

AGENDA
AIR QUALITY ADVISORY COMMITTEE*
TUESDAY June 24, 2014
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 May 27, 2014 Meeting

- II. Update on Missouri Proposed Transportation Sales Tax**
 - Peter Koeppel, East-West Gateway Council of Governments

- III. Effect of Distant Meteorology/Event on Local Air Quality Measurements during August 2013**
 - Jack Fishman, Ph.D., St. Louis University
 - Joseph Wilkins, St. Louis University

- IV. St. Louis Regional Clean Air Partnership Activities**
 - Susannah Fuchs, American Lung Association

- 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 July 29, 2014**

- 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, May 27, 2014
East-West Gateway Board Room

Members Present:

Michael Coulson, Chair, East-West Gateway Council of Governments
Michael Zlatic - St. Louis County Health Department
David Bloomberg - Illinois Environmental Protection Agency
Joe Gray - Illinois Department of Transportation, District 8
Christopher Schmidt - Illinois Department of Transportation
Joe Winkelmann - Missouri Department of Natural Resources
Jack Fishman - St. Louis University
Jeanine Arrighi - City of St. Louis Department of Health
Betsy Tracy - Federal Highway Administration, Illinois Division (telephone)

Others Present:

Aaron Beswick - Intern, City of St. Louis Department of Health
John Hickey - Sierra Club
Amy Funk - Metro East Community Air Project
Rebecca Gernes - Washington University
Curtis Jones - Illinois Department of Transportation
Sara Chappell - Illinois Department of Transportation
Lenora Fisher - Citizens for Modern Transit
David Shanks - Boeing
Andy Knott - Sierra Club (telephone)
Rafael Gonzalez - Madison County Transit/RideFinders (telephone)
Amy Bhesania - U.S. Environmental Protection Agency Region 7 (telephone)

Staff:

David Wilson John Posey Carol Lawrence Gary Pondrom

- 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 (EWG). The minutes of the April 29, 2014 AQAC meeting were approved and posted on EWG website. Mr. Coulson reported that Ms. Fuchs, American Lung Association, and Mr. Herdler, St. Louis Regional Clean Cities Program, were unable to attend and their presentations will be rescheduled.

- II. National Climate Assessment: Climate Change Impacts in the United States
 - John Posey, Ph.D., East-West Gateway Council of Governments

The Global Change Research Act of 1990 requires the President to submit every four years an assessment of how climate change is affecting key sectors in the country. Work on the third National Climate Assessment began in 2011. It was released earlier this year. The process was overseen by

a 60 person federal advisory committee whose members were appointed by the Secretary of the Department of Commerce. Their term of the committee ends 90 days after the National Climate Assessment is released. Dr. Posey was one of 44 voting members and there were 16 ex-officio representatives from federal departments. The effort was staffed by the U.S. Global Change Research Program coordinated out of the White House and received major support from the National Climate Data Center. The federal advisory committee defined a National Climate Assessment outline of 30 chapters analyzing climate change impacts on a variety of different sectors (agriculture, transportation, etc.) and ten geographic regions. Each chapter had eight authors and some of the authors solicited additional contributors. Dr. Posey worked on the transportation chapter and assisted in the preparation of a report on Climate Change in the Midwest. In all there were 300 authors involved. The Global Change Research Program assembled teams of researchers to put together technical inputs on the sectors and regions. There was an extensive public involvement process with listening sessions held around the country and requests for information and technical reports. The federal advisory committee tried to create a process which would allow for sustained assessment so that information could be assembled and reports produced on an interim basis. That way the next federal advisory committee will have a research starting point.

One top line message from the Assessment is that human-induced climate change has moved firmly into the present, not just a problem for the future anymore. The first chapter of the Assessment presents the science and explains how we know what we know and association between carbon dioxide (CO₂) and global temperature. For example, the 1980s was the warmest decade on record. However, every year in the 1990s was warmer than the 1980s average temperature. In the 2001-2012 period every year was warmer than the 1990s average temperature. Change is really here in the present.

