

Policy and Practice Options for Near Roadway Pollution

Doug Brugge, PhD, MS
Professor & Chair

Department of Public Health Sciences
UConn Health



Community-based Participatory Research Approach



Community engagement
Capacity building
Rigorous science
Policy and practice

Dynamic Community and Agency Engaged Processes





We have conducted multiple design charrettes with architects, designers, planners, environmental health experts, agencies, and community members

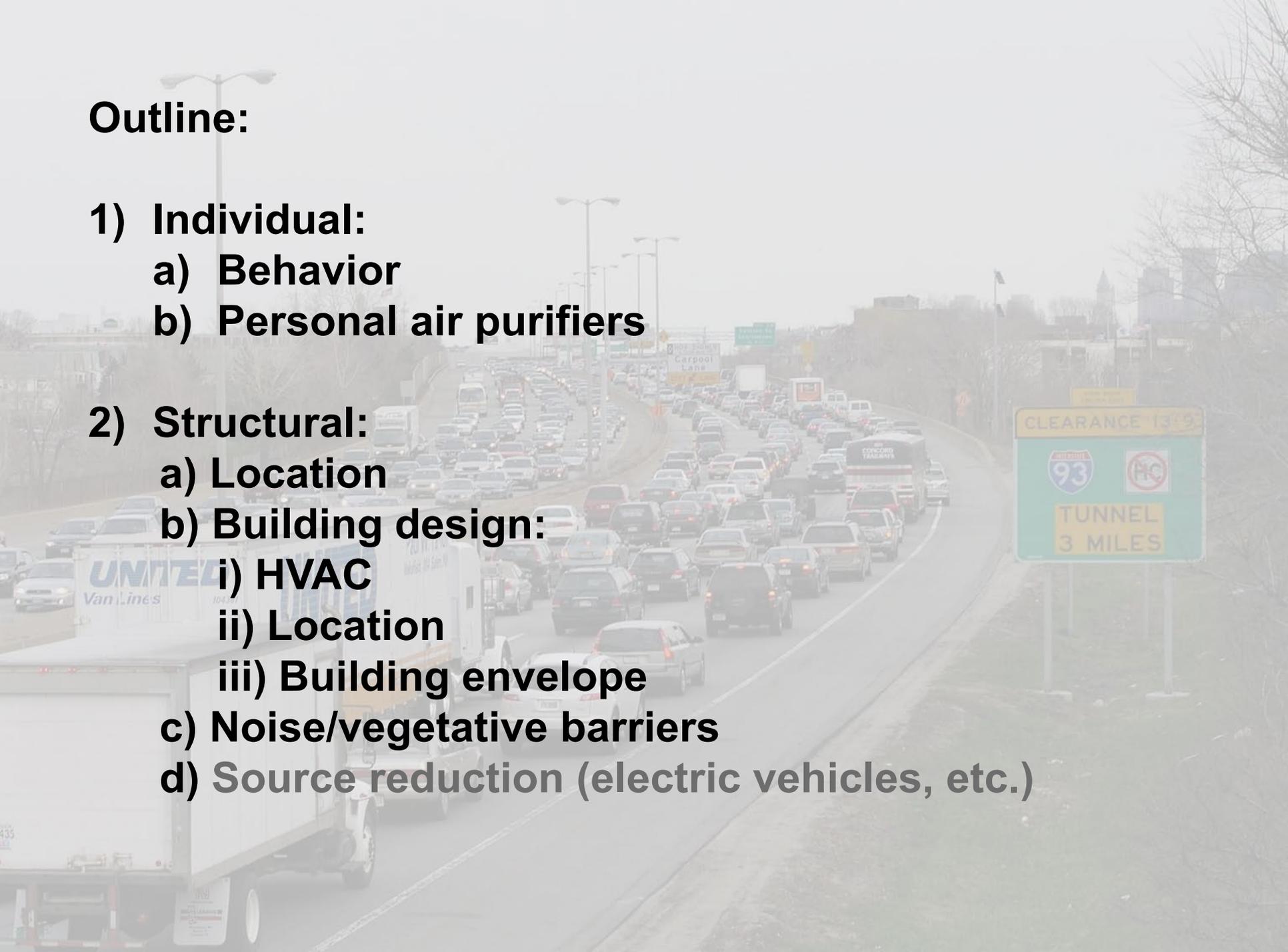
Outline:

1) Individual:

- a) Behavior
- b) Personal air purifiers

2) Structural:

- a) Location
- b) Building design:
 - i) HVAC
 - ii) Location
 - iii) Building envelope
- c) Noise/vegetative barriers
- d) Source reduction (electric vehicles, etc.)



