Attachment H

CITY OF LONG BEACH

Application For Appeal

Department of Development Services | Planning Bureau
411 W. Ocean Blvd., 2nd Floor, Long Beach, CA 90802
(562) 570-6194 longbeach.gov/lbds

An appeal is hereby made to Your Honorable Body from the decision of the

- ○ Site Plan Review Committee
- ○ Zoning Administrator
- ◉ Planning Commission
- ○ Cultural Heritage Commission

Which was taken on the 19th day of September, 20 19.

Project Address: 131 West 3rd Street, Long Beach, California

I/We, your appellant(s), hereby respectfully request that Your Honorable Body **reject** the decision and ☐ **Approve** / ☒ **Deny** the application or permit in question.

ALL INFORMATION BELOW IS REQUIRED

Reasons for Appeal: As described more fully in the attached letter, it approving the project based on a CEQA Addendum violated CEQA. Because there is substantial evidence that the Project will have significant environmental impacts not analyzed in the 2011 City of Long Beach Downtown Plan Program Environmental Impact Report, a tiered EIR must be prepared for the Project.

Appellant Name(s): Supporters Alliance for Environmental Responsibility

Organization (if representing)

Address: 1939 Harrison St., Suite 150

City Oakland State CA ZIP 94612 Phone 510-836-4200

Signature(s) Date 9/26/2019

- A separate appeal form is required for each appellant party, except for appellants from the same address, or an appellant representing an organization.
- Appeals must be filed within 10 days after the decision is made (LBMC 21.21.502).
- You must have established *aggrieved* status by presenting oral or written testimony at the hearing where the decision was rendered; otherwise, you may not appeal the decision.
- See reverse of this form for the statutory provisions on the appeal process.

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☐ **Appeal by Applicant** ☒ **Appeal by Third Party**

Received by: JN Case. No.: SPR18-038 Appeal Filing Date: 9/27/19

Fee $105.80 ☑ Fee Paid Project (receipt) No.: 03602415

PLNE-465381

APL19-004

Revised August 2019

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VIA E-MAIL AND HAND DELIVERY

September 19, 2019

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Re: Comment on 3rd and Pacific Project Addendum to Downtown Plan Program EIR, Site Plan Review (SPR18-038)

Dear Chair Lewis and Honorable Commissioners:

I am writing on behalf of the Supporters' Alliance for Environmental Responsibility ("SAFER") and its members living and working in and near Long Beach ("SAFER"). The City of Long Beach ("City") received an application for the development of the 3rd and Pacific Project, which includes development of two mixed-use residential and commercial buildings within the Downtown Plan Area (the "Project"). SAFER is concerned that the City is proposing to approve the Project based on an Addendum prepared based on the assertion that the Project is consistent with the City of Long Beach Downtown Plan Program Environmental Impact Report approved by the City in 2011 (the "2011 PEIR"). As discussed below, because there is substantial evidence that the Project will have significant impacts not analyzed in the 2011 PEIR, a tiered EIR must be prepared for the Project. Approval of the Project based on an addendum violates the California Environmental Quality Act ("CEQA"), Pub. Res. Code section 21000, et seq.

PROJECT DESCRIPTION

The Project proposes to develop a mixed-use residential and commercial development in the Downtown Plan area. The proposed project would replace two existing surface parking lots

with two buildings— an 8-story building at the north end of the property (North Building) and a 23-story high rise building at the south portion of the site (South Building) on a 1.2-acre site. Both buildings would include ground floor retail, with residential units on the upper stories.

The proposed project would include a total of 345 residential units that would range from studios to 3-bedroom units, 14,437 sf of retail commercial space, 563 vehicle parking spaces, and 128 bicycle parking spaces. The project's residential component would consist of 429,456 square feet (sf) of residential uses, including amenities, 14,337 sf of commercial retail uses, 217,493 sf of parking. The proposed project would also include 42,307 sf of open space, namely 13,944 sf of residential common outdoor open space, 11,688 sf of residential indoor common open space, 11,340 sf of residential private open space, and 5,335 sf of public open space. The proposed project's gross building area would be approximately 661,430 sf, including all below-grade levels.

