AGENDA
AIR QUALITY ADVISORY COMMITTEE*
TUESDAY January 27, 2015
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 October 28, 2014 Meeting

II. EPA’s Ozone National Ambient Air Quality Standard Proposed Rule
    - Joe Winkelmann, Missouri Department of Natural Resources

III. Illinois Bureau of Air Program Overview
     - David Bloomberg, Illinois Environmental Protection Agency

IV.  American Fuel Group Report
    - St. Louis Regional Clean Cities Program

V.   Update Activities of the States
     - Missouri Department of Natural Resources
     - Illinois Environmental Protection Agency

VI.  Other Business - Next Meeting Date March 24, 2015

VII. 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, October 28, 2014
East-West Gateway Board Room

Members Present:
Michael Coulson, Chair, East-West Gateway Council of Governments
Jeremy Rogus - St. Louis County Health Department
Joe Winkelmann - Missouri Department of Natural Resources
Jack Fishman - St. Louis University
Mike Henderson, Missouri Department of Transportation
David Bloomberg - Illinois Environmental Protection Agency
Susannah Fuchs - American Lung Association
Brad McMahon - Federal Highway Administration, Missouri
Tiffany Brase - Illinois Department of Transportation, District 8
Ryan Tilley - St. Charles County

Others Present:
Jeff Rosenfeld - ICF International (telephone)
Seth Hartley - ICF International (telephone)
Lenora Fisher - Citizens for Modern Transit
Amy Funk - Metro East Community Air Project
Curtis Jones - Illinois Department of Transportation
Kevin Jemison - Illinois Department of Transportation, District 8
Emily Wilbur - Missouri Department of Natural Resources
Patricia Maliro - Missouri Department of Natural Resources
Stacy Allen - Missouri Department of Natural Resources
Jason Welsh - St. Louis University
Andy Knott - Sierra Club

Staff:
John Posey Lubna Shoaib Carol Lawrence

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). Dr. Fishman, St. Louis University (SLU), and Mr. Winkelmann, Missouri Department of Natural Resources (MoDNR), had corrections to the September minutes. On page 3, the second sentence of the last paragraph should read: “In the late 19th century tropospheric ozone levels were 100 ppm.” On page 6, the second sentence of the first paragraph should be: “As far as CAA obligations, Unclassifiable and Unclassifiable/Attainment do not have different mandatory State Implementation Plan (SIP) requirements.” With these revisions, the minutes of the September 16, 2014 AQAC meeting were approved as circulated. Those attending the meeting introduced themselves.

II. Alternative Fuels for Air Quality Implementation and Planning
Mr. Coulson, EWG, said that Mr. Rosenfeld and Mr. Hartley of ICF International will give an overview of this effort and their presentation will be available on the EWG website. Mr. Rosenfeld, ICF, said that the Alternative Fuels for Air Quality Implementation Planning project was prepared by ICF for The Mid-America Collaborative for Alternative Fuels. The Mid-America Collaborative is composed of the Kansas City Regional Clean Cities Coalition, Nebraska Clean Cities Coalition, St. Louis Regional Clean Cities program and the Iowa Clean Cities Coalition. This group received a grant from the U.S. Department of Energy (DOE) for an Alternative Fuel Implementation project.

Purpose of this project element was to provide The Mid-America Collaborative with information to incorporate alternative fuel vehicles into air quality and transportation planning. A quantitative tool was to be developed to estimate the air quality improvements/benefits from alternative fuel implementation. The focus of this study is on tailpipe emissions. Default emission factors representing the St. Louis region were developed for use with the MOtor Vehicle Emissions Simulation (MOVES). Scenario analyses were then performed for the St. Louis region over time with various market segments of alternative fuels and alternative fuel vehicles. The methodology and tool developed by ICF can be used by other agencies and applied to other regions. ICF has prepared a final report describing the methodology, research and tool. The tool can be modified to develop regionally specific scenarios. The real goal of this project was to impact state implementation plan (SIP) planning with goal of increasing the local adoption of policies that prioritize alternative fuel development.

Alternative fuels included in the Air Quality Planning tool were: E85 ethanol; biodiesel blended with conventional diesel; compressed natural gas (CNG); liquefied natural gas (LNG); liquefied petroleum gas (LPG) or propane; and electric (full battery like the Nissan Leaf and plug-in hybrids like the Prius and the Chevy Volt). Biodiesel is used in diesel engines. Main applications of natural gas include medium and heavy duty vehicles, including buses, which displaces diesel consumption. The main applications of propane fuel is light duty trucks, medium duty trucks and heavy duty school buses.