Summary of Air Pollution Reduction Tactics

By Allison Patton

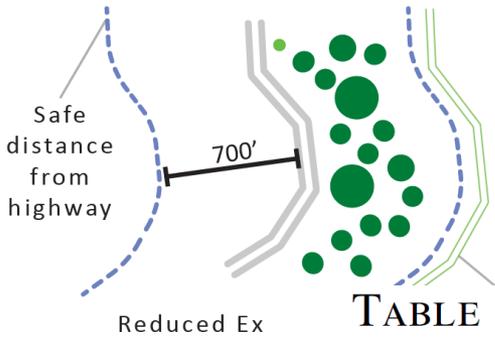
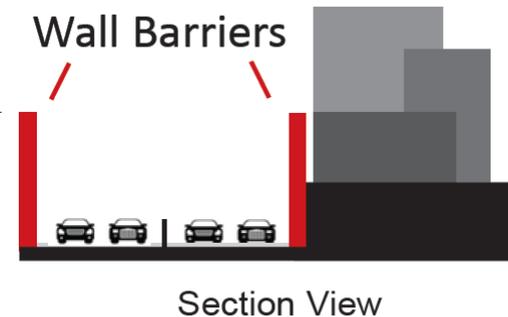
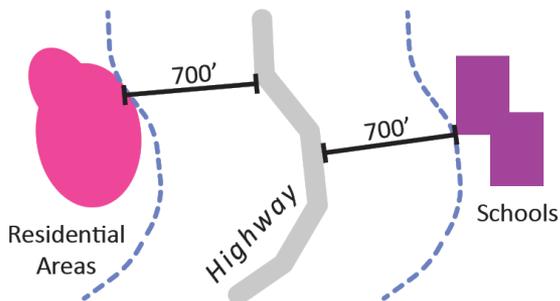
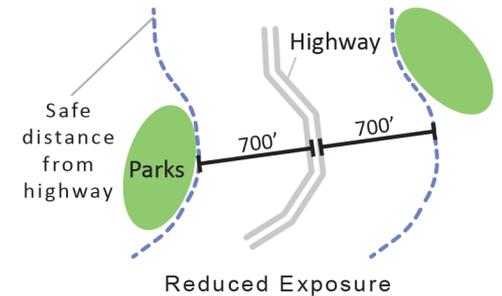
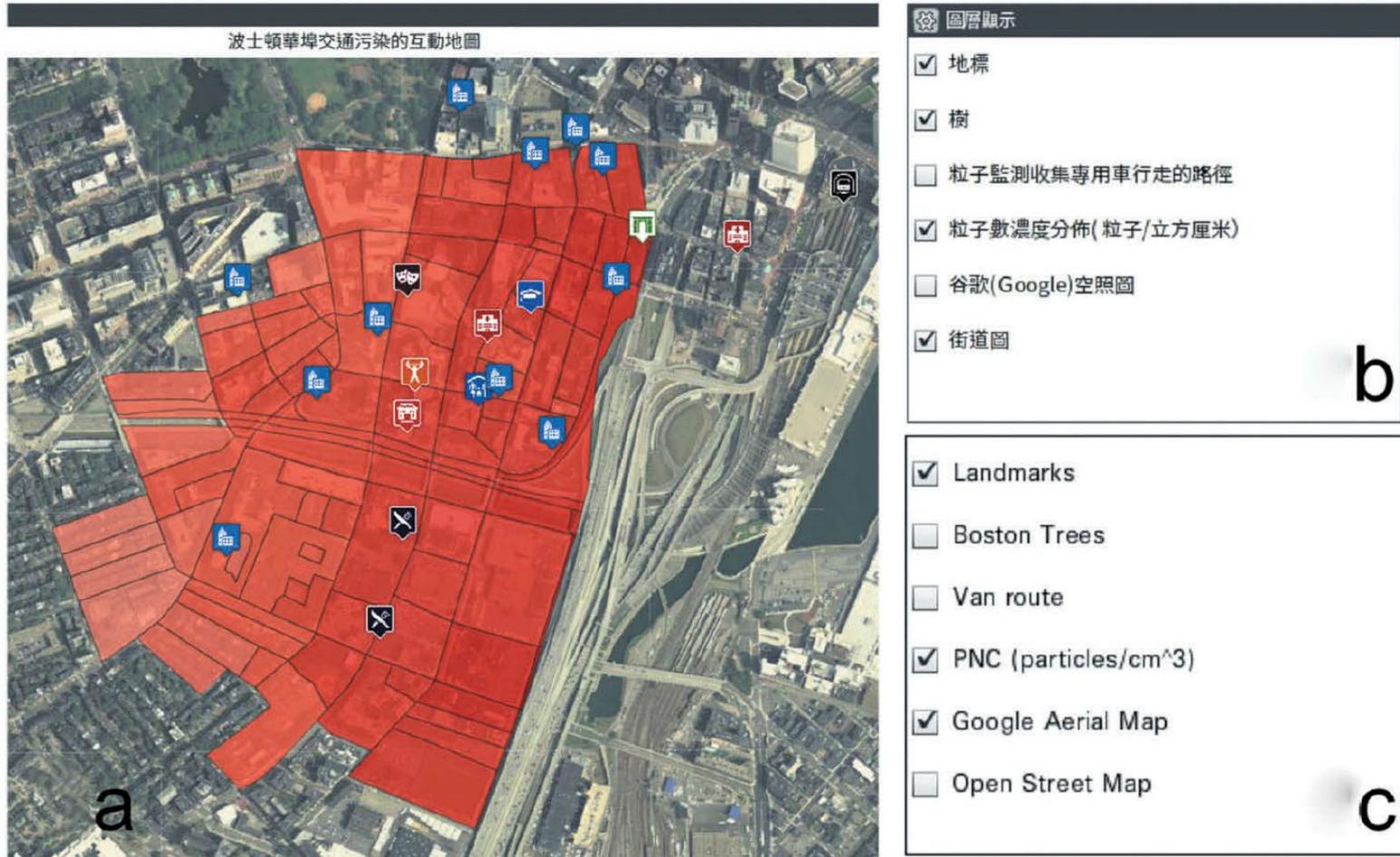


