

AGENDA  
AIR QUALITY ADVISORY COMMITTEE\*  
**TUESDAY July 30, 2013**  
10:00 a.m. - 12:00 noon  
East-West Gateway Board Room

- I. Call to Order**
  - Michael Coulson, Chair, East-West Gateway Council of Governments
  - A. Minutes of June 25, 2013 Meeting
  
- II. Boundary Designation for the 2012 Annual PM2.5 National Ambient Air Quality Standards**
  - Mark Leath, Missouri Department of Natural Resources
  
- III. NASA's Studies of Emissions and Atmospheric Composition, Clouds and Climate Coupling by Regional Surveys: The St. Louis Connection**
  - Jack Fishman, Ph.D., St. Louis University
  
- IV. Current Activities of Metro East Community Air Project**
  - Amy Funk, Metro East Community Air Project
  
- V. American Fuel Group Report**
  - St. Louis Regional Clean Cities Program
  
- VI. Update Activities of the States**
  - Illinois Environmental Protection Agency
  - Missouri Department of Natural Resources
  
- VII. Other Business** - Next meeting date September 24, 2013
  
- VIII. Adjournment**

\*Please note that this meeting will serve as a part of the Inter-Agency Consultation Process as detailed in the Missouri Transportation Conformity SIP.

MINUTES  
AIR QUALITY ADVISORY COMMITTEE  
Tuesday, June 25, 2013  
East-West Gateway Board Room

Members Present:

Michael Coulson, Chair, East-West Gateway Council of Governments  
Wendy Vit - Missouri Department of Natural Resources  
Mike Henderson - Missouri Department of Transportation  
Kathrina Donegan - St. Louis County Air Pollution Control Program  
Betsy Tracy - Federal Highway Administration, IL  
Christopher Schmidt - Illinois Department of Transportation  
David Bloomberg - Illinois Environmental Protection Agency  
Susannah Fuchs - American Lung Association  
Jack Fishman - St. Louis University

Others Present:

Jim Stack - Illinois Department of Transportation, District 8  
Amy Funk - Metro East Community Air Project  
Bob Klepper - Missouri Coalition for the Environment  
Kathy Andria - American Bottom Conservancy  
Bryan Kresak - U.S. Steel  
Meredith Klekotka- Trailnet  
Jennifer Meyer - St. Clair County Health Department  
David Shanks - Boeing  
Wesley Stephen - Missouri Department of Transportation  
Stephen Hall - Missouri Department of Natural Resources  
Joe Winkelmann - Missouri Department of Natural Resources  
Mark Hildebrandt - Southern Illinois University Edwardsville  
Crystal Converse - St. Louis Regional Clean Cities  
Jason Braxton - U.S. Steel  
Mike Alesandrini - URS  
Joe Wright - RideFinders

Staff:

John Posey      Carol Lawrence      Brendan Ehlmann

- I.      Call to Order  
        - Michael Coulson, Chair, East-West Gateway Council of Governments

The meeting of the Air Quality Advisory Committee (AQAC) was called to order by Chair Michael Coulson, East-West Gateway Council of Governments (EWGCOG). The minutes of the April 23, 2013 AQAC meeting were approved as circulated.

## II. Air Quality and Global Climate Change - Mark Hildebrandt, Ph.D., Southern Illinois University Edwardsville

Mr. Coulson, EWG, said that Dr. Hildebrandt has been at Southern Illinois University Edwardsville (SIUE) since 1999. He has been recognized by the U.S. Department of State as an expert on climate change. In 2006 he was a Fulbright Scholar and studied global climate change and air quality in Nepal, India and Pakistan. Dr. Hildebrandt, SIUE, began his presentation by saying that he considered himself a “tough sell” on global climate change. For his post-graduate work he had studied under a global warming cynic at Arizona State University in order to learn and understand both sides of the conversation.

