County of Ventura,* the court required the agency to follow the "proper procedure" and prepare a supplemental review document after the public submitted evidence of a new significant impact.[6] The court held that:

> By failing to act in this manner, the County did not consider the full range and effectiveness of alternatives and mitigation measures. The Board's imposition of the additional conditions and its administrative findings regarding mitigation did not cure the County's failure to proceed as required by law. This is true even if the Board would have reached the identical findings and determinations had it been in compliance.[7]

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[4] Pub. Resources Code, § 21166.
[5] CEQA Guidelines, § 15162, subd. (a)(3)(A), (D).
[6] *Mira Monte Homeowners Assn. v. County of Ventura* (1985) 165 Cal.App.3d 357, 365; see also *People v. County of Kern* (1974) 165 Cal.App.3d 357, 366 ("Only by requiring the County to fully comply with the letter of the law can a subversion of the important public purposes of CEQA be avoided.").
[7] *Mira Monte Homeowners Assn. v. County of Ventura, supra,* 165 Cal.App.3d at p. 365.

In *City of San Jose v. Great Oaks Water Co.,* the court similarly emphasized the importance of public participation and public disclosure in the environmental review process in the context of a section 21166 violation.[8] The court found that evidence submitted by the public demonstrated that the project would have a new significant impact that had not been disclosed, analyzed and mitigated in the previously certified EIR.[9] The court held that the city violated CEQA by relying exclusively on the previously certified EIR.[10]

As these and many other cases highlight, public participation and informed decision-making are necessary to ensure that impacts to the environment and public health are reduced or avoided.[11] "Only through an accurate view of the project may affected outsiders and public decision-makers balance the proposal's benefits against its environmental cost, consider mitigation measures, assess the advantage of terminating the proposal . . . and weigh other alternatives in the balance."[12] The "interactive process of assessment of environmental impacts and responsive project modification"[13] is designed to ensure that "a subversion of the important public purpose of CEQA can be avoided."[14]

The TAC Study, the Traffic Studies and expert opinion constitute new information that the Project will cause new significant impacts not discussed in the PEIR, MND and Addendum. To comply with CEQA's "proper procedure," and ensure informed decision-making, meaningful public participation and protection of the environment and public health, the City must prepare a supplemental CEQA document, and the City Council must review it prior to considering approval. We have submitted substantial evidence in the form of expert opinion that new significant impacts have been identified that had not been previously discussed, and that these new impacts are not fully mitigated. Based on this record, the City Council may not rely on the prior PEIR and MND, and it must prepare a supplemental CEQA review.

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[8] *City of San Jose v. Great Oaks Water Co.* (1987) 192 Cal.App.3d 1005, 1017.
[9] *Id.* at p. 1015.
[10] See *id.* at p. 1017.
[11] See *Laurel Heights Improvement Assn. v. Regents of University of Cal.* (1993) 6 Cal.4th 1112, 1129; *Concerned Citizens of Costa Mesa, Inc. v. 32nd Dist. Agricultural Assn.* (1986) 42 Cal.3 929, 937-41.
[12] *County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 192-93.
[13] *County of Inyo v. City of Los Angeles* (1984) 160 Cal.App.3d 1178, 1185.
[14] *People v. County of Kern, supra,* 39 Cal.App.3d at p. 842.

II. THE TAC STUDY PRESENTS NEW INFORMATION THAT THE PROJECT WILL HAVE A SIGNIFICANT IMPACT TO PUBLIC HEALTH

The PEIR required that all new development under the proposed Plan be subject to further "CEQA review" to evaluate project-level TAC impacts specific to a project's site, time and project description.[15] Despite this requirement, neither the 2008 MND, nor the 2010 Addendum contained any analysis of the Project's potential to cause TAC impacts. Perhaps in recognition of this gap in the required CEQA analysis, in November 2011, the Applicant prepared a study of the Project's potential TAC impacts.

The 2011 TAC Study determined that future residents on the Project site would be exposed to a 12.18 in 1 million cancer risk.[16] According to the Study, all threshold exposure exceedances were identified within 130 meters of the northern property boundary and within 30 meters of the western property boundary.[17] The Study recommended implementing air filtration and landscape buffering should any residential buildings be sited in these areas.[18] The Conditions of Approval require the Applicant to demonstrate compliance with the recommendations of the TACs Study.[19]

Under section 21166 and the implementing guidelines, the City must conduct supplemental environmental review because the TAC Study presents new information that future residents would be exposed to a significant impact that was not discussed in the PEIR and MND. The Project's cancer risk of 12.18 people in 1 million substantially exceeds the threshold of significance established by the PEIR and Bay Area Air Quality Management District.[20] The Applicant is also proposing to reduce the setback from the northern and western property boundaries, which will increase the number of future residents exposed to a significant public health impact.[21] Requiring the Applicant to incorporate the recommendations of the TAC Study does not absolve the City of the obligation to conduct supplemental review in accordance with section 21166. As a result of the City's failure to follow the "proper

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[15] PEIR, pp. 2-22.
[16] TAC Study, p. 4.
[17] *Ibid.*
[18] *Id.* at,p. 5.
[19] Conditions of Approval, No. 7.
[20] PEIR, pp. 2-22.
[21] See Planning Commission Staff Report, p. 1.

procedure," it has not considered the full range and effectiveness of alternatives and mitigation measures, and a potential for significant TAC impacts remains.

According to Dr. Valorie Thompson, an air quality expert with 23 years of experience, there is no evidence that the TAC Study's recommendations will reduce the Project's impacts below 10 in 1 million. In her opinion, TAC risks may be higher than disclosed in the TAC Study and effective, Project-specific mitigation measures are necessary to protect public health.[22] Dr. Thompson concluded, however, that the recommended filtration system will not reduce TAC emissions associated with automobile exhaust, and that the systems will not reduce exposure to people engaged in outdoor activities, or to people exposed through open doors, windows and cracks.[23] As described in Dr. Thompson's testimony, the efficiency of the filtration system will also decrease with time, and there is no provision for maintenance and replacement of the systems.[24]

In addition, the recommended vegetation barrier may not be effective because it is not described or designed according to Project-specific conditions. According to Dr. Thompson, the City may only rely on a vegetation barrier to reduce the Project's impacts if it describes the number of trees, types of trees and how the vegetation barrier will be monitored and maintained.[25] In Dr. Thompson's expert opinion, the City's reliance on the TAC Study's recommendations to reduce the Project's impacts is unsupported by the evidence in the record.

The City must prepare a supplemental environmental document that discloses, analyzes and mitigates the Project's health impacts to future Project residents. The results of Dr. Thompson's findings highlight the need for the City to ensure informed decision making and public participation in accordance with the process mandated by CEQA.

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[22] Letter from Valorie L. Thompson, Ph.D., to Robyn C. Purchia, Attorney, Adams Broadwell Joseph & Cardozo (Mar. 18, 2012), p. 2 (Attachment A).
[23] *Id.* at pp. 2-3.
[24] *Id.* at p. 3.
[25] *Id.* at pp. 3-4.

III. THE TRAFFIC STUDY AND EXPERT OPINION PRESENT NEW INFORMATION THAT THE PROJECT WILL HAVE A SIGNIFICANT IMPACT TO TRAFFIC AT THE INTERSECTION OF GREAT MALL PARKWAY/S. ABEL STREET

The PEIR found that development under the Specific Plan would result in a level of service ("LOS") D at the intersection of Great Mall Parkway/S. Abel Street, when compared to background conditions.[26] The City's General Plan has established a threshold of significance of LOS E.[27] Thus, the PEIR did not find that the Project would cause a significant impact to the Great Mall Parkway/S. Abel Street intersection. The MND and Addendum did not analyze the Project's impact at this intersection. Therefore, the PEIR was certified and the MND and Addendum were approved without discussing a significant impact at the intersection of Great Mall Parkway/S. Abel Street.

In November 2011, the Applicant prepared a new Traffic Study. The Traffic Study found that intersection operations at Great Mall Parkway/S. Abel Street would change from LOS D to LOS E with the addition of project traffic during both peak hours.[28] To reduce the impact, the Traffic Study proposed adding lanes, but determined this improvement was infeasible due to the proximity of a residential subdivision. The Traffic Study then noted "that no improvements for this intersection were identified in the TASP, and this proposed improvement does not modify current signal timing plans at this intersection, which could be another solution to improve LOS to a manageable level without widening."[29]

After publication of the November 2011 Traffic Study, the Applicant decided to reduce the amount of residential units proposed for the Project. The reduction in residential units caused an overall 71 a.m. peak hour trip reduction and an 86 p.m. peak hour trip reduction.[30] In March 2012, after submittal of a letter by the Coalition requesting supplemental CEQA review, and after the Planning Commission hearing on the Project, the Applicant submitted a Revised Traffic Study to the City. The Revised Traffic Study reversed the finding of the November

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[26] PEIR, p. 3.3-56.
[27] City of Milpitas General Plan, Circulation Element, p. 3-6.
[28] November Traffic Study, pp. 2, 19, 33.
[29] *Id.* at pp. 20-21.
[30] Letter from Andrew Kluter, P.E., Project Manager, TJKM Transportation Consultants, to Glenn Brown, P.E., VP Entitlements, Integral Communities (Feb. 16, 2012), pp. 1-2.

Traffic Study and now concludes that there would not be a significant impact at the Great Mall Parkway/S. Abel Street intersection after all.[31]

Under section 21166 and the implementing guidelines, the City must conduct supplemental environmental review. The November Traffic Study presents information that the Project will cause a significant impact at the intersection of Great Mall Parkway/S. Abel Street. Although the March Traffic Study purported to reverse this finding, Tom Brohard, an expert in traffic analysis and impacts, reviewed both studies and concluded that the significant impact would remain. According to Mr. Brohard, the reduced Project size would result in only 10 fewer a.m. peak hour trips and 12 fewer p.m. peak hour trips at the intersection.[32] This is a "minimal change" and does not warrant a finding of no significant impact.[33]

Mr. Brohard found that the Applicant's consultant was able to find a less-than-significant impact at the intersection in the March Study by changing input parameters. One of input parameters that was changed was the "peak hour factor" that had been used in the November Traffic Study.[34] No explanation for the change in methodology was offered. If the Applicant's consultant had used the same peak hour factor and input parameters in both studies, the March Traffic Study would have also disclosed a significant impact at the intersection.[35] In Mr. Brohard's expert opinion, the November Traffic Study was correct in finding that the Project would cause a significant impact at Great Mall Parkway/S. Abel Street.[36]

The City may not rely on the March Traffic Study without some explanation and justification for the change in methodology which allowed the revised Study to reverse the impact finding. This analysis must also be presented in a supplemental CEQA document circulated for public review.

In addition, the City should consider adoption of the November Traffic Study's proposal to modify signal timing in order to address the impact to the Great Mall Parkway/S. Abel Street intersection. However, the City may only incorporate this measure after conducting the requisite analysis to ensure the effectiveness and

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[31] See March Traffic Study, p. 20.
[32] Letter from Tom Brohard, P.E., to Robyn C. Purchia, Attorney, Adams Broadwell Joseph & Cardozo (Mar. 18, 2012), pp. 1-2 (Attachment B) (hereafter Brohard comments).
[33] *Id.* at p. 2.
[34] *Id.* at p. 3.
[35] *Ibid.*
[36] *Ibid.*

safety of signal timing. According to Mr. Brohard, the California Department of Transportation recommends that the use of traffic control signals should be based on an engineering study of roadway, traffic and other conditions.[37] Improperly designed traffic control signals may cause excessive delay, excessive disobedience and significant increases in the frequency of collisions.[38] In addition, traffic control signals may not be effective for certain intersections with high pedestrian and bicycle use.[39] In Mr. Brohard's opinion, further study is necessary to determine if modified signal timing will reduce the Project's impacts and/or cause additional impacts to traffic.[40]

The City must prepare a supplemental environmental document that discloses, analyzes and mitigates the Project's traffic impacts. The results of Mr. Brohard's findings highlight the need for the City to ensure informed decision making and public participation through the proper process.

IV. CONCLUSION

For the reasons stated above, the City must prepare a supplemental review document before the City Council may approve the Project. We respectfully request that the City Council deny the Applicant's request and order City Staff to prepare an environmental review document that complies with California law.

Sincerely,

Robyn C. Purchia

RCP:vs
Attachments
cc: Sheldon Ah Sing, via email

---

[37] *Ibid.* (citing Cal. Dept. of Transportation, *California Manual on Uniform Traffic Control Devices* (2012)).
[38] Cal. Dept. of Transportation, *California Manual on Uniform Traffic Control Devices* (2012), Section 4B.03.
[39] Brohard comments, pp. 3-4.
[40] *Id.* at p. 4.

ATTACHMENT A

Scientific Resources Associated

March 18, 2012

Ms. Robyn Purchia
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Ste. 1000
South San Francisco, CA 94080

Dear Ms. Purchia:

Per your request I have reviewed the *Report on Toxic Air Contaminants Analysis, Proposed McCandless Development Project, Milpitas California* (Report) prepared by Haley and Aldrich, dated November 9, 2011. My review focused on the adquacy of the Report's recommended mitigation measures. In my opinion, the recomended mitigation measures are insufficent to reduce the Project's significant TAC risk. I recommend that the City conduct a thorough evaluation of alternate and more specific mitigation measures.

My qualifications include a doctorate in Chemical Engineering from Purdue University and 23 years of environmental consulting experience in the preparation of CEQA and NEPA documents throughout the western United States. I have prepared and reviewed numerous project and plan documents for universities, commercial projects, industrial projects, and infrastructure projects, and am very familiar with the state and local requirements for evaluating air quality and greenhouse gas impacts. I have also prepared numerous toxic air contaminant health risk assessments in accordance with California guidelines. My resume is attached to this letter.

I. Impacts to Future Residents May Be More Significant Than Disclosed in the TAC Report

The Report presents a toxic air contaminant (TAC) analysis of potential impacts on the McCandless Development Project in Milpitas as a requirement under Policy 5.25 of the 2008 City of Milpitas Transit Area Specific Plan (TASP), which requires developments within 500 feet of active rail lines to prepare such an analysis. The analysis focused on potential impacts associated with rail operations and also with traffic on the South Main Street and Great Mall Parkway, and focused the analysis on emissions of diesel particulate matter (DPM). The study concluded that 34 receptors within the proposed

development would experience a risk that is above the significance threshold of 10 in 1 million, of which the highest calculated risk is 12.18 in 1 million.

My review of the analysis conducted on TAC impacts indicates that the risk analysis may not be conservative in nature, and the "expected continued decrease in emissions of diesel exhaust" has already been factored into the analysis. According to the BAAQMD's *Roadway Screening Analysis Tables,*[1] the tables present cancer risks that are based on exposure from 2014 through 2084, indicating that the tables include reductions in emission factors for diesel particulate from on-road traffic. Furthermore, as shown in Table VI in the Report, the roadways contribute the largest share of the risk at the receptors, indicating that any USEPA mandates for rail emissions would have little effect on the risk results.

While the TAC Report identifies a significant public health risk, it is my opinion that the risk may be higher given the proximity of the Project to the roadway and the fact that the Report attempts to count the same emission reductions twice. Therefore the City must require mitigation measures to be implemented.

II. Proposed Mitigation Measures are Insufficent to Reduce the Project's Impacts

The Report includes a section entitled "Mitigation Measure Investigation," which presents qualitative information on potential measures that could be used to reduce the risks to receptors within the development. Two main mitigation measures are discussed in the "Mitigation Measure Investigation." In my opinion, the proposed mitigation measures are insufficent to reduce Project impacts.

a. The Filtration System is Insufficent to Reduce the Project's Impacts

The first measure proposes to install a filtration system with a minimum efficacy reporting value (MERV) 13 to filter the air in the portion of the property where risks are above the significance threshold. This measure will not reduce the Project's impacts because it will not filter ultra-fine DPM particles, will not prevent outdoor/accidental exposure and will not be monitored. Therefore, the City may not rely on this measure to find that the Project will have a less-than-significant TAC impact.

According to the Report, the filtration system has the potential to remove between 75 percent and 90 percent of particulate emissions in the particle size range of 0.3 to 3.0. I disagree that the use of these filters will be effective in reducing exposures to DPM.

[1] BAAQMD. 2011. *Roadway Screening Analysis Tables.* http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/County%20Surface%20Street%20Screening%20Tables%20Dec%202011.ashx?la=en

According to the ASHRAE MERV Ratings all combustion smoke is less than 0.3 microns in diameter.[2] As stated in the *Health Assessment Document for Diesel Engine Exhaust*,[3] "Approximately 80% to 95% of diesel particle mass is in the size range from 0.05 to 1.0 μm, with a mean particle diameter of about 0.2 μm." Given that the mean particle diameter is 0.2 μm, the MERV 13 filter proposed in the Report would not effectively capture DPM particles.. Thus, DPM exposure would not be reduced with installation of a filter with a MERV 13 value.

In addition, the Report correctly points out that receptors could be exposed during time spent outdoors and that there would be additional impacts from inhalation of unfiltered air through doors, windows and cracks in buildings. However, the proposed filtration system does not reduce outdoor and accidental exposure.

Finally, there is no specific information provided on the operation and maintenance of the filtration system, nor any information on the required replacement of filters and decrease in efficiency of filter systems with time.

In my opinion, it is impossible to find that the quantity of TAC risk would be reduced below 10 in 1 million with such vague, unspecific and insufficent qualitative mitigation measures. Accordingly, I disagree with the conclusion, as stated in the document, that "the above filter would certainly decrease the risk at each receptor to values within the policy." Future residents may still be exposed to significant health risks.

b. The Vegetation Barrier is Insufficent to Reduce the Project's Impacts

The second mitigation measure proposed is installation of a vegetation barrier. This measure will not reduce the Project's impacts because it does not take into account Project's specific conditions and does not contain enough specificity.

The Report relies on a study that found that redwood, deodar, and live oak trees removed particulate matter downwind.[4] However, the findings of this study may not be applicable to Project-specific conditions. For example, the study analyzed the removal rates of particulate matter in a wind tunnel. A wind tunnel is an artificial environment. In my opinion, the Project's location downwind of a major roadway presents a considerably different condition.. Therefore, simply requiring the Applicant to plant trees will not necessarily reduce the Project's impacts below 12.18 in 1 million.

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[2] http://www.airpurifierguide.org/faq/merv-ratings.

[3] USEPA. 2002. *Health Assessment Document for Diesel Engine Exhaust*. EPA/600/8-90/057F. p. 2-79. May.

