Day Two

8:30-9:00am	**Registration and Breakfast**
9:00-9:30am	**Welcome and Logistics** – Ken Elstein, M.B.A., EPA
9:30-10:00am	**Green Prescription: Link Between Urban Tree Canopy Cover & Health Behaviors and Outcomes** – Desiree Backman, DrPH, MS, RD, California Department of Health Care Services & UC Davis Health System
10:00am-2:00pm	**Discussion Activity** (Lunch Available 11:30-12:30)
2:00-3:00pm	**Next Steps** – Ken Elstein, M.B.A., EPA
3:00pm	**Adjourn**

Miscellaneous Items:

Restrooms are just outside of the main auditorium.
Free wireless internet is available under "PCA."
A map with dinner suggestions will be provided at the end of day 1.
A full contact list for participants will be made available at the end of the event.
Presentations will be sent to participants after the event with permission from presenters.
A participant survey will be emailed out after the event. We'd love to have your feedback!

Questions or Comments?

Katie Valenzuela Garcia
kgarcia@sacbreathe.org
(916) 444-5900 ext. 215

Welcome to Day 2 of

Educational Conference on the Use of Vegetation as Near-Roadway Mitigation for Air Pollution

End-of-Day Assessment

- Need more table heterogeneity!
  - "Max-mix"
- Do need to write a best-practices paper (discuss at Next Steps)
- Other product suggestions
  - Publications list
  - Widely available white paper – what's been done, what's in progress, what needs to be done
- Also need to stretch – identify robust action(s) to move this effort forward
- More structure to discussion activity
  - Scenario planning!

Scenario Planning Exercise

- Table Discussion
  - 7 urban/suburban scenarios
  - What does “success” look like in 2030?
  - What do we have to do to get there?
  - What insights have you learned?
  - Based on those insights, what do we start on tomorrow?
- Plenary
  - Report-out
  - Synthesis → actions for next year.

Today's Agenda

- Green Prescription (9:30 – 10:00)
- Scenario Planning Exercise
  - Logistics (10:00 – 10:30)
  - Discussions (10:30 – 12:00)
- Box Lunch (12:00 – 12:30)
- Report-Out and Discussion (12:30 – 2:00)
- Next Steps (2:00 – 3:00)
- Adjourn (3:00)

Heterogeneity: Max-Mix!

- Everyone get up & choose a group reflective of your expertise/passion
  - Research
  - Health
  - Policy
  - Implementation
  - Trees
- Each group counts off 1-4
- First 4 go to appropriate table for your discussion
- Spread out rest accordingly

Scenarios

1. Low-income, multi-family housing near a freeway
2. Building a new high school in an urban community for active transportation, but borders heavy traffic
3. Expanding suburban highway from 3 to 4 lanes (both ways) through moderate density area
4. Major brownfield is ripe for in-fill, but bordered by freeway on one side, major artery on other

Scenarios

5. Establishing a new community college in a low-density development area (a “leap-frog” greenfield).
6. Consolidating 3 intermodal freight terminals (truck and train) into 1 for efficiency in a highly populated area.
7. Customs plaza for inspecting trucks entering US from Mexico (expect queuing, idling….)

Can look at CA, but think **nationally**

Scenario Planning Exercise

- Table Discussion
  - 4 urban/suburban scenarios (nationally)
  - What does "success" look like in 2030?
  - What do we have to do to get there?
    - Policy changes, critical research, technologies to implement
  - What insights have you learned?
  - Based on those insights, what do we start on tomorrow?
- Plenary
  - Report-out & synthesis

Managing Our Time

- 5 Minute Presentations
  - –Green for 4 min.
  - –Yellow = 1 min. left
  - –Red = 15 sec. left

Before You Leave!

- Sign sheet if don't want your slides shared.
- Label any flipcharts with Table/Scenario and page number.
- Provide Ken with any electronic files.
- Fill out emailed survey
- Thank you!!