TABLE 1. SUMMARY OF EXPECTED EFFECTIVENESS OF DIFFERENT TACTICS

Location	Effectiveness		
	Good	Moderate	Inconclusive
On-Site	<ul style="list-style-type: none"> Filtration Air intake location Sound proofing 	<ul style="list-style-type: none"> Healthy placement of buildings and parking structures Trees and Plantings 	<ul style="list-style-type: none"> Healthy vegetables
Off-Site	<ul style="list-style-type: none"> Park locations Land use buffers 	<ul style="list-style-type: none"> Built or vegetative barriers Active travel locations Decking over highways 	



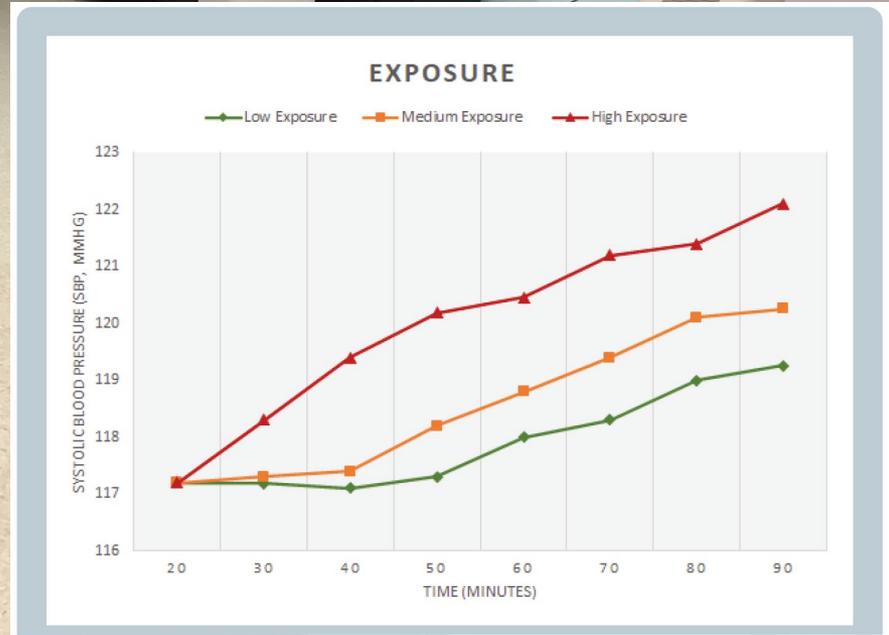
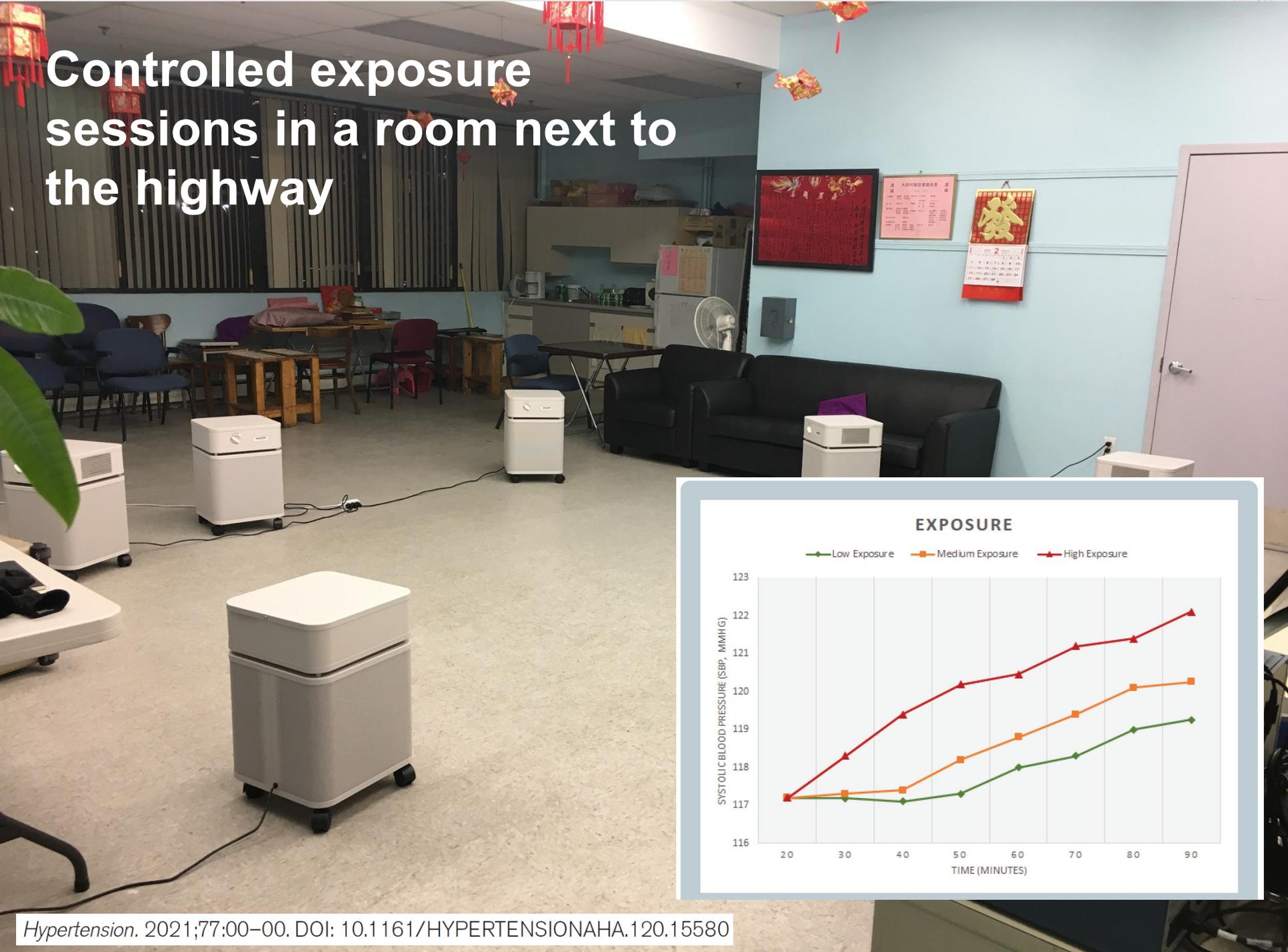
Behavior: Educational Intervention using an Interactive Map of Chinatown Traffic Pollution