[4] Fujii, E., J. Lawton, T. Cahill, D. Barnes, C. Hayes, and N. Spada. 2008. Removal Rates ofParticulate Matter onto Vegetation as a Function of Particle Size.

In addition, no information has been provided in the Report that describes the thickness of the vegetation barrier proposed, the number of trees, the types of trees, and how the measure will be monitored. This information is essential in assessing the effectiveness of the measure. For example, if the Applicant plants trees that lose their leaves in the winter, the tree will not remove particulate matter for a few months out of the year.

I disagree with the Report's finding that incorporation of a vaguely described vegetation barrier will reduce the Project's impacts below the 12.18 in 1 million threshold.

Conclusions

In conclusion, the *Report on Toxic Air Contaminants Analysis, Proposed McCandless Development Project, Milpitas California* does not specify mitigation measures that would reduce the significant risks identified in the study to less than significant levels.
In my opinion the City should include a complete analysis of mitigation measures that will be implemented to reduce or avoid the Project's impacts, and provide a demonstration that the mitigation measures will be effective in reducing the significant health risks at the site.

Sincerely,

Valorie L. Thompson, Ph.D.
Principal

VALORIE L. THOMPSON, PH.D.

PRINCIPAL

Dr. Thompson has over twenty years of experience in environmental planning, air quality studies, air toxics emission evaluations, health risk assessments, process safety management, hazard and operability studies, off-site consequence analysis, and atmospheric dispersion modeling and is the founder of Scientific Resources Associated. She has managed numerous environmental planning, air quality, and risk assessment projects for ports and shipyards, and has conducted evaluations of air emissions and air toxics risks from manufacturing facilities, oil and gas processing facilities, chlorine repackaging facilities, incineration projects, and cogeneration facilities. Dr. Thompson has conducted air toxics health risk assessments for projects involving diesel particulate emission sources and has also served as a training associate for the Hotspots Analysis and Reporting Program (HARP) software training course.

EDUCATION

Ph.D., Chemical Engineering, Purdue University, 1986
M.S., Chemical Engineering, Purdue University, 1982
B.S., Chemistry, Eastern Michigan University, 1980

PROFESSIONAL REGISTRATIONS/AFFILIATIONS

Small Woman-Owned Business Enterprise/Disadvantaged Business Enterprise Certification: Caltrans CT-030697
California Department of General Services Small Business Certification: #0019779

PROFESSIONAL EXPERIENCE

Air Quality and Health Risk Analysis – Pier S Container Terminal. Dr. Thompson is responsible for the preparation of the air quality analysis and health risk assessment for the proposed Pier S Container Terminal at the Port of Long Beach. The analysis, which is in progress, includes evaluating emissions from ocean-going vessels, harbor craft, diesel truck traffic, and container terminal equipment. The analysis also includes a health risk assessment to address potential impacts to residential areas and sensitive receptors in the communities surrounding the Port. The health risk assessment focused on the potential impacts from toxic air contaminants, including diesel particulate matter, on the surrounding communities in the Port area. The analysis also evaluated potential impacts from speciated toxic air contaminants from Port sources. The analysis also involves preparation of a greenhouse gas emission inventory and evaluation of mitigation measures.

Toxic Air Contaminant Technical Review – I-5 Expansion Project. For the City of Encinitas, California, Dr. Thompson conducted a technical review of the Mobile Source Air Toxics analysis prepared for the proposed widening of the Interstate 5 freeway through the City of Encinitas. The project proposed to add lanes and move traffic closer to residents and sensitive receptors along the corridor. The analysis provided comments and recommendations for the City, including a discussion of potential health effects of ultra-fine particulates and a recommendation for a quantitative health risk assessment for the project.

Air Quality Impact Analysis/Health Risk Assessment – Meridian Specific Plan Amendment. For a large industrial/commercial development in Riverside, Dr. Thompson prepared an air quality analysis, health risk assessment, and global climate change analysis to address potential impacts associated with construction and operation of the development. The project included warehousing and distribution centers, light industrial uses, commercial uses, a gas station, and restaurant/fast food operations. The health risk

analysis addressed diesel particulate emissions from truck traffic attributable to the project, as well as emissions from diesel generators and TRUs. The global climate change analysis took into account the project's design features that are designed to reduce greenhouse gas emissions as well as state and federal programs designed to reduce greenhouse gas emissions from vehicles.

Air Toxics Health Risk Assessment – Tenth Avenue Marine Terminal. Dr. Thompson prepared a health risk assessment for diesel particulate matter emitted from truck traffic associated with operations at the Port of San Diego's Tenth Avenue Marine Terminal. The analysis included evaluating truck routes and determining emission factors for truck traffic along the main truck routes from the terminal to the freeways through the Barrio Logan residential area.

Air Toxics Health Risk Assessment – Riverbend Recycling. In accordance with the requirements of the San Joaquin Valley Air Pollution Control District, Dr. Thompson prepared a health risk assessment for diesel particulate matter associated with truck traffic generated by a waste recycling center in Fresno County, California. The analysis focused on potential risks to sensitive receptors, including residents along the truck route and a school located in the project vicinity.

AB 2588 Health Risk Assessment – National Steel and Shipbuilding. Dr. Thompson has provided continuing support and analyses for the AB 2588 Health Risk Assessment for a shipbuilding and ship repair facility in the City of San Diego. The project has required air dispersion modeling using the U.S. EPA's approved AERMOD model, and health risk calculations using the California Air Resources Board's Hotspots Analysis and Reporting Program (HARP). The project has also involved evaluating various exposure scenarios to address risks to populations within the site vicinity, and risk communication.

Air Quality Impact Analysis – Rialto Gas Station. For a proposed gas station located in the City of Rialto, Dr. Thompson prepared a screening health risk assessment to address the potential for significant impacts as required under the California Environmental Quality Act. The analysis followed the approved CAPCOA guidelines for the preparation of gas station health risk analyses.

HARP Training Course – Teaching Assistant. Dr. Thompson served as Teaching Assistant for the first Hotspots Analysis and Reporting Program (HARP) training session in Anaheim, California. Dr. Thompson's duties included assisting students with modeling and risk assessment concepts.

Residual Risk Evaluation – National Steel and Shipbuilding Co. Dr. Thompson has been providing assistance to the National Steel and Shipbuilding Company in preparation/evaluation of residual risks associated with their facility's operations following the implementation of the Shipbuilding MACT requirements. The assessment has included a reevaluation of emission factors and test data associated with welding operations, as well as a reevaluation of the source allocations at the facility.

Human Health Risk Assessment - Pearl Harbor Sediment Study. Dr. Thompson was the task manager for the human health risk assessment for the Pearl Harbor Sediment Study. The project involvee screening contaminants detected in marine sediments and marine tissue samples to identify those chemicals which may pose a potential human health risk; developing exposure scenarios for exposure to sediments and ingestion of fish and shellfish from Pearl Harbor; evaluating toxicity of contaminants detected in marine sediments, including PCB congeners, PAHs, dioxins/dibenzofurans, ordinance compounds, metals, and semi-volatile organics; and estimating the risks associated with exposure to contaminants. The screening human health risk assessment was completed in accordance with the requirements of the U.S. EPA Region IX and the Hawaii Department of Health. In addition, Dr. Thompson developed an innovative approach to identifying spatial patterns in risk calculations and effectiveness of cleanup options using a GIS-based methodology. The methodology links the ecological risk assessment with the human health risk assessment.

Screening Human Health Risk Evaluation – Campbell Shipyard Site. Dr. Thompson prepared the screening human health risk evaluation for closure of a contaminated site at the former Campbell Shipyard in San Diego, California. The health risk assessment involved evaluating exposure pathways for exposure to subsurface polycyclic aromatic hydrocarbons (PAHs) at the site, and assessing appropriate cleanup levels based on direct exposure and groundwater contamination. The human health risk evaluation was prepared for the Port of San Diego in accordance with the requirements of the Regional Water Quality Control Board.

Air Toxics Evaluation – National Steel and Shipbuilding Co. Dr. Thompson is assisting the National Steel and Shipbuilding Company in the preparation of an air toxics evaluation under San Diego Air Pollution Control District's Rule 1200 for a new paint booth installation. The rule requires new sources to demonstrate that the risk associated with emissions from the source do not exceed acceptable levels.

AB 2588 Health Risk Assessment Update – GKN Chem-Tronics, Inc. Dr. Thompson is assisting an aerospace manufacturing facility in assessing its potential human health risks associated with operations at the facility. The project involves evaluating emission quantification methodologies and assessing their effect on health risk predictions. The project also includes preparing an update to the facility's AB 2588 Health Risk Assessment to incorporate risk reduction measures employed at the facility.

Human Health Risk Assessment - Pearl Harbor Naval Station. Dr. Thompson performed a screening human health risk assessment for PCB-contaminated sites located at Pearl Harbor Naval Station in Honolulu, Hawaii. The purpose of the risk assessment was to provide assistance and guidance for the EE/CA and to develop risk-based cleanup goals for PCB sites. U.S. EPA and State of Hawaii guidance for PCB-contaminated sites was used to support the conclusions of the risk assessment.

Human Health Risk Assessment - Norton Air Force Base. Dr. Thompson performed a screening health risk assessment for contaminated sites located at Norton Air Force Base in California. Contamination at the site included petroleum hydrocarbons and metals contamination. The human health risk assessment was conducted to evaluate the effectiveness of recommended action at the site.

Human Health Risk Assessment - Giebelstadt Army Base. Dr. Thompson served as task manager for the preparation of a human health risk assessment for a contaminated site at the Giebelstadt Army Base in Germany. Concern was expressed by local agencies regarding the presence of chlorinated hydrocarbons in local ground water wells. The sampling program evaluated ground water and subsurface soils for a variety of contaminants, including total petroleum hydrocarbons, chlorinated hydrocarbons, and PCBs. A screening human health risk assessment was performed for ingestion of ground water in order to support a recommendation for no further action at the site.

Proposition 65 Compliance Support - National Steel and Shipbuilding Company and Southwest Marine. Dr. Thompson has been providing support to both the National Steel and Shipbuilding Company and Southwest Marine to assist them in demonstrating compliance with the notification requirements of California' Proposition 65. Both facilities submitted AB 2588 health risk assessments that were based on worst-case hexavalent chromium emission factors provided by the local Air Pollution Control District. Subsequent to that, Dr. Thompson assisted the facilities in evaluating alternative emission factors for welding and painting processes and in preparing alternative health risk assessments. The alternative health risk assessments were submitted both to the APCD and the California Attorney General's Office. The alternative emission factors and risk assessments were used to demonstrate that notification under Proposition 65 was not required despite the conservative AB 2588 health risk assessment results. Dr. Thompson has also written a windows-based program that evaluate's the facilities' status with regard to Proposition 65 compliance on a real-time basis.

Air Toxics Health Risk Assessment - National Steel and Shipbuilding Company. Dr. Thompson served as project manager for an air toxics emissions inventory and health risk assessment pursuant to the California AB 2588 Air Toxics "Hot Spots" Information and Assessment Act. The facility is a major shipbuilding facility operating in San Diego, California, with air toxics emissions from processes including combustion, welding, solvent use, and abrasive blasting operations. Dr. Thompson assisted facility environmental staff in preparing emission estimates for the processes, and prepared the multi-pathway health risk assessment to evaluate human health risks associated with air emissions. The risk was driven by emissions of hexavalent chromium from welding operations; Dr. Thompson also provided assistance to NASSCO in evaluating alternative emission factors for metals from welding operations. The health risk assessment was reviewed and accepted by the San Diego County Air Pollution Control District and the California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA).

Air Toxics Health Risk Assessment - Southwest Marine. Dr. Thompson served as project manager for a health risk assessment that was prepared for the Southwest Marine facility pursuant to the California AB 2588 Air Toxics "Hot Spots" Information and Assessment Act. The facility is a major ship repair facility in San Diego, California. Major sources of emissions included welding operations, combustion operations, solvent use, and abrasive blasting. Dr. Thompson prepared the air toxics health risk assessment to evaluate human health risks associated with exposure to emissions from these sources. The health risk assessment was reviewed and accepted by the San Diego County Air Pollution Control District and the California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA).

Health Risk Assessment - U.S. Navy Comprehensive Long-Term Environmental Action Navy (CLEAN). Dr. Thompson managed a project to evaluate the human health risks associated with a former firefighting training area and drain field area at PMRF Barking Sands, Kauai, Hawaii. The contamination at the site included minor amounts of polynuclear aromatic hydrocarbons (PAHs) and elevated levels of metals. Dr. Thompson evaluated the risks associated with exposure to surface soils, ground water, and surface water. One of the important aspects of the health risk assessment was the evaluation of background health risks associated with naturally occurring levels of arsenic and other metals at the site.

Health Risk Assessment - U.S. Navy Comprehensive Long-Term Environmental Action Navy (CLEAN). Dr. Thompson managed a project to evaluate the human health risk associated with exposure to contaminants at a landfill at the South Finegayan Construction Battallion Landfill site on Guam. Contaminants detected at the site include PAHs, pesticides and PCBs, metals, and total petroleum hydrocarbons. The evaluation included an assessment of the risks associated with exposure to surface soils and to potable ground water underlying the site.

Air Quality Impact Analysis – Chula Vista Bayfront Master Plan. Dr. Thompson prepared the Air Quality Analysis for two specific projects, the Gaylord Resort and Conference Center and the Pacific Residential and Retail Development, proposed as part of the Chula Vista Bayfront Master Plan. The analyses included evaluations of potential impacts associated with construction, health risk assessments to address toxic air contaminants from mobile sources (heavy-duty truck traffic), and an evaluation of global climate change impacts from the proposed development. The global climate change analysis addressed potential emissions and strategies to demonstrate consistency with the goals of the California Global Warming Solutions Act, AB32.

Air Quality Analysis – National City Marine Terminal, Port of San Diego. Preparation of an air quality, air toxics, and greenhouse gas assessment for the proposed expansion of the National City Marine Terminal for the Port of San Diego. The Port is proposing to expand the wharf area to allow for additional marine vessel calls at the terminal. The analysis included estimating emissions of greenhouse gases from expanded Port operations, including emissions from ocean-going auto carriers and truck traffic.

Air Toxics Evaluation – San Diego International Terminal. Dr. Thompson prepared the air quality analysis and air toxics health risk assessment for a proposed expansion of operations at the Port of San Diego's Tenth Avenue Marine Terminal. The evaluation included preparation of a health risk assessment to address potential impacts associated with truck traffic and terminal operations involving aggregate handling.

Air Permit Application – Clearwater Port Project. Dr. Thompson prepared the air permit application for submittal to EPA Region IX for the proposed Clearwater Port Project, a liquefied natural gas terminal offshore of Ventura County. The project included evaluating emissions from stationary source operations including vaporizing equipment and power generation equipment, as well as evaluating emissions from LNG carriers and support vessels during both construction and operation of the facility. The application has been submitted to EPA for their review.

Health Risk Assessment Protocol – Port of Long Beach. Dr. Thompson was responsible for preparing the Health Risk Assessment Protocol for all human health risk assessments conducted for projects proposed at the Port of Long Beach. The development of the Protocol included identifying source configurations, emissions estimation methodologies, modeling approaches, and report preparation for Port of Long Beach HRAs.

ATTACHMENT B

Tom Brohard and Associates

March 18, 2012

Ms. Robyn C. Purchia, Attorney at Law
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080

SUBJECT: McCandless Project in the City of Milpitas – Great Mall Parkway and South Abel Street

Dear Ms. Purchia:

As requested, Tom Brohard, P.E., has reviewed portions of the November 4, 2011 Traffic Operations Analysis (November Study) as well as the March 5, 2012 Revised Final Report (March Study) for the McCandless Development (Project) in the City of Milpitas. Specifically, I compared the findings between the two reports at the intersection of Great Mall Parkway and South Abel Street and I also reviewed the proposed recommendations to reduce the significant impacts.

In my opinion, the Background Conditions plus the Project will result in a level of service (LOS) E at the intersection of Great Mall Parkway and South Abel Street. This is a significant impact. The City must provide measures to reduce the Project's impact at this intersection. However, the City must conduct the requisite assessment to ensure that the proposed signal timing will actually reduce the Project's impact and not cause secondary impacts.

Background plus Project Conditions Will Cause a Significant Impact at the Intersection of Great Mall Parkway and South Abel Street

TJKM has prepared two Traffic Analyses to assess the Project's impacts to traffic. The first study prepared in November 2011 (November Study) found that the Background plus Project Conditions will cause a significant impact at the intersection of Great Mall Parkway and South Abel Street in both the AM and PM peak hours. (Table VI on Page 20.) The Applicant then reduced the Project's size resulting in less vehicle trips. The second TJKM study prepared in March 2012 (March Study) found that the Background plus Project Conditions will ***NOT*** cause significant impacts at the intersection of Great Mall Parkway and South Abel Street in either the AM or PM peak hours. (Table VI on Page 21.) While overall vehicle trips have decreased slightly, Project vehicle trips at the intersection of Great Mall Parkway and South Abel Street have decreased by only a nominal amount. In my opinion, the Project will have a significant impact at the intersection of Great Mall Parkway and South Abel Street.

In comparing Figure 6 between the two reports, I found that the reduced Project studied in March will result in only 10 fewer AM peak hour trips and in only 12

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fewer PM peak hour trips through Great Mall Parkway and South Abel Street. Despite, the minimal change in vehicles using the intersection, there was a substantial change between the findings of the two Studies. In the November Study, the average vehicle delay in the AM peak hour with Project traffic added was found to be 59.2 seconds (LOS E) and 63.4 seconds (LOS E) in the PM peak hour. In the March Study, the average vehicle delay in the AM peak hour with Project traffic added was found to be 52.5 seconds (LOS D) and 50.1 seconds (LOS D) in the PM peak hour. The only thing that could account for such a drastic difference between the two Studies is a change in the basic parameters.

The Synchro program used in the traffic analysis contains many different variables and a number of these can be changed by the traffic analyst. Without reviewing the Synchro input which was not included in the report appendices, a number of parameters may have been changed between the two Studies. In comparing the Synchro calculations in the appendices in each Study, I found significant inconsistencies between the November Study and the March Study in the "peak hour factor" parameter[1] that was applied at the intersection of Great Mall Parkway and South Able Street.

In the November Study, the peak hour factors were taken directly from the existing traffic counts. These peak hour factors then were consistently applied in both peak hours in the Synchro program in the analysis of Existing, Baseline, and Baseline plus Project conditions at Great Mall Parkway and South Abel Street. Identical peak hour factors for each intersection approach were used in the three different analyses of Existing, Baseline, and Baseline plus Project conditions.