Notes from Educational Conference on Use of Vegetation as Near-Roadway Mitigation for Air Pollution

Shriner's Hospital, Sacramento, CA
(June 2-3, 2015)

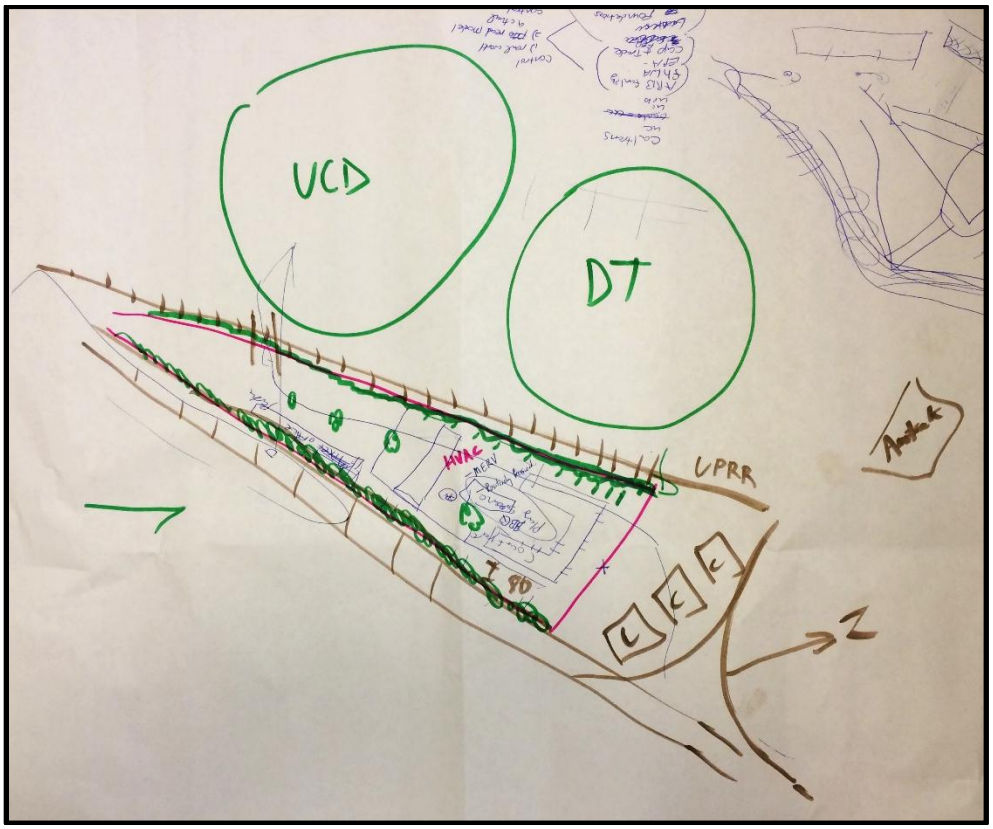
Day 2

Scenario Discussion Activity

1) What does "success" look like in 2030?
2) What do we have to do to get there?
3) Policy changes, critical research, technologies to implement
4) What insights have you learned?
5) Based on those insights, what do we start on tomorrow?

Report-Out

Scenario 1: Low-income, multi-family housing near a freeway



1) What does Success look like?
   a) The location is not just for a specific group – it is desirable and healthy for all. Education and messaging about the healthy design is built in to the complete lifecycle of the project.
2) What do we need:
   a) Modeling
   b) Quantifiable information
   c) Architectural solutions
   d) Non operable windows
   e) courtyards

f) Measurement/description of combined benefits
g) Best practices – multi-discipline and messaging built in
h) Non reflective solar surfaces so panels could be on soundwalls
i) Threshold
j) Trees need to go in first
k) Selection and stewardship of vegetation
l) Clean up sources
m) Metals out of brakes
n) Clean vehicles
o) Tires
p) Need info on tire and brake composition
q) Filters in front of walls at source
r) Experimental design – fans, filters above wall
s) Cost/benefit analyses
t) Designs with room for large trees, integrated parkways

3) Insight:
   a) We have enough information to move on to an actual study to get some real data
4) What can we do today
   a) Pilot project
   b) Modeling
   c) Co-benefits description
   d) Multi-discipline best practices
5) Pilot project
   a) Start with blank slate and build the way we want. UC or Caltrans park and ride property
   b) UC best option – partner in experiment, use UC Master Gardeners
   c) Partner with Cal Trans, urban forestry, Cap and trade, sustainable communities, ARB, EPA, Foundations (Wellness, endowment, resource legacy)
   d) Control to evaluate best practices, look at species, long stretch with segments of different design

