





Steering Committee

February 7, 2024



Welcome!

Name, Affiliation/Organization Please sign in/add comments in the sheet:

- Member Sign In Sheet
 - https://docs.google.com/spreadsheets/d/1ByQ_QDRd1QLrFk-fBVGSOos-80uNPpFOUXy8v2ZBMZY/edit#gid=0
- Meeting Attendees-

https://docs.google.com/spreadsheets/d/1SYPRUBuhS0gW6r0kVA3unOEsklg7mgyKAZu3dhEZo_E/edit#gid=6602

Owning Our Air - West Oakland AB 617 Steering Committee Meeting Wednesday, February 7, 2024 | 6:00 pm to 8:00 p.m.

Time	Item
6:00-6:05 pm (5 min)	Roll Call
6:05-6:10 pm (5 min)	Welcome and Co-leads Report
6:10-6:20 pm (10 min)	Follow Up from Previous Meeting
6:20-6:55 pm (35 min)	Prescott Greening Presentation
6:55-7:15 pm (20 min)	Prescott Large Group Discussion/Q&A
7:15-7:55 pm (40 min)	Prescott Breakout Rooms (30 min) + Report Back (10 min)
7:55-8:00pm (5 min)	Meeting Evaluation Survey

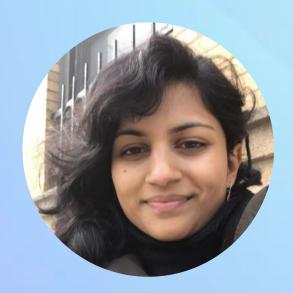


Welcome and Co-Leads Report

Q&A Protocol

- 1. No questions/comments during presentations (Questions in the chat are okay)
- 2. SC Members FIRST
- 3. Then General Public
- 4. THEN Co-Leads

New WOEIP Staff



Tarangini Saxena **Project Manager**

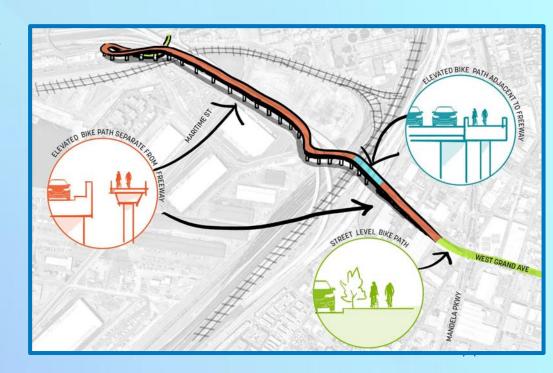


Clara Weinstein

Communications Manager

Other WOEIP News

- West Oakland
 Link meeting # 6 Week of April
 8th, 2024
- 35% Design
- More details to follow



Follow-Up from Past Meetings

Town Hall Recap

- 16 Organizations tabled.
- 150+ attendees (including new participants)
- Feedback: Generally,
 participants reported that the
 information provided was
 helpful and understandable
 but locals felt less able to
 participate. Volume was an
 issue in the venue.



Semi-annual Evaluation Survey

- Keep your eyes open for a survey in your email
- Open to all WOCAP participants including Steering Committee members, partner agencies, and the general public



Prescott Greening Agenda

- Introduction
- Project Area
- Modeling
 - What is modeling
 - Building a 3D world
 - > Pollution Levels
 - Vegetated Buffers
- Concept Designs
- Discussion

Prescott Greening (brief overview)



- Pilot project to reduce pollution exposure
- Developing way to model different planting options
- Vegetative buffers along:
 - Frontage Rd from 7th -16 th St
 - Caltrans Freeway
 - 7th street
- Creation of Stewardship Model for Green Infrastructure

AB 617 Greening Strategies

Strategy #10: The City of Oakland creates a comprehensive, area-wide urban canopy and vegetation plan that identifies locations that trees can be added and maintained, such as parks and along Caltrans' rights-of-way and develops a plan to protect existing trees that reduce exposure to air pollution emissions in West Oakland. This includes partnering with local nonprofit groups, encouraging trees on private property, and working with the community on tree maintenance and (as needed) removal.

Strategy #11: The City of Oakland works with local groups to train residents to maintain biofilters.

Strategy #12: The Air District and the West Oakland Environmental Indicators Project intends to implement the green infrastructure project currently under development between Interstate I-880 and the Prescott neighborhood in West Oakland by 2021.

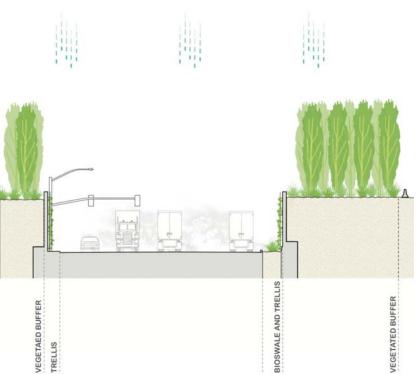
Strategy #16: The City of Oakland, in partnership with the Steering Committee, CARB and the Air District, studies the exposure reduction benefit of requiring solid or vegetative barriers to be incorporated into site design between buildings and sources of air pollution (for example, a freeway).

Prescott Greening

This project is ONE piece of the puzzle toward improved air quality in West Oakland along with all the other WOCAP strategies that address both indoor and outdoor air pollution and exposure







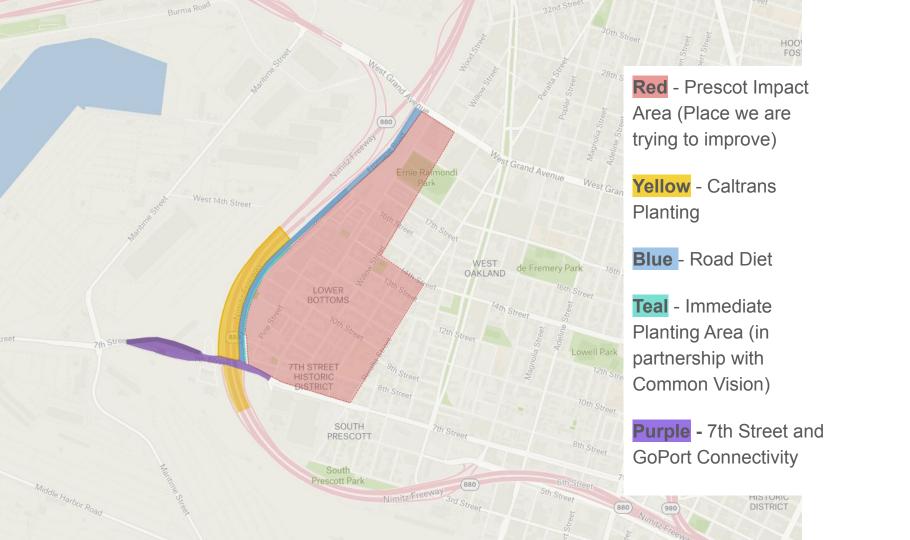
Prescott Showcase Goals



July - Sep 2023 Jun - Aug 2024 Oct 2024 Feb 2024 Identify Community Model concept Final changes possible feedback to designs planting designs and opportunities models Oct - Dec 2023 Feb - Jun 2024 **Sep 2024 Dec 2024** Model initial Use feedback Present Masterplan opportunities Launch to develop concept designs and concept designs models to community

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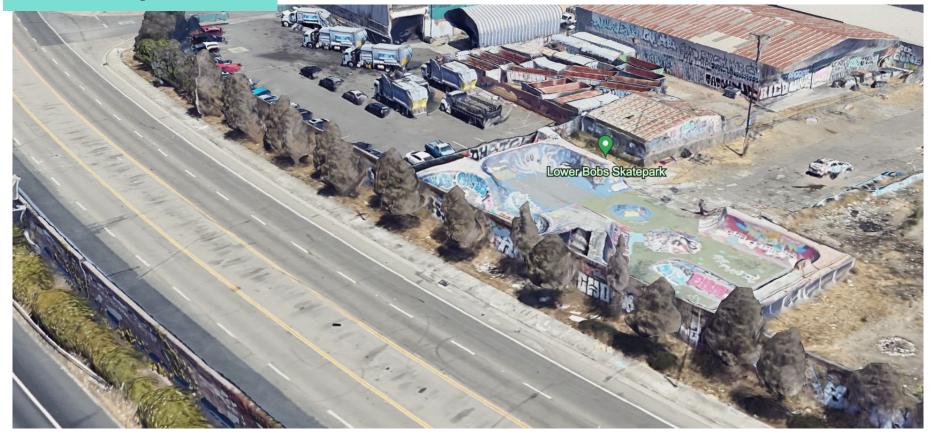