The Intergovernmental Panel on Climate Change (IPCC) is an international scientific body under the auspices of the United Nations, In 2007 the IPCC issued a statement that by the end of the century, the mean global temperature would rise 1.8 - 11.7°F. The current average global temperature is 57°F. This means that by 2100, on average the mean temperature will go up to 60°F or 70°F. These numbers are subject to revision. The low projection would occur if would begin to reduce greenhouse gas emissions now. The high projection would occur if business as usual would continue. Between these two extremes, the middle of the road projection is probably where would be heading if begin to mitigate our actions. The IPCC also projected that by 2100 the mean sea level is expected to rise at least one meter (39 inches).

The greenhouse gases contributing to global climate change include: carbon dioxide (CO<sub>2</sub>); water vapor; methane; ozone; nitrous oxide; and chlorofluorocarbons (CFCs). CFCs are largely anthropogenic (associated with human activity) while the rest are naturally occurring. The most complete global information is on CO<sub>2</sub>, so that is the gas most discussed in relation to global climate change. Methane has been more closely monitored globally in the last 15 years and is a more powerful greenhouse gas than originally thought. Approximately 27 percent of methane is produced in wetland areas and areas with rice production, i.e., southeast Asia. As population increases globally and food demand increases, pollutant levels could be exacerbated. The theory is that if more greenhouse gases are trapped in the atmosphere, more infrared radiation will be absorbed and re-emitted in the lower atmosphere and global temperature is going to go up.

According to data collected at the Mauna Loa observatory by National Oceanic and Atmospheric Administration (NOAA), since 1958 global CO<sub>2</sub> levels have increased as result of natural cycles, deforestation and industrialization. Since 1960 the global mean annual average temperature over land and over sea is on the increase. A decrease in the extent of arctic sea ice has been observed. Also, the oldest sea ice is now around five years old instead of ten.

Using proxy and collected data, CO<sub>2</sub> levels and mean global temperatures have been estimated from 1000 onward. CO<sub>2</sub> concentrations were steady until the industrial revolution in the 19<sup>th</sup> century. Rates at which fossil fuels have been burned and CO<sub>2</sub> emissions appears to be doubling over time. In 1850, CO<sub>2</sub> emissions were ½ billion metric tons. Emissions had doubled by 1900 and doubled again to two billion metric tons by 1950. In the early 1970s CO<sub>2</sub> emissions were four billion tons and by the start of the 21<sup>st</sup> century it was eight billion metric tons. Since 1950 global fossil carbon

emissions have increased. Temperatures held relatively consistent, even cool, until the industrial revolution. Since then global temperature have increased to where there appears to be a statistical association between CO<sub>2</sub> emissions and global temperature.

Consensus in the scientific community is that climate change is taking place. Some of this change is natural such as the recovery from period known as the “little ice age” ending in 1850. Some of this rise in temperature is anthropogenic. What climatologists and scientists will argue is about how much human beings are responsible for. There is concern about global climate change is that in terms of putting so much CO<sub>2</sub> emissions into the earth’s atmosphere at once is that it will not be able to absorb them. Climatically, it could throw the earth off the cliff. In geologic time, the earth will come back. But whether humans are around or not is another question.

The IPCC has projected that for their middle of the road scenario to occur global CO<sub>2</sub> emission levels would need to be stabilized at 450 parts per million (ppm) by 2020. By 2100 temperature would be projected to increase 3.8oF and sea level would rise less than two feet. Recent data from the Mauna Loa Observatory shows that the May 2013 average monthly CO<sub>2</sub> level was 399 ppm.