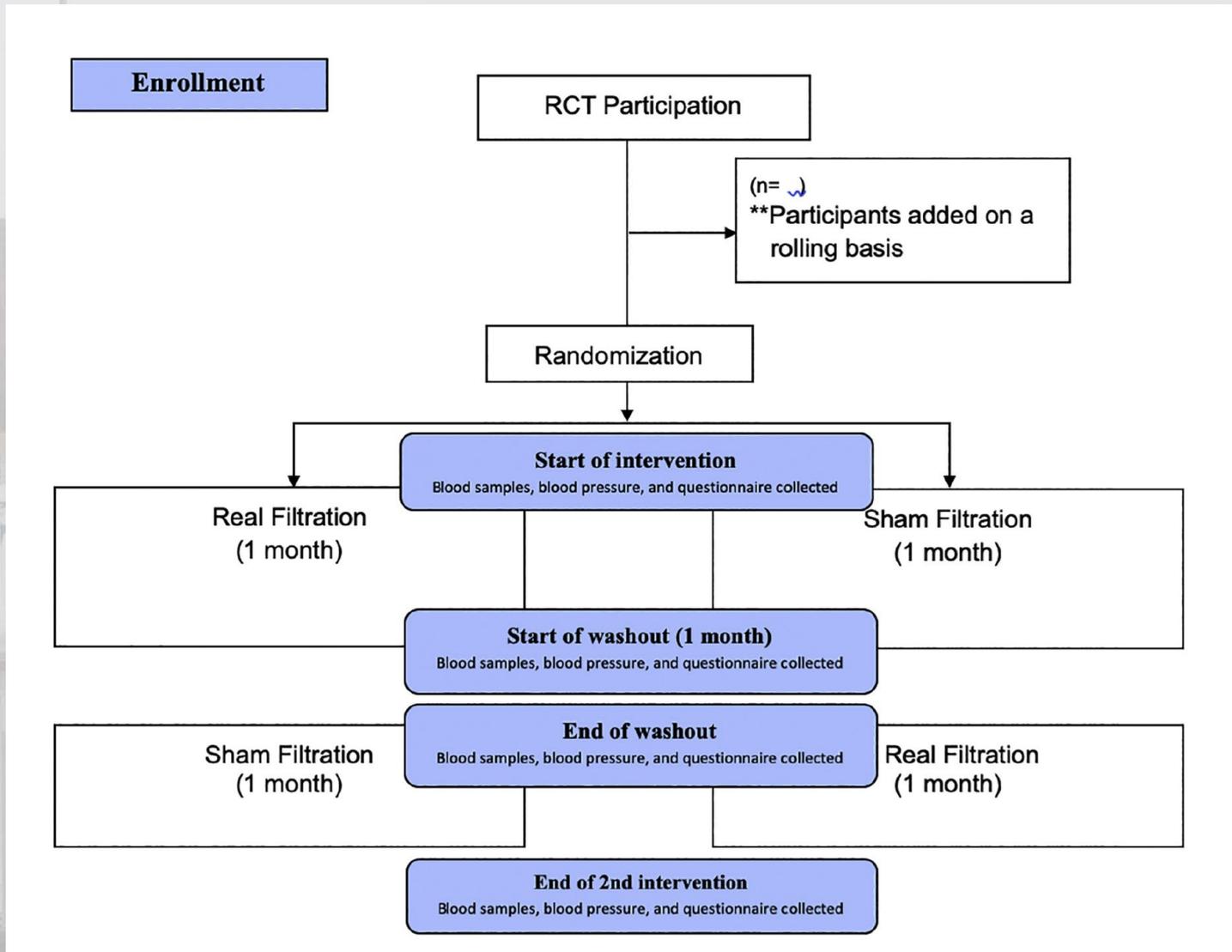
In-home air filtration



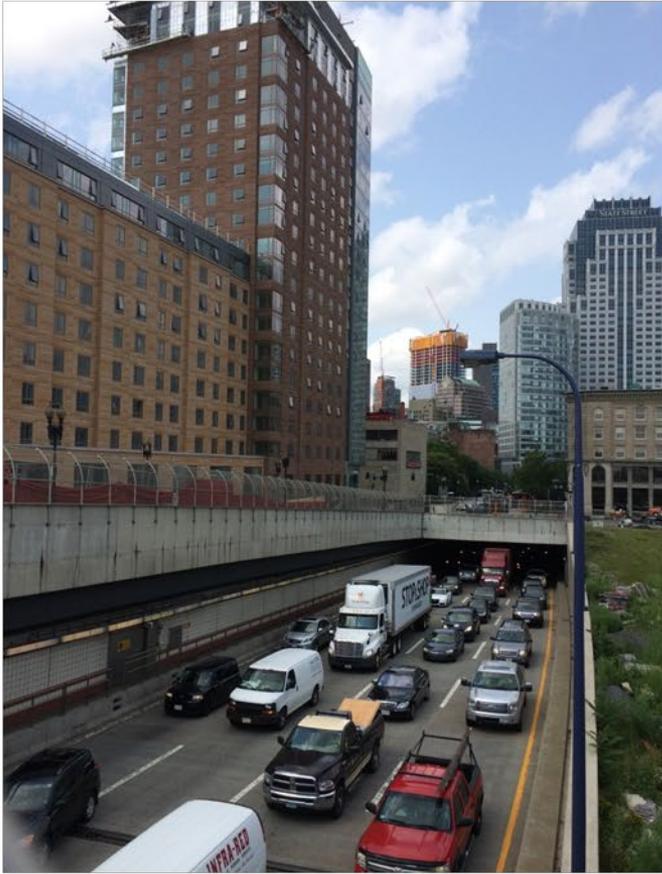
Controlled exposure sessions in a room next to the highway



Our randomized Clinical Trial of In-Home Air Purifiers is in Progress in Somerville



Location...