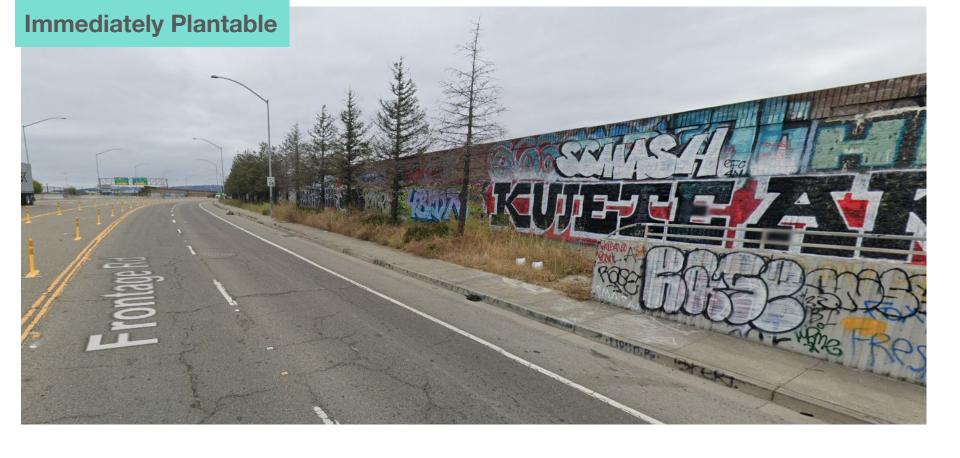






Immediately Plantable





Some areas we can fill in where the trees are thin or dying to create a better buffer





Some places have lots of spaces for new trees

Immediately Plantable





This area could have hanging vines









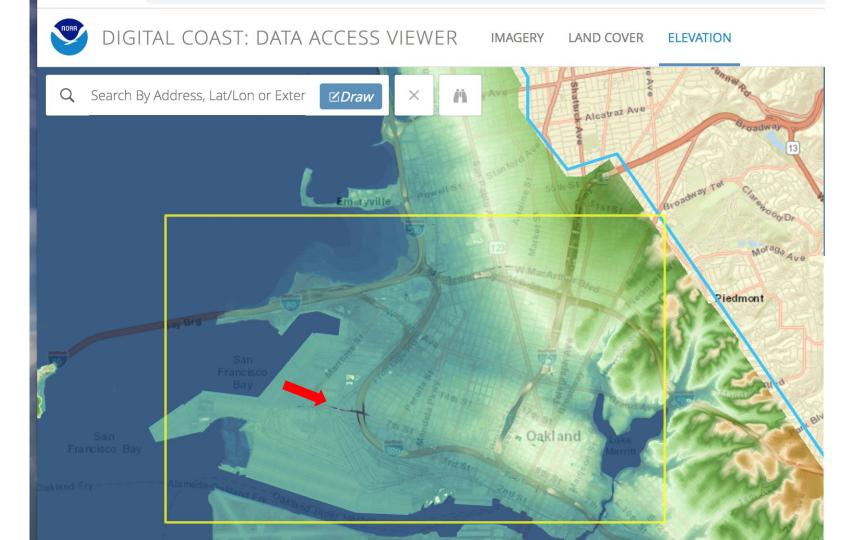


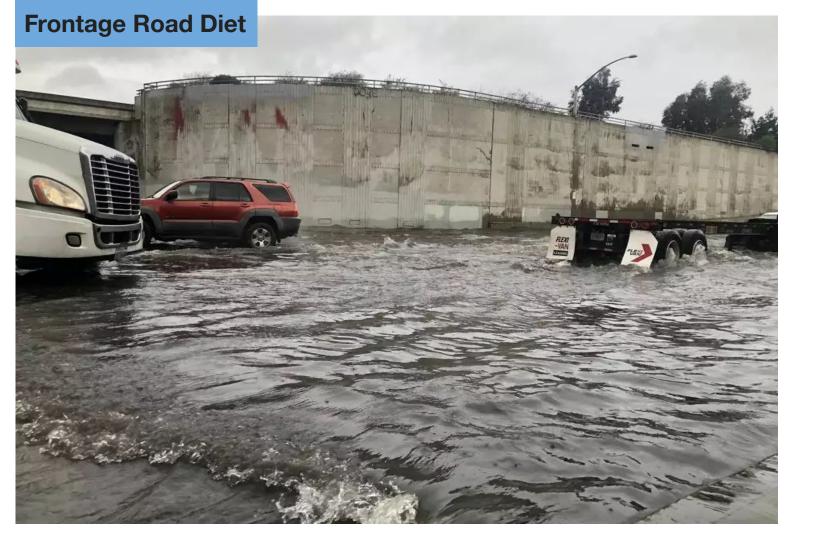


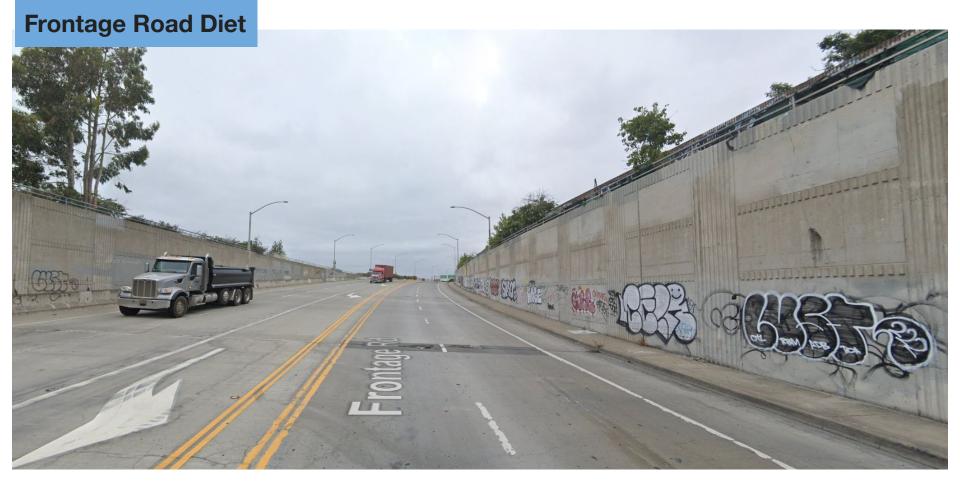




Street dips down lower than the surrounding area



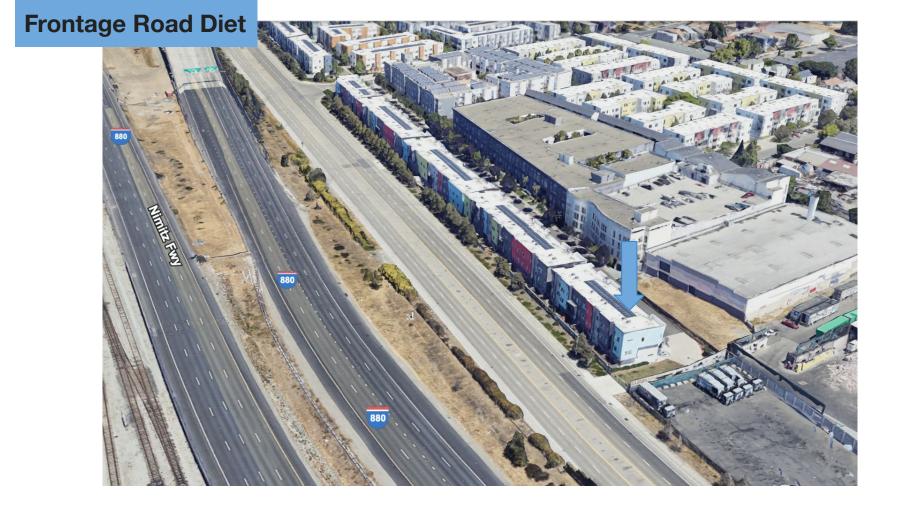




Frontage Road Diet







Zoom Poll (3 min)

What does Frontage road mean to you?