In the March Study, the peak hour factors were inexplicably changed in the analysis of Background plus Project conditions in both peak hours. The AM peak hour values in the November Study used 0.79 for the eastbound lanes, 0.91 for the westbound lanes, and 0.84 for the northbound lanes. In the March Study, the AM peak hour factors were changed to 0.86 for the eastbound lanes, 0.95 for the westbound lanes, and 0.88 for the northbound lanes. The PM peak hour values in the November Study used 0.88 for the eastbound lanes, 0.90 for the westbound lanes, 0.94 for the northbound lanes, and 0.91 for the southbound lanes. In the March Study, the PM peak hour factors were changed to 0.92 for the eastbound lanes, 0.92 for the westbound lanes, 0.91 for the northbound lanes, and 0.94 for the southbound lanes.

In comparing the two Studies, minor changes in the peak hour factors create very different results. In my opinion, the reduction of 10 vehicles in the AM peak hour

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[1] The peak hour factor accounts for variations in traffic flow among the fifteen minute increments during the peak hour. The peak hour factors typically range between 0.80 and 0.95, with a default value of 0.92. Lower peak hour factors expand the traffic volumes analyzed to account for high fifteen minute periods in the peak hour, whereas higher peak hour factors account for more stable traffic volumes between the fifteen minute periods.

and of 12 vehicles in the PM peak hour would not appreciably change the results of the November Study which found 59.2 seconds (LOS E) in the AM peak hour and 63.4 seconds (LOS E) in the PM peak hour.

To properly compare the delay and LOS caused by the reduction in traffic volumes of 10 vehicles in the AM peak hour and 12 vehicles in the PM peak hour by the reduced Project, the same peak hour factors used in the analysis of Existing and Background conditions must also be used for Background plus Project conditions. If the same peak hour factors had been used, the impacts in both peak hours caused by the Project at Great Mall Parkway and South Abel Street would remain significant and would require mitigation.

Revised Signal Timing Is a Feasible Mitigation Measure at the Intersection of Great Mall Parkway and South Abel Street

The November Study identified a significant impact during Background plus Project conditions at the intersection of Great Mall Parkway and South Abel Street and proposed mitigation. Specifically, the November Study recommended that the addition of an eastbound right turn lane and a southbound right turn lane at the intersection would mitigate the significant impact. The November Study then stated adding these traffic lanes are not likely to be feasible, and that modification of the current signal timing plans "...could be another solution to improve LOS to a manageable level without widening."

The City must adopt a measure to reduce significant impacts at Great Mall Parkway and South Abel Street under Background plus Project conditions. In my opinion, the modified signal timing is a feasible measure and ***may*** reduce the Project's impacts ***if*** implemented properly. To properly implement the measure, the City must conduct the requisite analysis to ensure the effectiveness of the measure and to protect against secondary impacts.

The California Manual on Uniform Traffic Control Devices published by the State Department of Transportation is issued to adopt uniform standards for all official traffic control devices used in California. According to the Manual, "The selection and use of traffic control signals should be based on an engineering study of roadway, traffic and other conditions." (Section 4B.02.) Traffic control signals may cause additional traffic impacts if they are ill-designed, ineffectively placed, improperly operated, or poorly maintained. Specific impacts may cause excessive delay, excessive disobedience of the signal intersections, increased use of less adequate routes and significant increases in the frequency of collisions. (Section 4B.03.)

The current edition of the Manual requires that traffic signals include sufficient minimum timing for bicyclists to safely cross and clear signalized intersections,

as well as the use of lower walking rates for pedestrians. These new requirements for bicyclist and pedestrian timing may result in longer traffic signal cycles and constrain the effectiveness of the measure. However, done correctly, the measure may increase the traffic handling capacity of the intersection.

Because modified signal timing is a feasible mitigation measure to alleviate significant impacts at Great Mall Parkway and South Abel Street, the City must adopt a measure to reduce the Project's impact. However, in my opinion, further study is required to determine if modified traffic signal timing will improve the LOS to a "manageable" level at Great Mall Parkway and South Abel Street and/or whether it will cause additional impacts to traffic, bicyclists and pedestrians.

If you have questions regarding these comments, please call me at your convenience.

Respectfully submitted,

Tom Brohard and Associates

Tom Brohard

Tom Brohard, PE
Principal

REGISTERED PROFESSIONAL ENGINEER
TOM BROHARD
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CIVIL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
TOM BROHARD
TR724
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Tom Brohard, PE

Licenses: 1975 / Professional Engineer / California – Civil, No. 24577
1977 / Professional Engineer / California – Traffic, No. 724
2006 / Professional Engineer / Hawaii – Civil, No. 12321

Education: 1969 / BSE / Civil Engineering / Duke University

Experience: 40+ Years

Memberships: 1977 / Institute of Transportation Engineers – Fellow, Life
1978 / Orange County Traffic Engineers Council - Chair 1982-1983
1981 / American Public Works Association – Life Member

Tom is a recognized expert in the field of traffic engineering and transportation planning. His background also includes responsibility for leading and managing the delivery of various contract services to numerous cities in Southern California.

Tom has extensive experience in providing transportation planning and traffic engineering services to public agencies. Since May 2005, he has served as Consulting City Traffic Engineer for the City of Indio. He also currently provides "on call" Traffic and Transportation Engineer services to the Cities of Big Bear Lake, Mission Viejo, and San Fernando. In addition to conducting traffic engineering investigations for Los Angeles County from 1972 to 1978, he has previously served as City Traffic Engineer in the following communities:

- Bellflower ..... 1997 - 1998
- Bell Gardens ..... 1982 - 1995
- Huntington Beach ..... 1998 - 2004
- Lawndale ..... 1973 - 1978
- Los Alamitos ..... 1981 - 1982
- Oceanside ..... 1981 - 1982
- Paramount ..... 1982 - 1988
- Rancho Palos Verdes ..... 1973 - 1978
- Rolling Hills ..... 1973 - 1978, 1985 - 1993
- Rolling Hills Estates ..... 1973 - 1978, 1984 - 1991
- San Marcos 1981
- Santa Ana ..... 1978 - 1981
- Westlake Village ..... 1983 - 1994

During these assignments, Tom has supervised City staff and directed other consultants including traffic engineers and transportation planners, traffic signal and street lighting personnel, and signing, striping, and marking crews. He has secured over $5 million in grant funding for various improvements. He has managed and directed many traffic and transportation studies and projects. While serving these communities, he has personally conducted investigations of hundreds of citizen requests for various traffic control devices. Tom has also successfully presented numerous engineering reports at City Council, Planning Commission, and Traffic Commission meetings in these and other municipalities.

In his service to the City of Indio since May 2005, Tom has accomplished the following:

- Oversaw preparation and adoption of the Circulation Element Update of the General Plan including development of Year 2035 buildout traffic volumes, revised and simplified arterial roadway cross sections, and reduction in acceptable Level of Service criteria under certain constraints. Reviewed Riverside County's updated traffic model for consistency with the adopted City of Indio Circulation Plan.

- Oversaw preparation of fact sheets/design exceptions to reduce shoulder widths on Jackson Street over I-10 as well as justifications for protected-permissive left turn phasing at I-10 on-ramps, the first such installation in Caltrans District 8 in Riverside County; reviewed plans and provided assistance during construction of a $1.5 million project to install traffic signals and widen three of four ramps at the I-10/Jackson Street Interchange under a Caltrans encroachment permit.

- Oversaw preparation of fact sheets/design exceptions to reduce shoulder widths on Monroe Street over I-10 as well as striping plans to install left turn lanes on Monroe Street at the I-10 Interchange under a Caltrans encroachment permit; reviewed plans to install traffic signals and widen three of four ramps at the I-10/Monroe Street Interchange.

- Reviewed traffic impact analyses for Project Study Reports evaluating different alternatives for buildout improvement of the I-10 Interchanges at Jefferson Street, Monroe Street, Jackson Street and Golf Center Parkway.

- Oversaw preparation of plans, specifications, and contract documents and provided construction assistance for over 40 traffic signal installations and modifications.

- Reviewed and approved over 600 work area traffic control plans as well as signing and striping plans for all City and developer funded roadway improvement projects.

- Oversaw preparation of a City wide traffic safety study of conditions at all schools.

- Prepared over 500 work orders directing City forces to install, modify, and/or remove traffic signs, pavement and curb markings, and roadway striping.

- Oversaw preparation of engineering and traffic surveys to establish enforceable speed limits on over 200 street segments.

- Reviewed and approved traffic impact studies for more than 25 major developments.

- Developed the Golf Cart Transportation Program and administrative procedures; implemented routes forming the initial baseline system.

Since forming Tom Brohard and Associates in 2000, Tom has reviewed many traffic impact reports and environmental documents for various development projects. He has provided expert witness services and also prepared traffic studies for public agencies and private sector clients.

ATTACHMENT C

Robyn C. Purchia

From: Imwalle, Miles H. [MImwalle@mofo.com]
Sent: Monday, March 12, 2012 4:15 PM
To: Sheldon AhSing
Cc: Bryan Otake; Carr, Christopher J.; Eknapp@integralcommunities.com; Gbrown@integralcommunities.com
Subject: Submittal Regarding McCandless Mixed Use Project
Attachments: 20120312 Ltr C. Carr to S. Ah Sing.pdf; Checklist.pdf

Dear Sheldon --

On behalf of Integral Communities, please find the attached correspondence relating to the McCandless Mixed Use Project. Please include these documents in the record and for submittal to the City Council.

<<20120312 Ltr C. Carr to S. Ah Sing.pdf>> <<Checklist.pdf>>
Thank you,

Miles

Miles Imwalle
Morrison & Foerster LLP
425 Market Street
San Francisco, California 94105-2482
Phone: 415-268-6523
Fax: 415-276-7493

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03/20/2012
Agenda Item No. 2

ATTACHMENTS AND/OR ADDITIONAL MATERIALS RELATED TO AGENDA ITEM AFTER AGENDA PACKET DISTRIBUTION

TJKM
Transportation Consultants

Vision That Moves Your Community

March 20, 2012

The Honorable Jose Esteves, Mayor
and Members of the City Council
City of Milpitas
455 East Calaveras Boulevard
Milpitas, CA 95035

Subject: TJKM Response to Tom Brohard, P.E., Comments dated March 18, 2012 (McCandless Mixed Use Project)

Dear Mayor Esteves and Council Members:

I represent TJKM Transportation Consultants, the traffic consultant engaged to conduct a traffic impact analysis for the McCandless Mixed Use Project (Project) proposed by Integral Communities. This letter responds to the comments prepared by Tom Brohard, P.E. (dated March 18, 2012), submitted to the City by Robyn C. Purchia, counsel to Milpitas Coalition for Responsible Development. TJKM offers the following responses to Mr. Brohard's comments.

Comment: Background plus Project Conditions will cause a significant impact at the intersection of Great Mall Parkway and South Abel Street.

1. TJKM's March 2012 traffic study (March study) concluded that no significant impacts are expected at the Great Mall Parkway/South Abel Street intersection under Background plus Project Conditions. Expected operations at this intersection are level of service (LOS) D during both a.m. and p.m. peak hours. The November 2011 study (November study) referenced by Mr. Brohard refers to an earlier project proposal assuming greater land use densities, which is not the project proposal under consideration for the March 20, 2012 Milpitas City Council. He has concluded that because the larger development proposal resulted in a LOS E condition at this study intersection, an impact of LOS E (based on City intersection standards) should nevertheless remain, even with a smaller development proposal.

   What is missing from his conclusion is the broader context of why the intersection is expected to operate at LOS D under Background plus Project Conditions. The Milpitas Transit Area Specific Plan (TASP) is an approved City policy document that guides the full development build out of the defined TASP area. The proposed McCandless Mixed Use Project is located within the TASP area. As TJKM updated the November study based on the revised McCandless project description (which resulted in the March study), TJKM saw an opportunity to refine the traffic analysis by revisiting the project's traffic impacts as they compare with the projected traffic operations of the study intersections at full-build of the TASP.

   The TASP EIR projected that operations at the Great Mall Parkway / South Abel Street intersection would be LOS D under Background Conditions (without TASP buildout), and furthermore would remain at LOS D with the addition of the entire TASP land use buildout. All TJKM studies have assumed the same Background Conditions baseline as the TASP EIR. Since intersection operation at full TASP build-out would remain at LOS D and the proposed McCandless Mixed Use Project constitutes only a portion of the full TASP land use buildout, by logic it follows that the Great Mall Parkway/South Abel Street intersection would continue to operate at LOS D with the build-out of the McCandless Mixed Use Project.

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2. Mr. Brohard evaluated the November and March studies and found a difference in the peak hour factor parameters used at the Great Mall Parkway/South Abel Street intersection under Background plus Project Conditions. He contends that the same parameters must be used for the Background plus Project Conditions as for Existing and Background Conditions. As I explain below, the peak hour factor parameters were changed for good reasons and based on my experience and expertise, the March 2012 study provides the most reasonable assessment of potential impacts on the Great Mall Parkway/South Abel Street intersection. As TJKM updated the November study based on the revised McCandless project description (which resulted in the March study), TJKM saw an opportunity to refine the traffic analysis that reflects the latest assumptions and traffic concepts (i.e., the state of the art in the field), including the concept of peak spreading, which is described below.

   In TJKM's experience, as intersections approach capacity (in this case, LOS E), some motorists may alter their travel patterns or times passing through a corridor. Motorists do not necessarily choose a different route, but the specific time at which they pass through a corridor changes so that they avoid congestion during specific time periods. This traffic phenomenon is known as peak spreading and is a commonly used technical assumption in traffic analysis of future year scenarios. When peak spreading occurs, general traffic flow through a corridor becomes more uniform, leading to increases in the peak hour factor (PHF). PHF is a traffic technical assumption that is an indicator of traffic intensity during a typical peak hour, with values ranging from 0.25 to 1.0. A value of 0.25 indicates that all traffic over a peak one hour travels through an intersection during one peak 15-minute period within that hour, while 1.0 indicates a uniform arrival of traffic at intersection throughout the peak one hour. The more that peak spreading occurs at an intersection, the more that there is a uniform arrival of vehicles and consequently, PHF approaches 1.0.

   The peak spreading assumption is logical for the Great Mall Parkway/South Abel Street intersection under Background plus Project Conditions. When a development project adds 214 a.m. peak hour vehicles and 286 p.m. peak hour vehicles to an intersection approaching capacity, it is reasonable to expect, and commonly assumed in traffic studies, that the uniformity of traffic flow would change as motorists adjust the times at which they pass through the intersection, thereby avoiding and minimizing congestion. For these reasons, I disagree with Mr. Brohard's assessment that the peak hour factors must remain constant and, to the contrary, doing so may result in inaccurate results. The March 2012 study analyzes the revised project now being considered and its assessment that the Great Mall Parkway/South Abel Street intersection will operate at LOS D under the Background plus Project Conditions conclusion remains valid.

Comment: Revised signal timing is a feasible mitigation measure at the intersection of Great Mall Parkway and South Abel Street.

1. As part of this comment, Mr. Brohard implies that the TJKM study did not consider traffic signal retiming at the Great Mall Parkway/South Abel Street intersection for the November study. He misconstrues our statement in the November study that modifying current signal timing plans at the Great Mall Parkway/South Abel Street intersection "…could be another solution to improve LOS to a manageable level without widening." This statement does not imply that signal retiming at the intersection is <u>infeasible;</u> rather, it identifies signal retiming is a possible future option when warranted. It is common practice for traffic engineering staff at cities in the Bay Area to periodically revisit signal timings on corridors as nearby new developments are built and occupied and as traffic patterns accordingly change along corridors.

While TJKM's March study did not identify an impact at the Great Mall Parkway/South Abel Street intersection under Background plus Project Conditions, it is possible in the future as changing traffic patterns warrant that signal timing at the intersection may need to be revisited. However, the McCandless Mixed Use Project as currently proposed would not trigger the need for such retiming under Background plus Project Conditions based on the results of TJKM's March study. Therefore, no additional traffic analysis for this intersection and scenario is necessary.

2. Mr. Brohard refers to a section of the California Manual on Uniform Traffic Control Devices (MUTCD) regarding the selection and use of traffic control signals that must be based on engineering studies. The use of the section of the MUTCD is irrelevant, as it refers to installation of new signals. The traffic signal at the Great Mall Parkway/South Abel Street intersection has been in place for many years. In addition, it is important to note that the traffic signal timings used in the traffic analysis for the Great Mall Parkway/South Abel Street intersection are the latest timings that TJKM has implemented in cooperation with City of Milpitas traffic engineering staff. The timings incorporate the latest MUTCD procedures, including sufficient timing for bicyclists to safely cross and clear the intersection, as well as the use of lower walking rates for pedestrians. Therefore, given that no additional signal retimings are currently warranted at this intersection, no additional impacts to traffic, bicyclists, and pedestrians are expected, and no additional analysis at this intersection is necessary.

Thank you for the opportunity to provide a response to Mr. Brohard's comments. Please let me know if there are questions or comments concerning this response or the TJKM traffic studies.

Sincerely,

Andrew R. Kluter

Andrew Kluter, P.E.
Project Manager

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20 March 2012
File No. 38460-000

The Honorable Jose Esteves, Mayor
And Members of the City Council
City of Milpitas
455 East Calaveras Boulevard
Milpitas, California 95035

Subject: McCandless Development Project
Milpitas, California

Dear Mayor Esteves and City Council Members:

We are writing to provide comments regarding the Toxic Air Contaminants Analysis (TAC Analysis) and to respond to comments submitted to your attention via a letter written by Adams Broadwell Joseph & Cardoza (ABJ&C) dated March 19, 2012. Please find the following comments regarding the ABJ&C letter as well as additional information ascertained during project implementation:

1. ABJ&C Comment
   "The TAC Study …constitutes new information that the Project will cause new significant impacts"

   TAC Analysis
   As provided for in the report, of the 1,032 receptor locations modeled only 34 exceed the 10 in a million cancer risk outlined in Policy 5.25 of the 2008 City of Milpitas TASP. Of the 34 exceedances only 24 exceeded the 10 accounting for significant digits. Of the 34, 20 receptors were greater than 10 and less than 11, with only 5 being greater than 12. All of these exceedances occurred at ground-level within 130 meters of the northern property boundary and within 30 meters of the western boundary. See the attached figure for the location of these exceedances. These are very minor exceedances based on conservative assumptions and they are commonly mitigated through the use of filtration devices, as discussed further below.

2. ABJ&C Comment
   "The TAC Study determined that future residents on the Project site would be exposed to a 12.18 in 1 million cancer risk"

   TAC Analysis
   This comment mischaracterized the study findings. Actually the study identified a single "ground-level" receptor location of the 1,032 receptors evaluated with a 12.18 in 1 million cancer risk.