Dr. Hildebrandt talked about his research on air pollution in southeast and east Asia. A growing phenomena is “Asian Brown Cloud” referring to a brown haze over southeast and east Asia. Population is increasing in these areas and industrialization is growing. Approximately 75 percent of the cloud is from anthropogenic sources. It blocks out sunlight, increasing greenhouse gas emissions and air pollution is starting to change temperature patterns and precipitation patterns, increasing the intensity of monsoons. Research has shown that the pollutants in the “Asian Brown Cloud” affect Asia and can travel around the globe in less than a week. For the longest time the U.S. was the largest emitter of CO<sub>2</sub>. China is now number one. In the next ten years India will be in second place. Most likely will have the equivalent of three U.S. putting CO<sub>2</sub> emissions into the earth’s atmosphere.

From 1900 on the U.S. mean temperature appears to be on the increase. In many areas there is a relationship between population growth and rising temperatures, especially urban locations with “heat island” effect. However, rising mean temperatures have been observed in remote rural areas away from urban influence. For the St. Louis area (1961-2010), overall trend is that mean temperature is going up. In the U.S. warming temperatures are occurring in the winter. Human beings have an influence on different climate variables. Research done in New England showed there is a seven-day cycle for ozone and CO<sub>2</sub> levels and precipitation. Cycle can be attributed to human activity associated with the work week. The 1971-1975 Metro Mix program in St. Louis region showed that air quality does affect weather. There are more thunderstorm days in the Metro East than to the west of St. Louis. Looking at the St. Louis region’s 2012 ozone season, observed a weekly cycle with more exceedances on Thursdays and Fridays.

For St. Louis, the IPCC middle of road scenario estimates that in the next decade, the average annual temperature is expected to rise 3.6 - 4.5°F. By the end of the century, the temperature is projected to rise 7.2 - 9.0°F. If this happens, the climate here will be like Houston, TX. There are some model projections that do have Gulf of Mexico currents warming enough so that if a hurricane could hit the

Gulf Coast the winds could still be sustained and strong enough that they would still be Category 3 when they hit St. Louis.

In the St. Louis area, sectors impacted by climate change would include: transportation, particularly shipping; tourism and recreation; fisheries; and industry and energy. There will be an increase in problems with water quality and supply. Air quality is forecasted to become worse worldwide. It will be necessary to develop a plan to deal with radical changes in all aspects of life and invest in countermeasures. For the St. Louis area will have to consider alternative methods of power and agriculture such as increased use of irrigation. Instead of just considering mitigation will have to consider adaptation.

Ms. Andria, American Bottom Conservancy (ABC), stated that rising river levels in St. Louis area needs to be addressed as levees were not built with climate change in mind. Dr. Hildebrandt, SIUE, said that some rivers will rise and some will not. The Mississippi River level and the Great Lakes levels are forecast under climate change scenarios to be different from where they are now. Mr. Posey, EWG, said that the most recent flooding risk projections from NOAA show an increase in precipitation for the Upper Mississippi, especially in the Winter and Spring. Possibility of flooding may be increasing.

Mr. Klepper, Missouri Coalition for the Environment, observed this is a global problem and requires global policy. He asked if the speaker was optimistic or pessimistic. Dr. Hildebrandt, SIUE, said that he wants to be optimistic. The international community has to get on board. Think that climate is changing and that the IPCC worst case scenarios are over-stated. In his opinion, the more industrialized world will adapt.

### III. St. Louis Monitoring Network Overview and Near-Roadway Ambient Air Monitoring - Stephen Hall, Missouri Department of Natural Resources

MoDNR had to temporarily suspend monitoring at the West Alton site due to the potential for flooding. The site is located in the floodplain between the Missouri and Mississippi Rivers.

Federal regulations (40 CFR 58 Appendix D) lay out the specific criteria for the way the an ambient air monitoring network is to be designed. Monitor network design is pollutant specific. Network design criteria has changed since the network was established in the 1970s. Now, monitoring network requirements are based on population of Core Based Statistical Area (CBSA). For St. Louis region, the CBSA consists of 16 counties in Missouri and Illinois. St. Louis has monitoring requirements based on the National Core multi-pollutant (including air toxics) monitoring network (NCore). Some of the monitoring sites date to the 1960s. In some cases the number of minimum required monitors has been reduced. States at one time had more flexibility in moving monitors but changes to federal regulations in 2006 changed that. It is difficult to obtain U.S. Environmental Protection Agency (USEPA) approval to move/discontinue required State or Local Air Monitoring Stations (SLAMS) sites. For the NAAQS/public health air pollutants, over the long term, concentrations in general are going down.