DISCUSSION

SAFER hereby requests that the City prepare an environmental impact report ("EIR") to analyze the significant environmental impacts of the Project and to propose all feasible mitigation measures and alternatives to reduce those impacts. The City many not rely on an addendum to the 2011 PEIR for several reasons, including, but not limited to, the following:

I. CEQA REQUIRES THE CITY TO PREPARE A TIERED EIR FOR THE PROJECT INSTEAD OF AN ADDENDUM.

CEQA permits agencies to 'tier' EIRs, in which general matters and environmental effects are considered in an EIR "prepared for a policy, plan, program or ordinance followed by narrower or site-specific [EIRs] which incorporate by reference the discussion in any prior [EIR] and which concentrate on the environmental effects which (a) are capable of being mitigated, or (b) were not analyzed as significant effects on the environment in the prior [EIR]." (Pub. Res. Code § 21068.5.) The initial general policy-oriented EIR is called a programmatic EIR ("PEIR") and offers the advantage of allowing "the lead agency to consider broad policy alternatives and program wide mitigation measures at an early time when the agency has greater flexibility to deal with basic problems or cumulative impacts." (EIR 14 CCR §15168.) "[T]iering is appropriate when it helps a public agency to focus upon the issues ripe for decision at each level of environmental review and in order to exclude duplicative analysis of environmental effects examined in previous [EIRs]." (Pub Resources Code § 21093.) CEQA regulations strongly promote tiering of EIRs, stating that "[EIRs] shall be tiered whenever feasible, as determined by the lead agency." (Cal Pub Resources Code § 21093.)

Once a program EIR has been prepared, "[s]ubsequent activities in the program must be examined in light of the program EIR to determine whether an additional environmental document must be prepared." (14 CCR § 15168(c).) The first consideration is whether the activity proposed is covered by the PEIR. (*Id.*) If a later project is outside the scope of the program, then it is treated as a separate project and the PEIR may not be relied upon in further review. (*Sierra Club v. County of Sonoma* (1992) 6 Cal.App.4th 1307.) The second consideration

is whether the "later activity would have effects that were not examined in the program EIR." (CCR §§ 15168(c)(1).) A PEIR may only serve "to the extent that it contemplates and adequately analyzes the potential environmental impacts of the project." (*Sierra Nevada Conservation v. County of El Dorado* ("*El Dorado*") (2012) 202 Cal.App.4th 1156). If the PEIR does not evaluate the environmental impacts of the project, a tiered EIR must be completed before the project is approved. (*Id.*) For these inquiries, the "fair argument test" applies. (*Sierra Club*, 6 Cal.App.4th 1307, 1318; *See also Sierra Club v. County of San Diego* (2014) 231 Cal.App.4th 1152, 1164 ("when a prior EIR has been prepared and certified for a program or plan, the question for a court reviewing an agency's decision not to use a tiered EIR for a later project 'is one of law, i.e., the sufficiency of the evidence to support a fair argument.'"))

Under the fair argument test, a new EIR must be prepared "whenever it can be fairly argued on the basis of substantial evidence that the project may have significant environmental impact. (*Id.* at 1316 (quotations omitted).) When applying the fair argument test, "deference to the agency's determination is not appropriate and its decision not to require an EIR can be upheld only when there is no credible evidence to the contrary." (*Sierra Club*, 6 Cal. App. 4th at 1312.) "[I]f there is substantial evidence in the record that the later project may arguably have a significant adverse effect on the environment which was not examined in the prior program EIR, doubts must be resolved in favor of environmental review and the agency must prepare a new tiered EIR, notwithstanding the existence of contrary evidence." (*Sierra Club*, 6 Cal.App.4th at 1319.)