Another top line message is that Americans are already feeling the effects of increases in some types of extreme weather and sea level rise. A series of maps and graphs were developed to illustrate this point. The average temperature change in the U.S. was compared between periods 1901-1960 and 1991-2012. For St. Louis, found that on average the average temperature has risen ½ to 1° F. In the north and west, temperature increases were more exaggerated. Precipitation patterns in the U.S. are also changing. St. Louis is wetter than it used to be. What might be of concern is that areas upstream of St. Louis are quite a bit wetter and could contribute to increase downstream flooding risk. For St. Louis, there is projected to be an increase in episodes of very heavy precipitation (one inch or more) which suggests increase risk of flash flooding.

Impacts are projected to increase. About ten years ago, different greenhouse gas emissions scenarios were modeled in a report prepared by IPCC. In pre-industrial times, the concentration of CO₂ was 280 parts per million (ppm). The A2 scenario, assuming continued increase in greenhouse gas emissions, projects that by the end of century CO₂ concentration would be 850 ppm. The B1 scenario is more optimistic with much more aggressive reductions and projected that CO₂ concentration would be 550-600 ppm. These emission scenarios have been used around the world to model climate impact estimates. In 2013, the concentration was 400 ppm and for all of April 2014 the concentration was over the 400 ppm threshold. We are pretty much locked into increased temperature change and can expect additional warming. After the update began, the study team had access to model using updated emissions information from Representative Concentration Pathway (RCP) scenarios analysis. There are similar findings which indicate warming temperatures are likely to occur no matter what scenario is considered. Global climate model output can be downscaled to

regional level. For example, can project precipitation change by season for the U.S. Under A2, precipitation north of St. Louis region is projected to increase during winter and spring. For summer, direction in change is less robust among the different models.

Another top line message is that impacts are already widespread. Many parts of the country are seeing increase in severity of flooding. Water supply stress, particularly in the west and southwest, is increasing. On balance, some crop yields are down due to higher temperatures. But some crops are doing better because of the longer growing season and because CO₂ is good for some crops but overall it is still a net negative. Locations of certain fish species habitats in the Atlantic Ocean are shifting northward.

An additional top line message is that there are many actions we can take to reduce future climate change and its impacts, reduce our vulnerability to its impacts and prepare for the impacts we cannot avoid. The Assessment contains chapters on mitigation and on adaptation. Mitigation actions reduce emissions of greenhouse gases including alternative energy sources like solar panels as well as preserving carbon sinks by planting more trees and preserving the rainforest. The assessment points out that “Carbon monoxide is removed from the atmosphere by natural processes at a rate that is roughly half of the current rate of emissions from human activities. Therefore, mitigation efforts that only stabilize global emissions will on reduce atmospheric concentration of CO₂ only limit their rate of increase.” We are locked into climate change regardless, so we’re going to have to figure out how to reduce future emissions and adapt to new conditions. Examples of adaptation include elevating structures in coastal areas, designing for increased stormwater flow and low impact development approaches like green roofs.

A key message from the human health chapter is that there are wide-ranging health impacts associated with climate change. Climate change threatens human health and well-being in many ways, including impacts from increased extreme weather events, wildfire, decreased air quality, threats to mental health, and illnesses transmitted by food, water and disease carriers such as mosquitos and ticks. Some of these health impacts are already underway in the U.S. For example, climate change with warmer summer temperatures is projected to worsen asthma. Pollen season will lengthen.

The full 1,400 page report, highlights and a 20 page overview are available online at the National Climate Assessment website at www.globalchange.gov. Report contains links to data and sources used.