In 2013 the carbon monoxide (CO) monitor network consists of three sites (Blair Street NCore in the City of St. Louis, Forest Park near-roadway and East St. Louis). For CO, one NCore site and one near-roadway site are required. CO is not much of a problem any more here. In 1986 there were six monitors in Missouri.

The nitrogen dioxide (NO<sub>2</sub>) monitoring network is to have five sites. There are to be two near-roadway sites, one NCore site and two sites near susceptible/vulnerable populations. The USEPA Administrator added the requirement for monitors to be located near susceptible/vulnerable populations. The existing Margaretta (City of St. Louis) and East St. Louis sites satisfy this requirement. The Blair Street site monitors multiple pollutants (NCore). The first near-roadway monitor is located adjacent to I-64 in Forest Park. MoDNR is working to locate the second one.

In the revision to the SO<sub>2</sub> NAAQS, a formula was established to calculate the number of monitors a region required. For St. Louis only two monitors are needed. MoDNR has kept the monitors at Margaretta site (light industrial), Mott Street site (industrial) in Herculaneum and the Blair Street NCore site. The Mott Street monitor has some of the highest SO<sub>2</sub> design values in the country due to the lead smelter. In Illinois, at least for this year, SO<sub>2</sub> monitors are in Wood River, South Roxana and East St. Louis.

The spatial distribution of ozone monitors is different. Other monitors are located in those areas expected to have the highest measured ambient air concentration of a specific pollutant. Ozone occurs as the result of a chemical reaction in the atmosphere so monitor sites can be 10 to 30 miles downwind of metropolitan area sources/fresh NO<sub>x</sub> sources. There are 14 monitors in the St. Louis region. To remove a monitor the state has to show that in the last five years the site has not violated the NAAQS and there is another monitor in operation in that county.

The PM<sub>2.5</sub> network is designed primarily for areas where direct PM<sub>2.5</sub> emissions are expected. PM<sub>2.5</sub> can come from local sources in the region and from transport. Monitor network design criteria is to find locations where expect the highest concentration of emissions. Highly industrialized areas like the north St. Louis river front, Granite City, Alton and Wood River have monitors. The minimum network requirement is three monitors and the region has nine. Federal regulations indicate that the minimum number of PM<sub>10</sub> monitors needed for St. Louis core are three and there are three monitors. Historically, there have not been significant changes in PM<sub>10</sub> levels.

Lead today is a source-related issue. The Granite City monitor currently has at least one three-month rolling average NAAQS violation. Do not have a wide-spread lead problem today. With the removal of lead from gasoline, most of the problem was solved.

In February 2010 the NO<sub>2</sub> NAAQS was revised and now requires near-roadway monitoring based on population and traffic counts. Two sites in the St. Louis CBSA and one in Kansas City CBSA are required. Sites were to be identified in the States' July 2012 air monitoring plan and begin monitoring in January 2013. The states informed USEPA that the near-roadway requirements and schedule would place a financial burden on them. USEPA revised the monitoring plan schedule in March 2013. The 2012 Missouri monitoring plan stated that the first St. Louis near-roadway site

would be in operation in January 2013 and that MoDNR was making progress in locating the other two sites in the state. USEPA provided financial assistance so that Missouri could move ahead with this effort. The August 2011 final rule continuing the CO NAAQS also requires near-roadway CO monitoring. The January 2013 final rule revising the PM<sub>2.5</sub> NAAQS requires near-roadway PM<sub>2.5</sub> monitoring. Both NAAQS require that there be one site in the St. Louis CBSA by January 2015 and one site in Kansas City CBSA by January 2017. Both pollutant monitors are to be co-located at the NO<sub>2</sub> monitor sites.

