Air Quality

The Louisville nonattainment area consists of Clark and Floyd counties, IN, and Bullitt, Jefferson, and Oldham counties, KY. In June 2004, it was designated as a basic nonattainment area under the 8-hour standard for the pollutant ozone. Prior to that time, a portion of the area was designated as a nonattainment and later maintenance area under the 1-hour ozone standard.

During the time when that portion was a nonattainment or maintenance area, the state and local air quality agencies were required to develop State Implementation Plans (SIPs) limiting pollutant emissions. These limits, known as emission budgets, were established for the precursors of ozone, volatile organic compounds (VOCs) and oxides of Nitrogen (NOx).

To avoid confusion concerning the portions of the Louisville nonattainment area, the following definitions will apply.

- Nonattainment area — the area which has a nonattainment status for the 8-hour ozone standard. This area consists of Clark and Floyd counties in Indiana and Bullitt, Jefferson, and Oldham counties in Kentucky.
- Maintenance area — the area which was a maintenance area for the 1-hour ozone standard before the 8-hour ozone designations were made. This area consists of Clark and Floyd counties in Indiana and Jefferson and portions of Bullitt and Oldham counties in Kentucky.
- New Nonattainment Area(s) — the portions of Bullitt and Oldham counties which are now in the nonattainment area but which were not in the maintenance area and therefore are not covered by the 1-hour budgets.

AIR QUALITY HISTORY

Prior to the implementation of the 8-hour ozone standard, the Louisville maintenance area was designated as a moderate nonattainment area for many years. As part of the effort to attain the National Ambient Air Quality Standards for ozone and to partially fulfill the requirements of the Clean Air Act Amendments of 1990, Indiana and Kentucky submitted SIPs committing to the reduction of emissions of VOCs by 15% relative to adjusted 1990 levels. The Indiana SIP was submitted to US EPA in December 1993 and was approved in July 1997. The Kentucky SIP was submitted to US EPA in November 1993, was found administratively complete in September 1997, and subsequently approved in September 1999.

Efforts were made to improve air quality in the region, and the number of exceedances for 1998, 1999, and 2000 was sufficiently small that in 2001 the state and local air quality agencies were able to request that the region be redesignated as a maintenance area in attainment of the 1-hour ozone standard. As part of the request for redesignation, a plan was submitted indicating how the 1-hour ozone standard was to be maintained in the region. As previously mentioned, the plan established emission budgets for VOCs and NOx, the precursors of ozone. Also, as part of the redesignation request, Indiana and Kentucky committed to update the VOC and NOx budgets after the release of a new emission factor model (MOBILE 6). In January of 2002, US EPA released MOBILE 6 as the accepted emission factor model. The VOC and NOx emission budgets were updated during 2003.

CONFORMITY UNDER THE 8-HOUR OZONE STANDARD

During 2004, along with the designation of certain areas as nonattainment areas, EPA promulgated an update to the federal conformity rule (40 CFR 93). This update established new interim tests to be applied when an area sought to determine conformity after being designated as nonattainment under the 8-hour ozone standard and before SIPs were developed establishing new budgets for VOCs and NOx.

In general, two issues guided the application of the requirements of the new conformity rule to the local area. First, based on the monitored 8-hour concentrations of ozone, the Louisville area was designated as a basic nonattainment area. Second, the nonattainment area includes all of the former maintenance area and additional area, as well. EPA classifies this type of area as a Scenario 3 area. For a Scenario 3 area such as Louisville, the requirements of the conformity rule are:

(1) the 1-hour budgets must be used for the maintenance area for the analysis years for which they apply, and
(2) an interim test for the 8-hour standard must be used for the new areas or for the nonattainment area, as a whole.

CONSULTATION FOR THE DEVELOPMENT OF *HORIZON 2030*

The first step in determining conformity of *Horizon 2030* was to consult with the interagency consultation (IAC) partners concerning matters not explicitly determined by the conformity rule. These matters included:

(1) the analysis years,
(2) the conformity tests and the years to which they are to be applied, and
(3) planning assumptions that needed to be updated.