In *Friends of College of San Mateo Gardens* the California Supreme Court explained the differing analyses that apply when a project EIR was originally approved and changes are being made to the project, and when a tiered program EIR was originally prepared and a subsequent project is proposed consistent with the program or plan:

> For project EIRs, of course, a subsequent or supplemental impact report is required in the event there are substantial changes to the project or its circumstances, or in the event of material new and previously unavailable information. (*Friends of Mammoth*, citing § 21166.) In contrast, when a tiered EIR has been prepared, review of a subsequent project proposal is more searching. **If the subsequent project is consistent with the program or plan for which the EIR was certified, then 'CEQA requires a lead agency to prepare an initial study to determine if the later project may cause significant environmental effects not examined in the first tier EIR.'** (*Ibid.* citing Pub. Resources Code, § 21094, subds. (a), (c).) 'If the subsequent project is not consistent with the program or plan, it is treated as a new project and must be fully analyzed in a project—or another tiered EIR if it may have a significant effect on the environment.' (*Friends of Mammoth*, at pp. 528–529, 98 Cal.Rptr.2d 334.)

(*Friends of Coll. of San Mateo Gardens v. San Mateo County Cmty. Coll. Dist.* ("*San Mateo Gardens*") (2016) 1 Cal.5th 937, 960.)

Here, the City prepared a program EIR in 2011 for the Downtown Plan Project.[1] As a result, CEQA requires the City to prepare an initial study to determine if the Project *may* cause significant environmental effects not examined in the PEIR. (Pub. Res. Code § 21094.) As discussed below, there is substantial evidence supporting a fair argument that the Project may result in significant environmental impacts that were not previously analyzed in the PEIR. Accordingly, an EIR must be prepared for the Project.

II. THE CITY CANNOT ISSUE AN ADDENDUM FOR THE PROJECT BECAUSE THE PROJECT WAS NOT ADDRESSED IN THE PROGRAM EIR.

The City is wrong in concluding that the Project can be analyzed under CEQA Guidelines Section 15164 and 15162 because those sections are only applicable when a project has recently undergone CEQA review. As the California Supreme Court explained in *San Mateo Gardens*, subsequent CEQA review provisions "can apply only if the project has been subject to initial review; they can have no application if the agency has proposed a new project that has not previously been subject to review." (*Friends of Coll. of San Mateo Gardens v. San Mateo County Cmty. Coll. Dist.* ("*San Mateo Gardens*") (2016) 1 Cal.5th 937, 950.) Agencies can prepare addendums for project modifications or revisions and avoid further environmental review, but only if the project has a previously certified EIR or negative declaration. (*See Save our Heritage v. City of San Diego* (2018) 28 Cal.App.5th 656, 667.)

If the proposed Project had already been addressed in the 2011 PEIR, the standard for determining whether further review is required would be governed by 14 CCR §15162 and Pub. Res. C. §21166, and an addendum could potentially be allowed under § 15164. These sections are inapplicable here, however, because the proposed Project has never undergone CEQA review. Neither an EIR nor a negative declaration was prepared for the Project, and the Project was never mentioned or discussed in the PEIR. As a result, the City cannot rely on the subsequent review provisions of CEQA Guidelines sections 15162 or 15164.

III. THERE IS SUBSTANTIAL EVIDENCE THAT THE PROJECT WILL HAVE SIGNIFICANT ENVIRONMENTAL IMPACT.

A. There is Substantial Evidence that the Project may have a Significant Impact on Indoor Air Quality.

Formaldehyde is a known human carcinogen. Many composite wood products typically used in residential and office building construction contain formaldehyde-based glues which off-gas formaldehyde over a very long time period. The primary source of formaldehyde indoors is

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[1] The 2011 PEIR states that it was "prepared in accordance with the provisions of the California Environmental Quality Act (CEQA) and Section 15168 of the CEQA Guidelines, which provides for the preparation of a PEIR '[i]n connection with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program.'" (2011 PEIR, p. 1-1.)

composite wood products manufactured with urea-formaldehyde resins, such as plywood, medium density fiberboard, and particle board. These materials are commonly used in residential and office building construction for flooring, cabinetry, baseboards, window shades, interior doors, and window and door trims.