USEPA siting criteria is that near-roadway monitoring sites must be within 50 meters (164 feet) of target road segments so as to measure expected peak concentrations. In St. Louis, MoDOT annual average daily traffic (AADT) counts and a truck traffic weight fraction from USEPA were used to identify potential road segments. Potential segments for near-roadway monitoring included: I-64 east of I-170; I-70 west of I-270; and I-270 in north St. Louis County and in west St. Louis County. The City of St. Louis agreed for the monitor to be located in Forest Park greenhouse's parking lot. It is within 24 meters of the closest west-bound lane of I-64. The site has meteorological equipment and monitoring equipment for PM<sub>2.5</sub>, NO<sub>2</sub>, CO, black carbon and PM<sub>10</sub>. The monitor site began operation on January 1, 2013. Early monitoring results indicate that NO<sub>2</sub>, NO, CO and black carbon concentrations are generally higher than at other St. Louis sites. These pollutants show significant morning peaks on weekdays (during the morning commute). After five months, NO<sub>2</sub> and CO do not yet show exceedances of standards.

Mr. Coulson, EWG, asked what the zone of influence was for the West Alton monitor in terms of population exposure. Mr. Hall, MoDNR, said that back in the 1970s USEPA, with the consultation of the state, classified that site as an urban scale monitor, to be representative of a 50 kilometer square area (30 miles). However, when compare ozone concentration isopleths for West Alton and the two Illinois monitors within this area, West Alton almost always is higher than they are.

#### IV. RideFinders' Schoolpool Initiative - Joe Wright, RideFinders

RideFinders regional rideshare program was created by the Madison County Transit District in 1994 to improve air quality by reducing traffic congestion. It operates as a free public service for work or school commutes in the bi-state region. RideFinders provides free ridematching service which enables commuters to rideshare by carpool or vanpool.

Schoolpool is a new initiative for K-12 schools. With Schoolpool parents can share the transportation of students to school. Sharing can be via a carpool or parents walking students to school or parents bicycling with students to school). There is no cost or liability for schools. It can help to reduce traffic which improves safety and less traffic equals healthier air. In Illinois this program can help to offset state-level cuts to school transportation funds. Benefits to parents include: safe and reliable transportation for those who can't drive their children to school; improving air quality; improving student health through walking or biking; and saving money on gas. Interested schools can contact and meet with RideFinders. Currently RideFinders is working with 25 schools in the region. After a school joins, parents can register online and identify travel preferences. RideFinders then will

create match lists for carpools or walk/bike options. RideFinders is conducting a number of different outreach activities to promote Schoolpool. RideFinders is working with the American Lung Association and Metro East Community Air Project to encourage no-idling at schools and offers ridesharing information for school staff. Most of participants are coming from private and charter schools as they typically do not have a transportation program.

V. American Fuel Group Report

- Crystal Converse, DOE Clean Cities Intern for St. Louis Regional Clean Cities Program

In May the U.S. Department of Energy (DOE) congratulated the St. Louis Regional Clean Cities Program (SLCC) on a job well done and authorized their re-certification for another three years. Currently, SLCC has two grants from the Maritime Administration of the U.S. Department of Transportation to research the use of coal-bed methane as an American fuel for river transportation and to re-power six tugboats owned by J.B. Marine. Last week SLCC submitted a proposal to USEPA to participate in the National Clean Diesel Funding Assistance Program. Funds were requested to: replace 13 school buses; perform two engine re-powers on tugboats; and obtain 22 truck stop electrification outlets. SLCC is part of the four state Mid-America Collaborative for Alternative Fuel Implementation. The Collaborative has issued a Request for Proposals for scenario evaluation and modeling as way to inform the discussion on alternative fuel use. On October 24, SLCC will hold a ride and drive event at Gateway Motorsports Park in Madison IL.