The conformity rule requires that analyses be done for the attainment year and the last year of the transportation plan. In addition, other intermittent year(s) are required such that no two analysis years are more than ten years apart.

As previously stated, the conformity rule requires that a 1-hour budget test must be used for the maintenance area and that an interim test must be used either for the new areas or the nonattainment area, as a whole. In addition to the options concerning geographic area, there are also two options for the interim test. They are:

(1) build emissions no greater than no-build emissions, or

(2) analysis year emissions no greater than 2002 emissions.

The IAC partners corresponded through e-mails and through a conference call. The group discussed these interconnected issues and chose 2009, 2012, 2020, and 2030 as analysis years. For the situations where an interim emission test is appropriate, the IAC partners chose to use the 2002 baseline or "no greater than 2002" test. Since there are no budgets for 2009, it was agreed that the 2002 baseline test would be applied to the entire nonattainment area for that analysis year. For the other analysis years, it was agreed that the 2002 baseline test would be applied only to the new nonattainment areas of Bullitt and Oldham counties with the budget test applied to the 1-hour maintenance area. A summary of the analysis years and conformity tests is shown in the table below.

Analysis Year	Conformity Test(s)
2009	2002 Baseline test for the (5-county) nonattainment area
2012	Budget test for the 1-hour maintenance area and 2002 Baseline test for the new areas of Bullitt and Oldham counties
2020	2002 Baseline test for the new areas of Bullitt and Oldham counties and 2002 Baseline test for the new areas of Bullitt and Oldham counties
2030	Budget test for the 1-hour maintenance area and 2002 Baseline test for the new areas of Bullitt and Oldham counties

The updating of planning assumptions concerned two items. The first involved travel model inputs and outputs. KIPDA has recently completed an update to the regional travel demand model. This update involved all of the portions of the model except those involving transit. The conformity analysis was conducted following the update of the regional travel model. It was agreed that travel model inputs and outputs from the updated model would generally be used. This issue is discussed in greater detail in the "KIPDA TRAVEL DEMAND MODEL" section. It was also agreed that KIPDA would update the transportation networks based on information from project sponsors and that travel model outputs would be summarized to provide inputs for MOBILE 6 in the same manner as for past conformity determinations. This involves adjusting the vehicle-miles-traveled (VMT) as recommended in the conformity rule; adjusting the speeds using the methodology developed and utilized previously by KIPDA (based on methods used in the Highway Economic Reporting System); and categorizing the VMT into speed bins based on the adjusted speeds.

The second item involved the inputs to the MOBILE 6 model. The recent practice has been for the Louisville Metro Air Pollution Control District (APCD) to run the MOBILE 6 model to produce emission estimates and/or emission factors for Clark, Floyd, and Jefferson counties. During 2004, the vehicle registration distributions used as inputs to MOBILE 6 were updated by APCD based on information developed by other agencies as well as that developed by the District itself. The methodology for developing these distributions was previously reviewed and approved

through consultation. Therefore, it was agreed that the inputs to MOBILE 6 used in the October, 2004 conformity analysis would continue to be used.

CONFORMITY OF *HORIZON 2030*

The long-range plan, *Horizon* 2030, was examined to determine if it meets the requirements of the conformity rule under both the 1-hour and 8-hour ozone standards. In general, examinations for conformity have two major components:

(1) an air quality analysis to determine that air pollutant emissions do not exceed the budgets for VOCs and NOx set in the SIPs or the emission levels for a given base year such as 2002 and
(2) a monitoring of the progress in implementation of the Transportation Control Measures (TCMs) contained in the SIPs.

In the past, consultation with the state and local air quality agencies and US EPA had determined that there are no approved TCMs in the SIPs of Indiana and Kentucky. Therefore, it was possible to show conformity of *Horizon* 2030 simply by determining that the air pollutant emissions do not exceed the budgets in the SIPs or the base year emissions.

In general, the calculation of the regional emissions for 2002 and the analysis years involved three procedures. First, the VMT and speeds were determined. Second, the MOBILE 6.2 emissions model was used to determine the emission factors for VOCs and NOx. Third, the VMT was multiplied by the emission factors to determine the emissions for each county. The use of these three procedures in Bullitt and Oldham counties varied slightly from their use in Clark, Floyd, and Jefferson counties. The details of their use are discussed in the Regional Emissions Analysis section below.

