



**South Mountain Corridor Study  
Citizens Advisory Team  
Meeting Summary**

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**Date:** April 22, 2013  
**Time:** 6 p.m.  
**Location:** South Mountain Community College

**SMCAT Members Attending:**

Ahwatukee Foothills Chamber of Commerce, Karen Starbowski  
Ahwatukee Foothills Planning Committee, Melanie Beauchamp  
Arizona Public Health Association, Al Brown  
Calabrea HOA, John Cochran (for Mike Buzinski)  
City of Avondale, Bryan Kilgore  
Cottonfields Community HOA, Timmothy Stone  
Foothills Club West HOA, Michael Hinz  
Foothills Reserve HOA, Derrick Denis  
Kyrene School District, Jeremy Calles  
Laveen Village Planning Committee, Wes Lines  
Maricopa County Farm Bureau, Clayton Danzeisen  
Pecos Road/I-10 Landowners Association, Nathaniel Percharo  
Phoenix Mountains Preservation Council, Michael Goodman  
Sierra Club, Tiffany Sprague (for Sandy Bahr)  
Silverado Ranch, Eric Baim  
Southwest Valley Chamber of Commerce, Woody Thomas  
The Foothills HOA, Chad Blostone

**SMCAT Members Absent:**

Ahwatukee Village Planning Committee, Doug Cole  
Arlington Estates HOA, Camilo Acosta  
AZ Forward, (no designated representative)  
Estrella Village Planning Committee, Peggy Eastburn  
Gila River Indian Community – District 4, LaQuinta Allison  
Lakewood HOA, Chris Boettcher  
Laveen Citizens for Responsible Development, Laurie Prendergast  
Mountain Park Ranch HOA, Jim Welch  
South Mountain Village Planning Committee, Tamala Daniels

**Staff and Consultants**

Darcy Anderson, ADOT  
Brock Barnhart, ADOT  
Ralph Ellis, ADOT  
Chaun Hill, ADOT  
Timothy Tait, ADOT  
Peter Hyde, ASU  
Alan Hansen, FHWA  
Jeff Houk, FHWA  
Rebecca Yedlin, FHWA  
Lindy Bauer, MAG

Bob Hazlett, MAG  
Nathan Pryor, MAG  
Kelly Taft, MAG  
Michael Book, HDR  
Terry Gruver, HDR  
Ben Spargo, HDR  
Heather Honsberger, Jacobs  
Tom Keller, KCA  
Dr. Paul T. Roberts, Sonoma Technology

**Citizens:**

Chris Ahlstrand  
Mark Coryell  
Sean Holstege  
Allison Hurtado  
Renee Jackson  
Jim Jochim  
Tim Lank  
Pat Lawlis  
Andi Morago

Jordan Morago  
Moranda Morago  
Dana Owsiany  
Lisa Percharo  
Andrew Pertro  
William Ramsay  
Scott Sprague  
Connie Squerises

Meeting Agenda	Speaker
Welcome and introductions	Tom Keller, KCA
SMCAT role and responsibilities	Tom Keller, KCA
SMCAT communication process	Tom Keller, KCA
Update on upcoming study milestones	Tom Keller, KCA
Air quality panel discussion	Jeff Houk, FHWA; Peter Hyde, ASU; Lindy Bauer, MAG; and Dr. Paul T. Roberts, Sonoma Technology
SMCAT questions for air quality panel members	Darcy Anderson, ADOT; Jeff Houk, FHWA; Peter Hyde, ASU; Lindy Bauer, MAG; and Dr. Paul T. Roberts, Sonoma Technology

*Meeting began at 6:00 p.m.*

**Tom Keller:** Good evening everyone. Can you hear me okay? Welcome to the meeting of the South Mountain Citizen’s Advisory Team. Today is April 22, 2013 and the time scheduled for this meeting is 6 to 8 p.m. For those members of the public in attendance, the people seated around the table are the members of the Citizen’s Advisory Team. They represent various organizations and offer their representation for this important study.

The SMCAT members have a binder in front of them. Inserted in each binder is a copy of tonight’s PowerPoint presentation. Also, please note that each SMCAT member has a

meeting session form. Please make sure that you complete your form and submit it to us before the end of the meeting.

Anyone wishing to submit a question tonight should write it down on a yellow question card. These cards are available at various tables around the room. During the course of tonight's meeting, there will be some time when the air quality panelists will be answering your questions. Feel free to write your question on these cards during the meeting and then turn it in to one of the study team members. If we are unable to ask your question to the air quality panelists tonight, we will address your question in the meeting summary, which will be posted to the study website.

We have a full schedule tonight. In addition to our regular agenda items, we have assembled a panel of people to discuss general air quality issues. In a minute, I will introduce the members of the panel.