3. ABJ&C Comment

"The Study recommends implementing air filtration and landscape buffering should any residential building be sited in these areas"

TAC Analysis
Because of the conservative nature of the analysis which will be further discussed below, the conclusion of the analysis actually states that while "…mitigation measures discussed above could be implemented to address the risk it is likely unnecessary given the conservative nature of the analysis and the expected continued decrease in emissions of diesel exhaust as USEPA mandates stricter emission requirements for diesel engines."

4. ABJ&C Comment
"…it is my opinion that the risk may be higher given the proximity of the Project to the roadway and the fact that the Report attempts to count the same emission reductions twice."

Response
The Report does not count the same emission reductions twice. The model used assumed reductions of TAC emissions in the future due to improved technologies. This was assumed only once for the analysis and ultimate conclusion. The statement at the end of the Report that mitigation may be unnecessary reflects the conservative nature of the analysis. It further reflects that if the start of occupancy is later than assumed, TAC emissions may be reduced by that point such that the Report overstates the impact.

5. ABJ&C Comment
"…there is no evidence that the TAC Study's recommendations will reduce the Project's impacts below 10 in 1 million"

Response
There have been several studies regarding the use of vegetative barriers to reduce particulate matter and those were referenced in the TAC Analysis and would provide sufficient control to decrease all concentrations to less than 10 in a million risk if it were necessary.

There have also been several studies regarding the use of filtration. A frequently conducted study by W. J. Fisk, et al., *Performance and costs of particle air filtration technologies*, 5 Indoor Air, 2002, attached, demonstrates that MERV 13 and similarly effective filtration devices effectively and significantly reduce indoor concentrations of TACs, including diesel particulate matter. Based on this and other studies, the City of San Francisco, through its recently adopted Article 38, requires that residential units in areas of high TAC concentrations include filtration devices, most commonly MERV 13 as the primary method of mitigating this impact. The general consensus in the scientific and regulatory community is that MERV 13 is generally sufficient to address DPM and other vehicle exhaust. This is particularly true when the exposure only slightly exceeds the threshold, as is the case here.

6. ABJ&C Comment
"..recommended filtration system will not reduce TAC emissions associated with automobile exhaust and that the systems will not reduce exposure to people engaged in outdoor activities…"

Response

See Response above regarding the effectiveness of filtration and the scientific literature supporting that conclusion.

The comment that persons may be engaged in outdoor activities or that TAC may enter homes through windows or cracks does not undermine the effectiveness of the filtration. The model very conservatively assumes that persons are located outdoors at all times. Thus, even if a person is engaged in outdoor activities for a few hours every day, it is reasonable to assume that most of the time spent at the project site is spent indoors benefitting from the filtration. Further, the majority of the grid locations for the project have exposure values of less than 10. Accordingly, it is reasonable to assume that a person engaged in outdoor activities would be in a location with exposure less than a value of 10. This leads to the conservative point of the model that assumes the person is going to be at that grid point at all times.

As described above, only 34 receptor locations exceed the standard of 10 in a million, the worst case being 12.18 in a million cancer risk. MERV 13 has been shown to remove 75% to 90% of particulate emissions. In order for the receptor located at the worst location (12.18 in a million), there must be a reduction of less than 20% exposure. Even assuming that windows are open some of the time, that a person spends some time outdoors, and that some air infiltrates through other means, it is reasonable to conclude that a MERV 13 filter effectively reduces the exposure.

7. <u>ABJ&C Comment</u>
   "…the efficiency of the filtration system will also decrease with time…"

   <u>Response</u>
   While it is true the ventilation system pressure will increase with the actual particle loading of the filters, more particles on the dirty side of the filter provide better filtering of the incoming particles. As with the current home ventilation system or the oil filter on an automobile, there is an underlying assumption of appropriate maintenance.

8. The risk presented in the TAC Analysis included all ground-level concentrations, as opposed to concentrations that upper level residences may experience. This was done to present a "worst-case" evaluation and because actual developmental plans were unavailable. Upper level residences will experience less exposure to TACs.

9. The current understanding is that the train traffic is significantly less than the estimated values of 2 per day used in the TAC Analysis. If the estimate was replaced with one per day, all but five (5) receptors would more than likely result in risk values less than 10, with the remaining five (5) receptors being less than 10.2. Again, the analysis is very conservative and the identified mitigation would be effective.

10. Similar to the above comment, because site plans were unavailable during the TAC analysis, the existing vegetation was not used to reduce modeled DPM.

11. Because plans were not yet completed a determination of risk at only the areas where residential occupancy was expected was not conducted but receptors were spaced across the entire property, including in areas where there could be commercial, parking areas, roads, etc.

12. Conservativeness of the utilized air dispersion model was not considered. Experience indicates when an air dispersion model is used, when measured, actual concentrations are usually much less.

13. Policy 5.25 of the 2008 City of Milpitas TASP requires that for a "*development that is proposed within 500 feet of active rail lines where vehicles emit diesel exhaust, or roadways where total daily traffic volumes from all roadways within 500 feet of such location exceed 100,000 vehicles per day, will, as part of its CEQA review, include an analysis of toxic air contaminants (which includes primarily diesel particulate matter (DPM).* It is important to note that no roadways within 500 feet exceed 100,000 vehicles per day. To present a "worst-case" analysis all roadways were included where the annual average daily traffic exceeded 10,000 cars.

Thank you for the opportunity to provide a response to ABJ&C's comments. Please let us know if there are questions or comments concerning this response or the TAC Analysis.

Sincerely yours,
HALEY & ALDRICH, INC.

James P. Schwartz, P.G.
Client Leader

Craig S. Schmeisser
Air Quality Specialist

cc:
Glenn Brown, Integral Communities
Miles Imwalle, Morrison & Foerster LLP

Attachments:
1: Site Location and Receptor Grid
2: W. J. Fisk, et al., Performance and costs of particle air filtration technologies, 5 Indoor Air, 2002
3: City of San Francisco Article 38

ATTACHMENTS

LEGEND:

RISK EXCEEDS 10 PEOPLE IN A MILLION, POLICY 5.25 STANDARD

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SCALE IN METERS

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Rev.	Description	By	Date

McCANDLESS PROJECT
MILPITAS, CALIFORNIA

SITE LOCATION AND RECEPTOR GRID

Sheet: 1 OF 1

FIGURE 1

CADD File Data:
Drawing Name: G:\38460\000\CAD\38460-000-C1_20120320.dwg Layout: C-1
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Performance and costs of particle air filtration technologies

Abstract This paper predicts the reductions in the indoor mass concentrations of particles attainable from use of filters in building supply airstreams and also from use of stand-alone fan-filter units. Filters with a wide efficiency range are considered. Predicted concentration reductions are provided for indoor-generated particles containing dust-mite and cat allergen, for environmental tobacco smoke (ETS) particles, and for outdoor air fine-mode particles. Additionally, this paper uses a simple model and available data to estimate the energy and total costs of the filtration options. Predicted reductions in cat and dust-mite allergen concentrations range from 20 to 80%. To obtain substantial, e.g. 50%, reductions in indoor concentrations of these allergens, the rate of airflow through the filter must be at least a few indoor volumes per hour. Increasing filter efficiencies above approximately ASHRAE Dust Spot 65% does not significantly reduce predicted indoor concentrations of these allergens. For ETS particles and outdoor fine-mode particles, calculations indicate that relatively large, e.g. 80%, decreases in indoor concentrations are attainable with practical filter efficiencies and flow rates. Increasing the filter efficiency above ASHRAE 85% results in only modest predicted incremental decreases in indoor concentration. Energy costs and total costs can be similar for filtration using filters with a wide range of efficiency ratings. Total estimated filtration costs of approximately $0.70 to $1.80 per person per month are insignificant relative to salaries, rent, or health insurance costs.

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Key words: Allergen; Building; Concentration; Filtration; Particle; Reduction.

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Practical Implications

To more effectively control indoor concentrations of fine particles, heating, ventilating, and air conditioning (HVAC) equipment manufacturers and building engineers should consider the use of filters in HVAC systems with ASHRAE Dust Spot Efficiencies of 65 to 85%. The lower efficiency filters used commonly in today's HVAC systems decrease indoor concentrations of fine particles only marginally, while increasing the filter efficiency above 85% results in only modest incremental reductions in indoor particle concentrations. With careful selection of the higher efficiency filters, the increase in filtration costs and fan energy will be negligible. Portable fan-filter units marketed today most often contain high efficiency particulate air filters. To decrease the costs, energy consumption and noise production of fan-filter units without significantly sacrificing particle control performance, manufacturers should develop products with lower efficiency filters, e.g. with an 85% Dust Spot Efficiency.

Introduction

Filters and other particle air cleaners are used extensively in buildings to remove particles from incoming outdoor air and from recirculated indoor air. Historically, filters were installed to reduce the accumulation of deposited particles on heating, ventilating and air conditioning (HVAC) equipment which diminished airflow rates and impeded heat transfer. Within the last two decades, the potential benefits to health have been increasingly recognized as a primary purpose of filtration. Other potential benefits of filtration include reducing unsightly soiling of indoor surfaces and reducing the deposition and accumulation of organic matter on surfaces such as HVAC ducts where it can become odorous or provide a substrate for microbiological colonization.

In commercial buildings, filters are typically installed in the supply airstreams of forced HVAC systems that provide heated or cooled air to occupied spaces. In US commercial buildings, this supply airstream is usually a mixture of outdoor air and recirculated indoor air, while in many European commercial buildings the supply airstream is often entirely outdoor air. In US residences, filters are commonly installed in the recirculated airstreams of forced-air heating and cooling

systems. Stand-alone, e.g. portable, fan-filters units are also relatively common, particularly in residences.

Several classes of health effects are linked to particle exposures that may be reduced via filtration. Allergy and asthma symptoms may be produced in susceptible people upon inhalation of allergenic particles, such as pet allergens, dust-mite allergens, pollens from outdoor plants, and fungal spores or fragments from outdoors or indoor sources (Committee on Assessment of Asthma and Indoor Air, 2000; Committee on Health Effects of Indoor Allergens, 1993). Infectious diseases such as influenza and some common colds can result from the inhalation of droplet nuclei from people's coughs and sneezes that carry infectious organisms (e.g. Couch, 1981; Dick et al., 1987). Some particles of indoor or outdoor origin may contain inflammatory or toxic agents; an example is endotoxin in the cell walls of certain bacteria (Milton, 1996). Environmental tobacco smoke (ETS), a mixture of particles and gases, is associated with increases in lung cancer, heart disease, asthma exacerbation and other health effects (California EPA, 1996; EPA, 1992). Increased concentrations of particles in outdoor air are associated with increases in hospital admissions, deaths, and other health effects (EPA, 1996a); however, most people's exposures to these outdoor particles occur predominately indoors where approximately 90% of the time is spent. Outdoor particles smaller than approximately 2.5 μm in aerodynamic diameter are thought to be more strongly associated with these health effects (EPA, 1996a, 1996b). The small particles in outdoor air, less than approximately 1 μm in aerodynamic diameter, are produced substantially from combustion processes and through photochemical reactions (EPA, 1996b). In industrial settings, not considered in this paper, there are additional sources of particles and associated health effects.

The sizes of particles associated with adverse health effects vary widely. Many of the particles of microbiologic origin tend to be larger than 1 μm in aerodynamic diameter, with some exceeding 10 μm (Committee on Assessment of Asthma and Indoor Air, 2000; Committee on Health Effects of Indoor Allergens, 1993). Most of the particle mass in ETS is contained within particles with diameters between 0.1 and 1.0 μm (Miller and Nazaroff, 2001). The usual outdoor particle distribution is considered to be bi-modal or trimodal. The particle mass within the outdoor fine particle mode, as defined by Whitby (1978), is contained between 0.03 and 4.0 μm particles, with approximately 90% of this mass in particles smaller than 1.0 μm.

Despite the widespread use of filtration systems, the influence of different air filtration options on indoor concentrations of particles has not been well-documented. Information on the relative costs and energy use of different filtration options is also not readily available. Chamber studies have assessed the rates of particle removal by stand-alone filtration units. A few field studies, primarily within houses, have monitored the influence of filtration on total particle number or mass concentrations, generally without distinguishing between particles from different sources. The Committee on the Assessment of Asthma and Indoor Air (2000) estimated the reduction in various size particles from a range of filtration options. This paper expands upon the Committee's work, integrating over particle size to predict reductions in the indoor concentrations of particles from various sources. Additionally, this paper provides examples of the costs and energy use of different filtration options.

Methods

Reductions in indoor concentrations

A mass-balance model was used to estimate the reductions in the indoor concentrations of different particle types from use of air filtration systems, including filters in HVAC systems and stand-alone filters. The modeling assumes a well-mixed indoor space and integrates over particle size, accounting for the size distributions of source-specific particles and the size-dependent variations in both filter performance and particle deposition losses to surfaces. We have used the percentage reduction in indoor particle mass concentration as the performance metric, with the reference case typically being no filter. Calculations were performed for outdoor fine-mode particles (as defined in Appendix 1) and for three types of indoor-generated particles – those with dust-mite allergen, with cat allergen, and from ETS. Our calculations do not apply for the many gaseous compounds within ETS, which will not be removed by particle filters.

The computations for the indoor concentrations of particles of each type are made in discrete size bins (see Appendix 1) and then integrated. The mass balance equation is

$$C_{indoor} = \sum_j \frac{S_j/V + C_{OA,j}[Q_{OA}(1-\varepsilon_{s,j}) + Q_I P_j]}{Q_R \varepsilon_{s,j} + Q_{OA} + Q_I + Q_C \varepsilon_{C,j} + \beta_j} \quad (1)$$

where j is the bin number; Q_R is the recirculation airflow rate through the supply air filters; Q_{OA} is the outside airflow rate through the supply air filters; Q_I is the rate of infiltration of unfiltered air; Q_C is the flow rate through stand-alone filters; ε_S is the particle removal efficiency of the supply air filters; ε_C is the particle removal efficiency of the stand-alone fan-filter unit; β is the rate of particle depositional loss; S is the indoor particle source strength; V is the indoor volume; and P is the penetration factor for particles entering via air infiltration. C_{OA} is the outdoor particle concentration which is non-zero only for outdoor fine-mode particles.

All flow rates, denoted by Q, and the particle deposition loss rate β are normalized by the indoor volume; therefore, these variables have the dimension of the reciprocal of time. In general, a reference indoor concentration ($C_{\text{reference}}$) was calculated with the same equation except the filter efficiencies were set to zero. For a few calculations of the benefits of stand-alone fan-filter units, the reference calculation assumed a low-efficiency supply air filter, i.e., ε_S, was greater than zero in the calculation of $C_{\text{reference}}$. Because we report only percentage reductions in indoor particle concentrations, the value of S does not affect our results when the particle is generated indoors, i.e. for cat allergen, dust-mite allergen and ETS. When performing calculations for outdoor fine-mode particles, S was set to zero.

The percentage reduction in indoor concentration was then calculated from the equation

$$\%\text{Reduction} = 1 - (C_{indoor}/C_{reference}) \quad (2)$$

As an overall (i.e. single-number) efficiency rating, we have characterized filters according to the ASHRAE Dust Spot Efficiency Rating (ASHRAE, 1992), the standard rating used by US industry. To denote the ASHRAE Dust Spot Efficiency, we will use the notation 'ASHRAE nn%' where 'nn' refers to the Dust Spot Efficiency rating. There is no unique filter efficiency curve, i.e. curve of particle removal efficiency vs. particle size, for each Dust Spot Efficiency Rating; hence, we have performed calculations with example efficiency curves based on data provided by Hanley et al. (1994) and provided by manufacturers' data. For some filters, we extrapolated from the reported data to estimate filter efficiency for the largest particles, e.g. we extrapolated from 10 to 20 μm; however, the filter efficiency curves were nearly flat (with a high efficiency) for the large particle sizes. These efficiency curves are provided in Figure 1. To maintain readability, we have not shown curves for the 'Pocket' and high efficiency particulate air (HEPA) filters. The 'Pocket' filter is a second filter with an ASHRAE 95% rating. Its efficiency curve is slightly better than the curve provided for ASHRAE 95%, e.g. the Pocket filter has a minimum efficiency of 68%. For the HEPA filter which has a rated minimum efficiency of 99.997%, we assume an efficiency of unity for all particles. Data on the efficiency curves of a furnace filter are contradictory. In contrast to the curve within Figure 1, one set of unpublished data indicates that furnace filters have a maximum efficiency between 10 and 20% for 0.9–2.5 μm particles and an efficiency less than 10% for both smaller and larger particles. The efficiency curves used in calculations represent the performance of clean (unused) filters. As filters load with particles, their efficiency usually increases, consequently, our calculated reductions in indoor particle concentrations are conservative. More detailed filter efficiency data are expected in the future as filter manufacturers develop filter performance data using a new ASHRAE rating system for filters (ASHRAE, 1999).

We neglected air bypass around filters. Bypass is the leakage of air between adjacent filters and between filters and the framework holding the filter. Insufficient information is available on typical rates of bypass for various types of filters. By neglecting bypass, we

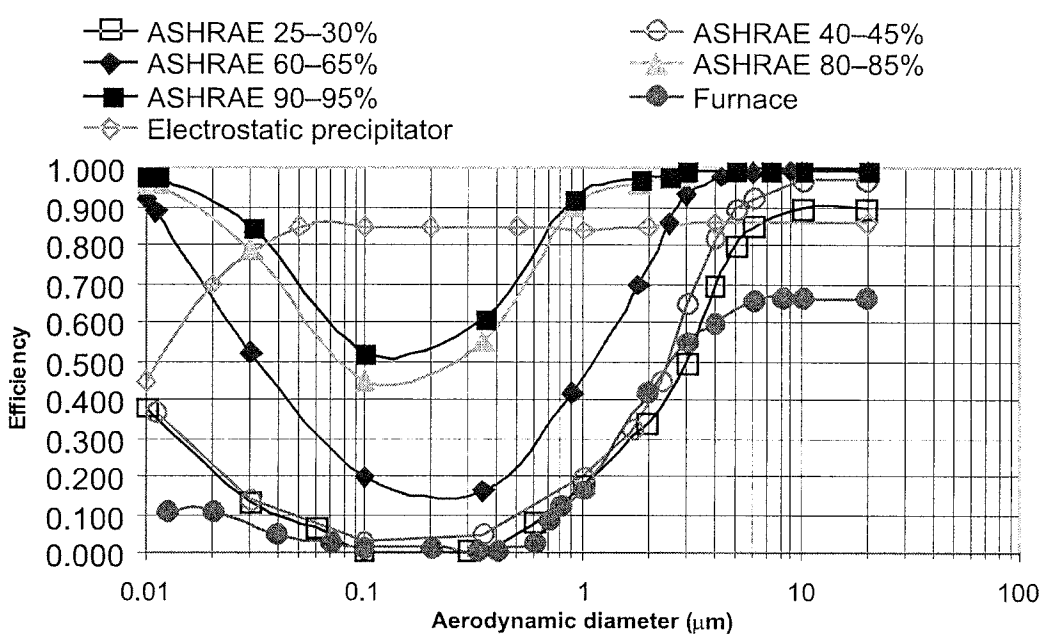

Fig. 1 Particle removal efficiencies used in the calculations

overestimate the particle removal efficiencies of the filtration systems.