Mr. Hartley, ICF, described the methodology used to develop the baseline emission factors for the Air Quality Planning tool. ICF used MOVES2010b inputs and factors that reference the St. Louis area to determine regional average, activity-weighted, baseline emission factors for use as defaults in the tool. The MOVES model estimates tailpipe and evaporative emissions covering a broad range of pollutants from cars, trucks, buses and motorcycles. Since this project began, a MOVES2014 update has been released by USEPA. For this effort, evaporative emissions were excluded due to a lack of information. To produce accurate, aggregate baseline emission factors in MOVES, local meteorological, fuels, activity (vehicle miles traveled or VMT) and vehicle fleet description data is needed. All of this data can be collected from Metropolitan Planning Organizations (MPOs), air quality agencies and other state agencies to create custom inputs for any region. The baseline emissions to be developed include a vehicle population mix of all regional vehicle types fueled by gasoline and/or diesel. In the tool, vehicles were aggregated to either light duty category or heavy duty category.

The Air Quality Planning tool was pre-populated with default emission factors and VMT...
representing the bi-state St. Louis area. This information was obtained from EWG, Illinois Environmental Protection Agency (Illinois EPA) and Missouri Department of Natural Resources (MoDNR). ICF made slight modifications to some of the inputs to make them consistent across the two states. To determine baseline emissions and VMT for gasoline and diesel ICF then performed county-level MOVES runs for Missouri and three county MOVES runs for Illinois covering 2010, 2020, 2030 and 2040. The pollutants of interest were: oxides of nitrogen (NO$_x$); fine particulate (PM$_{2.5}$); coarse particulate (PM$_{10}$); and volatile organic compounds (VOC).

Mr. Rosenfeld, ICF, then discussed the development of the emission reduction factors used in the tool, scenario analysis results and described how to use the Air Quality Planning tool. Emission reduction factors are factors applied to the baseline gasoline and diesel emission factors to estimate the emission reduction potential for each alternative fuel. The MOVES2010b model did not address emissions for high ethanol blends, electric vehicles or propane and has CNG estimates only for transit buses. Alternative fuel emission reduction factors (other than biodiesel) had to be developed outside of the MOVES model. ICF utilized research papers, data from the California Air Research Board and data from the EV Project to do this. More information on the development of the emission reduction factor for each alternative fuel can be found in the final report. These emission reduction factors were compared to both gasoline and diesel baseline fuels for each vehicle class, since the tool allows for alternative fuel vehicles to displace gas and/or diesel vehicles. The Air Quality Planning Tool and emission reduction factors can be updated as new research and data becomes available.

ICF developed and ran scenarios for alternative fuel penetration (percentage of vehicles using this particular fuel) to illustrate the potential air quality benefits of alternative fuels over time. The scenarios used input from the Metropolitan Energy Center in Kansas City and key St. Louis metropolitan stakeholders. Vehicle types and alternative fuels included: transit buses (biodiesel, CNG, propane); school buses (biodiesel, CNG, propane); refuse trucks (CNG); light duty autos and trucks (electric, CNG, E85); heavy duty trucks (CNG/LNG); and medium duty trucks (propane). Emission reductions for NO$_x$, PM$_{2.5}$ and VOC (hydrocarbons) were estimated by vehicle and alternative fuel type. For light duty vehicles, electric vehicles, with little or no tailpipe emissions, have the highest potential for emission reduction among these pollutants. CNG light duty vehicles have a lower penetration rate (fewer vehicles) and lower NO$_x$ emission reduction potential but these vehicles can significantly help VOC emission reduction. E85 vehicles show an increase in VOC emissions. On a per vehicle basis, all alternative fuel heavy duty trucks show significant emission reduction potential compared to diesel trucks. CNG fueled refuse trucks have huge economic market viability with the lower fuel prices. Even though propane heavy duty trucks have a lower penetration rate of 15 percent, there is high VOC emission reduction potential. On a per vehicle basis, the propane sector shows significant emission reduction potential. As a result of improvements to particulate matter control technologies and changes to baseline diesel fuel, school and transit buses will be significantly cleaner operating by 2030 and therefore a lower potential for emission reductions.