Now, I will draw your attention to the agenda. First we will cover the introductions. Let me introduce the newer SMCAT members. Karen Starbowski is here representing the Ahwatukee Foothills Chamber of Commerce. Melanie Beauchamp is here for the Ahwatukee Foothills Planning Committee. By the way, if I miss anyone, please let me know. Bryan Kilgore is here representing the City of Avondale. Jeremy Calles is the representative for the Kyrene School District. We have Tiffany Sprague here, who is sitting in for Sandy Bahr from Sierra Club. We also have John Cochran sitting in for Mike Buzinski for the Calabrea HOA. For the SMCAT members who have been with us longer, can we do a quick go around the table?

**SMCAT Member:** My name is Al Brown. I am with the Arizona Public Health Association. My day job is at Arizona State University.

**SMCAT Member:** My name is Nathaniel Percharo and I represent the Pecos Road/I-10 Landowners Association. I am located just across the road from the proposed alignment.

**SMCAT Member:** I am Wes Lines. I am Chairman of the Laveen Village Planning Committee.

**SMCAT Member:** My name is Michael Goodman and I represent the Phoenix Mountains Preservation Council.

**SMCAT Member:** I am Derrick Denis and I am here for the Foothills Reserve HOA, which is located all the way at the end of Pecos Road

**SMCAT Member:** My name is Timmothy Stone and I represent the Cottonfields Community HOA.

**SMCAT Member:** I am Michael Hinz. I am here for the Foothills Club West HOA.

**SMCAT Member:** I am Woody Thomas. I represent the Southwest Valley Chamber of Commerce.

**SMCAT Member:** I am Chad Blostone and I represent The Foothills HOA.

**SMCAT Member:** My name is Clayton Danzeisen and I am here for the Maricopa County Farm Bureau.

**Tom Keller:** And it looks like Eric Baim from Silverado Ranch is walking in the room right now.

Members of the public, there is an operating agreement that guides us through these meetings. It basically helps address how we interact with one another and outlines our code of conduct. It also explains the rules for decision making related to having a quorum.

The purpose of this group is to provide a forum for communication between ADOT, the Federal Highway Administration, and the local community regarding the proposed South Mountain Freeway. The SMCAT is a voluntary advisory team, not a decision making body, and it will not be responsible for decisions made by the State of Arizona or the FHWA. The SMCAT will meet regularly to review project status and provide input on issues that are relevant to the project. The single purpose of the SMCAT is for each member to provide, from his/her respective organization, a build or no-build recommendation for the South Mountain Freeway.

This group has been meeting for a number of years. We are nearing the end of this cycle. There is a slide which I will show shortly that identifies the end of the process. As far as the SMCAT is concerned, there will only be one more meeting after this one. The focus of tonight's meeting is to have an air quality discussion to provide you with general information. The final meeting will be scheduled to occur after the Draft Environmental Impact Statement is released. In that meeting, you will be able to ask your questions about any issues involved with the document.

We have a lot of information to cover tonight. I will be in charge of keeping an eye on the time. We would like to gather your questions on the yellow question cards as soon as possible so they can be answered after the members of the air quality panel members have given their presentations. Darcy Anderson will be moderating the question-and-answer session. Normally, we have time for public questions at the end of this meeting. Please note that tonight, only general questions regarding air quality will be addressed. So please save your project-specific questions for the final SMCAT meeting.

Are we all on the same page? Is everyone okay? Let's see, how many SMCAT members are here? I count 16 people. We have a quorum, so we can conduct business.

A reminder that through the course of tonight's meeting that SMCAT members are expected to treat each other with mutual courtesy, respect, and dignity. Unacceptable or disruptive behavior will not be tolerated and will be grounds for exclusion from further participation in SMCAT activities. Any SMCAT member who acts disrespectfully towards other members, disrupts the SMCAT process, or is unable to attend meetings on a consistent basis, may be required to leave or resign from the SMCAT.

Are there any other questions?

*No questions were asked.*

**Tom Keller:** I think we are ready to begin.

I am going to introduce the speakers on the general air quality panel for this evening. I am going to introduce them all at once so I don't interrupt the flow of the presentations.

Lindy Bauer is the Environmental Director for the Maricopa Association of Governments. MAG is a Council of Governments composed of twenty-five cities and towns within Maricopa County and the contiguous urbanized area, the County of Maricopa, the Gila River Indian Community, the Salt River Pima-Maricopa Indian Community, Fort McDowell Yavapai Nation, Arizona Department of Transportation, and Citizens Transportation Oversight Committee. Within the Maricopa County area, MAG serves as the designated Regional Air Quality Planning Agency and the Metropolitan Planning Organization for transportation. Ms. Bauer plays an integral role in preparing regional air quality and other environmental plans. She also provides technical assistance to the MAG member agencies. Ms. Bauer holds a Bachelor's degree in Political Science from Thiel College (Pennsylvania) and a Master's degree from the University of Akron (Ohio).