In the St. Louis region it is getting somewhat warmer and wetter. Projections call for that to continue. If there are wetter winters and springs, suggests increase in flooding risk on major rivers. More heavy precipitation events suggest more flash flooding events and ponding. Hard to get data on flash flood events. Looked at MoDOT’s 2013 road conditions twitter feed and found there were 28 separate occasions where roads were covered due to heavy rains. For St. Louis region, levees are important. They are being updated now because of current conditions but are also important for the future. Want to highlight importance of green infrastructure to keep precipitation where it falls instead of running off to a stream or storm sewer system. Instead of predict and plan model need to move to mind set of looking at a wide range of robust options. Actions that will pay off regardless where future conditions fall. Green infrastructure will start paying off now and will continue into the future. Twenty years ago or so there was a lot of distance between the mitigation

and adaptation camps. We have reached point now that everyone has realized both approaches are necessary. Locked into changing conditions regardless what do, some adaptation is essential.

Mr. Hickey, Sierra Club, said that this past session the Missouri House voted 135 to 18 for stopping proposed USEPA greenhouse gas rule for power plants. Has any strategy been prepared to get this information to the Missouri House. Mr. Posey, EWG, said that the National Climate Assessment is being delivered to every member of Congress and the Obama administration has identified a number of outreach methods. President Obama wants to use the findings as basis for future decision-making at the federal level.

Mr. Coulson, EWG, asked if there are there natural bio-feedback systems or just man-made ones. Mr. Posey, EWG, replied that conserving and preserving rainforests and old growth forests is important as they are a significant carbon sink as are oceans. Oceans and forests remove CO₂ but not fast enough. Mr. Wilson, EWG, said that a program like Forest Re-Leaf is an example of an action an area could take. It is a non-profit which has set a goal to increase tree cover and canopy in the City of St. Louis and St. Louis County which in turn reduce the heat island effect and improve carbon uptake. Mr. Posey, EWG, agreed and said that this is an example of co-benefits. He added that the transportation chapter contains a discussion on street trees.

- III. Place, Pollution and Asthma: Environmental and Social Predictors of Asthma Hospitalization in the St. Louis Area
- Amy Funk, Metro East Community Air Project
 - Rebecca Gernes, Washington University

Ms. Funk, Metro East Community Air Project (MECAP), distributed copies of the MECAP 2013 Annual Report. She announced that the fourth annual Metro East Air Quality and Health Forum is scheduled for October 17, 2014. One keynote speaker will be Elena Grossman of University of Illinois Chicago who will speak on the BRACE-IL Project. It is a CDC funded project to establish framework for cities and state in developing climate action/adaption plan with specific focus on public health entities such as county health departments. The other keynote speaker will be Dr. Kramer who will talk on indoor environmental health assessments for high risk asthma pediatric patients and potential health outcomes.

Ms. Funk said that Ms. Gernes is a recent graduate of Washington University with dual degrees in public health and social work. She recently was selected for a fellowship with USEPA. Ms. Gernes was one of eight selected to participate in USEPA's national Toxic Release Inventory (TRI) University Challenge. Ms. Gernes examined various environmental and socio-economic predictors and hospital asthma admission rates in the St. Louis region. Ms. Funk, MECAP, said that it took a lot of effort to get asthma hospital admission rates. When Illinois Department of Public Health analyzes hospital data, just look at Illinois hospitals, IDPH does not look at Missouri (St. Louis) hospital admissions for Illinois (Metro East) residents. Regional data could be used in applications to demonstrate need for funding various research programs.

Ms. Gernes, Washington University, said that there is a high asthma risk in St. Louis. Asthma is a complex disease with environmental and socio-economic components which differ across the region. The purpose of this project was to identify potential patterns in regional asthma hospitalization and toxic releases from stationary sources for the eight-county St. Louis region (MO-IL). Data was

broken down by ZIP code. Potential areas of high risk based on environmental and social indicators would be delineated.

To the extent possible, TRI data from USEPA would be integrated with locally relevant, publicly available data. TRI is a national database containing information on toxic chemical releases by industries (stationary or point sources). For this study, 2010 TRI data was used and only chemicals with respiratory health effects were examined. To build a contextual picture of the point sources in the study area and to identify trends, 2010 TRI data was compared to data from the 2005 National Air Toxics Assessment (NATA) and compared to 2005 TRI information. Socio-economic data came from American Community Survey of the U.S. Census Bureau. Asthma hospitalization data by ZIP code was obtained from IDPH and the Missouri Department of Health and Senior Services. Spatial cluster analysis was performed using ARC-GIS. Statistical analysis of significance was also conducted.