The deposition coefficient β is the product of a mass transfer coefficient called the deposition velocity (Nazaroff et al., 1993) and the ratio of indoor surface area to volume (S/V). The ratio S/V may change with building size and furnishings. This coefficient accounts for the loss of particles by deposition on indoor surfaces by all natural mechanisms including gravitational settling. Although the deposition velocity is the more fundamental parameter, it is usually based on measured values of deposition coefficient and estimated values of S/V. For this paper, deposition velocities were based on a combination of measured data from full-size rooms and extrapolations consistent with theoretical predictions. At present, there is considerable uncertainty in the typical values of deposition velocities for buildings; therefore, our calculations have been performed using two sets of deposition velocities. Most calculations are based on the base case deposition velocity curve in Figure 2 which fits the data of Thatcher (Lawrence Berkeley National Laboratory, unpublished) and Xu et al. (1994) with extrapolations consistent with the theoretical predictions of Lai and Nazaroff (2000). A few supplementary calculations were performed with the alternate deposition coefficient curve shown in Figure 2, which fits the data of Abt et al. (2000) and Fogh et al. (1997). Given the uncertainty in deposition velocities, no attempt was made to fit the data statistically – we simply used values from a smooth curve through the available data. The assumed value of S/V was 2.7 based on measurements in a set of offices accounting for the surface area of furnishings, as well as walls, ceiling and floor.

The particle penetration factor 'P' only enters into our calculations for outdoor fine-mode particles, and even then it only affects the rate of particle entry via air infiltration. Data on typical values of particle penetration (P) are quite limited. For outdoor fine-mode particles, 'P' may be close to unity (Lewis, 1995; Ozkaynak et al., 1996; Thatcher and Layton, 1995), although Vette et al. (2001) reported lower measured values ranging from approximately 0.5–0.8 for 0.01–2 μm particles. We have assumed that 'P' equals unity for all outdoor fine-mode particles.

In this model, the size distribution for indoor-generated particles should be the size distribution of emitted particles, however, such information was not available for cat and dust-mite allergen. For these allergens, we used measured size distributions in indoor air as an approximate surrogate for the size distribution of emitted particles. Appendix 1 presents the size distributions employed and references the sources of the size distribution data.

Other parameter inputs, such as flow rates through filters and outside air ventilation rates, were based on typical design values for building HVAC systems. For filters in supply airstreams of HVAC systems, we assumed that the rates of outside airflow and recirculation airflow were one and four indoor volumes per hour, respectively (denoted by 1/h and 4/h). Most calculations with supply airstream filters assumed an air infiltration rate of 0.25/h. For some calculations, we assumed no infiltration or no recirculation. For calculations involving portable fan-filter units or a portable electrostatic precipitator, we assumed an infiltration rate of 0.5/h typical of a residence, and assumed rates of airflow through the filters of 2, 5 and 10/h.

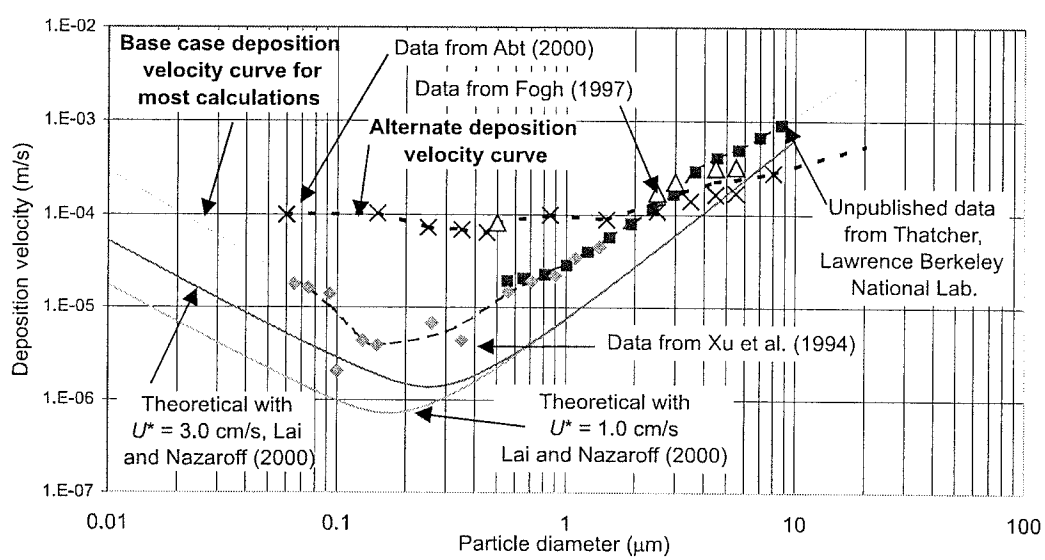

Fig. 2 Deposition velocities reported by others and curves (dashed lines) illustrating the deposition velocities used in calculations

Costs of air filtration

We have estimated the costs of using different types of filters in HVAC supply airstreams. As background for the cost calculation, we note that filters vary a great deal in the degree of pleating (i.e. folding of the filtration media) and in depth in the direction of airflow. Depth may vary from approximately 2 to 30 cm. With an increase in depth and pleating, the area of filtration media increases, price usually increases, and the ratio of pressure drop to efficiency usually decreases. To limit pressure drops, more efficient filters tend to have increased pleating and depth. Because of their increased surface area, these larger filters will often have an increased lifetime between replacements.

The total costs of different air filtration options per unit of filtered airflow were estimated considering the costs of periodically replacing the filters (materials plus labor) and the incremental costs of energy used by fans. As products with a similar particle removal performance can vary in price and airflow resistance (which affects energy costs), our estimates are examples that serve only to illustrate approximate costs and their variability among the filtration options.

Equation 3 was employed to compute life cycle cost

$$\text{Cost per unit airflow} = \frac{\text{Filter Cost} + \text{Labor Cost per Filter Installation} + \text{Energy Cost}}{(\text{Filter Lifetime})(\text{Air Flow Rate})} \tag{3}$$

$$\text{Filter Lifetime} = \frac{\text{Dust Holding Capacity}}{(\text{Arrestance})(\text{Inlet Particle Concentration})(\text{Air Flow Rate})} \tag{4}$$

The costs of a variety of filters were provided by venders. We used an electricity cost of \$0.10 per kWh.

Limited information was available for estimating the costs of labor for periodic filter replacement (removing old filters and installing new ones). The standard handbook for estimating labor time required for facilities management and repair (R.S. Means, 1999) does not provide different time estimates for filters with different efficiency ratings and allocates only 0.078 labor-hours for filter replacement in air-handling systems that would typically have three to eight filters, corresponding to 0.6–1.6 min of labor per filter. With the total labor cost of \$46 per hour (R.S. Means, 1999), including overhead and profit, the cost per filter installation is only \$0.5 to \$1.2. We have used \$1.2 per filter in one set of calculations. However, based on our experience, filter installation labor and costs will often be higher than these estimates. For example, documentation from the US Department of Defense (DOD, 1987) estimates 0.07 labor-hours (4.2 min) per filter for removal and replacement of cartridge filters, the most common type of filter. In addition, we believe that installation labor and costs will increase with filter efficiency because more efficient air filters are larger and heavier, and sometimes have more complex installation hardware. Consequently, calculations were also performed using the following installation labor cost schedule: \$3 (4 min) per filter for filters with a depth in the direction of airflow $\leq$ 10.2 cm, \$5 (6.5 min) per filter for filters with a depth of 15.2 cm, and \$10 (13 min) per filter for filters with a depth $\geq$ 30.5 cm.

The lifetime of filters can be roughly estimated. As filters collect particles their resistance to airflow (i.e. pressure drop) increases. Filter manufacturers usually provide a recommended maximum pressure drop, e.g. 250 Pa, at which replacement of the filter is recommended. The increase in pressure drop across a filter as it loads with deposited particles is determined in a standard test involving a special test dust (ASHRAE, 1992). The resulting data yield a 'dust holding capacity' at maximum recommended pressure drop and a particle removal efficiency (Arrestance) for this test dust. With this information, the lifetime was estimated via Equation 4.

When calculations were based on manufacturer's data, the flow rate assumed for this calculation was the manufacturer's recommended value. When calculations were based on data provided by Hanley et al. (1994), we used the flow rates in their tests. We assumed that airflow occurred 12 h per day and 6 days per week, typical of the periods of operation of many commercial building ventilation systems. For the inlet particle concentration, we used the arithmetic average of the indoor and outdoor daytime PM10 concentration (i.e. mass concentrations of particles smaller than 10 μm aerodynamic diameter) from a survey of 28 US office buildings[1] (13 $\mu g/m^3$ indoors, 31 $\mu g/m^3$ outdoors, 22 $\mu g/m^3$ average). The filter Arrestance was provided by manufacturers.

Sources of error in the calculation of filter lifetime include the following: (1) The test dust mixture used to

assess dust holding capacity contains more coarse particles than typical indoor and outdoor air, and the dust holding capacity of filters for real particles and this test dust may differ. (2) The average particle removal efficiency for the mixture of real particles entering filters is likely to be smaller than the Arrestance. (3) The average inlet particle concentration in practice will exceed the PM10 concentration because the PM10 measurement excludes particles larger than 10 μm. The second and third error will tend to counteract one another.

The energy cost was computed from the equation

$$\text{EnergyCost} = (\text{Fan Power})(\text{Fan Operating Time}) \times (\text{Electricity price}) \quad (5)$$

with fan power estimated using the standard fan laws (ASHRAE, 1996) in Equation 6.

For the time average pressure drop across the filter, we averaged the initial and final pressure drop. Values of 0.9 and 0.75 were used for the motor efficiency and fan efficiency, respectively. These values are representative of the performance of large motors and fans used in large commercial building HVAC systems. Smaller

$$\text{FanPower} = \frac{(\text{Air Flow Rate}) + (\text{Time Average Pressure Drop Across Filter})}{(6356)(\text{Motor Efficiency})(\text{Fan Efficiency})} \quad (6)$$

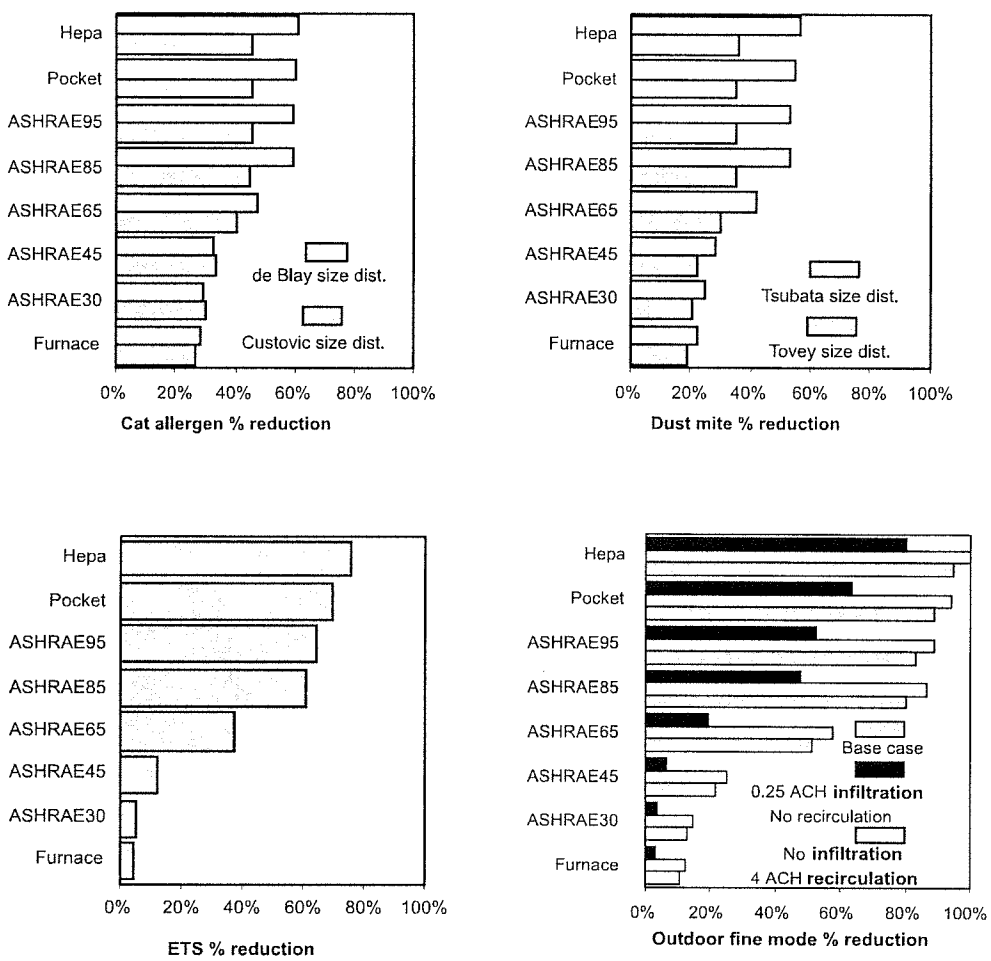

Fig. 3 Predicted reductions in particle concentrations with supply airstream filtration. Unless indicated otherwise, the following base-case conditions apply: 1/h outside air supply, 4/h of recirculation and 0.25/h of unfiltered air infiltration

size systems will often have less efficient motors and fans.

Results

Reductions in particle concentrations

Figure 3 shows the predicted reductions in indoor concentrations of pollutants from use of eight filters in supply airstreams, ranging from a residential furnace filter (ASHRAE Dust Spot Rating not available) to a HEPA filter. For cat and dust-mite allergen, which is predominately found in particles with a diameter of several micrometers, the predicted reductions in indoor mass concentrations (mass per unit air volume) range from approximately 20 to 60%. Increasing filter efficiencies above approximately ASHRAE 65% (or 85%) does not reduce indoor concentrations significantly because even moderate efficiency filters work well for the larger diameter particles containing most of the cat and dust-mite allergen. Predictions vary depending on the source of data on particle size distribution.

For ETS particles, which are almost entirely submicron in size, the predicted indoor concentration reductions from use of low-efficiency filters (furnace filter, ASHRAE 30 and 45%) are very small (5–12%). Increasing the filter efficiency to ASHRAE 85% yields a predicted concentration reduction of 61%. Further increases in filter efficiency bring modest additional benefits, up to 75% reduction in concentration with a HEPA filter.

For outdoor fine-mode particles, the predicted benefits of low-efficiency filters, ASHRAE 45% and lower, are again quite small. The predicted reduction in concentrations from a filter with an ASHRAE 85% rating is 80% with base-case assumptions (1/h of mechanical outside air ventilation, 0.25/h of unfiltered infiltration and 4/h of recirculation). Upgrading to a HEPA filter brings only a modest additional benefit, with a predicted reduction in indoor concentration of 95%. If there is no infiltration, the predicted reductions in indoor concentration are two to six percentage points higher. If the building does not recirculate air, as in many European offices, the concentration reductions are significantly smaller. Also, without recirculation, the benefits of increasing filter efficiency above ASHRAE 85% are more pronounced.

Figure 4 illustrates the predicted reductions in indoor airborne cat allergen from the use of four types of fan-filter units as a function of the rate of airflow through the filter. The results presented for the two particle size distributions differ significantly. The reference for the top two charts is the predicted concentration with no filtration occurring in the building, while the reference for the bottom two charts is the predicted concentration in a building with a furnace

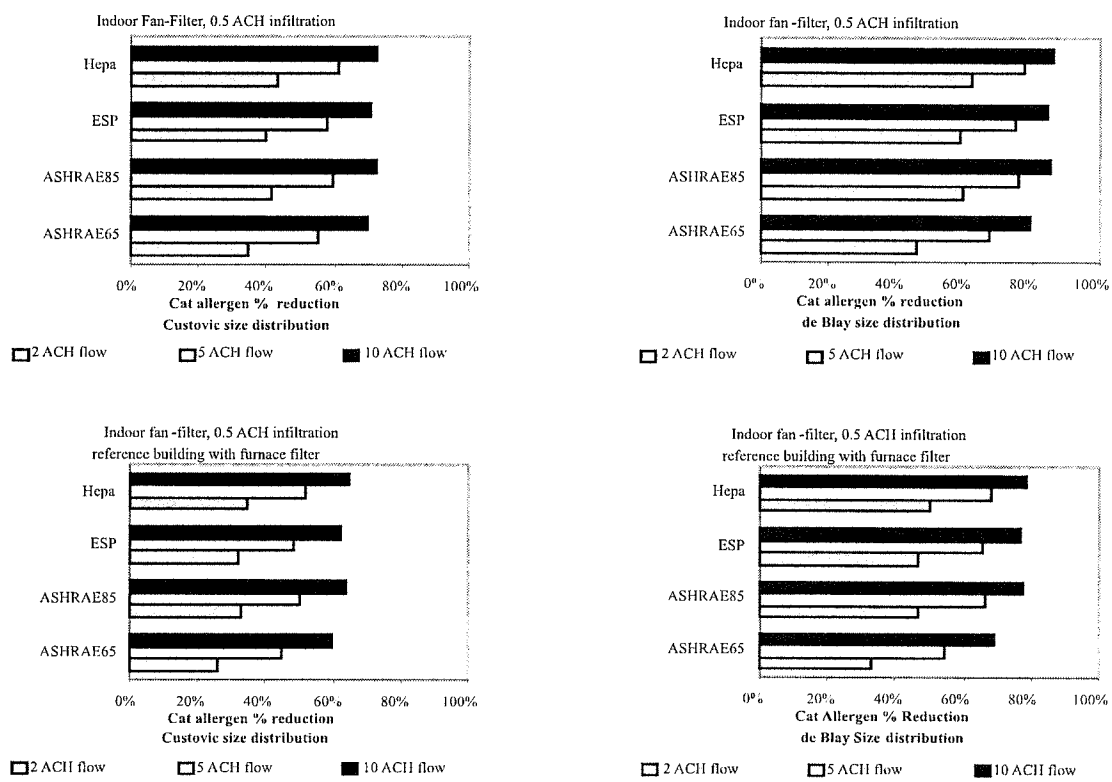

Fig. 4 Predicted reductions in airborne cat allergen concentrations with stand-alone fan-filter units

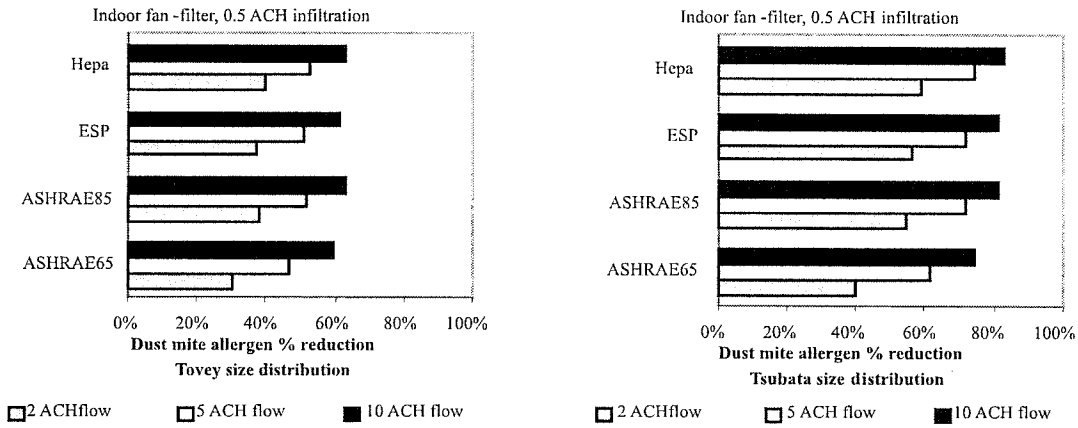

Fig. 5 Predicted reductions in airborne dust mite allergen concentrations with stand-alone fan-filter units

filter with a recirculation rate of 4/h. Predicted reductions in cat allergen concentrations range from 35 to 86% if the reference is no filtration and from 26 to 79% if the reference building recirculates air through a furnace filter. Increasing the filter efficiency above ASHRAE 85% results in little incremental reduction in indoor concentration. Increasing the flow rate through the strand-alone fan-filter unit decreases the indoor concentrations substantially.