New housing next to the I-93 tunnel exit

Reggie Wong Park next to I-93



Photo courtesy of Shauna Lo



School that was proposed to be built on top of the I-93 tunnel exit

Proposed protective features for the school from a design charrette held by CAFEH

Ventilation and Filtration with Atrium

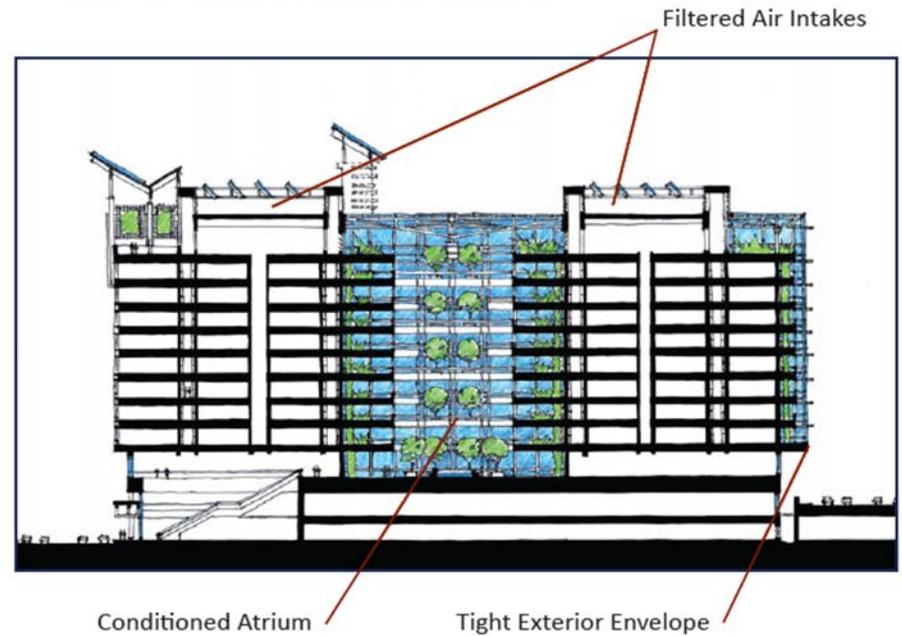
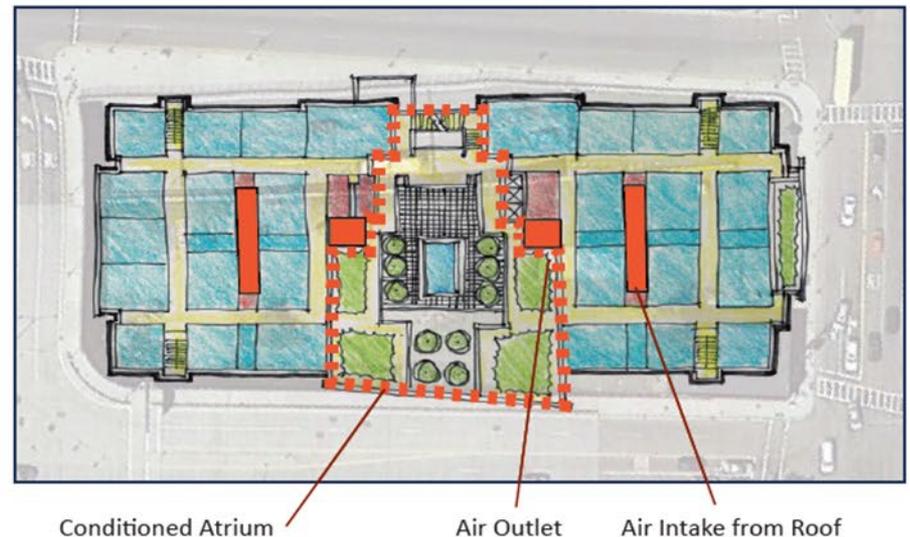


Figure 52: This building section illustrates two enclosed HVAC zones, with separate air intakes and filtration, joined in the middle by an atrium with its own ventilation system and filled with plants and light. Credit: Giamportone Design.

Ventilation and Filtration with Atrium



Marketing HEPA Filtration in California...

[10621 NORTHVALE RD, Los Angeles, CA 90064 \(MLS ... southerncaliforniabroker.com/.../mls-14811103-10621_northvale_rd_los_a...](#)
Dec 28, 2014 - CENTRAL HEATING AND A/C WITH **HEPA FILTRATION**... Property Type(s): Residential, Sale / Single Family Midway City, Mill Creek, Mira Loma, Mira Mesa, Mission Hills San Fernando, Mission Viejo ... Newark, Newberry Springs, Newbury Park, Newhall, Newman, Newport Beach, Newport Coast ...