Seated next to Lindy is Jeff Houk. Jeff Houk is an air quality specialist with the Federal Highway Administration Resource Center. His areas of expertise include climate change, energy, Clean Air Act regulations, toxic mobile source pollutants, and mobile source emissions modeling. Jeff has authored or coauthored ten professional papers on various transportation topics, and has contributed to many Environmental Protection Agency and FHWA guidance documents and training courses. Jeff presents training courses on various air pollution topics, helps analyze the air pollution impacts of proposed highway projects, and conducts research into new ways to use emissions models to estimate emissions from roadways. Jeff has 28 years of experience in this field, including 12 years with FHWA and 16 years with the EPA in Denver, Colorado and Ann Arbor, Michigan. He has a degree in chemical engineering from Michigan State University.

Next is Peter Hyde, who is an academic associate at Arizona State University. After a 30-year career in environmental science and regulation (24 years in air pollution; 6 in water quality), all in Arizona; Mr. Hyde retired in 2007, moving to ASU's Tempe campus to pursue air pollution research. He has studied the emissions, concentrations, and health effects of air toxics in metropolitan Phoenix; airborne particulate matter and the affects of childhood asthma in Central Phoenix; and air pollution concentrations centered at 24th Street, from Broadway Road to the Salt River. He also assembled an archive of air quality studies conducted along the U.S./Mexico border.

Seated next to Peter is Dr. Paul T. Roberts. He represents Sonoma Technology, Inc. as the Executive Vice President and Chief Scientific Officer. Dr. Roberts has over 33 years of experience designing and managing air quality and exposure field studies, as well as leading data analysis efforts for these studies. Much of his recent work has focused on designing and performing field studies to understand the effects of near-road pollution on ambient and indoor environments. He earned his Bachelors and Masters degrees in chemical engineering at Rice University and his Doctorate degree in environmental engineering science from the California Institute of Technology.

And finally, the air quality panel moderator tonight is Darcy Anderson. Darcy Anderson is the air and noise team leader for the Arizona Department of Transportation. Ms. Anderson has over 25 years of experience in air quality monitoring, modeling, data analysis, and permitting, and has spent the last 19 years in Arizona. She earned her Masters degree in air pollution meteorology at South Dakota School of Mines and Technology, and completed her Masters degree in hydrology and engineering and her Doctorate degree in atmospheric chemistry at the University of Arizona. So you may recall the last time the SMCAT met as a team, you asked us to assemble an air quality panel of experts to answer your questions and they are here tonight.

So Heather, where are you?

**Heather Honsberger:** I am dimming the lights.

**Tom Keller:** Okay.

**Jeff Houk:** I am going to sit down for my presentation since I don't think I am coordinated enough to handle the microphone and clicker while standing.

The National Environmental Policy Act is a procedural law and doesn't include specific requirements for air quality analysis. One item we use is a Federal Highway Guidance Memorandum that includes a requirement for carbon monoxide analysis of EIS projects. This memorandum is from 1987, so that is fairly old guidance. Also, in 2006 FHWA issued interim mobile source air toxics guidance, which has been updated a few times.

There are lots of kinds of analysis that can be performed. We include the Environmental Protection Agency's criteria pollutants. Some of these items include: description of existing air quality, description of meteorology, comparison of corridor emissions for no-action and build alternatives, qualitative or quantitative analysis of air toxics, and mitigation.

Project level conformity is actually a legal and critical component of the air quality process. The Clean Air Act prohibits the federal government from approving funding of any activity, which does not conform to an implementation plan. Conformity applies in nonattainment and maintenance areas for criteria pollutants: carbon monoxide, particulate matter, ozone, and nitrogen dioxide. Under the Clean Air Act, a project cannot create a new air quality problem. In fact, the analysis that is conducted must show that a new project will not worsen area air quality.

Prior to the first time a federal project is adopted, accepted, approved, or funded, a project-level conformity determination is required. Typically, this is completed as part of the NEPA process prior to the adoption of the Categorical Exclusion, Finding of No Significant Impact, or Record of Decision. The general requirements for this include: using the latest planning assumptions, using the latest emissions model, interagency consultation, and including a hotspot analysis for any applicable pollutants.

Hot spot analysis is important for showing conformity. Particulate matter comes in different forms. It is required for all federal nonexempt projects in carbon monoxide, PM2.5 and PM10 nonattainment and maintenance areas. Phoenix has had problems

with PM10 in the past. This type of analysis can be qualitative or quantitative depending on the type and timing of the project. We use dispersion models to estimate these concentrations. The most recent EPA guidance we are using, there is a two-year grace period.

The project hotspot analysis modeling required includes: projects that impact a location in the State Implementation Plan as a site of actual or possible violations; projects that affect intersections that are or will be at Level of Service D or worse; and projects affecting one of the three worst intersections in the area in terms of traffic volume or Level of Service. Qualitative analysis is required for all other projects.

Those projects that have an air quality concern are projects that have a high vehicular traffic volume. This is because there are typically a great amount of diesel emissions in one place. These would be primarily big projects in urban areas.