- If you know these areas, what is your experience of them?
- How do you use the area(s)?
- > What are your concerns about these areas?

Discussion (10 min) - NOTES

- What does Frontage road mean to you?
- If you know these areas, what is your experience of them?

0

What are your concerns about these areas?

0

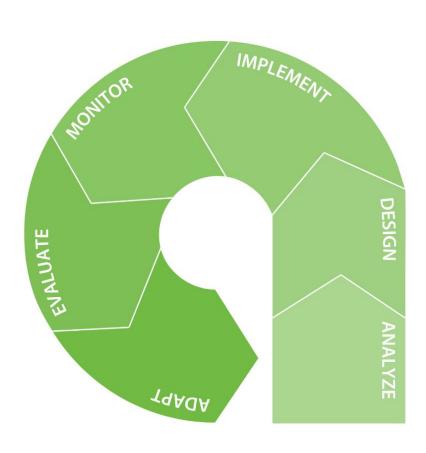
How do you use the area(s)?

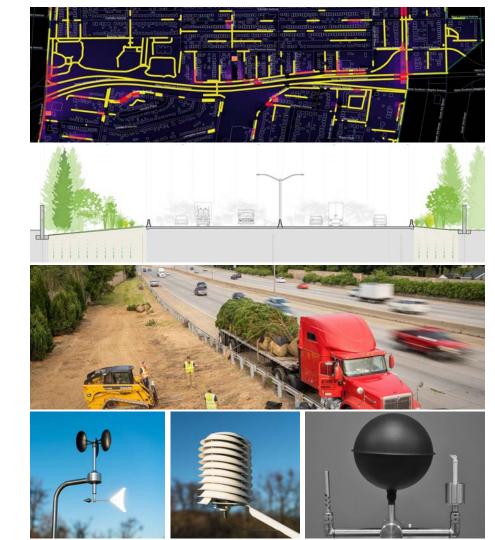
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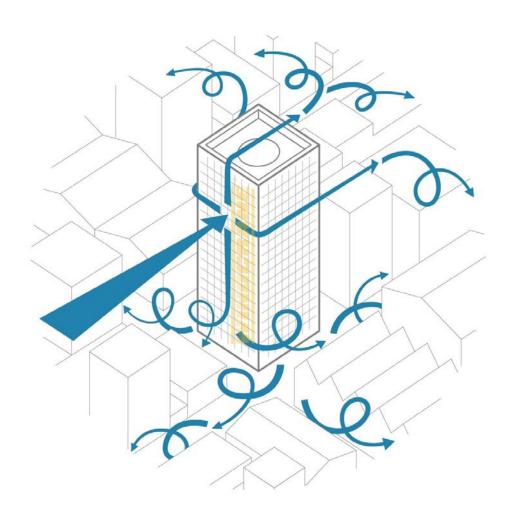
Prescott Greening Agenda

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Evidence Based Design



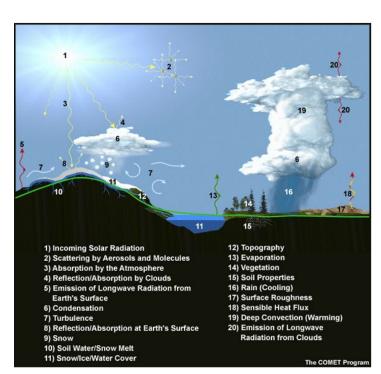




ENVIRONMENTAL MODELLING

Key Points about Models

- A model uses inputs to make predictions
- Models aren't always accurate, but they are still useful
- We working on trying to make the inputs that we use more accurate so that we can try to get more accurate results
- We are developing models that can test the differences between different planting interventions





Modeling is predicting outcomes based on a set of inputs



Modeling Measuring

Weather predictions are not completely correct.

But the information that we get is still useful.

Models allow you to compare multiple options before spending the resources on creating the full sized version

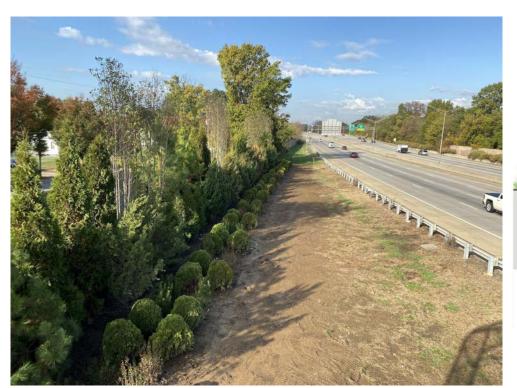


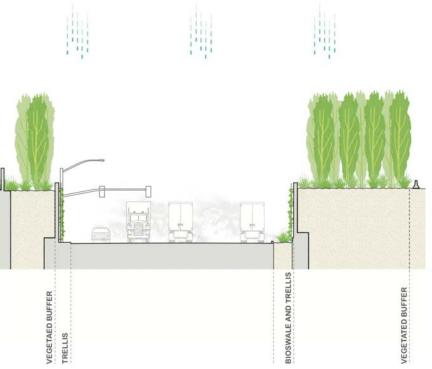
Modeling the way air moves over an airplane wing



Building the first airplane



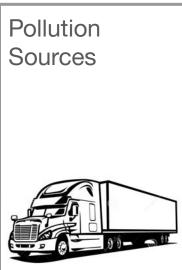


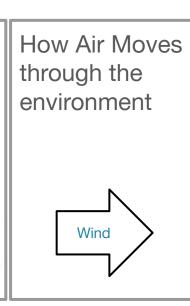


What we need to model how a green intervention impacts exposure risk

Change in Air Pollution Level =











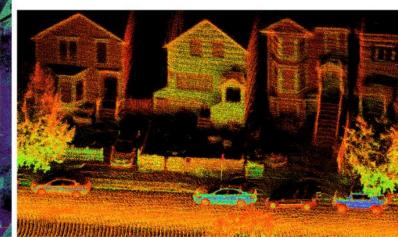
LiDAR scan process



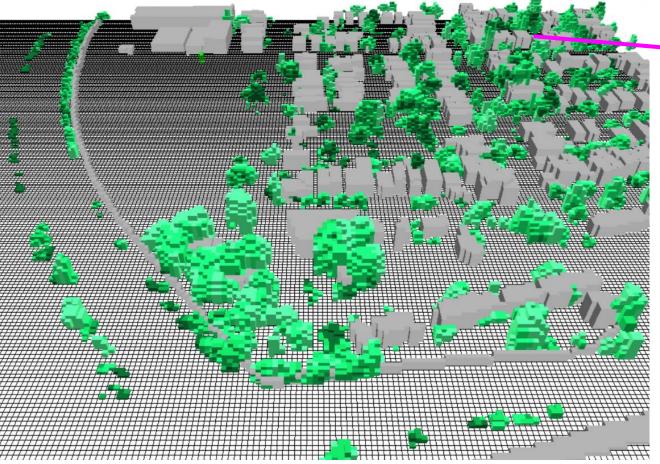


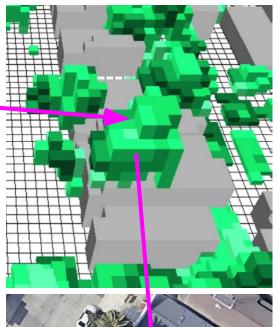






Simplify the 3D world into blocks



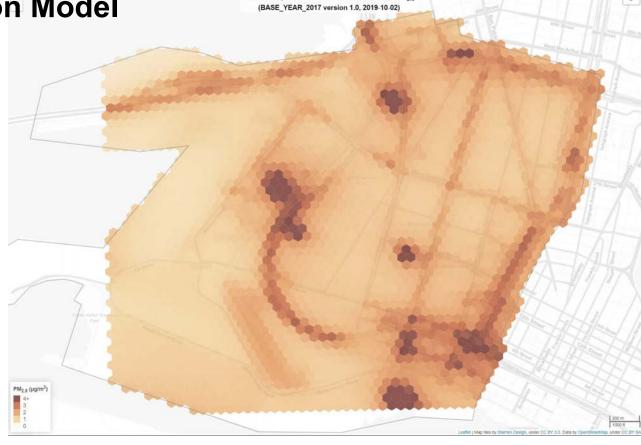






BAAQMD Air Pollution Model

Bay Area Air Quality Management District created used AERMOD to predict the way pollution from local sources would disperse across the city / region