Scenario 2: Building a new high school in an urban community for active transportation, but borders heavy traffic

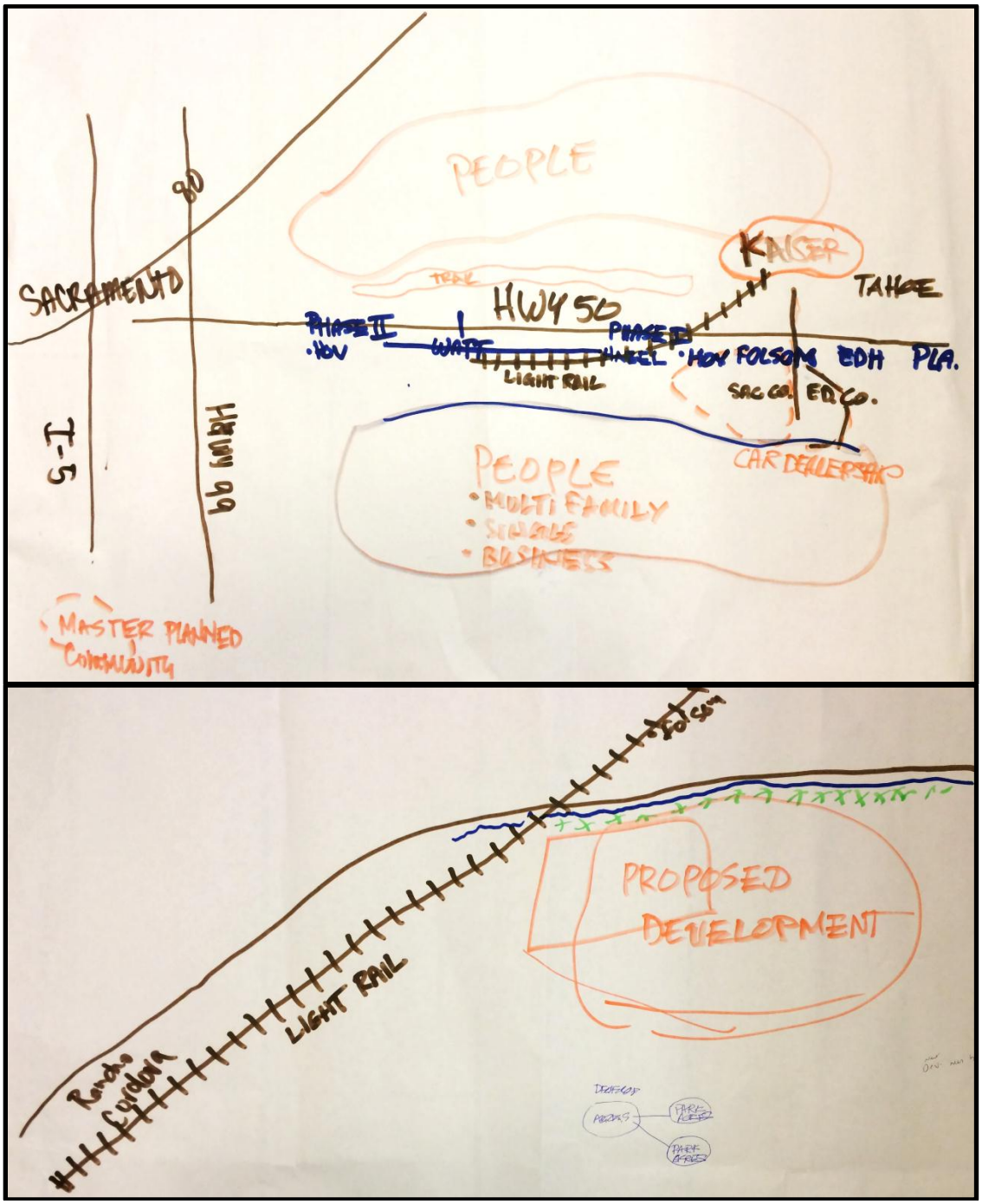
1) Applies for any high school, since all are next to major roads.
2) Went with matrices ideas – look at receptor source levels and decide what products we need
   a) Receptor: can use high filtration units in building. But someone will open the door, so also need a cheap measuring device, which will help educate people – teach them to keep the door closed, get vegetative barriers
   b) Traffic in morning – electric school buses or design issues (e.g., use roundabouts so cars aren't stopping as much. Look at truck routing (but they will use the fastest route, so could be hard to convince them otherwise).
   c) Kids are in classrooms. When are they exposed? Playing fields. So concentrate the vegetative barriers there – but it will depend on site whether place near roadway or playing field
   d) Do on case-by-case basis. But how to do at a bigger level, how to convince decision-makers?
      i) Promote safe routes to schools to high department levels of education – superintendents. Also, maintenance people. PTAs and citizen unions. Division of the state architect
3) Products
   a) Convince science teachers to take it on so they own it at the school level.
      i) Pertains to setting curriculum standards
   b) Data sheets specific to audience – promote benefits.