Green house gas emissions are definitely an issue. Researchers involved with a particular study can estimate these emissions, but it is hard to determine the global impact. We have to analyze the synergies to get a better idea of the global results. In this table, you can see what we are looking at with the 2010 conditions and the projected 2040 values.

That's a quick summary of the overview of NEPA air quality analysis for highway projects. I am going to turn it back over to Tom.

**Tom Keller:** This is a reminder to fill out the yellow question cards and turn them in to us. Lindy, are you going to give your presentation next?

**Lindy Bauer:** I am Lindy Bauer with the Maricopa Association of Governments. MAG prepares regional air quality plans for carbon monoxide, ozone, and PM10 particulate pollution in a cooperative effort among the Arizona Department of Environmental Quality, the Arizona Department of Transportation, and the Maricopa County Air Quality Department. This effort uses the latest state-of-the-art EPA approved models.

Under the Clean Air Act, MAG is not allowed to adopt any project unless it conforms to the air quality plan. This map shows three critical areas for Maricopa County. The dark pink box shows the carbon monoxide maintenance area. The blue box shows the PM10 nonattainment area. The green box shows the eight-hour ozone nonattainment area. So carbon monoxide used to be the problem. We haven't had any carbon monoxide violations of the one-hour standard since 1984 and the eight-hour standard since 1996. Recently, we submitted a carbon monoxide maintenance plan showing we would continue to meet these standards through 2025.

This graph shows the carbon monoxide monitoring data from 1983 through 2012. The blue bars shows the number of days where Maricopa County exceeded the limit. Since 1999, there have been no days that have exceeded the limit.

Maricopa County has not had any violations of the one-hour ozone standard since 1996 and no violations of the eight-hour standard since 2004. MAG 2009 eight-hour ozone maintenance plan demonstrates that the standard of 0.08 parts per million will continue

to be met through 2025. The new lower eight-hour ozone standard of 0.075 parts per million has not been met. The region has a December 31, 2015, attainment date.

There have been no violations of the 24-hour PM10 standard during stagnant conditions since 2007. PM10 can happen all year round. The MAG 2012 Five Percent Plan for PM10 demonstrates that the standard of 150 micrograms per cubic meter will be met by December 31, 2012, during high wind conditions.

The Maricopa County 2011 Periodic Emissions Inventory indicates that motor vehicle exhaust contributes the following shares of total emissions: carbon monoxide—66 percent, volatile organic compounds—13 percent, nitrogen oxides—62 percent, and particulates 6—percent.

Some of the key transportation control measures in MAG air quality plans include: EPA Tier 2 Motor Vehicle Emissions Standards for Passenger Cars and Trucks and Gasoline Sulfur Control Requirements (2004), Arizona Clean Burning Fuels Program, traffic synchronization, reducing traffic congestion at major intersections, regional trip reduction program, employer rideshare program incentives, bicycle and pedestrian travel, paving unpaved roads, and lowering speed limits on unpaved roads.

In any case, transportation and air quality are linked. The Clean Air Act requires that transportation plans, programs, and projects conform to the purpose of the air quality plans. In fact, these air quality plans set motor vehicle emissions budgets.

I want to show you a few trends. The following graphs depict what has been going on over time. The emission rates continue to decline for vehicle exhaust for carbon monoxide, volatile organic compounds, nitrogen oxides, and tire and brake wear emission rates for particulates. It is important to note that between 1990 and 2012, vehicle exhaust emission rates declined by the following percentages: carbon monoxide—67 percent, volatile organic compounds—85 percent, nitrogen oxides—77 percent, and particulates 81—percent.

Thank you very much. I will turn this over to the next speaker.

**Tom Keller:** Does anyone have any yellow question cards completed so that I may pick them up?

**SMCAT Member:** I have one.

**Jeff Houk:** We are now going to transition into learning more about Mobile Source Air Toxics.

The 1990 Clean Air Act Amendments mandates the EPA to regulate 188 hazardous air pollutants. In 2001 and 2007 rulemakings, the EPA identified a subset of these that come from mobile sources.

Now, let's take a look at the Mobile Source Air Toxic trends. These are total emissions after taking traffic into account. Even with the amount of vehicles on the roadways increasing, these emissions are going down, in part because of FHWA's control



programs. These control programs include: cold-start standards, longer useful life requirements, onboard diagnostic systems, new technologies, and new fuel requirements.

This next graphic shows the upcoming pollutant standards for 2017 and 2030. These regulations will reduce pollutants much more so than the existing levels. The pollutant reduction which may be most difficult to achieve is for diesel particulate matter.

The EPA has classified diesel exhaust as a probable human carcinogen, but has not adopted a risk estimate. There are occupational studies that show conflicting outcomes. In addition to new emissions standards, the EPA has promoted and funded retrofit programs to clean up older vehicles, non-road equipment, and locomotives. Because of this, diesel particulate matter has seen the largest decrease of all the Mobile Source Air Toxics—total emissions have dropped by half since 2005. So these diesel vehicles are a lot cleaner than they used to be.