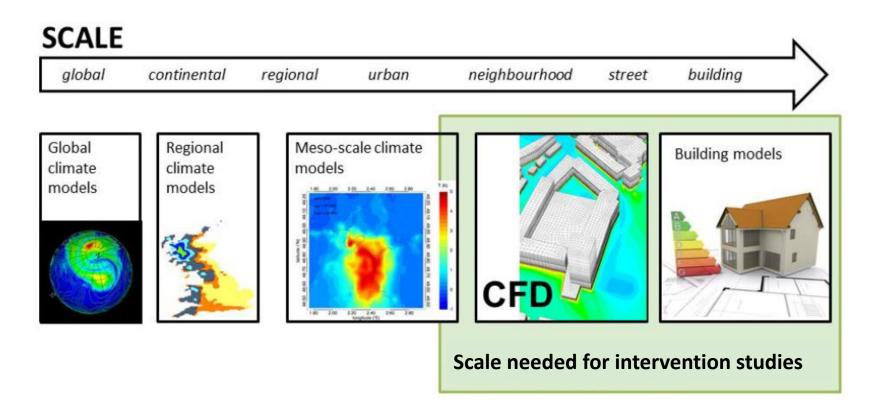


Modeled Impacts from Local Sources on Local PM2.5

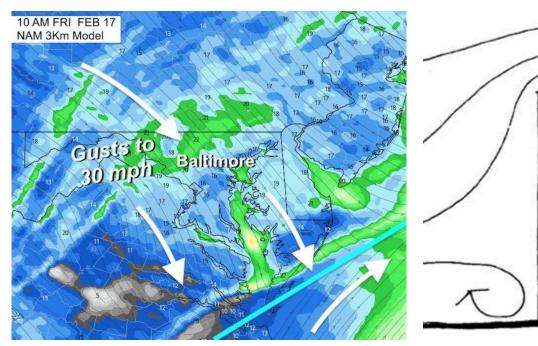
BAAQMD Methodology

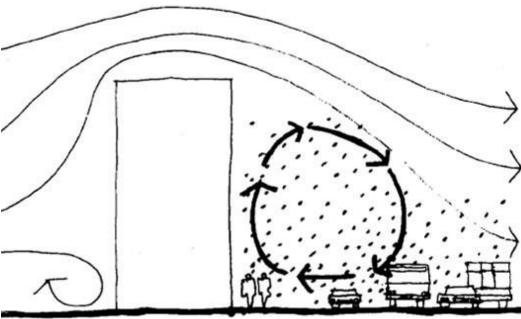
Local PM _{2.5} (μg/m ³) Highway			Rail		
			Rail lines	0.038	1%
Passenger vehicles	0.217	6%	Railyard (UP)	0.040	1%
Heavy/Medium HD trucks	0.067	2%	Permitted		
Light HD trucks	0.010	0%	Schnitzer (stationary)	0.044	1%
Road dust	0.094	2%	EBMUD	0.033	1%
Street	0.001	270	Dynegy	0.001	0%
Passenger vehicles	0.066	2%	Pinnacle Ag	0.316	8%
Heavy/Medium HD trucks	0.018	0%	Sierra Pacific	0.015	0%
Light HD trucks	0.004	0%	CASS	0.002	0%
Road dust	0.413	11%	California Cereal	0.018	0%
Port			CA Waste (10th St)	2.151	57%
OGV (maneuvering)	0.022	1%	Other facilities	0.016	0%
OGV (berthing)	0.043	1%	Other		
Harbor craft	0.055	1%	Ferries	0.005	0%
Dredging	0.015	0%	Schnitzer (ships)	0.002	0%
Bunkering (tugs + pumps)	0.003	0%	Schnitzer (trucks)	0.001	0%
Drayage trucks	0.019	1%	Truck-related businesses	0.003	0%
Road dust	0.018	0%		3.780	100%
Cargo handling	0.009	0%	Modeled impacts from local sources.		
Railyard (OGRE)	0.018	0%	2019-10-02 (BASE_YEAR_2017).		
Railyard (BNSF)	0.004	0%	2019-10-02 (DAGE_TEAN_2017)		

BAAQMD Model isn't at the scale needed for Prescott Greening



A larger scale model may tell you the direction of the wind. But at a smaller scale there could be areas behind buildings where the wind is blocked.





Larger scale

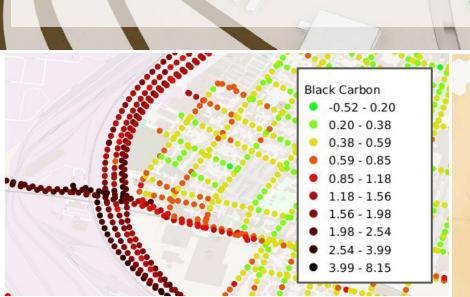
Smaller scale

AERMOD doesn't include vegetation, which is a critical part of our project



Bridging scales:

We model site-scale interventions and connect them to large scale models and measured data.





Add Wind Velocity to Model

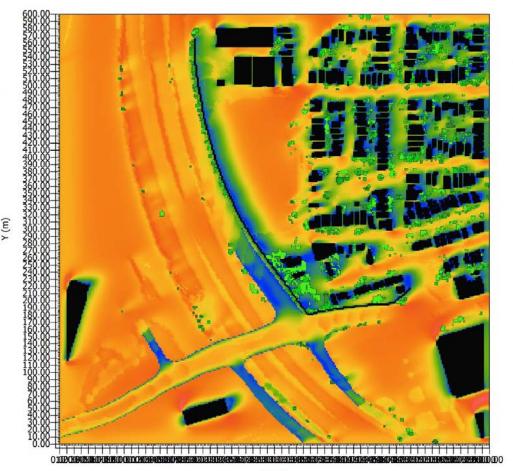
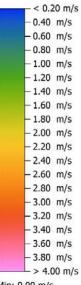


Figure -: pr24_exveg_1a 05.00.00 23.05.2023

x/y Cut at k=2 (z=2.5000 m) above terrain

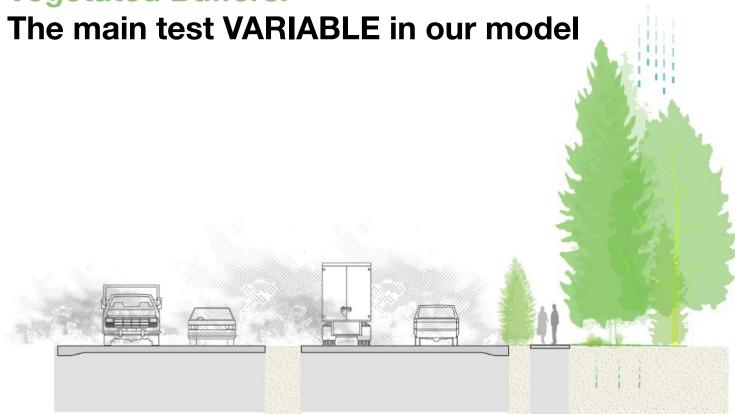
Wind Speed



Min: 0.00 m/s Max: 3.62 m/s



Vegetated Buffers:



The Relationship Between Trees and Human Health

Evidence from the Spread of the Emerald Ash Borer

Geoffrey H. Donovan, PhD, David T. Butry, PhD, Yvonne L. Michael, ScD, Jeffrey P. Prestemon, PhD, Andrew M. Liebhold, PhD, Demetrios Gatziolis, PhD, Megan Y. Mao

Background: Several recent studies have identified a relationship between the natural environment and improved health outcomes. However, for practical reasons, most have been observational, cross-sectional studies.