[1486 Mountain View Avenue, Chico, CA 95926 \(MLS ... www.pkrealestate.net/.../mls-ch15075087-1486_mountain_view_avenue...](#) ▾
Apr 11, 2015 - ... hot water, HVAC with **Hepa Filter** system, whole house vacuum, whole house ... Status, Active, Property Type(s), Residential , Single Family Residence Millbrae, Millersport, Milpitas, Mineral, Mira Loma, Mira Mesa, Miramar Beach ... Newllano, Newman, Newport, Newport Beach, Newport Coast, Nice ...

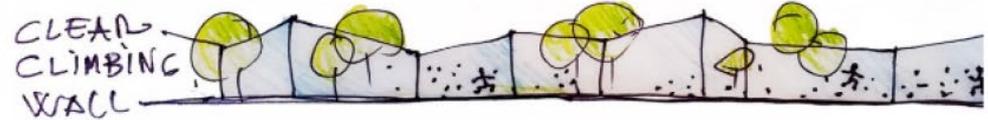
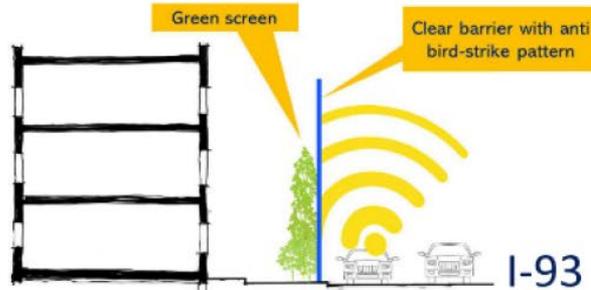
[6129 Cedar Mountain Drive, Rancho Cucamonga, CA ... www.pkrealestate.net/.../mls-cv15125488-6129_cedar_mountain_drive...](#) ▾
2 days ago - New energy efficient Air Conditioning with **Hepa filters**, and wi-fi controlled. ... Property Type(s), Residential , Single Family Residence ...

Noise Barriers for Noise and Traffic Pollution...

Possible Solutions



Clear & green noise barrier combo



Redesign of a park in Somerville

Continuous Berm Design

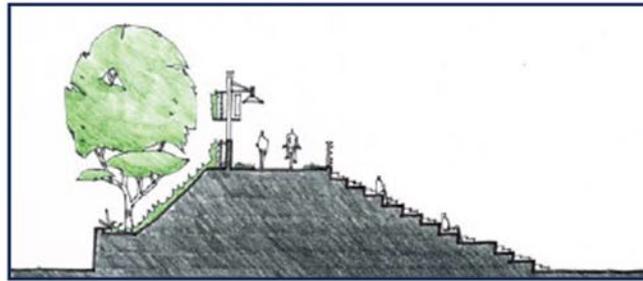


Figure 39: A taller design for the continuous berm system around Foss Park, along the Route 28 side.
Credit: Giamportone Design.