From a cancer standpoint, any exposure to these pollutants can have a cancer risk. However, the threshold for action is an amount greater than a 100 in one million risk. This information is from the EPA risk assessment manual.

I have a couple examples from California studies. The U.S. Army Corps of Engineers evaluated the China Basin area, in which they recorded an estimated cancer risk for nearby residents of approximately 8.5 per million for highways near the port. The Alameda Corridor Transportation Authority reported that the Schuyler Heim Bridge had an estimated cancer risk for nearby residents of approximately 10 to 20 people per million. It has been found that 92 to 97 percent of the risk comes from the diesel particulate matter. This information comes from the Office of Environmental Health Hazard Assessment, which sets standards used by California but not by the EPA.

The U.S. Department of Defense conducted a Mobile Source Air Toxics risk assessment for Guam roadways as part of an Environmental Impact Statement to relocate 8,000 marines from Okinawa. They analyzed the cancer risk for MSATs at eight locations with traffic volumes up to approximately 180,000 vehicles per day. They assumed fixed 2014 and 2030 emissions over 30 years, but used actual receptor sites and sidewalk receptors. For the actual receptors, there were less than two people per million in 2014 and less than one person per million in 2030. So the study showed that the chances of someone in the area getting cancer from MSATs decreased. These were fairly conservative assumptions in the studies. Anyway, these are the studies that can be used as a comparison.

My last slide shows your lifetime risk from a variety of elements. See that a person's lifetime injury accident risk is 707,500 per million. The lifetime fatal accident risk is one in 10,500 people. At the bottom of the slide is the Guam Haul Road with one to two people per million and the Schuyler Heim, China Basin projects with approximately one person in a million.

With that I will turn it over to Dr. Roberts.

**Dr. Paul T. Roberts:** I would like to show some examples from an ADOT project on State Route 92 in Southern Arizona. The project involved widening the highway from two to five lanes through a four-mile section. This study is interesting because it is in a rural setting, which allows us to better understand the particulate matter levels that resulted in direct relationship to the construction equipment activity and emissions. What we found was that PM10 construction-related fugitive dust overwhelmed the other source categories. In fact, 80 percent of the fugitive dust emissions were associated with the roadway excavation phase.

This next slide shows some of the pollution concentrations during the first couple days of the project. The red line shows the PM2.5 levels and the green line shows the PM10 levels. You can see that the level on the first couple of days is sort of the baseline for the rest of the week. The following days there are spikes in the PM10. Most of these spikes are caused from moving the dirt around on the freeway. So the construction resulted in high 24-hour PM10 concentrations, but PM2.5 levels were far less pronounced.

Sonoma Technology performed an air quality study on four schools exposures along U.S. 95 in Las Vegas, Nevada. Three of the schools were located directly next to the expanded roadway. Additionally, the monitoring sites were in the playgrounds of these schools. This slide shows a picture from one of the elementary schools before and after the roadway widening. The green dot is where we did the air quality monitoring. As you can see, the extended freeway is a lot larger and closer to the school.

One issue is that of black carbon. Black carbon is a surrogate for diesel particulate matter. The next slide shows the concentrations of black carbon upwind or downwind. You could see that any given wind speed causes lower levels of the black carbon at the school monitoring sites. The concentrations are much higher if the wind speeds are low.

The next slide shows the black carbon concentrations, which are much higher during the morning and evening rush hours. Because of this, the grade school children were not affected as much since the classes started at 9 a.m., which was after the rush hour. However, the high school started their classes at 7 a.m., so they had a greater impact. In fact, most of the high school kids wanted to take their physical education classes in the morning to avoid the hotter afternoon weather.

As a part of this study, we did an enhancement and measured black carbon again inside and outside of the school buildings. This slide shows the profile and the range at one of the elementary schools. The schools did have a filtration system in the buildings, but typically the system was only removing 60 percent of the black carbon. Interestingly enough, the school had this filtration system, but some of the classrooms had doors that opened to the outside. One teacher liked keeping the classroom doors open for “fresh air.” But keeping the doors open, didn’t allow the filtering system to be as effective. We also discovered that the materials inside the classroom itself, such as the white board materials and carpet cleaning solutions produced higher concentrations of some pollutants than those levels collected outdoors.

The result of this study was for the school to consider some near road mitigation approaches. They were: moving some school activities farther away from U.S. 95,

filtration added to HVAC systems at schools, bus retrofit program, bus idling education, and investigate time shifting of playground use.

Thank you.

**Tom Keller:** As Peter Hyde is getting ready, please keep in mind that the questions you are writing down on the yellow question cards should only relate to general air quality concerns. Any question related to the Loop 202 South Mountain Freeway will not be answered tonight. Does anyone else have any other yellow cards for me?