Figure 5 shows the predicted reductions in concentrations of dust-mite allergen, ranging from 30 to 83%, with use of stand-alone fan-filter units. If the reference building has a furnace filter (results not shown), the range is 20–78%. The benefits of increasing filter efficiency above ASHRAE 65% are small, with almost no benefit to increasing the efficiency above ASHRAE 85%. The predicted benefits of filtration are considerably, e.g. 20%, larger if one uses the particle size distribution of Tsubata et al. (1996) relative to the distribution of Tovey et al. (1981).

The predicted reductions in ETS and outdoor fine-mode particles from use of stand-alone fan-filter units are illustrated in Figure 6, with the reference building having no filtration. Results are almost identical if the reference building has a furnace filter (results not shown). For ETS particles, the predicted decreases in concentration range from 40 to 95%. Increasing filtration flow rates is beneficial. The benefits of increasing filter efficiency above ASHRAE 85% are modest. The predicted reductions in concentrations and associated trends are very similar for outdoor fine-mode particles.

For brevity, we have not included another set of figures with predicted particle concentrations reductions calculated using the alternate deposition velocity curve shown in Figure 2. The changes from the predicted base-case concentration reductions are complex, e.g. they both increase and decrease, because the two deposition velocity curves cross at a particle diameter of approximately 2 μm. In general, the change in predicted reduction in indoor particle concentration is less than 10% (i.e. less than 10% on the horizontal scales of the figures). For filters in HVAC supply airstreams (always referencing the lightly shaded bars in Figure 3), a few examples of changes in the predicted

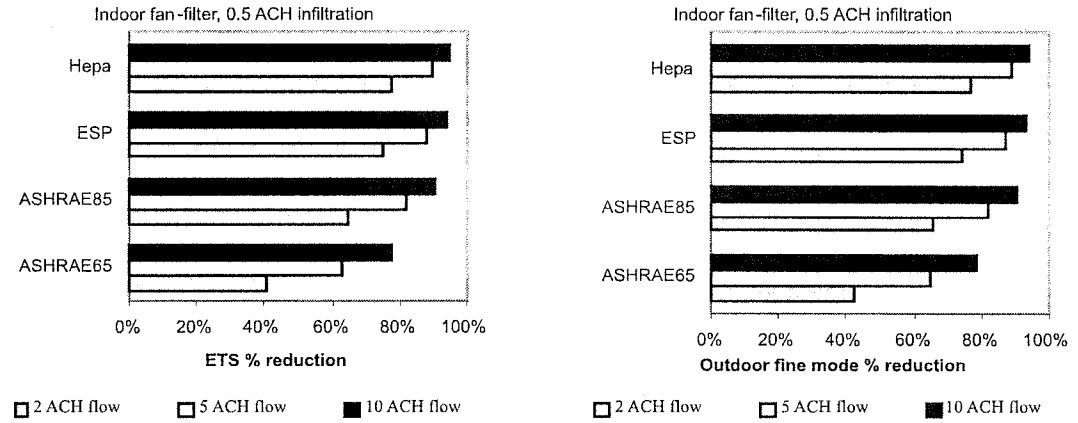

Fig. 6 Predicted reductions in ETS and outdoor fine-mode particles with stand-alone fan-filter units

percentage reduction in indoor concentrations follow: (1) reductions in cat allergen increase by 5–12%; (2) reductions in dust-mite allergen increase by 8–17%; (3) reductions in ETS concentrations decrease by 1–11%; and (4) reductions in indoor concentrations of outdoor fine-mode particles increase by 0–3%.

Filtration costs

Figure 7 displays the predicted energy and total costs of using ASHRAE 25% to ASHRAE 95% filters in supply airstreams. Cost are provided per 470 l/s (1000 ft^3/min) of filtered supply air, which would typically serve five to seven persons in a US-style office building with air recirculation or 10–15 occupants in European buildings without air recirculation. Monthly energy costs range from \$3.26 for a filter with an efficiency rating of 30% to \$5.94 for a filter with an efficiency of 95%. Using the fixed installation cost per filter of \$1.20 from R.S. Means (1999), total monthly costs range from \$3.80 to \$10.40. With the labor cost schedule, total monthly costs range from \$3.90 to \$11.10. There is a general tendency toward higher energy and total costs with higher efficiency filters; however, the costs of using different filter models of the same efficiency vary widely. Consequently, use of more efficient air filters does not always increase cost. For example, monthly costs per 470 l/s (1000 ft^3/min) of filtered supply air were as high as \$5.60 for a 25% filter efficiency and as low as \$4.20 for a filter with a 60% efficiency.

The costs displayed in Figure 7 are based on the manufacturers' rated airflows and recommended final pressure drops for the filters. With the assumed inlet particle concentrations and hours of usage, the predicted filter lifetimes range from 2 to 27 months. Energy consumption and energy costs will be smaller if the filter is replaced with a smaller final pressure drop; however, the costs of purchasing filters and the labor for filter replacement will increase. Using the data available from one major filter manufacturer, a limited sensitivity analyses explored the trends in total life cycle cost as final pressure drops decreased from the manufacturer's recommended values. In general, total predicted monthly costs increased or decreased only slightly, less than 10%, as the final pressure drop at filter replacement was decreased by up to 100 Pa. In a few cases, total monthly costs decreased by 30%. Consequently, more frequent filter replacement could save energy and sometimes also slightly decrease filtration costs.

Discussion

Filter selection and costs

The allergens that often elicit allergy and asthma symptoms, such as dust-mite and cat allergen, are predominately present within particles with a diameter larger than 2 μm. To reduce indoor concentrations of mite and cat allergen, a moderate efficiency filter, such as one with an ASHRAE 60% rating, is predicted to be nearly as effective as a HEPA filter. To obtain substantial, e.g. 50%, reductions in indoor concentrations of these allergens, the rate of airflow through the filter must be at least a few indoor volumes per hour. To obtain a concentration reduction on the order of 75%, the rate of airflow through the filter must be approximately 10 indoor volumes per hour, which may be impractical except within individual rooms.

Allergens in pollens also elicit allergy symptoms. Pollen grains tend to have large aerodynamic diameters, e.g. >10 μm (Committee on Assessment of Asthma and Indoor Air, 2000), consequently the comments provided above for dust-mite allergens should also apply qualitatively for many pollens. However, recent studies indicate that some plant allergens, such as grass and birch allergen, is present within much smaller particles, including particles smaller than 1 μm (e.g. Rantio-Lehtimaki et al., 1994; Schappi et al., 1997; Spieksma et al., 1990, 1991).

The ETS and outdoor fine-mode particles are much smaller than dust-mite and cat allergen, with nearly all of the particle mass in particles with a diameter below 2 μm, and much of this mass within submicron-size particles. However, even for these small particles, increasing the filter efficiency rating above ASHRAE 85% results in only a modest additional decrease in

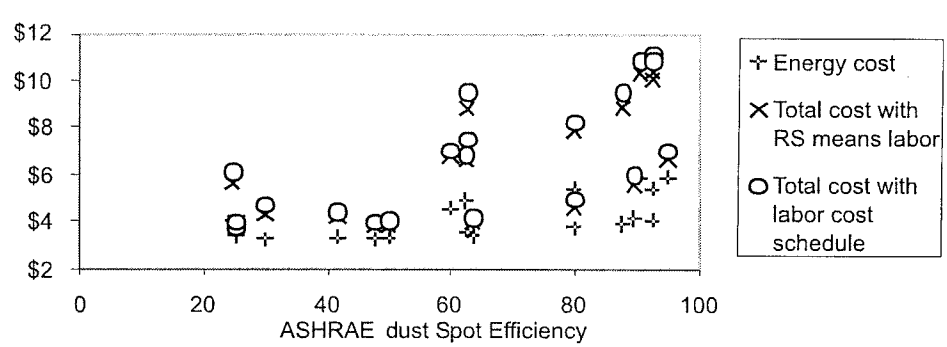

Fig. 7 Monthly cost per 470 l/s (1000 ft^3 /min) of supply air

indoor particle concentrations, usually less than 10 percentage points.

Our predictions indicate that relatively large decreases in indoor concentrations of ETS and outdoor fine-mode particles are attainable with practical filtration options. For example, the predicted concentration reductions from an ASHRAE 85% supply air filter in a HVAC system with recirculation are 60% for ETS and 80% for outdoor fine-mode particles. Similar magnitude reductions in concentrations are predicted from use of stand-alone fan-filter units with a flow rate of 5 indoor volumes per hour and ASHRAE 65 or 85% rating. However, filters with an efficiency rating of ASHRAE 45% or lower, which are used very often in commercial and residential HVAC systems, are not effective for reducing indoor concentrations of these particles.

Anecdotally, building engineers and operators often report that high efficiency filters in the supply airstreams of HVAC systems have an excessive airflow resistance, consume too much energy, and are prohibitively expensive. However, our analyses do not support such anecdotal reports for filter efficiencies up to ASHRAE 90%. The average of the initial and recommended-final pressure drops does not necessarily increase significantly with a higher efficiency rating (results not shown). For example, the average pressure drop of four ASHRAE 30% filters was about 160 Pa, while three of six ASHRAE 90% filters had very similar average pressure drops of approximately 185 Pa. The energy costs, which depend on average pressure drop, and total costs can also be similar for filters with a wide range of efficiency ratings. Based on the available data, the more efficient filters generally have a higher cost; however, these costs are small on a per person basis. The total range in monthly costs of filtration, relative to no filtration, shown in Figure 7 is approximately \$4 to \$11. With a supply airflow rate per occupant typical of US office buildings, the corresponding filtration cost range is \$0.70 to \$1.80 per person per month, which is insignificant relative to salaries, rent, or health insurance costs.

At present, the stand-alone fan-filter units marketed for residential use are predominately HEPA filters. We did not attempt to survey the cost and power use of these units. However, as an example a very popular HEPA-filter model with a maximum flow rate of 140 l/s (20 volumes per hour in a 30-m^3 bedroom) has an initial cost of approximately \$250, a manufacturers rated power consumption of 350 W at high fan speed (resulting in \$310 per year of fan energy with continuous operation), and an annual filter replacement cost of approximately \$100. Consequently, these units can consume significant energy and be costly to operate. The analyses within this paper indicate that fan-filter units with a lower efficiency rating will be nearly as effective for most indoor pollutants. Compared with a HEPA filter unit, the energy use and costs of lower-efficiency fan-filter units should be considerably smaller.

Limitations of this analyses

In addition to the assumptions stated in the previous methodology section, e.g. perfect mixing, a few limitations and uncertainties deserve a brief discussion. First, it is not certain that our particle concentration metric – airborne mass per unit volume – is the most relevant metric for health. For example, perhaps the airborne cat allergen within particles smaller than 2 μm contributes more to asthma symptoms than an equivalent amount of cat allergen within larger particles. Possibly, the number or surface area of particles per unit air volume would be a better metric. We have used the mass concentration because it is the most common metric, but further research is needed to identify the metrics most relevant for health.

For cat and dust-mite allergen, uncertainties regarding typical particle size distribution are another limitation. Our predicted concentration reductions differ by as much as 20% (but typically by much less), with different size distribution data. Uncertainties about typical values of particle deposition velocities within buildings and about other particle losses, e.g. in duct systems, also lead to substantial uncertainties in the concentration reductions attained with air filtration.

The particle concentration reductions from use of a furnace filter remain particularly uncertain. Predicted indoor particle concentration reductions would have been much smaller if our calculations had used the unpublished furnace filter efficiency curve with a maximum efficiency of 20%.

Another factor not considered in this paper is the potential release of pollutants from used filters that have an accumulation of particles removed from the air. The emissions of odorous compounds from new and used filters is an area of current research. It is possible that odor emissions from used filters may be determined to be an impetus for replacement of filters more frequently than assumed in our cost analyses. There is also evidence that some used filters, particularly those with a low-efficiency, can release large particles – another possible impetus for more frequent filter replacement. However, the majority of available data indicate that the particle removal efficiency of filters increase as the filter is used.

Finally, our filtration cost calculations were based on the readily available data from three filter suppliers. There is no assurance that these data are representative of the most commonly used filters.

Conclusions

1 Predicted reductions in cat an dust-mite allergen concentrations with filtration range from 20 to 80%. To obtain substantial, e.g. 50%, reductions in indoor concentrations of these allergens, the rate of

airflow through the filter must be at least a few indoor volumes per hour. Increasing filter efficiencies above approximately ASHRAE 65% does not significantly reduce predicted indoor concentrations of cat and dust-mite allergen.

2 Relatively large, e.g. 80%, decreases in indoor concentrations of ETS and outdoor fine-mode particles are attainable with practical filter efficiencies and flow rates. Increasing the filter efficiency above ASHRAE 85% results in only modest predicted incremental decreases in indoor concentrations of these particles. Filters with an efficiency rating of ASHRAE 45% or lower are not effective for reducing indoor concentrations of these particles.

3 Energy costs and total costs can also be similar for filters with a wide range of efficiency ratings. Total filtration costs of approximately $0.70 to $1.80 per person per month are insignificant relative to salaries, rent, or health insurance costs. More frequent filter replacement, than recommended by manufacturers, could save energy and sometimes also slightly decrease filtration costs.

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Appendix 1. Particle size distributions used in the modeling

Tables A1–A6 provide the particle size distributions used in the analyzes. Calculations for each size bin used the geometric mean diameter. The results reported by De Blay et al. (1991) and Tovey et al. (1981) did not include full information on the particle size cuts for the cascade impactor used in measurements. This information was obtained from a detailed evaluation of the performance of the impactor by Soole (1971a, b).

Table A1 Cat allergen size distribution from Custovic et al. (1998)

Bin min. (μm)	Bin max. (μm)	Geo. mean (μm)	Fraction of mass
0.43	0.65	0.54	0.02
0.65	1.1	0.875	0.01
1.1	2.1	1.6	0.02
2.1	3.3	2.7	0.04
3.3	4.7	4	0.14
4.7	5.8	5.25	0.12
5.8	9	7.4	0.21
9	20	14.5	0.44

Table A2 Cat allergen size distribution from De Blay et al. (1991)

Bin min. (μm)	Bin max. (μm)	Geo. mean (μm)	Fraction of mass
0.1	1.5	0.8	0.22
1.5	4	2.75	0.18
4	12	8	0.34
12	20	16	0.26

Table A3 Dust mite allergen size distribution from Tovey et al. (1981)

Bin min. (μm)	Bin max. (μm)	Geo. mean (μm)	Fraction of mass
0.1	1.5	0.8	0.027
1.5	4	2.75	0.018
4	12	8	0.067
12	20	16	0.888

Table A4 Dust mite allergen size distribution from Tsubata et al. (1996)

Bin min. (μm)	Bin max. (μm)	Geo. mean (μm)	Fraction of mass
0.1	0.43	0.265	0.031986
0.43	0.65	0.54	0.031874
0.65	1.1	0.875	0.046628
1.1	2.1	1.6	0.036862
2.1	3.3	2.7	0.052424
3.3	4.7	4	0.05842
4.7	7	5.85	0.08184
7	11	9	0.1758
11	20	15.5	0.4838

Table A5 Outdoor fine mode particle size distribution from Whitby (1978)

Bin min. (μm)	Bin max. (μm)	Geo. mean (μm)	Fraction of mass (%)
0.010	0.016	0.013	0.1
0.016	0.025	0.020	0.3
0.025	0.040	0.032	0.7
0.040	0.063	0.050	1.7
0.063	0.100	0.079	4.8
0.100	0.158	0.126	11.3
0.158	0.251	0.200	19.5
0.251	0.398	0.316	23.5
0.398	0.631	0.501	19.8
0.631	1.000	0.794	11.7
1.000	1.585	1.259	4.8
1.585	2.512	1.995	1.4
2.512	3.981	3.162	0.3

Table A6 Environmental tobacco smoke size distribution from Miller and Nazaroff (2001)

Bin min. (μm)	Bin max. (μm)	Geo. mean (μm)	Fraction of mass
0.086	0.110	0.098	0.064
0.110	0.140	0.125	0.112
0.140	0.177	0.159	0.170
0.177	0.226	0.201	0.179
0.226	0.287	0.256	0.156
0.287	0.364	0.325	0.115
0.364	0.463	0.413	0.112
0.463	0.588	0.525	0.047
0.588	0.747	0.668	0.011
0.747	0.950	0.849	0.008
0.950	1.207	1.078	0.010
1.207	1.534	1.370	0.008
1.534	1.949	1.741	0.006
1.949	2.477	2.213	0.000
2.477	3.148	2.812	0.001

San Francisc□□Cali□□rnia□Heal□□ C□de □□ ARTICLE □□□□AIR □UALITY ASSESSMENT AND □ENTILATION RE□UIREMENT FOR UR□AN INFILL RESIDENTIAL DE□ELOPMENTS □□

ARTICLE □□□□AIR □UALITY ASSESSMENT AND □ENTILATION RE□UIREMENT FOR UR□AN INFILL RESIDENTIAL DE□ELOPMENTS

SEC. 3801. - SHORT TITLE.
SEC. 3802. - FINDINGS.
SEC. 3803. - DEFINITIONS.
SEC. 3804. - APPLICABILITY OF ARTICLE.
SEC. 3805. - POTENTIAL ROADWAY EXPOSURE ZONE AND POTENTIAL ROADWAY EXPOSURE ZONE MAP.
SEC. 3806. - AIR QUALITY ASSESSMENT AND AIR QUALITY REPORT.
SEC. 3807. - VENTILATION REQUIREMENT.
SEC. 3808. - MAINTENANCE OF DOCUMENTS BY DIRECTOR.
SEC. 3809. - RULES AND REGULATIONS.
SEC. 3810. - MAINTENANCE REQUIREMENT.
SEC. 3811. - NO CONFLICT WITH FEDERAL OR STATE LAW.
SEC. 3812. - SEVERABILITY.
SEC. 3813. - UNDERTAKING FOR THE GENERAL WELFARE.

