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/1SYPRUBuhS0gW6r0kVA3unOEk7mgKAZu3dhEzo_E/edit#gid=660277727
## Owning Our Air - West Oakland AB 617 Steering Committee Meeting

**Wednesday, February 7, 2024 | 6:00 pm to 8:00 p.m.**

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

● Pilot project to reduce pollution exposure

● Developing way to model different planting options

● Vegetative buffers along:
  ○ Frontage Rd from 7th - 16th St
  ○ Caltrans Freeway
  ○ 7th street

● Creation of Stewardship Model for Green Infrastructure
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

Model Pollution  Model Solutions  Design  Build Interventions  Monitor Results
Prescott Greening Agenda

❖ Introduction
❖ Project Area
❖ Modeling
➢ What is modeling
➢ Building a 3D world
➢ Pollution Levels
➢ Vegetated Buffers
❖ Concept Designs
❖ Discussion
Red - Prescot Impact Area (Place we are trying to improve)

Yellow - Caltrans Planting

Blue - Road Diet

Teal - Immediate Planting Area (in partnership with Common Vision)

Purple - 7th Street and GoPort Connectivity
Prescott Impact Zone
Immediately Plantable
Caltrans Planting
7th Street
Frontage Road Diet
Immediately Plantable

Caltrans Planting

7th Street

Frontage Road Diet
Immediately Plantable
Some areas we can fill in where the trees are thin or dying to create a better buffer
Immediately Plantable
Some places have lots of spaces for new trees
This area could have hanging vines

Immediately Plantable
880 Freeway - Caltrans Land

- Immediately Plantable
- Caltrans Planting
- 7th Street
- Frontage Road Diet
7th Street

Immediately Plantable
Caltrans Planting
7th Street
Frontage Road Diet
Caltrans Planting
Frontage Road Diet
Immediately Plantable
7th Street
Frontage Road Diet
Street dips down lower than the surrounding area
Frontage Road Diet
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?
● What does Frontage road mean to you?
● If you know these areas, what is your experience of them?
  ○
● What are your concerns about these areas?
  ○
● How do you use the area(s)?
  ○
Prescott Greening Agenda

❖ Introduction
❖ Project Area
❖ **Modeling**
  ➢ What is modeling
  ➢ Building a 3D world
  ➢ Pollution Levels
  ➢ Vegetated Buffers
❖ Concept Designs
❖ Discussion
Evidence Based Design
Key Points about Models

- A model uses inputs to make predictions
- Models aren’t always accurate, but they are still useful
- We are 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.
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 =

Physical Environment

Pollution Sources

How Air Moves through the environment

Different Buffer Designs

Wind
Collect LiDAR data of the structures and trees
LiDAR scan process
Simplify the 3D world into blocks
Bay Area Air Quality Management District created used AERMOD to predict the way pollution from local sources would disperse across the city / region.
### Local PM$_{2.5}$ (µg/m$^3$)

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<tr>
<th>Highway</th>
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<tr>
<td>Passenger vehicles</td>
<td>0.217</td>
<td>6%</td>
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<tr>
<td>Heavy/Medium HD trucks</td>
<td>0.067</td>
<td>2%</td>
<td></td>
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<tr>
<td>Light HD trucks</td>
<td>0.010</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Road dust</td>
<td>0.094</td>
<td>2%</td>
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<table>
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<tr>
<th>Street</th>
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<th></th>
<th>%</th>
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<tr>
<td>Passenger vehicles</td>
<td>0.066</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Heavy/Medium HD trucks</td>
<td>0.018</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Light HD trucks</td>
<td>0.004</td>
<td>0%</td>
<td></td>
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<tr>
<td>Road dust</td>
<td>0.413</td>
<td>11%</td>
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<tr>
<th>Port</th>
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<tr>
<td>OGV (maneuvering)</td>
<td>0.022</td>
<td>1%</td>
<td></td>
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<tr>
<td>OGV (berthing)</td>
<td>0.043</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>Harbor craft</td>
<td>0.055</td>
<td>1%</td>
<td></td>
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<tr>
<td>Dredging</td>
<td>0.015</td>
<td>0%</td>
<td></td>
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<tr>
<td>Bunkering (tugs + pumps)</td>
<td>0.003</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Drayage trucks</td>
<td>0.019</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>Road dust</td>
<td>0.018</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Cargo handling</td>
<td>0.009</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Railyard (OGRE)</td>
<td>0.018</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Railyard (BNSF)</td>
<td>0.004</td>
<td>0%</td>
<td></td>
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### Rail

| Rail lines | 0.038 | 1% |
| Railyard (UP) | 0.040 | 1% |

### Permitted

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<tr>
<td>Schnitzer (stationary)</td>
<td>0.044</td>
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<tr>
<td>EBMUD</td>
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<td>1%</td>
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<tr>
<td>Dynegy</td>
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<tr>
<td>Pinnacle Ag</td>
<td>0.316</td>
<td>8%</td>
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<tr>
<td>Sierra Pacific</td>
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<td>0%</td>
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<tr>
<td>CASS</td>
<td>0.002</td>
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<tr>
<td>California Cereal</td>
<td>0.018</td>
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<tr>
<td>CA Waste (10th St)</td>
<td>2.151</td>
<td>57%</td>
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<td>Other facilities</td>
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### Other