VI. Update Activities of the States

- Joe Winkelmann, Missouri Department of Natural Resources
- David Bloomberg, Illinois Environmental Protection Agency

The Missouri Air Conservation Commission (MACC) is meeting on June 27 at the Sheraton-St. Louis City Center. Mr. Coulson of EWG is going to give a presentation on EWG's air quality activities. Everyone was encouraged to attend. At this meeting there will be a public hearing on the Reference Method rule (10 CSR 10-6.040) proposed update of several ambient monitoring and laboratory analysis methods. There will also be a public hearing on the proposed minor change to the Buick (MO) - Viburnum Trend lead non-attainment area State Implementation Plan (SIP). The revision would allow the Buick Recycling Facility, a secondary lead smelter, to reroute an emission source to their main stack instead of building a new stack. It is a cost savings item. The main stack would remain the same and there would be no effect on emissions. This approach was learned of late in the design phase for the SIP. There are several items up for adoption at the June meeting. Public hearing for these items were held at the May meeting. Information about them is available on the Air Pollution Control website at <http://www.dnr.mo.gov/env/apcp/index.html>. Over the next few months MoDNR will have discussions on potential boundary recommendation designations for the 2012 PM<sub>2.5</sub> National Ambient Air Quality Standards (NAAQS). These recommendations are based on the last three years of PM<sub>2.5</sub> monitoring data.

At the July MACC meeting in Jefferson City there will be further discussion on the boundary designation recommendations for the 2012 PM<sub>2.5</sub> NAAQS. There will be a public hearing on amendment to 10 CSR 10-6.130 for controlling emissions during episodes of potential high pollution,

updating the Air Quality Index (AQI) for consistency with the latest NAAQS and clarify certain other requirements. There will also be a public hearing on annual updates to New Source Performance Standards, Maximum Available Control Technology Standards and National Emission Standards for Hazardous Air Pollutants. These updates would adopt by reference changes to federal rules that have occurred over the last year.

In the 2013 Missouri legislation session, HB 28 was passed which allows fee increases to happen by commission action without direct legislative approval. However, the legislature could deny an increase after the fact. This bill would affect all environmental commissions. Industry was in support of this legislation. HB28 is now in the Governor's office.

Illinois EPA continues to work on the lead rule for the Granite City non-attainment area. It is focused on the Mayco facility which manufactures various lead products from radiation containment shield to shotgun shells. Illinois EPA will hold an outreach meeting in Granite City to discuss the lead rule and receive feedback. USEPA Region 5 has reviewed the draft rule and does not have any technical issues with it. Mayco is to add a second baghouse and is going to move their currently uncontrolled processes into the new baghouse area. USEPA is reviewing the modeling and Attainment Demonstration to insure that everything is ok before Illinois EPA moves forward.

For SO<sub>2</sub> NAAQS, USEPA will probably finalization attainment, non-attainment and unclassifiable designations later this summer. The U.S. Supreme Court has agreed to hear USEPA's appeal on the lower courts' rulings on the Cross State Air Pollution Rule (CSAPR). USEPA plans to continue their alternative approaches for addressing air pollution transport. Today (June 25), President Obama is going to make an announcement concerning greenhouse gases and power plants. The Illinois legislature has passed what some call the "most restrictive" fracking laws in the country. They will take some time to implement. The Illinois Department of Natural Resources will be more involved than Illinois EPA.

## VII. Other Business

Ms. Donegan, St. Louis County Air Pollution Control Program, announced that USEPA was holding a meeting on the West Lake Landfill tonight (June 25) starting at 6:30 p.m. at Pattonville High School. Ms. Andria, ABC, said that next week US Steel is going to start construction on their baghouse at the Granite City Works.

The next meeting of the AQAC was scheduled for July 30, 2013. There being no other business, the meeting of the Air Quality Advisory Committee was adjourned.