c) Project guidelines about tree species, density/porosity (how thick should vegetation be?). Can't be too specific since is location dependent.
d) Demo project – shipping in bamboo on pallets – do demo to convince them.
e) Toolkit: dust track – something to show how much pollution they're facing during the week vs. the weekend vs. different times of day.
    i) Can use computer vacuum, aquarium pump on filter

4) In 2030 – we won't have cars that emit so much.

Scenario 3: Expanding suburban highway from 3 to 4 lanes (both ways) through moderate density area

1) Many different points of view. Picked an example of a project – Highway 50, since there's a lot going on in that corridor – both existing issues and new development.



2) Reduce emissions/pollution, and bring in greenscape, sound walls, trees, landscape.
3) Have to work within system to connect and make arterial improvements as well as expand
    a) Improve public transportation (light rail).
        i) There are ways to get up to the highway, but there's a disconnect across 50. Hard to get from Watt to Folsom. Making connections would take cars off the highway.
    b) More express bus routes so people want to get on them to travel from 50 to downtown (fewer stops on the way).
    c) Buses that would go from certain stops/areas to certain light rail stations so people don't have to drive.
    d) Advocate a new project. More ride sharing. Along 50, they've built out phase 1 – already have HOV. Phase 2 goes west from Watt to the 80 connection. Want to tie in an HOV lane all the way down all of 50, but ensure that people are using it.
    e) Learn from Bay Area – so congested. Ride sharing and carpooling. People just meet at locations and ride. Save time, money. Use BART. There's an app where you go to a location, meet and drive.
        i) Can tap into people within your area – app on phone – see who is in your area – pay only $5-7. It's a combination of Uber and ride share. Promotes using HOV and carpooling.
    f) Also get developers involved. This is going to be a big development – 25,000 people moving in. Will have an impact on improvements that we've made along highway 50 – want people off the highway and on public transit
        i) With developer, focus on incorporating sound walls and using trees to cut down on emissions going into new community.
        ii) Have city to say that we have to have so many acres of open space to develop, so create areas within project that would resemble the greenways/green belts.
            (1) Incorporate them to encourage people to bike. Could tie in from community to major street sections where there's public transport and light rail. Encourage walking, safe routes for kids to go to school.
        iii) Encourage increased tree canopy – have incentive so developers incorporate this in the planning stage.
        iv) Strategically locate things near highway – want residential schools (sensitive receptors) far away if a new highway. Can put commercial/businesses closer.
            (1) But how do we get them to create sound walls/trees if businesses are not a sensitive receptor?
    g) Existing area – 50 is mixed. Residential up to the highway (the fence is the sound wall). Not much space for trees on highway side. So encourage homeowners to think about health issues (we underestimate them).
        i) They can get free trees – tap into the forestry program. Was a big hit for SMUD when going into new development – homeowners can get savings.
        ii) Could push when there's not much room going up to the highway
        iii) A lot of open, free space with room for development. Put in trees and sound walls.
    h) Incorporate new ideas for cleaner environment from the beginning (planning stage).
        i) Need to change the cost of doing business. If you are going to build, this is what you need to do to benefit the people.
    i) Reducing emissions
        i) Electric cars, zero emission vehicles, buses. Will happen over time
        ii) Pay attention to brake and asphalt emissions.
        iii) Big aspect is trying to reduce the number of vehicles on the road. Will never be high VMT. Think out of box to access system that's already in place.
4) 2030 – we are improving cars (emissions), electric cars. May not decrease volume on highway. Can focus on arterial sections and streets. Use public transportation.