*No response.*

**Peter:** My name is Peter Hyde and I am from ASU. I guess I am the last speaker before the break, so please be patient. Here is my contact information. You are welcome to contact me, either e-mail me, or come to my office. Of course, if you come to my office, you would have to come to Tempe.

This slide shows two projects in which I participated. The bottom bullet is a quote from a newspaper article.

Before I talk about the health effects, let me tell you a little about emissions. I know the term diesel particulate matter might resonate for some of you, but probably not others. This slide shows that 41 percent of the particulate carbon emissions in greater Phoenix come from vehicular diesel exhaust. Another 14 percent of these emissions come from vehicular gasoline exhaust.

Now let's consider the health effects. This slide shows a few little red circles on the Phoenix area map. They studied sites all over the Valley, from Wickenburg to Apache Junction. This was done as part of a 10-year project for air quality in the Phoenix area. The objective was to try to determine the health effects of all sources of air pollutants. On the map, notice the red circle labeled number seven. This is the monitoring site that was located at Pecos Road alignment and 51<sup>st</sup> Avenue.

The next slide shows the details for each of the air monitoring sites and the possible health effects. I am not talking about asthma here; I am talking about cancer. Take a look at the blue bars versus the red ones. The red bars show the gaseous air toxics, which cause the cancer effects. The blue bars show the particulate matter, which would cause respiratory issues. You can see that particulate matter carries the weight. Each of these bars represents a different air monitoring site.

So, how does this compare with other cities? This slide shows that air quality in Houston and Los Angeles are worse than Phoenix.

I appreciate speaking to you tonight. Thank you for your time.

**Tom Keller:** At this point in the agenda, I would like to collect the outstanding yellow question cards. According to my watch, it is 7:00 p.m. If it is your pleasure, I would like for us all to take our 10-minute break. We will see everyone back here at 7:10 p.m. Is that fair enough?

*No response; agreement indicated non-verbally.*

*Break taken at 7:00 p.m.*

**Tom Keller:** Okay, we would like to continue. If you have additional yellow question cards to turn in, please let me know. I will run around and get them from you. Darcy?

**Darcy Anderson:** Thank you, Tom. The first question is for Lindy Bauer. "In reference to your slide titled, 'Motor Vehicle Emissions,' the information states that the emissions inventory has assigned a contribution of six percent for PM10 from motor vehicle exhaust. Does this six percent include PM10 from disturbances caused from the movement of vehicles on roadways (e.g., dust from roadway shoulders or roadway erosion)?"

**Lindy Bauer:** Thank you very much. The six percent figure does not include dust from construction that may land on the road. The figure does include dust on the paved roadway surface. It also includes dust from tire and brake wear. So in effect, the 6 percent figure for particulates is 4.4 percent is roadway dust and the remaining 1.6 percent is the particulate matter from the tire and break wear.

**Darcy Anderson:** The next question is for Jeff Houk. "How can you predict such a radical reduction in diesel particulate matter over the next ten years? You say that there will be a 75 percent reduction? Does this account for trucks coming from Mexico that are only required to comply with EPA 2003 standards?"

**Jeff Houk:** Yes, my numbers only reflect U.S. vehicles and do not include trucks from Canada or Mexico. But if someone goes and purchases an import car, it goes by normal emission standards.

**Darcy Anderson:** The next one is for Dr. Roberts. "What was the filtration system used in the classrooms? Air flow? Filters?"

**Dr. Paul T. Roberts:** The situation was slightly different in these schools. All of the schools already had a filtration system that was in place before we did this study. This system that other engineers developed was good for removing 50 percent of the black carbon particles. There are better systems that have been developed that can reduce these particles by 80 or 90 percent. In general, these schools didn't spend too much money on these air filtration systems. These systems can be built into new or older schools.

**Darcy Anderson:** Please remember if you have any additional questions, please write them down on the yellow question card and turn them in.

This next question has to do with Dr. Roberts slide about downwind gradients being influenced by wind speed. "The slide showing the higher concentration of black carbon at downwind locations near U.S. 95 is much higher than the background. Were the concentrations found considered to be unhealthful?"

**Dr. Paul T. Roberts:** Well this is a more difficult question. Jeff Houk mentioned that California has established a standard for black carbon that is not being used by the EPA. Because of this, there is really not a standard that we can use. Looking at the slide, the level one is at a certain concentration for at least several hundred meters at modest wind speeds. This is only a qualitative comparison since, as I mentioned, there are no standards for health risk of black carbon matter.

**Darcy Anderson:** Thank you. Here is the first question that is not directed to a particular panel member. "Is there any data which considers the local street traffic and how a project would impact the local streets, in regards to air quality?"

**Lindy Bauer:** There is data that has been developed by using conformity analysis. Our transportation plans are to include regionally significant impacts on air quality. When we develop our transportation plans, we use a modeling network, which integrates local roadways to half mile segments. So, we are including a wide variety of transportation projects and roadways.