Given the prevalence of materials with formaldehyde-based resins that will be used in constructing the Project and the residential buildings, there is a significant likelihood that the Project's emissions of formaldehyde to air will result in very significant cancer risks to future residents and workers in the buildings. Even if the materials used within the buildings comply with the Airborne Toxic Control Measures (ATCM) of the California Air Resources Board (CARB), significant emissions of formaldehyde may still occur.

The residential buildings will have significant impacts on air quality and health risks by emitting cancer-causing levels of formaldehyde into the air that will expose workers and residents to cancer risks well in excess of SCAQMD's threshold of significance. A 2018 study by Chan et al. (attached as Exhibit A) measured formaldehyde levels in new structures constructed after the 2009 CARB rules went into effect. Even though new buildings conforming to CARB's ATCM had a 30% lower median indoor formaldehyde concentration and cancer risk than buildings built prior to the enactment of the ATCM, the levels of formaldehyde will still pose cancer risks greater than 100 in a million, well above the 10 in one million significance threshold established by the SCAQMD.

Based on expert comments submitted on other similar projects and assuming all the Project's and the residential building materials are compliant with the California Air Resources Board's formaldehyde airborne toxics control measure, future residents and employees using the Project will be exposed to a cancer risk from formaldehyde greater than the SCAQMD's CEQA significance threshold for airborne cancer risk of 10 per million.

The City has a duty to investigate issues relating to a project's potential environmental impacts. (*See County Sanitation Dist. No. 2 v. County of Kern*, (2005) 127 Cal.App.4th 1544, 1597–98. ["[U]nder CEQA, the lead agency bears a burden to investigate potential environmental impacts."].) "If the local agency has failed to study an area of possible environmental impact, a fair argument may be based on the limited facts in the record. Deficiencies in the record may actually enlarge the scope of fair argument by lending a logical plausibility to a wider range of inferences." (*Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 311.) Given the lack of study conducted by the City on the health risks posed by emissions of formaldehyde from new residential projects, a fair argument exists that such emissions from the Project may pose significant health risks. As a result, the City must prepare an EIR to analyze and mitigate this potentially significant impact.

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B. There is Substantial Evidence that the Project may have a Significant Impact on Biological Resources as a Result of Window Collisions.

The Project as planned would contribute to an ongoing national catastrophe in bird collision deaths caused by poorly planned incorporation of windows into building designs. Constructing 8- and 23-story buildings, as the Project proposes to do, will not only take aerial habitat from birds, but it will also interfere with the movement of birds in the region and it will result in large numbers of annual window collision fatalities.

Window collisions are often characterized as either the second or third largest source or anthropogenic-caused bird mortality. The numbers behind these characterizations are often attributed to Klem's (1990)[2] and Dunn's (1993)[3] estimates of about 100 million to 1 billion bird fatalities in the USA, or more recently Loss et al.'s (2014)[4] estimate of 365-988 million bird fatalities in the USA or Calvert et al.'s (2013)[5] and Machtans et al.'s (2013)[6] estimates of 22.4 million and 25 million bird fatalities in Canada, respectively.

Gelb and Delacretaz (2009)[7] recorded 5,400 bird fatalities under buildings in New York City, based on a decade of monitoring only during migration periods, and some of the high-rises were associated with hundreds of fatalities each. Klem et al. (2009)[8] monitored 73 building façades in New York City during 114 days of two migratory periods, tallying 549 collision victims, nearly 5 birds per day. Borden et al. (2010)[9] surveyed a 1.8 km route 3 times per week

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[2] Klem, D., Jr. 1990. Collisions between birds and windows: mortality and prevention. Journal of Field Ornithology 61:120-128.

[3] Dunn, E. H. 1993. Bird mortality from striking residential windows in winter. Journal of Field Ornithology 64:302-309.