SEC□□□□1□□SHORT TITLE□

This Article shall be entitled "Air Quality Assessment and Ventilation Requirement for Urban Infill Residential Developments."

(Added by Ord. 281-08, File No. 080934, 12/5/2008)

SEC□□□□□□□FINDINGS□

□a□ Motor vehicles are a major source of air pollution in the United States, particularly in urban areas;

□□□ Pollution from motor vehicles imposes severe health burdens on children and families living near freeways and busy roadways. Health research has consistently shown that persons living in close proximity to freeways or busy roadways have poorer lung functions and are more susceptible to develop asthma and other respiratory problems, compared with persons living at a greater distance;

□c□ To avoid the health problems associated with exposure to roadway pollution, the California Air Resources Board recommends avoiding the placement of residential and other sensitive uses within 500 feet (approximately 150 meters) of busy freeways and other busy roadways. However, significant residential development in the state is occurring in urban infill sites, near freeways or busy arterial roadways, potentially increasing these residents' exposure to air pollutants and their associated health risks; and

□d□ This situation is exacerbated in the City of San Francisco, which, by virtue of being located on a peninsula, has a limited amount of land available for new residential development.

(Added by Ord. 281-08, File No. 080934, 12/5/2008)

SEC□□□□□□□DEFINITIONS□

For the purposes of this Article, the following words shall have the following meanings:

□a□ "Building" means a new structure containing ten or more dwelling units as those terms are defined in the San Francisco Building Code.

□□□ "Department" means the San Francisco Department of Public Health.

□c□ "Director" means the Director of the San Francisco Department of Public Health or the Director's designee.

□d□ "Local Roadway Traffic Sources" means traffic generated on roadways within 500 feet from the site.

(e) "PM 2.5" means solid particles and liquid droplets found in the air, that are less than 2.5 micrometers in diameter.

(f) "Potential Roadway Exposure Zone" means those areas within the City and County of San Francisco which, by virtue of their proximity to freeways and major roadways, may exhibit high PM 2.5 concentration attributable to Local Roadway Traffic Sources.

(g) "Potential Roadway Exposure Zone Map" means a map, prepared and periodically updated by the Director and available to the public in the Department's website, depicting the Potential Roadway Exposure Zone.

(h) "Site" means a parcel of land as defined in the San Francisco Building Code.

(Added by Ord. 281-08, File No. 080934, 12/5/2008)

SEC. 38[illegible]. APPLICABILITY OF ARTICLE.

This Article shall apply to newly constructed buildings containing ten or more dwelling units located within the Potential Roadway Exposure Zone, and that have been determined to have a PM 2.5 concentration at the proposed site greater than 0.2 ug/m3 attributable to Local Roadway Traffic Sources, as defined herein.

(Added by Ord. 281-08, File No. 080934, 12/5/2008)

SEC. 38[illegible]. POTENTIAL ROADWAY EXPOSURE ZONE AND POTENTIAL ROADWAY EXPOSURE ZONE MAP.

(a) Pursuant to Section 4.110 of the Charter of the City and County of San Francisco, the Director shall create a Potential Roadway Exposure Zone Map, depicting the Potential Roadway Exposure Zone.

(b) The Director shall from time to time update the Potential Roadway Exposure Zone Map, to account for changes in circumstances that lead to changes in the Potential Roadway Exposure Zone, including, but not limited, to:

(1) Construction of new roadways in residential areas;

(2) Changes in traffic patterns in the City's roadway system; or

(3) Specific scientific data showing that certain areas should be included in the Potential Roadway Exposure Zone Map.

(c) The Director shall post the Potential Roadway Exposure Zone Map in the Department's website, and make paper copies of the map available to the public upon request.

(d) In creating and updating the Potential Roadway Exposure Zone Map, the Director shall follow the procedures of Section 3809, and shall make specific findings explaining how the boundaries of the Potential Roadway Exposure Zone Map meet the definition of Section 3803(f).

(e) The current Potential Roadway Exposure Zone Map is attached to this Ordinance as Attachment A.

(Added by Ord. 281-08, File No. 080934, 12/5/2008)

SEC. 38[illegible]. AIR QUALITY ASSESSMENT AND AIR QUALITY REPORT.

(a) Projects meeting the conditions of Section 3804 shall have performed an Air Quality Assessment, to evaluate the concentration of PM 2.5 from Local Roadway Traffic Sources at the site. All locations at the site where residential buildings or construction may occur shall be evaluated. The Department shall develop guidance, pursuant to Section 3809, setting forth what types of analyses shall be conducted. The project sponsor shall follow the Department's guidance, unless an alternative proposal is approved in writing by the Director.

(b) At the completion of the Air Quality Assessment required by Section 3806(a), an Air Quality Report shall be submitted to the Director. The Air Quality Report shall contain the following information:

(1) The names, addresses and professional expertise of the persons who conducted the Air Quality Assessment;

(2) An explanation of the methodology used in the Air Quality Assessment; and

(3) The results of the Air Quality Assessment.

(c) **Review by the Director.** The Director shall determine whether the Air Quality Report required by this Article was conducted as required by this Article, and whether the Air Quality Report is complete. If the Air Quality Report was not conducted as required by this Article or does not comply with the requirements of this Section, the Director shall notify the project sponsor in writing within 30 days of receipt of the Air Quality Report, indicating the reasons the report is unacceptable. A copy of the notification shall be sent to the Director of building Inspection.

(d) **Finding No Danger to PM 2.5 Concentration.** If the Air Quality Report indicates that the concentration level of PM 2.5 from Local Roadway Traffic Sources at the site is less than 0.2 ug/m3, the Director shall provide the project sponsor with written notification that the project has complied with the requirements of this Article.

(Added by Ord. 281-08, File No. 080934, 12/5/2008)

SEC□□□□□□□□ENTILATION RE□UIREMENT□

□a□ If the Air Quality Report indicates that the concentration level of PM 2.5 from Local Roadway Traffic Sources at the site is greater than 0.2 ug/m3 the project shall:

□1□ be designed, or relocated on the site in a way that would avoid residential exposure to PM 2.5 concentration from Local Roadway Traffic Sources greater than 0.2 ug/m3, as demonstrated by the Air Quality Report, or

□□□ submit to the Director a Ventilation Proposal, prepared by a licensed design professional, to install in the project a ventilation system to meet the requirements of San Francisco Building Code Section 1203.5 Building permit documents submitted to the Department of Building Inspection shall incorporate designs and details necessary for the construction of such ventilation system.

□□□ The Ventilation Proposal shall explain in detail how the project will achieve the standards mandated by San Francisco Building Code Section 1203.5. The Ventilation Proposal shall include a statement signed by the licensed design professional who prepared it, certifying that in his or her judgment the ventilation system proposed will be capable of removeing>80% of ambient PM 2.5 from habitable areas of dwelling units.

(Added by Ord. 281-08, File No. 080934, 12/5/2008)

SEC□□□□□□□MAINTENANCE OF DOCUMENTS □Y DIRECTOR□

The Air Quality Report, Ventilation Proposal, Certification and related documents shall become part of the file maintained by the Department. Such file shall be available to the public upon request.

(Added by Ord. 281-08, File No. 080934, 12/5/2008)

SEC□□□□□□□RULES AND REGULATIONS□

□a□ **Ad□□i□n □□R□les□**The Director may adopt, and may thereafter amend, rules, regulations and guidelines that the Director deems necessary to implement the provisions of this Article. For the purposes of this Article, a public hearing before the Health Commission shall be held prior to the adoption or any amendment of the rules, regulations and guidelines recommended for implementation, including creation and amendments to update the Potential Roadway Exposure Zone Map. In addition to notices required by law, the Director shall send written notice, at least 15 days prior to the hearing, to any interested party who sends a written request to the Director for notice of hearings related to the adoption of rules, regulations and guidelines pursuant to this Section.

In developing such regulations, the Director shall consider, inter alia, State and federal statutes, regulations and guidelines pertaining to the health effects of roadway air pollutants. The Director shall also consult with the Planning Department's Environmental Review Officer at least 30 days prior to initiating any amendments or modifications to these rules or regulations, including changes to the Potential Roadway Exposure Zone Map, and shall seek such officer's concurrence on any proposed change.

The Director shall also, from time to time, consult with the Green Building Task Force, to coordinate and resolve any potential conflicts that may arise between the Green Building Ordinance and this Ordinance.

□□□ **G□idelines □□r Re□□la□i□ns□**Rules, regulations and guidelines may address among others, the following subjects:

□1□ **Mini□ □□ s□andards □□r acce□□a□le Air □□ali□□ Assess□ en□□es□s□**The minimum standards shall be designed to assist interested persons including, but not limited to, the Director of the Department of Building Inspection, other state and local public agencies and licensed design professionals, to evaluate whether analyses, other than those required by Section 3806(a) must be conducted to detect the presence of harmful roadway air pollutants;

□□□ Minimum education and experience requirements for the persons who prepare Air Quality Assessments pursuant to Section 3806(a) and Ventilation Proposals pursuant to Section 3807; and

□□□ Creation and Periodic Updates of the Potential Roadway Exposure Zone Map.

(Added by Ord. 281-08, File No. 080934, 12/5/2008)

SEC□□□1□□□MAINTENANCE RE□UIREMENT□

□a□ The ventilation systems installed pursuant to Section 3807 shall be properly maintained, following standard practices, and as specified by the manufacturer.

□□□

Project sponsors shall preserve documentation of their actions installing and/or maintaining the ventilation systems for five years after installation.

(Added by Ord. 281-08, File No. 080934, 12/5/2008)

SEC□□□11□□NO CONFLICT WITH FEDERAL OR STATE LAW□

Nothing in this Article shall be interpreted or applied so as to create any requirement, power, or duty in conflict with any federal or state law.

(Added by Ord. 281-08, File No. 080934, 12/5/2008)

SEC□□□1□□□SE□ERA□ILITY□

If any section, subsection, sentence, clause, or phrase of this Article is for any reason held to be invalid or unconstitutional by a decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of the Article. The Board of Supervisors hereby declares that it would have passed this Article and each and every section, subsection, sentence, clause, or phrase not declared invalid or unconstitutional without regard to whether any portion of this Article would be subsequently declared invalid or unconstitutional.

(Added by Ord. 281-08, File No. 080934, 12/5/2008)

SEC□□□1□□□UNDERTAKING FOR THE GENERAL WELFARE□

In adopting and implementing this Article, the City and County of San Francisco is assuming an undertaking only to promote the general welfare. It is not assuming, nor is it imposing in its officers and employees, an obligation for breach of which it is liable in money damages to any person who claims that such breach proximately caused injury.

(Added by Ord. 281-08, File No. 080934, 12/5/2008)

CITY OF MILPITAS

455 EAST CALAVERAS BOULEVARD, MILPITAS, CALIFORNIA 95035-5479
GENERAL INFORMATION: 408-586-3000, www.ci.milpitas.ca.gov

03/20/2012
Agenda Item No. 11

ATTACHMENTS AND/OR ADDITIONAL MATERIALS RELATED TO AGENDA ITEM AFTER AGENDA PACKET DISTRIBUTION

City of Milpitas
CALIFORNIA

REQUEST FOR PROPOSAL #2004
Delivery of Fire, Emergency Medical First Response, and Related Emergency Services

DRAFT

City of Milpitas
Purchasing Division
455 E. Calaveras Blvd.
Milpitas, CA 95035-5411
(408) 586-3161
Fax (408) 586-3170

Date of Issuance: April 2, 2012
Bid Deadline: June 1, 1012
2:00 PM

REQUEST FOR PROPOSALS
To Provide Fire, Emergency Medical First Response and Related Emergency Services

The City of Milpitas is considering a variety of options to provide future fire, Emergency Medical Service, and emergency services to its citizens on or before January 2, 2013. To this extent, the City of Milpitas is interested in exploring all viable alternatives for these services, in particular alternatives that maintain the already high standard for fire and emergency services while also addressing concerns of ability to pay, cost containment, service duplication, and improved regional cooperation.

Background

Incorporated in 1954 as a General Law City, Milpitas encompasses 13.6 square miles and is located between Fremont and San Jose. The City of Milpitas is governed by a five member City Council, including the Mayor. The City Manager is appointed by the Council. The City of Milpitas has a population of 70,817 residents with a daytime population that swells above 100,000.

Faced with a continuing structural budget deficit the City of Milpitas is seeking a provider to deliver effective fire and emergency services to the residents of Milpitas. Discussions about regional cooperation and improved efficiency have taken place with Cal Fire (South Santa Clara County Fire Protection District) and the Santa Clara County Central Fire Protection District. Each of these entities has expressed interest in mutual cooperation to achieve possible efficiencies.

Fire & Emergency Service in the City off Milpitas are currently provided by the of Milpitas Fire Department. The Milpitas Fire Department currently has 61 FTE as follows:

- 1 Fire Chief
- 1 Fire Marshal
- 1 Emergency Services Coordinator
- 4 Fire Battalion Chiefs

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- 13 Fire Captains
- 1 Fire Prevention Inspector
- 1 Hazardous Materials Inspector
- 1 Fire Protection Engineer
- 6 Fire Engineers
- 11 Firefighters
- 13 Firefighter/Paramedics
- 6 Engineer/Paramedics
- 1 Office Assistant
- 1 Secretary

The Milpitas Fire Department operates from four fire stations, their addresses are:

- Station 1 – 777 South Main St.
- Station 2 – 1263 Yosemite Dr.
- Station 3 – 45 Midwick Dr.
- Station 4 – 775 Barber Lane

The Milpitas Fire Department currently deploys three, three-person engine companies, one, three-person quint/truck company, one, two-person truck company that responds in tandem with a one-person heavy rescue/Urban Search and Rescue rig.

It is expected that under the terms of a new service-delivery contract or agreement resulting from this Request For Proposal, emergency services will be delivered from the four stations in the City of Milpitas.

The FY 2011/2012 annual budget for the Milpitas Fire Department was approximately $14.2 million. Of the total budget, 100 percent is paid by the City of Milpitas.

Mandatory Pre-Proposal Conference

A pre-proposal conference will be held on May 11, 2012 at 1:00 PM, in the Committee Meeting Room at City Hall at 455 E. Calaveras Blvd. Milpitas, CA 95035. The Committee Room is in the first floor lobby. **Attendance is mandatory.** Questions pertaining to this Request For Proposal may be submitted prior to 4:00 PM on April 20, 2012, to Fire Chief Brian Sturdivant at bsturdivant@ci.milpitas.ca.gov

Innovative Approaches and Regional Solutions Desired

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Of particular interest to the City of Milpitas are proposals that capitalize on the strengths and assets of the emergency response resources available within the City of Milpitas and in nearby jurisdictions, such that mutual economic benefits(s) to the City of Milpitas and a proponent can be achieved. Proposers to this Request For Proposal are encouraged to "think out of the box". All relevant ideas and potential solutions will receive consideration.

General Responsibilities – Fire and Emergency Services

The City of Milpitas desires proposals identifying the proposers overall capabilities to deliver the proposed services. Inasmuch as fiscal issues are a major reason for this effort, proposers are expected to provide the total cost to deliver the proposed services. Requested services are included in the following section (Full Service Delivery Proposal Option).

At its sole discretion, the City of Milpitas may elect to hire its own fire personnel and contract for other such services as deemed necessary by the City Council. In this event the City of Milpitas may contract for management and administrative support or other needed services such as duties of the Fire Prevention Bureau. Under this scenario, the City of Milpitas will be responsible for hiring and management of its personnel.

Scope of Services

The City of Milpitas is seeking capable agencies to provide a full array of fire, emergency medical, and other emergency and non-emergency services. Such services may include, either in part or full:

- Fire suppression
- Vehicle and technical rescue
- Hazmat response
- Emergency medical non-transport response (Advanced Life Support and Basic Life Support) training
- Training and personnel development
- Emergency management (Office of Emergency Services)
- Code enforcement, plans review, inspection, investigation, and public education
- Fire administration and support to include: time and attendance reporting, fire and Emergency Medical Service records

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management; Information Technology; human resource management; fleet management
- Incident command, partnership in the Santa Clara County Joint Firefighter Academy, and Auto/Mutual Aid Plans

Proposers are expected to meet the general responsibilities for delivering fire and emergency response services and to provide such services in a manner that delivers these services using generally accepted practices within the level of service agreed to with the City of Milpitas. Examples of such level of service include but are not limited to:

- Arrival at an emergency scene within 5 minutes, 90% of the time.
- Fire crew turn-out times of 90 seconds (fire response), 60 seconds (Emergency Medical Service response)
- Fire unit reliability rate of 80%
- Structure fire flame spread contained to the room of origin 80% of the time.
- Reasonable, response turn-around for all issued fire permits, plan reviews conducted, inspections and investigations
- Acceptable fire service industry standards as outlined by NFPA recommendations.