Mr. Rosenfeld, ICF, then described how to use the Excel spreadsheet Air Quality Planning tool. In step one, an alternative fuel is selected from a drop-down menu. If electric vehicle is selected, then in step two the user has to identify the percentage share of the following vehicle types: battery electric vehicle; plug-in hybrid 10 (vehicle has 10 mile range on battery alone; and plug-in hybrid 40 (40 miles). In steps three and four, the user enters the conventional fuel (by vehicle type) being
displaced and the alternative fuel penetration by analysis year. At the bottom of spreadsheet is a table showing the pollutant emission reduction estimates by analysis year. As penetration percentages are changed, emission reduction estimates are shown in real time.

In conclusion, the purpose of this project was to assemble information and develop a tool to provide concrete, quantifiable air quality emission value benefits for alternative fuels. The information and tool will help prioritize policies concerning incorporating alternative fuel vehicles into air quality and transportation planning processes. ICF developed a methodology and spreadsheet tool, populated with default data for the St. Louis region, to be included in the transportation planning process. However, the tool can be edited for any region. The aim is to have full distribution of the tool on-line between the members of the Mid America Collaborative and any of the Clean Cities Programs.

Mr. Coulson, EWG, asked if the U.S. Environmental Protection Agency (USEPA) had reviewed this tool and given its blessing. Mr. Rosenfeld, ICF, said that USEPA has reviewed the tool but the Mid America Collaborative was not looking for a specific recommendation for use of this tool. It is to be a general use tool for planning purposes. Mr. Coulson, EWG, observed that this tool could be useful in evaluating Congestion Mitigation Air Quality (CMAQ) projects involving alternative fuels/fleets. He asked if there had been any feedback from other MPOs or Regional Planning Commissions. Mr. Rosenfeld, ICF, said that they had not received feedback on that type of application.

Mr. Knott, Sierra Club, asked if the different years of data provided by Illinois EPA and MoDNR have an impact on the study. Mr. Hartley, ICF, said that it had no impact and that the inputs for MOVES were based on those used in the Conformity findings. Also, projections were updated to make sure that Illinois and Missouri inputs were consistent in future years.

III. 2014 Ozone Season and Trends

- Michael Coulson, East-West Gateway Council of Governments

Ozone is formed when hydrocarbons and oxide of nitrogen emissions from cars and industry mix with oxygen in the lower atmosphere in the presence of strong sunlight, low wind speed and temperature of 85°F or higher. In the Ozone Data Sharing Project, EWG acts as a repository of ozone data collected from April 1 through October 31 from ten monitors in the St. Louis ozone non-attainment area. There are four monitors in Illinois and six in Missouri. EWG performs a preliminary quality assurance screening, enters data into a computerized spreadsheet and prepares monthly and weekly reports for partner agencies (Illinois EPA, MoDNR and USEPA Region 7).

The 2008 ozone standard is 75 parts per billion (ppb). An exceedance of the standard occurs when an eight-hour average of values is calculated to be greater than 75 ppb on any given day. A violation of the standard occurs when a three-year average of the annual fourth highest eight-hour average (out of 214 days) is calculated to be greater than 75 ppb. Each monitor have to pass this test for the area to be considered in attainment of this standard. The 2014 ozone season was good with just four exceedances on two days. On August 4 there were three exceedances at the West Alton, Alton and Wood River monitors. This was the latest date for the first exceedance day since 1999. The fourth exceedance was on September 28 at the Arnold West monitor. The weather plays an important role in ozone production and this year there was a lot of rain. In the St. Louis area, on average there are
36 days with temperatures 90°F or higher and of this, two days 100°F or higher. This season had 34 days of 90°F or higher. To put the 2014 exceedances into context, annual exceedances of the 2008 eight-hour ozone standard for 1999-2014 were reviewed. Even with the high exceedance summers, when a five-year running average of these exceedances is examined, area is still making good progress in terms of lowering overall ozone levels in the St. Louis area.

Another indicator that EWG monitors is mobile source emissions estimates developed using the MOVES model as part of the Conformity Determination process. Currently, there are 1.6 - 1.7 million vehicles in the region. Over time, it is anticipated that pollutant levels will be reduced, helping to improve ozone levels. Regional VMT is another indicator. VMT levels peaked in 2004 at 72 million miles and since then the VMT growth curve has flattened or decreased. It is projected that as we go forward, the flattening of VMT levels will continue which will in turn ozone levels.