[4] Loss, S. R., T. Will, S. S. Loss, and P. P. Marra. 2014. Bird–building collisions in the United States: Estimates of annual mortality and species vulnerability. The Condor: Ornithological Applications 116:8-23. DOI: 10.1650/CONDOR-13-090.1

[5] Calvert, A. M., C. A. Bishop, R. D. Elliot, E. A. Krebs, T. M. Kydd, C. S. Machtans, and G. J. Robertson. 2013. A synthesis of human-related avian mortality in Canada. Avian Conservation and Ecology 8(2): 11. http://dx.doi.org/10.5751/ACE-00581-080211

[6] Machtans, C. S., C. H. R. Wedeles, and E. M. Bayne. 2013. A first estimate for Canada of the number of birds killed by colliding with building windows. Avian Conservation and Ecology 8(2):6. http://dx.doi.org/10.5751/ACE-00568-080206

[7] Gelb, Y. and N. Delacretaz. 2009. Windows and vegetation: Primary factors in Manhattan bird collisions. Northeastern Naturalist 16:455-470.

[8] Klem, D., Jr. 2009. Preventing bird-window collisions. The Wilson Journal of Ornithology 121:314-321.

[9] Borden, W. C., O. M. Lockhart, A. W. Jones, and M. S. Lyons. 2010. Seasonal, taxonomic, and local habitat components of bird-window collisions on an urban university campus in Cleveland, OH. Ohio Journal of Science 110(3):44-52.

during 12-month period and found 271 bird fatalities of 50 species. Parkins et al. (2015)[10] found 35 bird fatalities of 16 species within only 45 days of monitoring under 4 building façades. In San Francisco, Kahle et al. (2016)[11] found 355 collision victims within 1,762 days under a 5-story building. Ocampo-Peñuela et al. (2016)[12] searched the perimeters of 6 buildings on a university campus, finding 86 fatalities after 63 days of surveys. One of these buildings produced 61 of the 86 fatalities, and another building with collision-deterrent glass caused only 2 of the fatalities.

Here, there is ample evidence to support a fair argument that the Project will result in many collision fatalities of birds, and that this may result in a significant impact. Yet neither the 2011 PEIR nor the Addendum make any attempt to analyze this potentially significant impact. An EIR is required to fully analyze and mitigate this impact.

IV. THE CITY MUST PREPARE AN EIR BECAUSE THE 2011 PROGRAM EIR ADMITS SIGNIFICANT AND UNAVAILABLE ENVIRONMENTAL IMPACTS.

An EIR must be prepared for the Project because the 2011 PEIR determined that the Downtown Plan would cause significant and unavoidable impacts on aesthetics, air quality, cultural resources, greenhouse gases, noise, population and housing, public services, transportation and traffic, and utilities and service systems. (Addendum, p. 8.)

In the case of *Communities for a Better Environment v. Cal. Resources Agency* (2002) 103 Cal.App.4th 98, 122-125, the court of appeal held that when a "first tier" EIR admits a significant, unavoidable environmental impact, then the agency must prepare second tier EIRs for later projects to ensure that those unmitigated impacts are "mitigated or avoided." (*Id.* citing CEQA Guidelines §15152(f)) The court reasoned that the unmitigated impacts was not "adequately addressed" in the first tier EIR since it was not "mitigated or avoided." (*Id.*) Thus, significant effects disclosed in first tier EIRs will trigger second tier EIRs unless such effects have been "adequately addressed," in a way that ensures the effects will be "mitigated or avoided." (*Id.*) Such a second tier EIR is required, even if the impact still cannot be fully mitigated and a statement of overriding considerations will be required. The court explained, "The requirement of a statement of overriding considerations is central to CEQA's role as a public accountability statute; it requires public officials, in approving environmental detrimental

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[10] Parkins, K. L., S. B. Elbin, and E. Barnes. 2015. Light, Glass, and Bird–building Collisions in an Urban Park. Northeastern Naturalist 22:84-94.

[11] Kahle, L. Q., M. E. Flannery, and J. P. Dumbacher. 2016. Bird-window collisions at a west-coast urban park museum: analyses of bird biology and window attributes from Golden Gate Park, San Francisco. PLoS ONE 11(1):e144600 DOI 10.1371/journal.pone.0144600.