Solid Band-Shell Sheltering Park



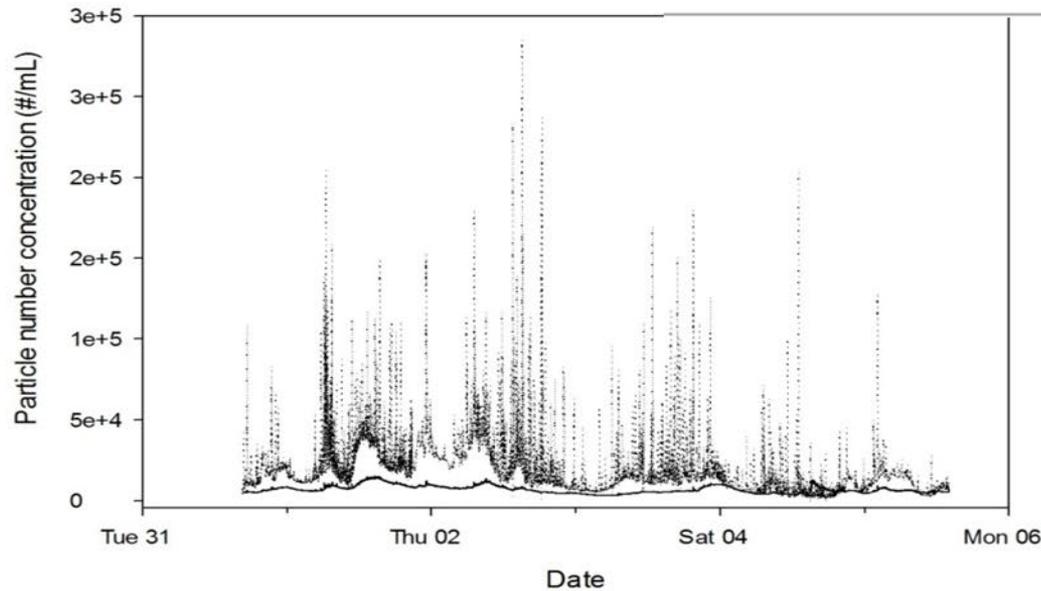
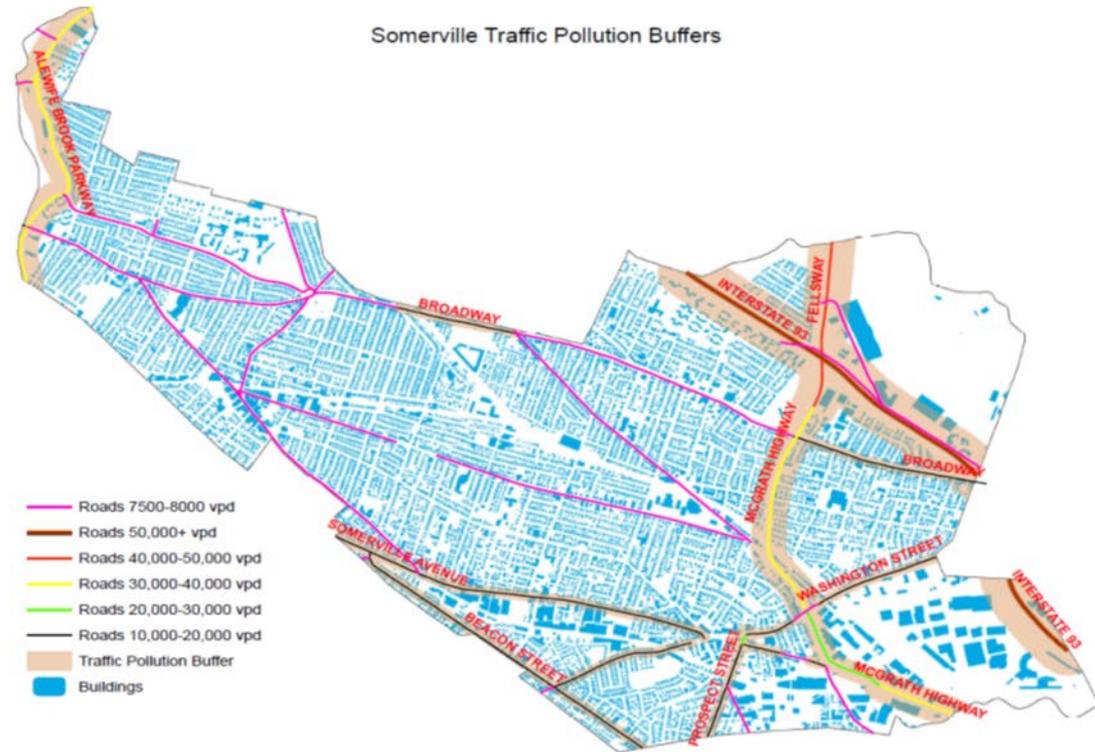
Figure 40: The band shell, shown in section, is designed to provide protection from near-highway pollutants. The roof of the band shell is shown covered in vegetation, further mitigating exposure to traffic-related pollution for people in the park (including people enjoying the concert.) *Credit: Giamportone Design.*

Foss Park Design - Plan View



Figure 41: The plan of Foss Park is shown as redesigned, with the band shell, berm system, and plantings located to provide maximum shelter from pollutants for park users. *Credit: Giamportone Design.*

Somerville zoning ordinance





ABOUT PUBLICATIONS MEDIA RESOURCES
INFOGRAPHICS CONTACT

THE COMMUNITY ASSESSMENT OF FREEWAY EXPOSURE AND HEALTH STUDY

CAFEH serves as the larger umbrella for multiple, related community-based participatory research (CBPR) air pollution studies.

These projects have full participation of the community partners in all aspects of the science including: developing the proposal, leading the study, and collecting, analyzing and interpreting the data.

The CAFEH partnership combines community and academic resources to advance scientific understanding of the health risks of highway pollution. We hope our findings will inform policymakers about the risks of siting new housing, schools or playgrounds next to highways and help to identify measures to reduce exposures.

CAFEH RESEARCH PROJECTS:

- [Original CAFEH Study](#)
- [Clean Air Project](#)
- [Boston Puerto Rican Health Study](#)
- [Improving the Health of Near-Highway Communities](#)
- [Visualizing Air Pollution](#) (PDF)
- [Near-Highway Pollution: From Research to Action](#)
- [Animal Model of Autism](#) (PDF)
- [Simple Ultrafine Particle \(UFP\) Factsheet](#) (PDF)



[Click here to register for Indoor Air Quality Webinar #1](#)



<https://cafeh.squarespace.com/>