KIPDA TRAVEL DEMAND MODEL

The KIPDA travel demand model is a mathematical model which relates travel to the transportation system and basic socioeconomic information. The domain of the model is a study area which includes the Louisville (KY-IN) Metropolitan Planning Area. This area is divided into 807 smaller units called traffic analysis zones.

Most of the KIPDA travel demand model was updated and calibrated during 2004-2005. This update established 2000 as the new base year for the model. The model update utilized the information incorporated into the travel model during previous updates. In addition, information from the 2000 Census, the 2000 KIPDA Household Travel Survey, and the 2004 on-board survey of transit riders by the Transit Authority of River City was also incorporated. During the update, the model parameters were adjusted such that the model output matched—within reason—three main calibration criteria based on measured data. These criteria were: (1) daily VMT for all highway facilities except local roads for the region; (2) the distribution of trip lengths (duration in time); and (3) highway traffic volumes crossing the Ohio River screenline. The result of the update was a travel model which replicated travel in the Louisville area for 2000. The updated travel model was subsequently used in the regional air quality analysis.

The KIPDA travel demand model uses the standard four steps of modeling: trip generation, trip distribution, mode choice, and trip assignment. In addition, it considers travel by vehicles entering, leaving, and crossing the study area. These types of trips are known as external-internal, internal-external, and external-external, respectively. The internal ends of these trips are determined by

the methods described below for internal-internal travel. The external ends are determined from the volume of traffic crossing the study area boundary at any of the 48 external stations.

Trip generation is the process of determining the number of unlinked trip ends—called productions and attractions—and their spatial distribution based on socioeconomic variables such as households and employment. Trip rates used to define these relationships were derived from the travel data collection efforts described above. This information was supplemented by use of the *National Cooperative Highway Research Program Report #365* and the Institute of Transportation Engineers' *Trip Generation Report*. The KIPDA travel demand model uses three internal-internal trip purposes and utilizes different trip rates for each. Internal-internal trips are those which have both ends inside the model domain. The three purposes are home-based work, home-based other, and non home-based.

Trip distribution is the process of linking the trip ends thereby creating trips which traverse the area. The KIPDA travel model uses a gravity model to link all trips except the external-external ones. The gravity model is based on the principle that productions are linked to attractions as a direct function of the number of attractions of a zone and as an inverse function of the travel time between zones. This inverse function of travel time is used to generate parameters called friction factors which, in turn, direct the gravity model. The friction factors used in the gravity model were developed as part of the calibration effort performed during the model update. In addition, information from the study which investigated the behavior of travelers crossing the Ohio River and traffic count information from 2000 were utilized to develop additional parameters called K-factors. The K-factors are used by the model to ensure that it is predicting the correct volume of traffic crossing the Ohio River.

Mode choice is the process used to separate the trips which use transit from those which use automobiles. It is also used to separate the auto drive-alone trips from auto shared-ride trips. In the KIPDA travel demand model, mode choice is based primarily on information provided by the *TARC Travel Forecasting Study*. In the KIPDA travel demand model, the user's benefit or utility is calculated for each mode based on zonal socioeconomic characteristics and the cost and time of the trip using the various modes. A nested logit model is used to determine the probability of the trip being made by each of the modes. This probability is then multiplied by the number of trips between zones to determine the number of trips by each mode.

As previously stated, the conformity analysis for *Horizon 2030* utilizes transit information from the previous travel demand model. This was deemed acceptable for several reasons. The primary reason was that the transit projects in Horizon 2030 were essentially the same as the ones previously in the long range plan. In addition, the number of total trips from the two models was similar. Therefore, the use of the transit trip information from the previous travel model did not change significantly the proportion of trips allocated to transit. Finally, the proportion of trips utilizing transit is less than 2% of the total trips. So small differences in the number of transit trips should provide a negligible effect on overall travel.