[12] Ocampo-Peñuela, N., R. S. Winton, C. J. Wu, E. Zambello, T. W. Wittig and N. L. Cagle . 2016. Patterns of bird-window collisions inform mitigation on a university campus. PeerJ4:e1652;DOI10.7717/peerj.1652

projects, to justify their decisions based on counterbalancing social, economic or other benefits, and to point to substantial evidence in support." (*Id.* at 124-125)

Since the 2011 PEIR admitted numerous significant, unmitigated impacts, a second tier EIR is not required to determine if mitigation measure can now be imposed to reduce or eliminate those impacts. If the impacts still remain significant and unavoidable, a statement of overriding considerations will be required.

CONCLUSION

For the above reasons, the City must prepare an EIR to analyze and mitigate the impacts of the Project that were not previously analyzed in the 2011 PEIR. The County may not on an addendum.

Sincerely,

Rebecca L. Davis

EXHIBIT A

Indoor Air Quality in New California Homes with Mechanical Ventilation

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SUMMARY
The Healthy Efficient New Gas Homes (HENGH) study measured indoor air quality and mechanical ventilation use in 70 new California homes. This paper summarizes preliminary results collected from 42 homes. In addition to measurements of formaldehyde, nitrogen dioxide (NO_2), and $PM_{2.5}$ that are discussed here, HENGH also monitored other indoor environmental parameters (e.g., CO_2) and indoor activities (e.g., cooking, fan use) using sensors and occupant logs. Each home was monitored for one week. Diagnostic tests were performed to characterize building envelope and duct leakage, and mechanical system airflow. Comparisons of indoor formaldehyde, NO_2, and $PM_{2.5}$ with a prior California New Home Study (CNHS) (Offermann, 2009) suggest that contaminant levels are lower than measured from about 10 years ago. The role of mechanical ventilation on indoor contaminant levels will be evaluated.

KEYWORDS
Formaldehyde; nitrogen dioxide; particles; home performance; field study

1 INTRODUCTION
The HENGH field study (2016–2018) aimed to measure indoor air quality in 70 new California homes that have mechanical ventilation. Eligible houses were built in 2011 or later; had an operable whole-dwelling mechanical ventilation system; used natural gas for space heating, water heating, and/or cooking; and had no smoking in the home. Study participants were asked to rely on mechanical ventilation and avoid window use during the one-week monitoring period. All homes had a venting kitchen range hood or over the range microwave and bathroom exhaust fans. This paper presents summary results of formaldehyde, NO_2, and $PM_{2.5}$ measurements in 42 homes. The full dataset is expected to be available in summer 2018.

2 METHODS
Integrated one-week concentrations of formaldehyde and NO_x were measured using SKC UMEx-100 and Ogawa passive samplers. Formaldehyde samplers were deployed in the main living space, master bedroom, and outdoors. $PM_{2.5}$ were measured using a pair of photometers (ES-642/BT-645, MetOne Instruments) indoor in the main living space and outdoors. $PM_{2.5}$ filter samples were collected using a co-located pDR-1500 (ThermoFisher) in a subset of the homes and time-resolved photometer data were adjusted using the gravimetric measurements. Results are compared with a prior field study CNHS (2007–2008) (Offermann, 2009) that monitored for contaminant concentrations over a 24-hour period in 108 homes built between 2002 and 2004, including a subset of 26 homes with whole-dwelling mechanical ventilation.

3 RESULTS
Figure 1 compares the indoor concentrations of formaldehyde, NO_2, and $PM_{2.5}$ measured by the two studies. Results of HENGH are one-week averaged concentrations, whereas CHNS are 24-hour averages. HENGH measured lower indoor concentrations of formaldehyde and $PM_{2.5}$, compared to CNHS. For NO_2, the indoor concentrations measured by the two studies

are similar. Summary statistics of indoor and outdoor contaminant concentrations (mean and median concentrations; N=number of homes with available data) are presented in Table 1.