**Jeff Houk:** Emissions are generally highest at lower speeds. We generally are looking at average vehicular speeds, so local roadway traffic generally averages in time spent at stop signs. When a vehicle is stopped at a traffic light or stop sign, this stop-and-go traffic creates a great deal more emissions per mile than when a vehicle is traveling at higher speeds. So, the South Mountain Freeway would reduce the overall emissions per mile traveled in this area.

**Darcy Anderson:** Jeff's answer is a good segue into the second question on this card. "By moving traffic smoothly, are there potentially more emissions or is this offset by improved emissions on local roadways?"

**Jeff Houk:** Yes, it is the same issue. The more time a vehicle's engine spends idling or the vehicle slows down and speeds up, the vehicle emissions per mile are increasing. On freeways, the higher road speeds reduce the vehicle emissions and also tend to reduce the dust emissions.

**Lindy Bauer:** And to that point, in 2011 the EPA reduced the factor they had for dust on paved roadways, which was cut by 62 percent.

**Darcy Anderson:** The next question goes to Dr. Roberts. "Where are the studies related to pulmonary or heart disease? Why is this linked to cancer?"

**Dr. Paul T. Roberts:** Recently the Health Effects Institute (HEI) has published a report discussing these issues. What their study reported was that vehicular traffic exacerbates asthma. They suggested there is a causal relationship. This study was published in January 2010. If you want to read it, you can locate it on the HEI website.

**Darcy Anderson:** Thank you Dr. Roberts. The next card has three questions. The first question is for Lindy Bauer. "What are the implications of building new freeways on regional air quality? We often hear that widening roads or building new ones improves air quality, but research shows that this is only in the short term. Studies show that more

vehicles soon fill the uncongested spots and air quality worsens over time. What are the long-term solutions to air quality problems associated with transportation?"

**Lindy Bauer:** While vehicle miles traveled have increased, things have been done to reduce emissions. The federal government has established strict tail pipe emission guidelines. There are also transit, carpooling and vanpooling options available. Vehicle fuel has been developed to reduce emissions. There are also more rigorous vehicle emissions tests. So although vehicle miles are increasing, these other efforts are reducing total emissions, especially for carbon monoxide.

**Jeff Hauk:** For transportation conformity, there are certain standards that must be met, and caps that cannot be exceeded. Because of these standards, there are controls in place so that air quality improves. These standards must be met when designing a roadway network.

**Darcy Anderson:** Here is the second question on this card. "What about effects of emissions on local vegetation and associated wildlife? There is academic interest in detrimental effects of vehicle emissions on natural vegetation along roadsides. What are the associated impacts on native wildlife, including migratory and nesting birds?"

**Jeff Hauk:** The EPA has two sets of air quality standards. The primary one is for human health and the secondary one is for vegetation, crops, and wildlife. In many cases, the secondary standard is identical to the primary standard. That is according to the EPA anyways. One element of the secondary standard is that there are regulations for sulfur dioxide. This is an industrial pollutant so this is not something that is normally an issue with these transportation projects.

**Darcy Anderson:** The final question on this card is for Dr. Roberts. "The US 95 study shows numbers for winter. How do these numbers and their associated impacts vary throughout the year?"

**Dr. Paul T. Roberts:** Well, we have 18 months of data, which is segmented by wind speed but was not divided into seasons. In reality, seasonality doesn't matter as much. It is not like studying the effects of smoke from fireplaces, which would obviously be different between the winter and summer months. As far as transportation studies, the biggest seasonal influence is that in the wintertime there are often light winds that cause an inversion, which constrains the pollutants closer to the ground.

**Darcy Anderson:** The next question card has the following questions regarding black carbon. "Is black carbon studied in hotspot analysis? Does FHWA demand mitigation of black carbon at schools? Is black carbon a PM2.5 or a PM10?"

**Jeff Houk:** Black carbon is used as a surrogate because no one sells diesel air quality monitors. It is included in both PM2.5 and PM10 studies. When we conduct a hot spot study for PM 2.5, in some areas, some black carbon particulate matter comes in road dust and in other cases, it doesn't. There is nothing in NEPA that requires mitigation for black carbon. Under transportation conformity, it is a pass or fail test. One thing that has to be shown for these transportation projects is that the potential project will not produce an air quality violation. And it must be shown that the project will contribute to improved

air quality, or will need to implement mitigation. This is kind of new to all of us in this room. We haven't yet had a project that has failed this test. However, only three of these analyses have been performed.

**Darcy Anderson:** The next question is for Peter Hyde. "What was the distance from monitoring sites to the freeways in the 10-year Phoenix study?"