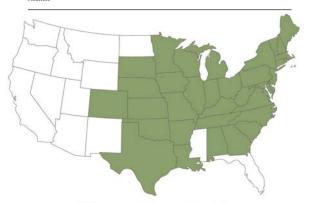
Purpose: A natural experiment, which provides stronger evidence of causality, was used to test whether a major change to the natural environment—the loss of 100 million trees to the emerald ash borer, an invasive forest pest—has influenced mortality related to cardiovascular and lower-respiratory diseases.

Methods: Two fixed-effects regression models were used to estimate the relationship between emerald ash borer presence and county-level mortality from 1990 to 2007 in 15 U.S. states, while controlling for a wide range of demographic covariates. Data were collected from 1990 to 2007, and the analyses were conducted in 2011 and 2012.

Results: There was an increase in mortality related to cardiovascular and lower-respiratory-tract illness in counties infested with the emerald ash borer. The magnitude of this effect was greater as infestation progressed and in counties with above-average median household income. Across the 15 states in the study area, the borer was associated with an additional 6113 deaths related to illness of the lower respiratory system, and 15,080 cardiovascular-related deaths.

Conclusions: Results suggest that loss of trees to the emerald ash borer increased mortality related to cardiovascular and lower-respiratory-tract illness. This finding adds to the growing evidence that the natural environment provides major public health benefits.

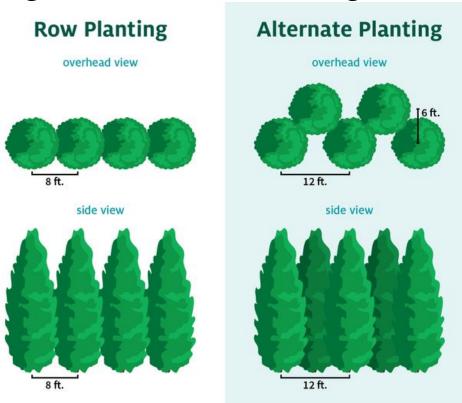
(Am J Prev Med 2013;44(2):139-145) Published by Elsevier Inc. on behalf of American Journal of Preventive Medicine



States with emerald ash borer

Counties where the Emerald Ash Borer had killed more trees had more cardiovascular-related deaths

Vegetated Buffers: Using trees as technology





Vegetated air barriers optimized for mitigating air pollution must be planted close together without any gaps, otherwise the pollution can squeeze through!

According to the EPA, these are the important factors to roadside vegetation design:

Barrier Length

Extend at least 50 meters past area of concern to limit downwind concentrations

Height

At least 4 meters of height will prevent downwind spread

Porosity

High porosity leads to pollution stagnation, low porosity is similar to a wall

Coverage

No gaps between or below trees is ideal. Bushes can be used to block low gaps

Thickness

5-10 meters recommended, but effectiveness impacted by porosity of barrier

Effective Barrier





Ineffective Barrier









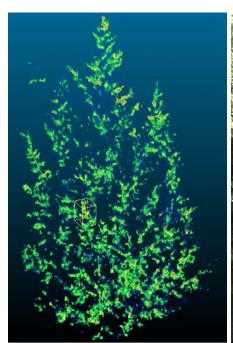




Measuring the leaf area density of trees to input into our models

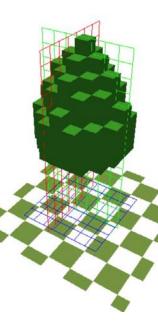




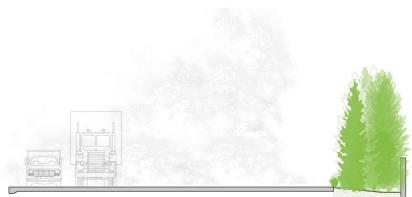




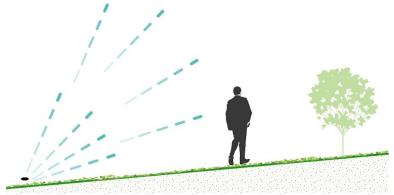




Planting a vegetated buffer closer to the source of pollution is more effective at blocking that pollution



Less effective at blocking



Less effective at blocking



More effective at blocking



More effective at blocking

Key Points about Vegetated Buffers

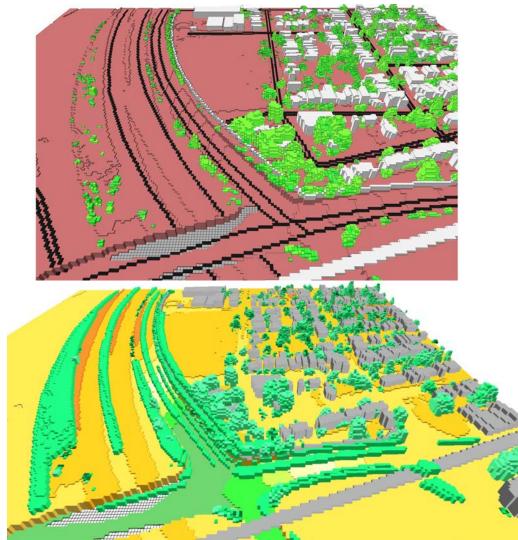
- Having a buffer that is tall and thick is more effective
- Using evergreen trees with dense leaves is better for blocking more pollution
- Its better to plant buffers close to the source of pollution



Example of our draft Prescott Model

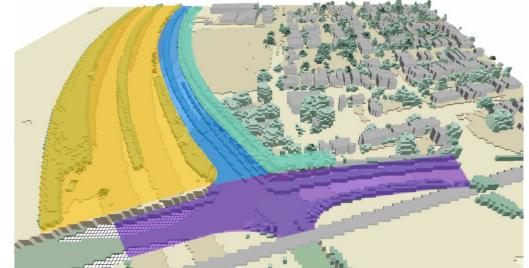






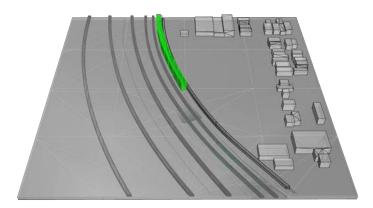
Existing Vegetation

Adding in proposed vegetation

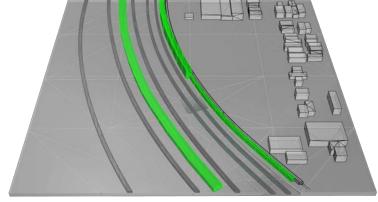




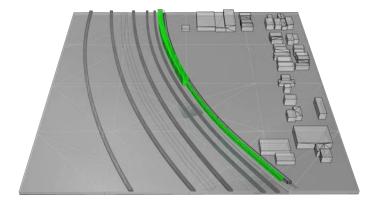
Decide what planting areas to compare



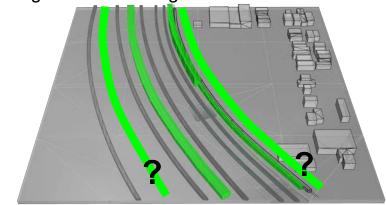
Existing Condition (Can be tested w/monitors)



Additional buffer between freeway directions



Single downwind vegetated buffer



Upwind buffer or outside wall?

Modeling Key Points

- A model uses inputs to make predictions
- Models aren't always accurate, but they are still useful
- We working on trying to make the inputs that we use more accurate so that we can try to get more accurate results
- We are developing models that can test the differences between different planting interventions

Clarifications/questions about modeling? (10 min)

Prescott Greening Agenda

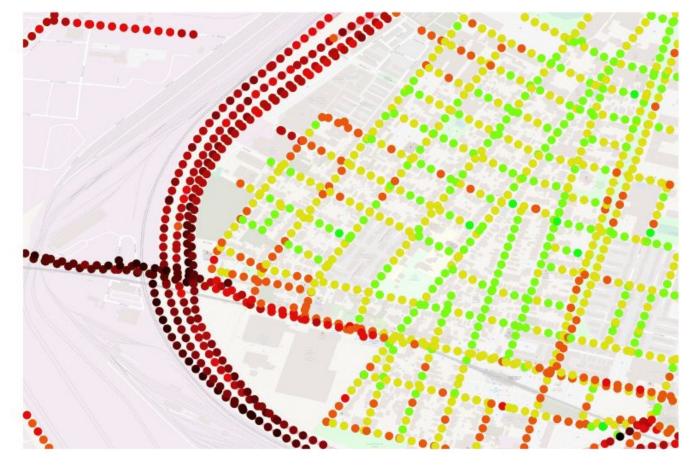
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EDF/Aclima Black Carbon Measurements

micrograms/m3

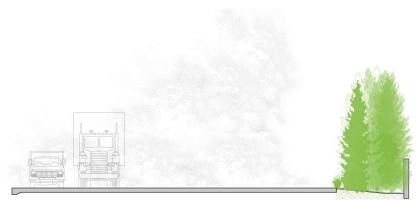


- -0.52 0.20
- 0.20 0.38
- 0.38 0.59
- 0.59 0.85
- 0.85 1.18
- 1.18 1.56
- 1.10 1.50
- 1.56 1.98
- 1.98 2.54
- 2.54 3.99
- 3.99 8.15

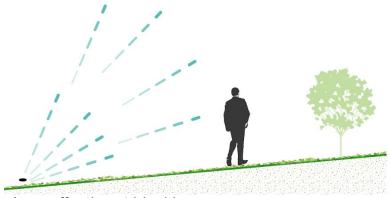


Existing data from EDF/Aclima has shown that significant air quality issues exist in the target neighborhood, especially near the roads with heavy truck traffic.