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<tr>
<td>Ferries</td>
<td>0.005</td>
<td>0%</td>
</tr>
<tr>
<td>Schnitzer (ships)</td>
<td>0.002</td>
<td>0%</td>
</tr>
<tr>
<td>Schnitzer (trucks)</td>
<td>0.001</td>
<td>0%</td>
</tr>
<tr>
<td>Truck-related businesses</td>
<td>0.003</td>
<td>0%</td>
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</table>

**3.780 100%**

Modeled impacts from local sources.

2019-10-02 (BASE_YEAR_2017).
BAAQMD Model isn’t at the scale needed for Prescott Greening

**SCALE**

- global
- continental
- regional
- urban
- neighbourhood
- street
- building

- Global climate models
- Regional climate models
- Meso-scale climate models
- CFD
- Building models

Scale needed for intervention studies
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.
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
Vegetated Buffers:
The main test VARIABLE in our model
The Relationship Between Trees and Human Health
Evidence from the Spread of the Emerald Ash Borer

Geoffrey H. Donovan, PhD, David T. Buty, PhD, Yvonne L. Michael, ScD,
Jeffrey P. Prestemon, PhD, Andrew M. Liebhold, PhD,
Demetrios Gatzoulis, 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 2013 and 2012.

Results: There was an increase in mortality related to cardiovascular and lower respiratory tract illness in counties infected 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 61,130 deaths related to illness of the lower respiratory system, and 15,000 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.


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

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.
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.
- It's 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)

Single downwind vegetated buffer

Additional buffer between freeway directions

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 are 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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❖ Discussion
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.
**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

**7th Street**
- 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
Immediately Plantable

Fill in and replace trees
Easiest place to ask local tree planting groups to plant this area
Frontage Road Diet

Immediately Plantable

Caltrans Planting

7th Street

Frontage Road Diet
Utilizing the unused middle lane and reducing lane sizes could increase safety.
Frontage Road Diet
**Frontage Road Diet**

**Option 1**
- 7.5’ planter
- Multi-use path
- Maintains 2 lanes

**Option 2**
- 10-14’ planter.
- Multi-use path
- Reduces lanes to 1 going each direction
- Option to have planters be replaced by turn lanes where necessary

**Option 3**
- Very large buffer
- Smaller path.
- 1-2 lanes going each direction.
Frontage Road Diet

Option 1

7.5’ planter
Multi-use path
Maintains 2 lanes
Frontage Road Diet

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

Option 2
- Option to have planters be replaced by turn lanes where necessary
Frontage Road Diet

Option 3

Existing

Proposed

Very large buffer
Smaller path.
1-2 lanes going each direction.
Which design features do people like?

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

Existing

Proposed
A series of stepped bioswales to absorb water.

Overflow to be stored for irrigation and pumped out.
Some of the greened areas will double as bioswales.
Some of the greened areas will double as bioswales.
Comparing Scenarios Using Models

A) Caltrans + Immediately Plantable
B) Caltrans + Frontage Road Diet & 7th Street
Comparing Scenarios Using Models

A) Caltrans + Immediately Plantable

B) Caltrans + Frontage Road Diet & 7th Street
A) Caltrans + Immediately Plantable

Bluer areas are where the pollution is better than existing.

Darker areas are where pollution is worse.
A) Caltrans + Immediately Plantable
B) Caltrans + Frontage Road Diet & 7th

Bluer areas are where the pollution is better than existing.

Darker areas are where pollution is worse.
Scenario 4

B) Caltrans + Frontage
Road Diet & 7th
A) Caltrans + Immediately Plantable

~500% worse

~15% better

~5% better

B) Caltrans + Frontage Road Diet & 7th

~500% worse

~11% better
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
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   ➢ 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?
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
<p>| | |</p>
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<tr>
<td>1</td>
<td>Road safety (reducing collisions)</td>
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<tr>
<td>2</td>
<td>Safe pedestrian/biking access</td>
</tr>
<tr>
<td>3</td>
<td>Noise reduction</td>
</tr>
<tr>
<td>4</td>
<td>Air pollution reduction</td>
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<tr>
<td>5</td>
<td>Ecological benefits (habitat, biodiversity)</td>
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<td>6</td>
<td>Flooding / stormwater mitigation</td>
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<tr>
<td>7</td>
<td>Vehicle traffic efficiency</td>
</tr>
<tr>
<td>8</td>
<td>Aesthetics</td>
</tr>
<tr>
<td>9</td>
<td>Other</td>
</tr>
</tbody>
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- Zoom Poll - NOTES
Breakout Activity (30 min)

Miro Board: [https://miro.com/app/board/uXjVNYPr1ZI=/](*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 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
Adjourn