**Peter Hyde:** The distances from various freeways varied. Let's look at number six on the 10-year Phoenix study map. This monitoring site was on the Salt River Pima-Maricopa Indian Community, which was a half-mile east of the Loop 101 freeway. So that is one instance. The Greenwood monitoring site was located at Interstate 10 and 27<sup>th</sup> Avenue. It is 20 feet from an arterial street that carried 20,000 vehicles per day. It is also in the vicinity of the stack interchange. So Greenwood is an especially vulnerable site, and by the way, people live nearby. The West Phoenix monitoring site, which is number two on the map, was located at 39<sup>th</sup> Avenue and Thomas Road. It is completely residential and was not close to any major arterial roadways. The other monitoring sites distances from major roadways vary. But remember, I have shown the health risks. These health risks are not solely attributable to motor vehicles. You must consider all possible sources.

**Darcy Anderson:** Okay, the next question is also for Peter Hyde. "Is the 'Lifetime Cancer Cases by City' chart an average of urban and urban perimeter and background readings?"

**Peter Hyde:** For each of these studies, you are talking about six, eight, or ten different air monitoring sites. So the low and the average and the high refer to the risk of breathing air at a number of different sites at different distances. Houston was the exception, but that is the way that goes and it only has the high readings shown on the chart. In any case, if you are in a large metro area, the exposure is different.

**Darcy Anderson:** Thanks. The next question I am going to give to Jeff Houk. "Will the Draft EIS include an impact analysis of both motor vehicle exhaust and paved road dust?"

**Jeff Houk:** In a way, these analyses include everything – emissions and pollutants coming off the roadway. We use them when looking at gasoline diesel, tail pipe exhaust, and brake wear. Road dust is an optional element. We look at all the sources, but we also know that roadway dust is not the single contributor. In the three analyses I have seen, the bulk of the particulate matter concentration is from the background air then the roadway dust.

**Darcy Anderson:** Okay. The next question card has several questions. "Has naturally occurring asbestos been considered on this proposed project? Will structures that require demolition be tested for asbestos fibers? Has this cost been considered? PM10 and PM2.5 appear to have been considered. What about total dust? There is no EPA inhalation reference concentration, but OSHA has a 15 milligram Total Weighted Average?"

**Peter Hyde:** The question concerns particles in the air and how large and small they are. The sampling mechanism for that effectively allowed 30 microns. To put this in

perspective, the diameter of a human hair is 60 to 70 microns. In the late 1980s, technology and science researched this and found that particles that large could not get into your system. They could obviously get into your nose, but I mean they were found to be too large to enter your body, such as your lungs. So the total particulates still count but they are not really considered when it comes to ambient air quality.

**Lindy Bauer:** I would add that these particles are used for lead standard and also used for some other rather exotic toxics, but not for ambient monitoring.

**Darcy Anderson:** Does anyone else have anything to add?

*No response.*

Then we have one more question card to read. After Lindy Bauer responds, we will get back to Tom. "Please refer to the MAG slide titled, PM10 Results for Conformity Budget Test-August 2012. Will the PM10 budget remain at 59.7 metric tons per day through 2031? It appears from the slide that we were well below the PM10 budget in 2010. Is my interpretation of the slide correct?"

**Lindy Bauer:** Actually, the new plan for PM10 will establish an even smaller budget, which will be 53 metric tons rather than 59.7. So those numbers will have to get even smaller for the next budget and we have to fit under that threshold to pass.

**Tom Keller:** Thank you panel members for your participation. And thank you Darcy for moderating the question-and-answer session.

I am trying to keep us on schedule. There are a couple final items on the agenda. Let's discuss the upcoming study milestones and how to participate. Chaun Hill from ADOT is going to talk about these next steps. So Chaun, if you would be kind enough.

**Chaun Hill:** It is such a pleasure for us to be here tonight discussing the air quality concerns of this potential freeway. We are now heading into an exciting time in the study. On April 26 the Draft Environmental Impact Statement will be available for public review and comment. The public comment period for the Draft EIS will be 90 days. On May 21, there will be a public hearing.

As Tom mentioned, there are only a couple more steps in the process for the SMCAT. Sometime in early June, we are looking at getting you guys back together for the final meeting. We will look at what issues you will want to discuss. During this meeting, we will discuss how to put together a build or no build recommendation.

So as you can see, this has been a very exciting week for us.

**Tom Keller:** Thank you Chaun.

As we updated our SMCAT membership for this meeting, one of the things we wondered was if we have all the current contact information for everyone. Please let us know if your information has changed. The next step for the team to do is to send follow up communication to you with dates for the final SMCAT meeting.



The meeting summary from tonight will include all of your questions that were asked. Any questions submitted on the yellow question cards, but not presented will be included with responses in the summary.

**SMCAT Member:** Will the Draft EIS be sent directly to us or do we have to access it online?

**Ben Spargo:** A copy of the Draft EIS will be sent to each SMCAT member. You will also be able to pull up copies of the document online from the study website, if you wish.

**Tom Keller:** Do I have a motion to adjourn?

**SMCAT Member:** Motion.

**Tom Keller:** Second?

**SMCAT Member:** I second the motion.

**Tom Keller:** The meeting is adjourned.

*Meeting ended at 8:02 p.m.*