Planting a vegetated buffer closer to the source of pollution is more effective at blocking that pollution



Less effective at blocking



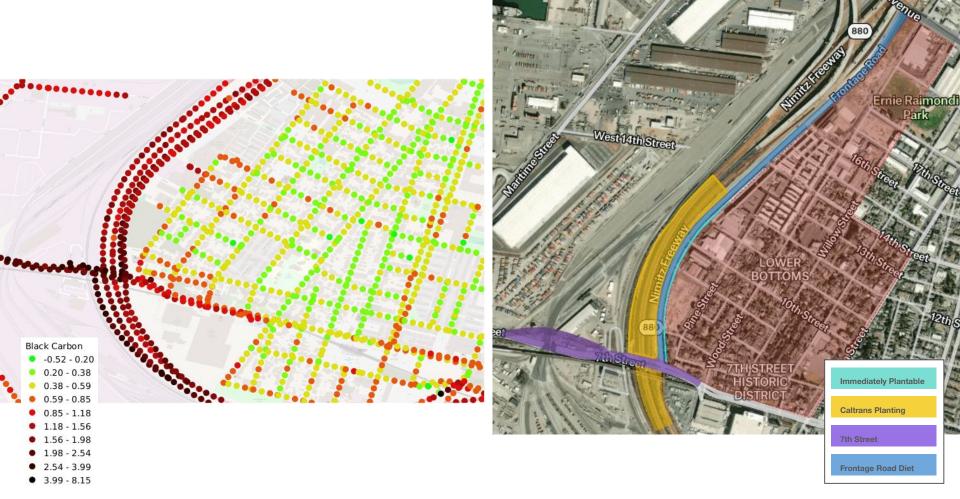
Less effective at blocking



More effective at blocking



More effective at blocking



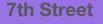


Immediately Plantable

- Simpler design: fill in with trees
- No concrete removal
- Can be planted the fastest
- Permitting with City of Oakland
- Can be planted by local tree planting groups

Caltrans Planting

- Simpler design: fill in with trees
- No concrete removal
- Requires building soundwalls and guard rails
- Permitting through Caltrans
- Need to use Caltrans approved contractors



- More complex design: costlier to design, engineer, and construct
- Other projects, such as one headed by the port of Oakland, are potentially being planned for this area, so important to move fast

Frontage Road Diet

- More complex design: costlier to design, engineer, and construct
- Lots of possibilities for how the area can be designed: want community input
- Innovative road diet: community support is critical













Easiest place to ask local tree planting groups to plant this area





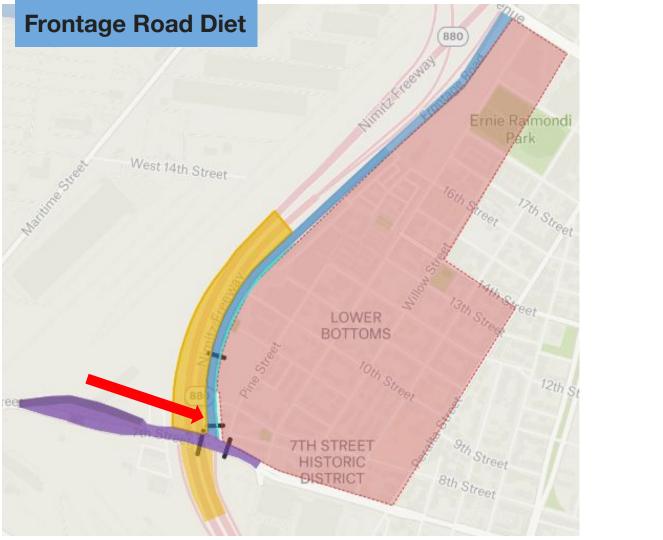




Frontage Road Diet

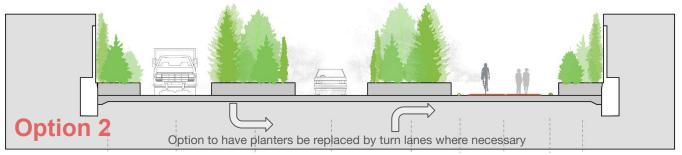


Utilizing the unused middle lane and reducing lane sizes could increase safety

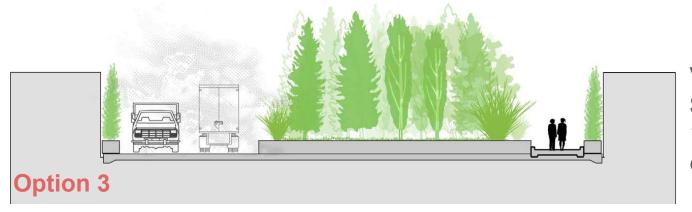




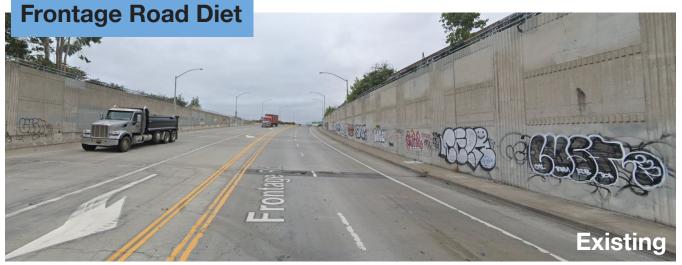
7.5' planter Multi-use path Maintains 2 lanes



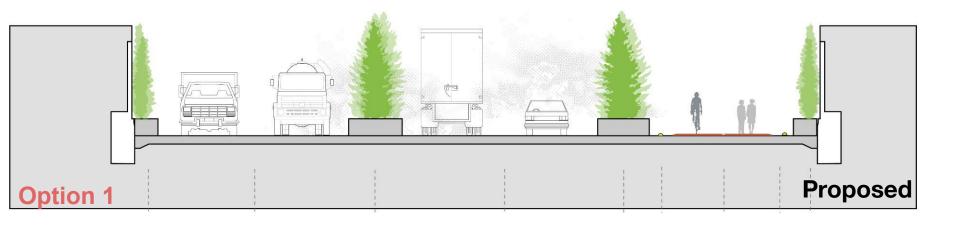
10-14' planter.
Multi-use path
Reduces lanes to 1
going each direction

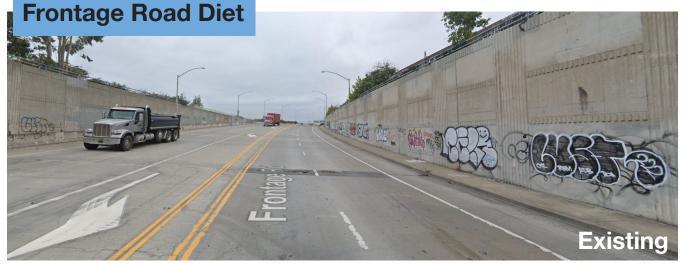


Very large buffer Smaller path. 1-2 lanes going each direction.