In 2012 the St. Louis area was classified as a marginal non-attainment area for the 2008 ozone standard. Since the implementation of the Clean Air Act Amendments (CAA) in 1990, historically the St. Louis area has been classified as a moderate ozone non-attainment area. Marginal is a major leap forward. Many of the groups around the table today, especially Illinois EPA and MoDNR, are responsible for achieving this milestone. It is anticipated that the St. Louis area will attain the 2008 ozone standard by the end of 2015. Data from 2013-2015 will be used to prepare the three-year average of the annual fourth highest eight-hour average (out of 214 days). Even if the summer of 2015 is above average, should be able to make the 2008 eight-hour ozone standard.

In December 2014, USEPA is to propose a revised eight-hour ozone standard. It is anticipated that the standard will be set between 60 - 70 ppb. After that there it usually takes three years for the revised standard to be rolled out and fully implemented. So the area will be in attainment in 2015 and probably classified as non-attainment some time in 2017-2018.

Additional information on air quality in the St. Louis area can be found online at the AQ Resource Center section of the EWG website at www.ewgateway.org/environment/aq/aq.htm. USEPA’s Air Quality Indicator (AQI) calculator is used to convert ozone information into AQI values and then a monthly AQI Calendar is prepared. It is a good way to visualize the ozone season.

Mr. Winkelmann, MoDNR, pointed out that one reason projected vehicle emissions will flatten out is of the new Corporate Average Fuel Economy (CAFE) vehicle standards. As older vehicles are replaced with newer, cleaner cars, tailpipe emissions are reduced.

IV. Greenhouse Gas Inventory Project
   - John Posey, Ph.D., East-West Gateway Council of Governments

This summer the Federal Highway Administration (FHWA) issued a solicitation to metropolitan planning organizations, like EWG, and state department of transportations for proposals to obtain grant funds to do greenhouse gas inventories. EWG submitted an application in the category of agencies new to performing greenhouse gas inventories. EWG uses the MOVES model to develop emission estimates for volatile organic compounds, oxides of nitrogen and PM_{2.5}. MOVES has a greenhouse gas module to estimate carbon dioxide emissions. However, EWG has not had the staff time to work on it.
EWG was successful in their application. During the one-year grant EWG will be working with Dr. Fishman of SLU and doctoral student Jason Welch. Mr. Welch will be working with Ms. Shoaib of EWG. The first task is to look at MOVES inputs and define model assumptions in order to make them more accurate. The second task will be to do post-processing of the MOVES model output. The aim is to develop baseline greenhouse gas emissions at a regional scale and then a sub-regional scale. The FHWA is also interested in corridor-level emission estimates. The study team will investigate if it is possible to develop greenhouse gas emissions reports at the municipal level. EWG is grateful for the opportunity to conduct this research and for SLU to collaborate with us.

Dr. Fishman, SLU, said that he is interested in this project from a scientific perspective. In his career with NASA and at SLU, has been looking at air pollution using satellite information which has a low resolution. In 2018, a satellite is to be launched which will be able to measure carbon dioxide emissions down to a five kilometer square. The database developed as part of this project can be used to validate information from the new satellite.

Mr. Coulson, EWG, remarked that occasionally there are rumblings from FHWA and USEPA about including carbon dioxide analysis in Conformity Determination. He asked the FHWA MO representative if that was on the horizon. Mr. McMahon, FHWA MO, said that he could not speak to that. Mr. Winkelmann, MoDNR, said that FHWA documents about greenhouse gas emission inventory mention transportation-related pollutants. However, the CAA identifies specific criteria pollutants. A number of steps would have to occur before greenhouse gases would be identified as a criteria pollutant in a federal rule and then become part of Conformity Determination by regulation.

V. American Fuel Group Report

Mr. Herdler of St. Louis Regional Clean Cities Program (SLCC) is in Kansas City coordinating an alternative fuel training session for code enforcement personnel and first responders. This training is also part of The Mid-America Collaborative for Alternative Fuels’ Alternative Fuel Implementation project.