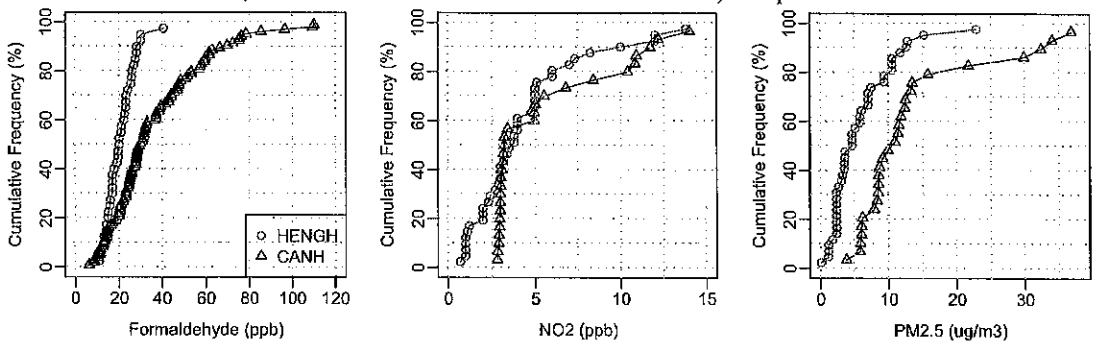

Figure 1. Comparisons of indoor contaminant concentrations measured by two studies.

Table 1. Summary statistics of indoor and outdoor contaminant concentrations.

	HENGH - Indoor			CNHS - Indoor			HENGH - Outdoor			CNHS - Outdoor		
	N	Median	Mean	N	Median	Mean	N	Median	Mean	N	Median	Mean
Formaldehyde (ppb)	39	20.0	20.6	104	29.5	36.3	38	2.0	2.0	43	1.8	2.8
NO_2 (ppb)	40	3.7	4.4	29	3.2	5.4	40	3.0	3.1	11	3.1	3.5
$PM_{2.5}$ (ug/m^3)	41	4.7	5.8	28	10.4	13.3	42	5.9	7.7	11	8.7	7.9

4 DISCUSSION

The lower formaldehyde concentrations measured by HENGH in comparison to CNHS may be attributable to California's regulation to limit formaldehyde emissions from composite wood products that came into effect between the two studies. Gas cooking is a significant source of indoor NO_2 (Mullen et al., 2016). Even though NO_2 concentrations measured by HENGH are similar to levels found in CNHS, the two studies differed in that HENGH homes all use gas for cooking, whereas almost all homes (98%) from the prior study used electric ranges. More analysis is needed to determine the effectiveness of source control, such as range hood use during cooking, on indoor concentrations of cooking emissions such as NO_2 and $PM_{2.5}$. Lower $PM_{2.5}$ indoors measured by HENGH compared to CNHS may be explained from a combination of lower outdoor $PM_{2.5}$ levels, reduced particle penetration due to tighter building envelopes (Stephens and Siegel, 2012) combined with exhaust ventilation, and use of medium efficiency air filter (MERV 11 or better) in some HENGH homes. Further analysis of the data will evaluate the role of mechanical ventilation, including local exhaust and whole-dwelling ventilation system, on measured indoor contaminant levels.

5 CONCLUSIONS

New California homes now have lower indoor formaldehyde levels than previously measured, likely as a result of California's formaldehyde emission standards. Indoor concentrations of NO_2 and $PM_{2.5}$ measured are also low compared to a prior study of new homes in California.

ACKNOWLEDGEMENT

LBNL work on the project was supported by the California Energy Commission. Field data collection was performed by the Gas Technology Institute. Support for field teams was provided by Pacific Gas & Electric and the Southern California Gas Company.

6 REFERENCES

Mullen NA et al. 2016 *Indoor Air* 26(2):231–245.

Offermann FJ. 2009. California Air Resource Board and California Energy Commission Report CEC-500-2009-085.
Stephens B, Siegel JA. 2012 *Indoor Air* 22(6):501–513.