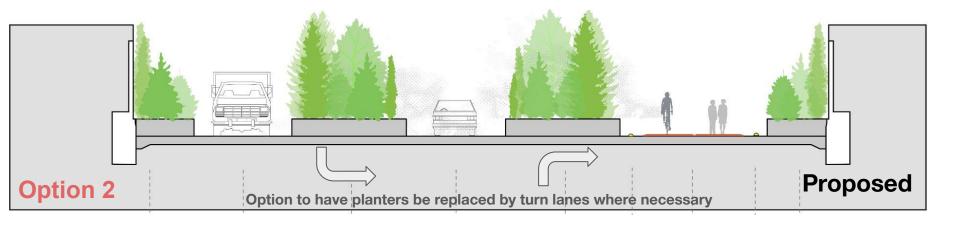


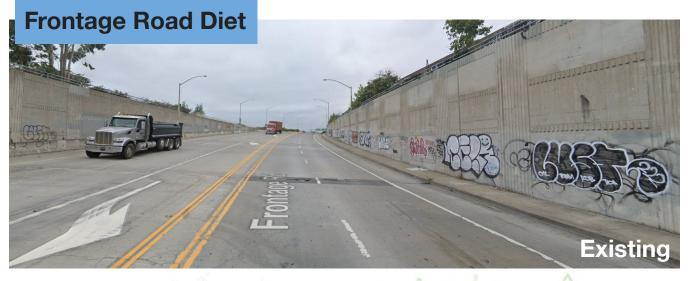
7.5' planter
Multi-use path
Maintains 2 lanes





10-14' planter.
Multi-use path
Reduces lanes to 1
going each direction

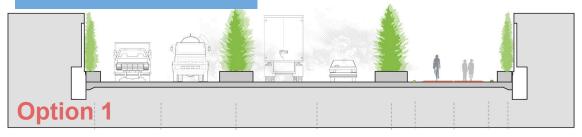


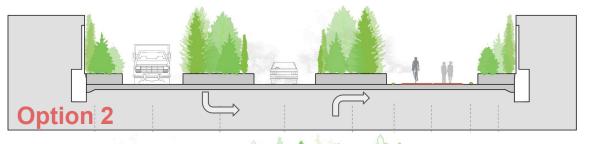


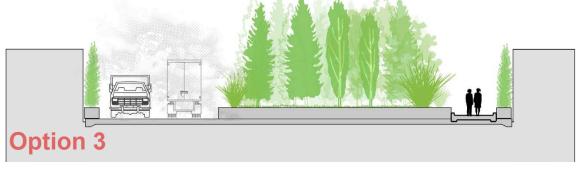
Very large buffer Smaller path. 1-2 lanes going each direction.



Frontage Road Diet



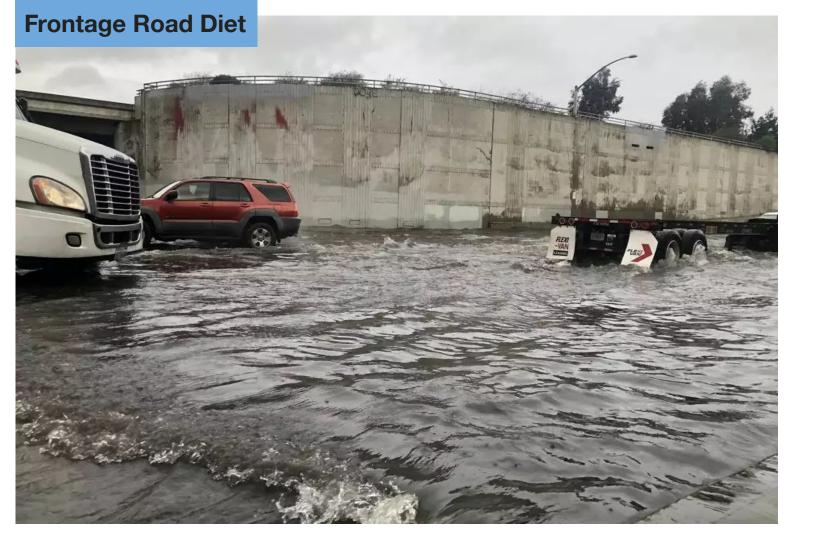




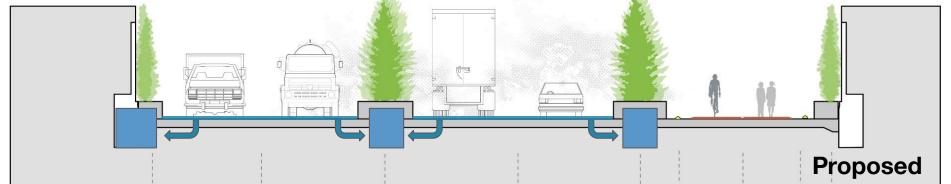
Which design features do people like?

- Lanes: 1 vs 2
- Planters: medians vs 1 big
- Path: Multi-use vs small
- Dedicated turn lanes?











A series of stepped bioswales to absorb water.

Overflow to be stored for irrigation and pumped out.