a) Was a divided discussion between the huge development on the books and how to impact the health of the community. Working with new community so could incorporate new ideas (greenways, walkability, bike access). Want that to happen now in this newly established area.
b) Helps with people in that community and those going back and forth into it.
    i) How to impact those emissions that will impact the community from that traffic (sound walls and trees)?
    ii) Whose responsibility is it to do that?
    iii) Want best practices – smart streets, green ways to help communities. But how to deal with who plants and cares for trees? Need to answer and educate people on how to do that.

Scenario 4: Major brownfield is ripe for in-fill, but bordered by freeway on one side, major artery on other

1) Very diverse group.
2) 4 topics
    a) Scenario
        i) Assumed a complicated site – 30 acre site bounded by freeway for multiuse – school, senior center, residences, retail and jobs, park
    b) Success
        i) Rich tree canopy at the site, happy neighbors, engaged community – those using and surrounding community.
        ii) Mobility/accessibility to transportation
        iii) Self-generated, distributed energy on-site. Net zero energy use
        iv) Gray water on site.
        v) Promote public health – reduced asthma, obesity
        vi) Active transportations (bike paths, walking).
        vii) Buffered from surrounding roads with barriers or distance.
        viii) Diverse vegetation to promote ecosystem health.
    c) Goals for vegetation – what is it supposed to do for us?
        i) Create barriers between roads and people
        ii) Provide canopies to further downwind, they'd intercept and filter pollution
        iii) Reduce urban heat island effect
        iv) Lush canopies in neighborhoods encourage active transportation – gives people an incentive to be out
        v) Aesthetic – attractive park without exacerbating asthma (resilience through diverse ecosystem)
        vi) Reduce energy consumption (cooling), green roofs
        vii) Stormwater retention
        viii) mental health benefits
        ix) increased property values
    d) What do we need?
        i) Regulation or system of requirements to allow correct use of vegetation – e.g., cities currently allow certain trees to be planted, but they may not be the best ones
        ii) Funding – need a mechanism (e.g., bank – developers put money into banks for affordable housing – a similar mechanism to fund these goals)
        iii) Guidance on what to plant (types of trees/shrubs)
        iv) Development standards (e.g., once you plant something, need to stratify irrigation system per the needs of the vegetation)
        v) To make it real, need some sort of review process – have city arborists review and approve plans on how these would unfold, so can check that they'll work.