Analysis showed that there is a higher rate of hospitalization for asthma in the urban core of the region (City of St. Louis, north St. Louis County, southwest Madison County and northwest St. Clair County). The St. Louis regional mean was 11 admissions per 1,000 people but in the urban core the admission rate was three to four times greater (statistically significant). The highest asthma rates were found in north St. Louis and in St. Clair County. Statistical analysis was performed comparing admission rates in the cluster and regionally to socio-economic indicators, proximity to air releases and proximity to interstates. The strongest predictors of asthma hospitalization was percent African American (49 percent in urban cluster) by ZIP code and percent under the federal poverty level. Majority of the facilities with the highest releases reported to TRI are located in Missouri and there are four facilities in Illinois. ZIP codes inside the cluster are closer on average to TRI facilities and highways, but these facilities have lower average TRI air releases. This is a useful finding because even though the urban cluster is close to a lot of TRI facilities, the heaviest polluters are located outside of the urban core. Close proximity to roadway had an impact but it was not one of the primary indicators like race and poverty.

The 2005 NATA report contains estimates by region of the contribution to cancer risk and respiratory health risk from air toxics from point, area and mobile sources as well as secondary sources/formation. Secondary formation refers to process by which hazardous air pollutants are transformed in the air into other chemicals. Mobile sources include on-road vehicles, planes, trains and off-road vehicles including agricultural equipment. According to NATA in St. Louis region mobile sources were estimated to make up 49 percent of the estimated respiratory risk and secondary sources 48 percent while point sources contribute only two percent. TRI represents one sliver of information about air pollution. When 2005 and 2010 TRI data was compared, found that since 2005 total air chemical releases in St. Louis region decreased by 42 percent. Mr. Bloomberg, Illinois Environmental Protection Agency (Illinois EPA), observed that mobile sources create ozone through chemical reaction and the overlap between emissions from mobile and secondary formation could be huge.

Mr. Hickey, Sierra Club, asked if sulfur dioxide (SO₂) is a major driver for respiratory illnesses, precipitating out PM_{2.5}. Ms. Funk, MECAP, pointed out that Ms. Gernes' s research project did not address criteria pollutants. USEPA's TRI University Challenge focused on TRI as a resource tool. Air toxics are not monitored unless a special study is in place. TRI contains information on emissions and not data from monitors.

Mr. Hickey, Sierra Club, asked if it would be fair to say that the criteria pollutants might be bigger drivers of asthma than chemicals measured through TRI. Mr. Winkelmann, Missouri Department of Natural Resources (MoDNR), said that from a historical perspective, asthma rates have gone up over the years as ambient ozone levels have gone down. Continuing research is needed on a variety of public health issues relating to asthma. This study shows that proximity to facility is a driving factor more than the amount of air toxics released which is what would be expected. Criteria pollutants have a regional impact and not localized. Burden of regulating criteria pollutants is at the state level. If monitor goes over standard, the state has to prepare a plan. Lead is the only criteria pollutant which is also a hazardous air pollutant. Lead no longer a regional pollutant since it was removed from gasoline. Now it is more typified as a pollutant associated with stationary sources regulated by the state. Ms. Funk, MECAP, noted that USEPA has begun to focus a lot more on indoor air pollution as people spend 90 percent of their time indoors. Indoor environment, poverty and housing stock condition have impacts as related to people with respiratory disease.

Ms. Gernes, Washington University, said observations to be drawn from her study include, education and prevention efforts should be focused on areas with high social risks for asthma. Additional research on mobile sources and secondary source formation is needed. TRI data should continue to be used but in proper context. TRI has a new requirement that facilities have to report their pollution prevention efforts, changing from a release to a managed waste. We could consider publicizing this information.