Comparing Scenarios Using Models





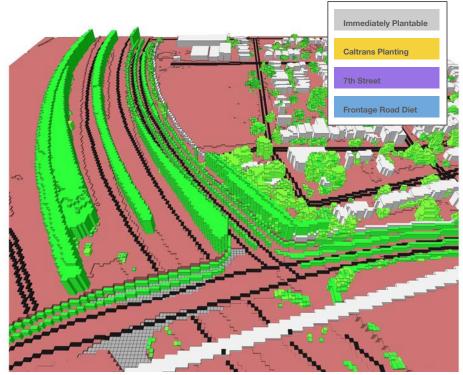
A) Caltrans + Immediately Plantable

B) Caltrans + Frontage Road Diet & 7th

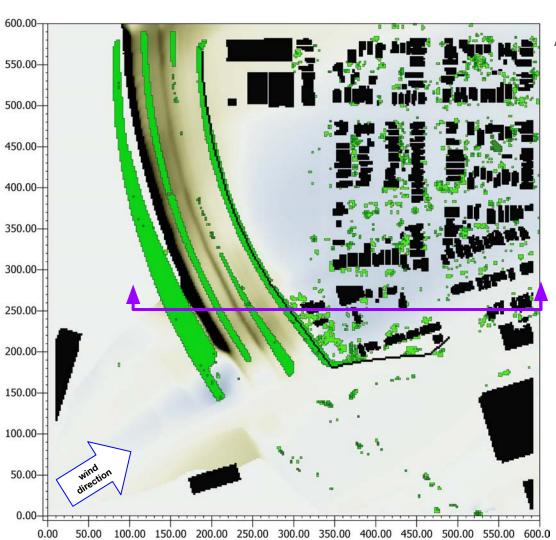
Comparing Scenarios Using Models



A) Caltrans + Immediately Plantable

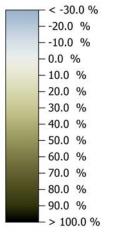


B) Caltrans + Frontage Road Diet & 7th



A) Caltrans + Immediately Plantable

relative difference PM0.015 Concentration



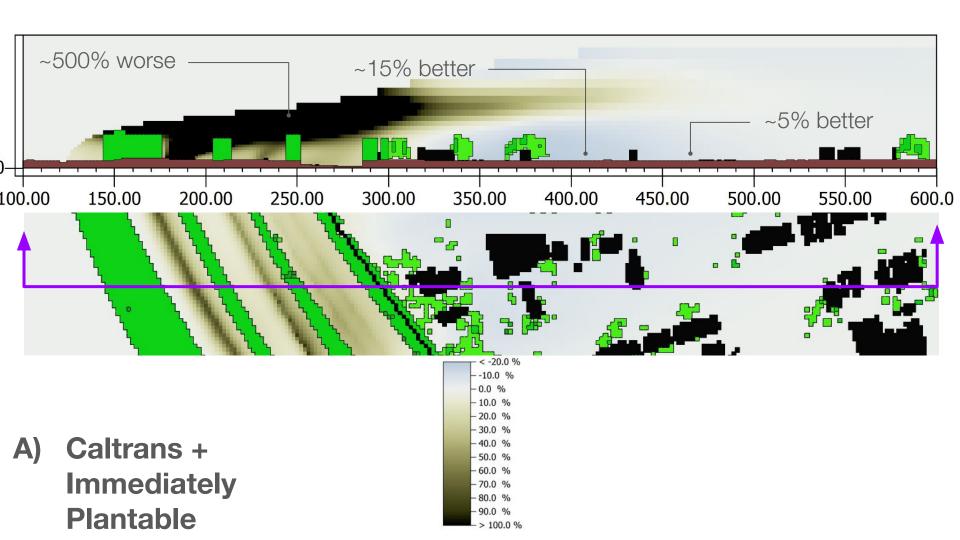
Min: -25.3 % Max: 2717.2 %

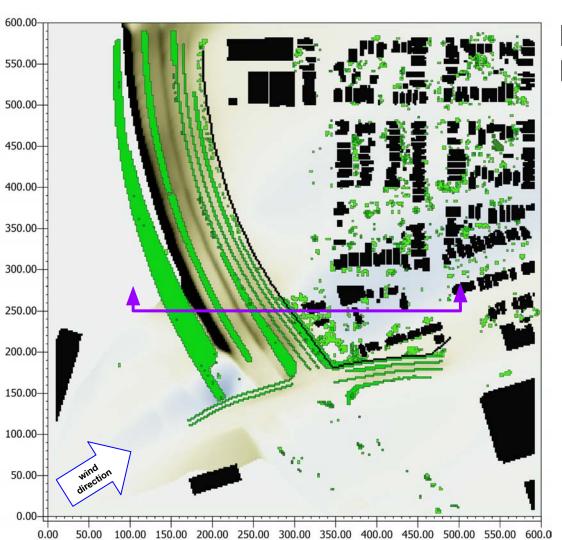
98%-Percentile 63.9 %

Bluer areas are where the pollution is better than existing

Darker areas are where pollution is worse

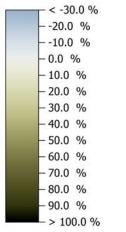






B) Caltrans + Frontage Road Diet & 7th

relative difference PM0.015 Concentration



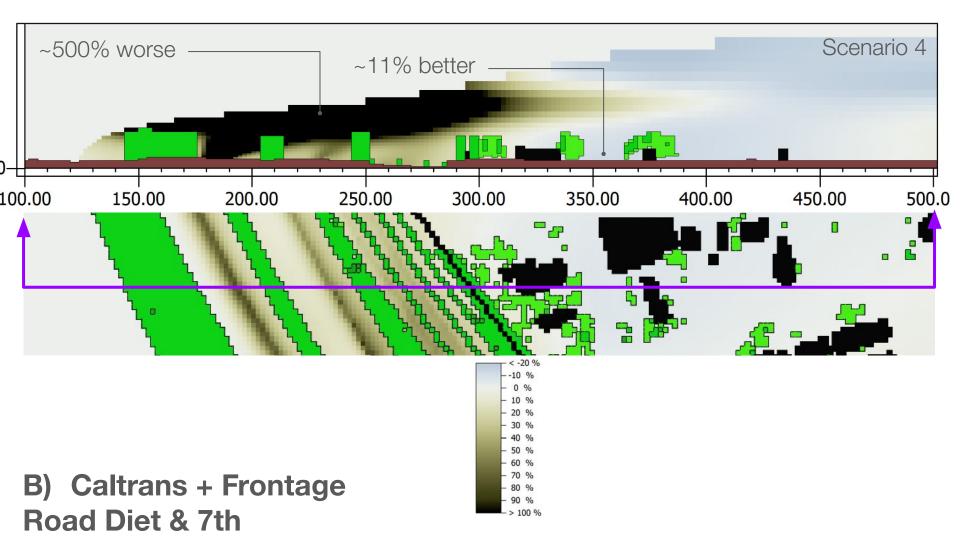
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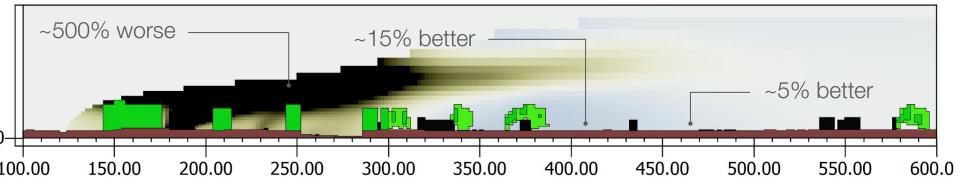
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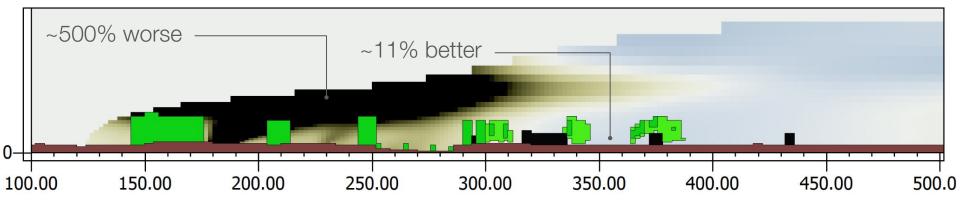




A) Caltrans + Immediately Plantable



B) Caltrans + Frontage Road Diet & 7th



Questions:

- If we know that a buffer concentrates pollution upwind of it, how do you best design buffers?
- Does it make sense to potentially cause spikes at frontage road where pedestrians may be, if it might make the neighborhood better?
- What are some of the other scenarios that we should and shouldn't test?

There are lots of different things we can choose to prioritize in designing the place we live



Habitat Stormwater Aesthetics Road safety

Prescott Greening Agenda

- Introduction
- Project Area
- Modeling
 - What is modeling
 - Building a 3D world
 - > Pollution Levels
 - > Vegetated Buffers
- Concept Designs
- Discussion

Group Q&A (10 min)

 What questions do you have about the designs?

 What additional information do you want to know before breakouts?



Q&A Notes

- What questions do you have about the designs?
- What additional information do you want to know before breakouts?

Zoom Poll #2 - Prioritization and Trade-offs (10 min)

Different designs and design assumptions will have different trade offs.

- What are the things we should uplift as priorities when working on this project inbetween WOCAP / community check-ins? (Choose your top 3)
 - 1. Road safety (reducing collisions)
 - 2. Safe pedestrian/biking access
 - 3. Noise reduction
 - 4. Air pollution reduction
 - 5. Ecological benefits (habitat, biodiversity)
 - 6. Flooding / stormwater mitigation
 - 7. Vehicle traffic efficiency
 - 8. Aesthetics
 - 9. Cost
 - 10. Other

Zoom Poll - NOTES

- Road safety (reducing collisions) Safe pedestrian/biking access Noise reduction

- Air pollution reduction
 Ecological benefits (habitat, biodiversity)
 Flooding / stormwater mitigation
 Vehicle traffic efficiency

- **Aesthetics**
- Other

Breakout Activity (30 min)

Miro Board: https://miro.com/app/board/uXjVNyPr1ZI=/

- Activity #1 Design Priorities
 - 1. Share your thoughts on the design priorities from the zoom poll

- Activity #2 Design Review (with section drawings)
 - 1. What are people's initial reactions to the designs?
 - 2. How do you want to see this road in the future?
 - 3. How should we weigh any conflicts in the community preferences vs. research results
 - 4. How should we involve WOCAP and the larger West Oakland Community in the the overall design process?

Large Group Report Back Notes

Background & Related Projects

- Adapt Oakland: Urban Greening & Living Buffers in WO ("Prescott Greening")
 - Funded by CARB (Audi settlement) & Metropolitan Transportation Commission (MTC)
- West Oakland Sustainable Transportation Equity Project ("STEP")
 - CARB funding to implement four strategies and recommendations from the WOCAP: (1) Truck
 Management Plan (TMP) implementation; (2) Pedestrian Improvements and Urban Greening; (3) Bike
 Resource Hub; and (4) Transit Access Improvements
- OakDOT/OPFR Streetscape Improvements: 7th Street Connection Project
- West Oakland Link: \$65M from Bay Area Toll Authority, ACTC, City of Oakland, & Caltrans



Evaluation

Monthly Post-Meeting Evaluation Survey

You have time now to complete the survey

www.woeip.org/wocap-sc-survey

We will also email the link after the meeting