For each agency submitting a proposal the following are considered mandatory:

1. The ability to function under the auspices of the City of Milpitas and Santa Clara Countywide Communications Center and protocols.
2. The ability to function under the Countywide Medical Joint Powers Authority and Automatic Aid Agreement protocols.
3. The ability to provide advanced life support service within the requirements of the Santa Clara County Health Department, Medical Director, and protocols.
4. The ability to provide a Medical Continuous Quality Improvement program and to provide special training and support for emergency medical service personnel.
5. The ability to serve as a critical element within the City of Milpitas's emergency response system and provide command staff during a major emergency, along with emergency operations center duties and responsibilities.
6. The ability to provide all related supplies and services and to account for all such supplies and services provided to the City of Milpitas.

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City Equipment

All vehicles and equipment, including expendable equipment, tools, fixtures, furnishings, supplies, and all items incidental to the operation of the Fire Department with a fair market value of $250 or more shall be either (a) purchased out right by the awarded proposer at the time of contract award or (b) credited to the City through deductions from City payments to the awarded proposer over the length of the contract and amortized over the life of the contract or equipment, which ever comes first. This includes all items currently in possession or assigned to the City of Milpitas Fire Department unless specifically excluded. Proposals should identify which of these purchase methods a proposer wishes to use. The City will also consider alternative payment methodologies for vehicle and equipment purchases other than the two specified herein.

All vehicles and major equipment sold would be identified in the agreement for services negotiated by the City of Milpitas and the awarded proposer.

City Fire Department Facilities

If the City of Milpitas were to award a contract for fire services, the awarded proposer would lease the City of Milpitas fire stations for $1 per year, per facility. For the duration of the contract the awarded proposer will be responsible for any and all maintenance and repairs require to maintain the facilities in as good a condition as when first taken over, minus normal wear and tear.

Fuel Tanks

The awarded proposer would assume all responsibility for the maintenance and utility of the above ground fuel pumps located at Fire Stations 1, 2, 3, and 4. As well as the provisioning of fuel for Stations 1, 2, 3, and 4.

Other Contracted Services

Currently, the City of Milpitas contracts for certain services and the awarded proposer may need to assume those contracts.

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Services

The City of Milpitas may accept any of the services and corresponding prices in any combination including none at all. Consequently, the proposal must list the cost of each service separately.

A proposal will provide the full range of services generally expected of a full-service fire and emergency organization including, but not limited to fire suppression, emergency medical response first response, advanced life support and basic life support, administration, incident command, training, emergency management, code enforcement/plans review, fire cause and determination, public education and outreach, hazmat response/mitigation and technical rescue.

Service 1 - Fire suppression - Operating from four fire stations in the City of Milpitas, the proposer will maintain three, three-person engine companies, one, three-person quint/truck company, one, two-person truck company that responds in tandem with a one-person heavy rescue/Urban Search and Rescue rig. Each three-person advanced life support engine company and the one, three-person truck Company will be staffed by one captain, one engineer, and one firefighter. One of the assigned crew members must be qualified as a paramedic. Also two members of the three-person truck company must be qualified at the haz mat technician level.

Proposers will be expected to provide response coverage to include one qualified battalion chief (or higher). It is also a requirement that a command officer (battalion chief or higher) be physically located at Milpitas Fire Department Station One. In addition to response activities, this command officer is expected to coordinate the daily staffing of the four fire stations located in the City of Milpitas and supervise company officers during routine activities.

Related services to be provided under this full service delivery option include:

Service 2 - Fire administration and support – Services provided are to include the full array of administrative and support activities to include budget administration, records management, incident reporting, quarterly data analysis of emergency and non-emergency activities, personnel administration, cost accounting, and other services necessary to administer a full-service emergency service

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system. The successful proposer will be expected to attend City of Milpitas meetings, and represent the City of Milpitas's interests at other meetings regarding emergency response issues.

Service 3 - Training – Services provided will include the full array of training, personnel development and evaluation needs to meet the entire slate of operational objectives required for the City of Milpitas. Fire training, technical rescue, and emergency medical response training certification and maintenance would be included along with professional development and candidate promotional process preparation.

Service 4 - Emergency management and support - Services to include the incorporation of the City of Milpitas Office of Emergency Services and the full array of emergency preparedness planning and training to the City of Milpitas and its employees. The capability and cost to represent the City of Milpitas at fire and emergency related meetings and community activities including attendance at City Council and other staff meetings, school programs, service clubs, and the business community are also to be provided.

Service 5 - Fire prevention and code enforcement – Services are to include the full array of fire prevention and code enforcement services currently provided to the City of Milpitas. The present staffing level is one Fire Marshal (3 bugle Division Chief), one Fire Prevention Inspector, one Hazardous Materials Inspector, one Fire Protection Engineer and one Office Specialist. Milpitas Fire Department Fire Prevention Bureau also utilizes 2 contract employees, part-time with no associated benefit package. Under this proposal it would be mandatory for these positions to be located within the City of Milpitas.

Activities to be performed by the Fire Prevention Bureau are to include, but are not limited by:

- Wild land urban interface inspections and enforcement
- State and local mandated fire and life safety inspections
- Plan checking
- Annual fire code permit inspection
- New construction inspection
- Builder consultation
- Coordinate and manage company level inspections by station personnel

- Develop and provide public education services to targeted audiences; coordinate public education activities with station personnel
- Fire cause and origin determination and investigation of fires within the City of Milpitas; coordinate activities with the local police agency.
- Provide and coordinate Citizen Emergency Response Team training for the community with the Office of Emergency Services
- Serve as a member of the command staff within the City of Milpitas's Emergency Operations Center
- Inspection, clearance, and issuance of fire permits
- Collection and remittance of collected fees to the City of Milpitas (prospective proposers may submit a proposed fee schedule to be considered as part of the code enforcement effort)
- Hazmat inspection and regulation

Terms of the Agreement and Pricing

The City of Milpitas expects to complete its review and selection process by July 1st, 2012 in anticipation that all facets of the emergency response system will be in place on or before January 2 2013.

The City of Milpitas will entertain suggestions to begin any of the proposed services before fiscal year 11/12, if such proposal is beneficial to the City of Milpitas. Proposers to this request for proposal should be prepared to enter into a minimum of ten-year agreement for the proposed services.

Pricing – All proposals shall include the pricing details for each service. Such detail will include the cost of personnel salaries and benefits, materials, equipment, and overhead cost, if any. The cost of each position/rank and level of effort for the individual is also to be shown. Pricing detail shall be depicted by year for each of the ten years such that the City of Milpitas can evaluate the proposal's annual and total cost. Proposals may include annual cost adjustments due to anticipated changes in salary, benefits, and other cost.

Y Banding and Agency Pricing – As part of their submittal, proposers shall transition personnel currently employed by the Milpitas

Fire Department and are to submit with their cost proposal, two separate cost structures. One is to show the cost of current City of Milpitas Fire Department employees that are "y banded" at their existing salary level. The second is to show the cost if the proposing agency uses employees hired by their agency and within its salary structure.

Submittal Guidelines

Agencies submitting proposals for the full service delivery request for proposal shall submit Three (3) bound copies and one electronic copy on CD-ROM. Proposal shall be double sided on recycled content paper, in a sealed envelope bearing the caption **"Request For Proposals - #2004: Delivery of Fire, Emergency Medical First Response, and Related Emergency Services".** The proposal must include a transmittal letter signed by an official representative authorized to commit the organization to the proposal terms.

Rules For Submitting Proposals

a. **Submittal Deadline**. Proposals must arrive in the (Purchasing Office), 455 E. Calaveras Blvd., Milpitas, CA 95035-5411, by the Submittal Deadline of June 1, 2012 at 2:00 PM, or subsequent addenda. Proposals may be submitted by hand, by courier, or any other method specified herein. Proposals may also be submitted in person at the Information Counter in the lobby of the first floor of City Hall at 455 E. Calaveras Blvd. Milpitas CA, 95035

b. **Responsibility**. Proposers are solely responsible for ensuring their proposal is received by the City of Milpitas in accordance with the solicitation requirements, before Submittal Deadline, and at the place specified. The City of Milpitas shall not be responsible for any delays in mail or by common carriers or by transmission errors or delays or mistaken delivery. Delivery of proposals shall be made at the office specified in the Request For Proposals (this solicitation). Deliveries made before the Submittal Deadline but to the wrong City of Milpitas office will be considered non-responsive unless re-delivery is made to the office specified before the Submittal Deadline.

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c. **Extension of Submittal Deadline**. The City of Milpitas reserves the right to extend the Submittal Deadline when it is in the best interest of the City of Milpitas.

d. **Facsimile Transmissions**. Proposals may NOT be submitted by facsimile, unless otherwise specified herein.

e. **Late Proposals**. The Submittal Deadline it IS FIRM. Proposals will NOT be accepted after the Submittal Deadline and will be returned to the Proposer unopened.

Rights Reserved

The City of Milpitas reserves the right to request additional information concerning any proposal for purposes of clarification, to accept or negotiate any modification to any proposal following the deadline for receipt of all proposals, and to waive any irregularities if such would serve the best interests of the City of Milpitas as determined by the City Manager.

All inquiries regarding the Request for Proposal should be directed to Brian Sturdivant, Fire Chief, at the above address or by telephone at (408) 586-2811, or preferably by email at bsturdivant@ci.milpitas.ca.gov.

Additional Submittal Information

The City of Milpitas assumes no responsibility for delays caused by delivery service. Postmarking by the due date will not substitute for actual receipt. All cost incurred during proposal preparation or in any way associated with the agency's preparations, submission, presentation, or oral interview shall be the sole responsibility of the agency.

If awarded a contract, the successful agency shall maintain insurance coverage as listed in Exhibit A - "Insurance Requirements - General"

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Award of Proposal

Award will be made to the Proposer offering the most advantageous proposal after consideration of all Evaluation Criteria set forth below. The criteria are not listed in any order of preferences. An Evaluation Committee will be established by the City of Milpitas. The Committee will evaluate all proposals received in accordance with the Evaluation Criteria. The City of Milpitas reserves the right to establish weight factors that will be applied to the criteria depending upon order of importance.

Award Evaluation Criteria

Evaluation Criteria that will be used to evaluate all proposals that are received are listed below:

- Qualifications and availability of key persons to be assigned to the contract resulting from this solicitation
- Number of years of experience the Proposer has in this type of business
- Demonstrated competence
- Experience in performance of comparable services / list at least 3 references
- Reasonableness of cost
- Financial stability
- Maximum guaranteed response time for standard service calls
- Maximum guaranteed response time for emergency service calls
- Conformance with the services listed in the request for proposal.
- Financial viability of fire station, vehicle, and equipment acquisition plan.

The evaluation committee may also contact and evaluate the Proposer's and subcontractor's references; contact any Proposer to clarify any response; contact any current users of a Proposer's services; solicit information from any available source concerning any aspect of a proposal; and seek and review any other information deemed pertinent to the evaluation process. The evaluation committee shall not be obligated to accept the lowest priced proposal, but shall make an award in the best interests of the City of Milpitas after all factors have been evaluated.

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Discussions may, at the City of Milpitas' sole option, be conducted with responsible Proposers who submit proposals determined to be reasonably susceptible of being selected for an award. Discussions may be for the purpose of clarification to assure full understanding of, and responsiveness to, the solicitation requirements. Proposers shall be accorded fair and equal treatment with respect to any opportunity for discussion and written revision of proposals. Revisions may be permitted after submissions and before award for obtaining best and final proposals. In conducting discussions, the City of Milpitas will not disclose information derived from proposals submitted by competing Proposers. A Notification of Intent to Award may be sent to any Proposer selected. Award is contingent upon the successful negotiation of final contract terms. Negotiations shall be confidential and not subject to disclosure to competing Proposers unless an agreement is reached. If contract negotiations cannot be concluded successfully, the City of Milpitas may negotiate a contract with the next highest scoring Proposer or withdraw the RFP.

Award Selection Process.

Additional questions may be asked of Proposers and interviews may be conducted. Proposers will be notified of any additional required information or interviews after the written proposals have been evaluated. Interviews will be held with the most qualified respondents. The recommended proposals will be submitted to the (awarding authority) for contract approval. The Proposer selected will enter into a contract with the City of Milpitas.

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EXAMPLE OF A WEIGHTED EVALUATION

EVALUATION CRITERIA	PERCENTAGE
Qualifications and availability of key persons to be signed to the contract resulting from this solicitation.	5
Number of years of experience the Proposer has in this type of business.	5
Demonstrated competence.	5
Experience in performance of comparable services. List at lease 3 references.	10
Reasonableness of cost.	10
Financial stability.	10
Maximum guaranteed response time for standard service calls.	15
Maximum guaranteed response time for emergency service calls.	15
Conformance with the services listed in the request for proposal.	15
Financial viability of fire station, vehicle, and equipment acquisition plan.	10

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The above percentages show the relative importance of individual criterion. The evaluation committee will use these criteria to score the proposals.

Proposal Evaluation Process and Timing

All proposals will be screened by the City of Milpitas. Those most advantageous to the City of Milpitas will be afforded the opportunity to present their proposal to a committee of City of Milpitas

representatives. It is the City of Milpitas's plan to interview the most responsive proposers prior to any decision. However, the City of Milpitas is under no obligation to interview any of the proposers. All proposals will be reviewed by the Milpitas City Council, which will make the final determination.

Important dates and the projected timeline for this process are:

Pre-proposal Conference	May 11, 2012
Proposals due	June 1, 2012
Proposal Presentation to the City Council	TBD
Questions to Proposers/Meetings with City Staff	TBD
Council Discussion and Direction to Staff	TBD
Council Consideration of Draft Agreement	TBD
Transition of Services to New Provider	January 2, 2013

Non – Obligation

The City of Milpitas retains sole discretion to evaluate proposals and may make an award to the agency deemed to have the most advantageous proposal. In addition the City of Milpitas reserves the right to engage in negotiations with any proposer over alternatives identified in this Request For Proposal as well as alternatives that may become apparent during negotiations. Receipt of proposals in response to this Request For Proposal do not obligate the City of Milpitas in any way to engage any proposing agency and the City of Milpitas reserves the right to reject any or all proposals, wholly or in part, at any time, without penalty. The City of Milpitas reserves the right to cancel the solicitation and make no award.

The City of Milpitas shall bear no financial or other responsibility to any proposer for any reason or for any participation in the process. The City of Milpitas reserves the right to negotiate all final terms and conditions of any agreements entered into.

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EXHIBIT A
INSURANCE REQUIREMENTS - GENERAL

Definition:
For purposes of this contract, the following definition applies: City of Milpitas includes the duly elected or appointed officers, agents, employees and volunteers of the City of Milpitas, individually or collectively.

Insurance Required:
No work shall be done under this Contract unless there is in effect insurance required by the Contract and under this section, and such insurance has been approved by the City, nor shall the CONTRACTOR allow any subcontractor to commence work on his subcontract until all insurance required of the subcontractor has been so obtained and approved. The CONTRACTOR shall maintain or cause to be maintained adequate workers' compensation insurance as required under the laws of the State of California, for all labor employed by him or by any subcontractor under him who may come within the protection of such worker's compensation laws of the State of California and shall provide or cause to be provided employer's general liability insurance for the benefit of his employees and the employees of any subcontractor under him not protected by such compensation laws.

Minimum Scope of Insurance:
Coverage shall be *at least as broad as*:

1. Insurance Services Office Form CG 0001 covering Commercial General Liability on an "occurrence" basis.
2. Insurance Services Office Form Number CA 0001 covering Automobile Liability, Code 1 (any auto).
3. Workers' Compensation insurance as required by the State of California and Employer's Liability Insurance.

Minimum Limits of Insurance:
Contractor shall maintain limits no less than:

1. **General Liability**: (Including operations, products and completed operations.)

   $20,000,000 per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit.

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2. **Automobile Liability**: **$20,000,000** per accident for bodily injury and property damage.

3. **Employer's Liability**: **$1,000,000** per accident for bodily injury or disease.

Deductibles and Self-Insured Retentions:
Any deductibles or self-insured retentions must be declared to and approved by the City. The City may require the Contractor to provide proof of ability to pay losses and related investigations, claim administration, and defense expenses within the retention.

Other Insurance Provisions:
The general liability and automobile liability policies are to contain, or be endorsed to contain, the following provisions:

1. **The City of Milpitas, its officers, officials, employees, and volunteers** are to be covered as insureds with respect to liability arising out of automobiles owned, leased, hired or borrowed by or on behalf of the contractor; and with respect to liability arising out of work or operations performed by or on behalf of the Contractor including materials, parts or equipment furnished in connection with such work or operations. General liability coverage can be provided in the form of an endorsement to the Contractor's insurance (at least as broad as ISO Form CG 20 10 11 85), or as a separate owner's policy.

2. For any claims related to this project, the **Contractor's insurance coverage shall be primary** insurance as respects the City, its officers, officials, employees, and volunteers. Any insurance or self-insurance maintained by the City, its officers, officials, employees, or volunteers shall be excess of the **Contractor's insurance and shall not contribute with it**.

3. The Insurance Company agrees to **waive all rights of subrogation** against the City, its elected or appointed officers, officials, agents and employees for losses paid under the terms of any policy which arise from work performed by the Named Insured for the City. <u>This provision also applies to the Contractor's Workers' Compensation policy.</u>

4. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be canceled by either party, except after **thirty (30) days' prior written notice (10 days for non-payment)** by certified mail, return receipt requested, has been given to the City. If Contractor's insurer refuses to provide this endorsement, Contractor shall be responsible for providing written notice to the City that coverage will be canceled thirty (30) days after the date of the notice or ten (10) days for non-payment.

Acceptability of Insurers:
Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A:VII, unless otherwise acceptable to the City.

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Verification of Coverage:
Contractor shall furnish the City with original certificates and amendatory endorsements affecting coverage required by this clause. All certificates and endorsements are to be received and approved by the City before work commences. However, failure to obtain the required documents prior to the work beginning shall not waive the contractor's obligation to provide them. The City reserves the right to require complete, certified copies of all required insurance policies, including endorsements affecting the coverage required by these specifications, at any time.

The Certificate with endorsements and notices shall be mailed to: City of Milpitas, Attention: Purchasing, 455 East Calaveras Boulevard, Milpitas California, 95035-5411.

Absence of Insurance:
If the CONTRACTOR allows the insurance to lapse, be cancelled, or be reduced below the limits specified in this article, the Contractor shall cause all work in the Project to cease and any delays or expenses caused due to stopping of work and change of insurance shall be considered CONTRACTOR's delay and shall not be considered to increase cost to the City or increase time in which the Project shall be completed.

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