Synthesis Discussion

1) Need a guidance package – what types of vegetation work under what situations?
   a) When is vegetation combined with a sound wall vs. using a canopy for protecting a broad area?
   b) If using ecosystem model, group plantings as a starting point – develop sets under different climate/soil scenarios. Help developers understand what plantings will work in that area but also for exposure mitigation.
   c) Design for benefits as well as for mitigation.
2) List of potential funding sources to help people implement.
   a) How to change funding modeling? We need staff to do this.
   b) It's not just about what Caltrans can do for us; what can everyone do?
   c) Enforcement money could be used in mitigation – e.g., it has been used in training on rules and regulations. Amount depends on cases and settlements.
      i) 25% of penalties can be directed to mitigation. Not geographically limited.
3) This is a small group – who are the partners we need to bring to the table? Advocacy.
   a) Decision makers – county supervisors. That level. Will show up. Federal Highway Administration people
4) Important message is that we should stop planting because of the drought, the drought (climate change) is the reason we need to be planting.
   a) Ensure what's planted is sustainable so it's native (who is going to care for it?). Consider both planting and stewardship. The right plant in the right place so it's sustainable.
   b) What do we need in order to lobby and advocate?
   c) We need to be careful that we're not using just native trees – the climate is changing. Consider the future and an ecosystem perspective. Need people who understand ecosystems.
   d) Need characteristics, not a list. An ecosystem package. If people understand there's a reason for selecting, they'll be tuned into going to an expert. How does putting it in the context of an ecosystem shift how we look at it?
   e) A selling point would be not just health, but to monetize the benefits. What's the value of a tree?
      i) Return on investment for a tree in Sacramento was calculated at $80/tree/yr
      ii) There are different values depending on whether you're looking at health benefits, property values, replacement value. Need to aggregate.
5) How to incentivize
   a) If we can quantify benefits from the air quality perspective, some agencies will have greater incentive to help with deployment (e.g., pilot projects, modeling tools).
      i) Need to bring EPA in to ensure multiagency recognition when used in Clean Air Act conformity processes.
6) Design perspective
   a) County builds a road, but then turns it over to Caltrans for upkeep. This is a partnership that's negotiated and determined. Projects are developed, planned, and funded, and then handed over to Caltrans. Already doing it.
7) Need policies documents
   a) Must have integrated policies (air, water, public health). The obstacles and the opportunities or else we'll be working at cross purposes. Also, must address multiple audiences – state and local. Especially about impacts
8) Need a venue for guidance on what to plant, where, and what to think about.
   a) Could the California Health in All Policies Task Force bring agencies together to discuss? Start in CA and jump to national level?
      i) Is CA's regulatory burden too high? But that's often how it works – try it first in CA.
9) We need a press release – we've met several times, made lots of progress, had lots of discussion, and now it's time to move ahead. Discuss what we're sure about and not sure about.

a) Need to get the vegetation issue out in the common literature.

10) The lack of quantitative information is frustrating to agencies. Get out what we have.
    a) We've developed peer-review meeting reports for the past two meetings. Published in the Transportation Research Board's bimonthly magazine, TR News
    b) Who's the audience?
11) Need implementation projects and monitoring
    a) What funding sources do we have influence over? How many projects do we want to do?
    b) At the 2012 meeting, we wanted to do a demo project, but it didn't happen. Idea for us to plant trees and EPA for monitoring.
12) Need a multi-pronged approach
    a) Summarize what we know in guidelines
    b) Demo project
    c) Audiences
        i) Decision makers, but also communities – activists want info they could take to city planners. Don't underestimate community activist groups.
        ii) Could be a briefing paper, infographic. Basic info that engenders action.
            (1) Build on Tree Foundation study. Give them something concrete to use in their environment that's short-term usable.
            (2) Research won't move until activism moves more.
        iii) Training package – a PowerPoint presentation to accompany a briefing.
            (1) Could do a webinar and archive it.
        iv) Caution that activists already have a lot of materials, but they can't get money unless the policy is there.
        v) Can say what research shows so far and this is what you can do.
        vi) Engineers need numbers!
13) There are lots of policy drivers. Take the strongest – may be limited in air quality (there's not enough certainty). But we can move forward, then get air quality data.
14) Need partnerships.
15) Summary of possible products
    a) Paper on best practices and what to avoid
    b) List of publications
    c) Widely available white paper/meeting report – what's been done, what's in progress, what needs to be done
    d) Policies document outlining changes for stakeholders
    e) Press release
    f) Funding mechanisms
    g) Design resources (guidebook)
    h) Pilot studies (2-3 to help quantify benefits).
    i) Modeling protocols to model and quantify benefits

Priority Activities for the Next 12 Months

What And Who	By When
1) **public** report summarizing progress to-date (Helene) a) publications, research (Tom, Rich) b) resources available (John) c) best practices (Brent, Greg M., Tom, Rich, Jeff P.), implementation examples d) next steps: policy recommendations, implementation opportunities, research considerations, funding opportunities (Kristin, John, BAAQMD)	6-9 months
2) **interactive website** with slideshows, reports, one-pagers, links to resources (Linda, Cindy, Brent)	6 months
3) **communication space (listserv)** to troubleshoot next steps, specific projects, research opportunities, implementation support – "working group" (Breathe CA)	1 month
4) **webinar** to continue progress toward goals (Breathe CA/EPA)	1 year out

Next steps

1) Ken will provide notes and presentations to BreatheCA
2) Katie will send email out to this distribution list:
   a) Ask for additional volunteers for these activities
   b) Describe listserv concept and request to let her know if you want to opt out.