VI. Update Activities of the States
- David Bloomberg, Illinois Environmental Protection Agency
- Joe Winkelmann, Missouri Department of Natural Resources

Mr. Bloomberg, Illinois EPA, said that USEPA has released more information on the changes to occur to start-up, shut-down and malfunction exemptions. These changes will affect rules in both Missouri and Illinois. This is part of a law suit settlement and subsequent negotiations. USEPA is now at the point where they can identify what needs to be changed in a wide variety of rules.

Illinois EPA is focusing on sulfur dioxide (SO₂). Currently, the Peoria-Pekin and Lemont (Chicago area) areas are the only SO₂ nonattainment areas in the state. Illinois EPA is preparing for the next round of SO₂ nonattainment area designations which will probably involve modeling some areas in the Metro East.

Mr. Coulson, EWG, asked if the refinery in Wood River has elected to do modeling. Ms. Funk, Metro East Community Air Project (MECAP), pointed out there is one SO₂ monitor near the
refinery. Mr. Bloomberg, Illinois EPA, said that having one monitor does not exempt a facility from doing modeling. Almost every facility will be subject to modeling to determine if it is in attainment of the standard or not. There is one facility located east of the Metro East which is currently in talks with Illinois EPA about monitoring. The biggest issues with monitoring are that companies will have to pay for the monitoring themselves and a facility may need two or three monitors. In addition, even if the monitors show attainment after three years, the facility may not be able to remove the monitors (depending on the USEPA final rule). A monitor will have to get to 50 percent to 80 percent of the design value before the monitor can be pulled. Companies will be looking at their long-term expenditures. There needs to be three years worth of monitoring data (2017-2019) before a designation recommendation can be submitted to USEPA. Nonattainment area designation using monitoring data occurs three years later than designations using modeling data. Illinois EPA is aware of companies currently doing their own modeling and output evaluation. No one has announced if they will be monitoring. Almost all facilities will be modeled by Illinois EPA and some will be done sooner because of the Sierra Club lawsuit against USEPA.

Ms. Funk, MECAP, asked when companies have to decide about monitoring or modeling. Mr. Bloomberg, Illinois EPA, said that states are to submit designation recommendations (based on modeling) to USEPA by January 2017, so companies would have to inform Illinois EPA before then. Illinois will be doing all the modeling. For companies doing monitoring, the designation process would be completed in 2020. Ms. Wilbur, MoDNR, added that for non-attainment areas designated using modeling, State Implementation Plans (SIPs) would be due in 2019.

Mr. Coulson, EWG, asked about the status of PM$_{2.5}$ monitoring. Mr. Bloomberg, Illinois EPA, said that since July have been receiving good data. Staff is evaluating bids for new continuous monitoring equipment which will eliminate some of need for lab analysis. Mr. Coulson, EWG, asked if there will be any more monitors in the Metro East. Mr. Bloomberg, Illinois EPA said that not in this area but they continue to locate a near-roadway monitor site in the Chicago area.

Ms. Wilbur, MoDNR, said that in the last year the SIP Unit of the Air Quality Planning section of the Air Pollution Control Program had taken on the responsibility of doing mobile source emissions inventory and modeling. Stacy Allen has been brought on board as the mobile source emissions staffer. Ms. Allen has expertise in modeling and meteorology.

Mr. Winkelmann, MoDNR, announced that the Missouri Air Conservation Commission (MACC) will meet on October 30 in Macon, MO. There will be a public hearing on a proposed amendment to 10 CSR 10-6.110 (the fee rule), proposing to increase the emission fee to $48 a ton from $40. The plan is for the MACC to adopt this rule at their November 21 meeting in Jefferson City. That way the legislature would have their entire 2015 session to review the rule before it becomes effective in January 2016. The rule would be applicable to emissions accrued during 2015.

A preliminary revision to the state Opacity rule (10 CSR 10-6.220) is out for a 60-day public comment period and can be found in the Rules in Development section of the MoDNR website (www.dnr.mo.gov/env/apcp/rulesdev.htm). There are revisions to start-up, shut-down and malfunction exemption provisions and minor modifications.

VII. Other Business
Ms. Funk, MECAP, reported that between 114 - 119 people attended the third Metro East Air Quality Forum earlier this month. Ms. Fuchs of the American Lung Association presented Care About Clean Air award to six Metro East communities, organizations and businesses. The keynote presentations focused on climate change from a public health perspective and indoor air quality.

The next meeting of the AQAC was scheduled for Tuesday, January 27, 2015. There being no other business, the meeting of the Air Quality Advisory Committee was adjourned.