Mr. Wilson, EWG, asked if it would be possible to get records of doctor office visits as people with means may seek treatment before going to emergency room/hospitalization. Ms. Gernes, Washington University, said that hospital admissions are the only thing measured consistently.

IV. Update Activities of the States

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

This session the Missouri legislature passed a bill allowing the Air Pollution Control Program (APCP) of MoDNR to set up a process to increase fees for permitting work and asbestos. Rule-making has to be completed by the end of 2014 because the bill requires that the legislature have a full session (in 2015) to review the rule before it can become effective. MoDNR has held a series of stakeholder meetings to discuss the over-arching plan for raising these fees and getting agreement from agriculture and industry. The last meeting is scheduled for June 16.

The Missouri Air Conservation Commission (MACC) will meet on May 29 at the MoDNR St. Louis Regional Office in south St. Louis County. There will be public hearings on: revision to 10 CSR10-5.220, Control of Petroleum Liquid Storage and Transfer, removing requirement for Stage II vapor recovery controls at gas dispensing stations in the St. Louis ozone non-attainment area; Regional Haze Plan five year progress report; on proposal for the Marginal Plan for the Missouri portion of the St. Louis non-attainment area for the 2008 ozone standard; 10 CSR 10-6.040, Reference Methods, amending it to update the incorporation by reference date to include the latest Federal Register notices concerning ambient air monitoring methods (stack testing and chemical sampling methods for air processes). The Marginal Plan establishes a baseline emissions inventory which can be used if future modeling efforts are needed. The next meeting will be July 30 in

Jefferson City. The items up for public hearing this month may be up for adoption by the MACC.

Mr. Coulson, EWG, asked if the 2014 fee process would solve the funding problem. Mr. Winkelmann, MoDNR, said that analysis and discussion are still underway on what the increase will be. The emission fee going from \$40 to \$70 a ton covers the APCP for ten years. When add to proposed fee increases for permit work and asbestos (a lot of work being done by APCP), could be adequate.

Mr. Bloomberg, Illinois EPA, reported that the Sierra Club sued USEPA over the SO₂ designation process. Sierra Club's position was that USEPA had no right to do designations in phases. To resolve this suit, USEPA has prepared a proposal with four phases of designations with an early phase focusing on power plants of a certain size. This proposal has been submitted to the Court and released for comment. The proposal with comments received will be submitted to the Court. The Court will decide if USEPA can go ahead with this proposal. In Illinois, there could be 12 areas where will have to look at modeling or monitoring. Appears that about half would be hit with the proposed approach and Illinois EPA would have to look at them starting in 2015.

Mr. Winkelmann, MoDNR, said that the draft federal Data Reporting Requirement rule is still out for comment. Mr. Bloomberg, Illinois EPA, added that USEPA has identified three options. With USEPA's preferred option, would first look in areas like St. Louis and Chicago at any sources with 1,000 tons per year of SO₂ emissions. Outside such areas, would look at sources with 2,000 tons per year of SO₂ emissions. He observed that USEPA Headquarters is intensely focused on single source non-attainment areas and that they do not seem to grasp the idea that there could be multiple sources contributing to a particular non-attainment area. Will either have to do modeling or install monitors. The monitors that are in place now generally are not properly placed to determine attainment/non-attainment of these specific sources. It will be up to the sources to decide if they want to pay for monitors. Prior to release of proposed Data Reporting Requirement rule, it appeared that a facility could have monitors to collect data for three years. USEPA says monitors will stay in place until certain lower level is reached. A company may not be as eager to invest in monitoring if they do not know when that investment will end. Many of these companies are already having consultants do modeling and are probably conducting a cost/benefit analysis. Mr. Zlatic, St. Louis County, asked if source uses the monitoring approach, would that extend designation time frame and is it possible a company would use this approach to gain extra time. Mr. Bloomberg, Illinois EPA, said that designation recommendations using modeling data are due 2017 and recommendations using monitoring are due in 2020.

VII. Other Business

The next meeting of the AQAC was scheduled for June 24, 2014. There being no other business, the meeting of the Air Quality Advisory Committee was adjourned.