Trip assignment is the process used to determine which links of the network a trip will use. There are several assignment schemes which may be used. Two of the more common schemes are All-or-Nothing (AON)—in which all trips between two zones follow the shortest time path—and Stochastic—in which trips between two zones may be assigned to several paths based on their

impedances or travel times. It is not uncommon for travel models to use several assignment schemes in sequence to converge to a better assignment. A sequence commonly used involves using several AONs with the traffic volumes reported at the end of each scheme being a weighted average of the volumes from the most recent scheme and the volumes from the previous schemes. A capacity restraint provision is used to adjust travel times between assignment schemes. This sequence is called an equilibrium assignment. The KIPDA travel model uses an equilibrium assignment which converges when the change in volumes averages 1 percent or less.

The output from the KIPDA travel model is in the form of a series of links with each link having certain associated data such as number of lanes, capacity, facility type, area type, functional class, and volume. This data allows for the calculation of other link information such as VMT. The VMT can be calculated as the product of the volume of traffic using a link times the distance of the link.

Adjustment Factors for Travel Model Output

The VMT and speeds from the travel demand model were adjusted before being used in the calculation of regional emissions. The purpose of these adjustments was to reconcile the model output with travel estimates from other sources, such as the Highway Performance Monitoring System (HPMS) estimates of VMT. To perform this adjustment, factors were developed for the year of the HPMS or other estimates and applied to model output for other years.

The development of the VMT adjustment factors involved comparing the outputs of the travel demand model to the HPMS VMT estimates for 2000. Factors were developed to adjust the model output to account for variation between the model and HPMS within each of the counties. To do this, it was necessary to disaggregate the VMT from the 2000 model run by county and functional classification. The VMT estimates derived from the model were then compared to the HPMS VMT estimates for 2000 to develop adjustment factors to be applied to the model output for subsequent years. The adjustment factors for VMT were developed on a functional classification basis for each county.

The development of the speed adjustment factors involved a similar process. The outputs of the travel demand model were compared to estimates of speed based on: (1) the equations of the Highway Economic Reporting System (HERS) and (2) the use of data from the Automatic Continuous Traffic Recorders (ATRs) of the Kentucky Transportation Cabinet (KYTC) for 2001-2002.

The HERS equations were used to estimate speeds on 402 sections of urban roadways for five functional classifications. The speeds from these roadway sections were used to determine the average speed for each of five functional classes. The speeds used in the travel model were also averaged for each urban functional class. The speed adjustment factor for each urban functional class was calculated as the ratio of the average speed using the HERS equations to the average speed using the travel model data.

The KYTC ATR data was used to estimate speeds on 84 sections of rural roadways for four functional classifications. The speeds from these roadway sections were used to determine the average speed for each of four functional classes. The speeds used in the travel model were also averaged for each rural functional class. The speed adjustment factor for each rural functional

class was calculated as the ratio of the average speed using the ATR data to the average speed using the travel model data.

The procedures described above produced speed adjustment factors for all functional classes except rural minor collectors and rural and urban local roads and ramps. (Ramps are not officially a separate functional class, but the speed behavior of traffic on ramps is not expected to be like that of any other functional class. Therefore, the ramps were treated as a separate "functional class.") There was not sufficient data to estimate speeds for the roadways of these classes. For the rural minor collectors and rural and local roads, the speed adjustment factor of the next higher functional class was used. For ramps, the speeds in the travel model were used without adjustment (i.e. the speed adjustment factor for ramps = 1).

MOBILE 6.2 EMISSION FACTOR MODEL

In addition to the VMT, emission factors are the other component in calculating emissions. As previously mentioned, the Louisville region is a nonattainment area for the pollutant ozone and must therefore control the precursors of ozone, VOCs and NOx. The emission factors for VOCs and NOx were found using the MOBILE 6.2 emissions model. The Louisville Metro Air Pollution Control District (APCD) produced the emission factors and calculated the emissions for Clark and Floyd counties, IN and Jefferson County, KY. The emission factors and emission estimates for the maintenance and the new nonattainment portions of Bullitt and Oldham counties, KY were developed by the Kentucky Division for Air Quality (KYDAQ). The procedures used in calculating these emission estimates are discussed below.

The VMT generated in Clark, Floyd, and Jefferson counties comes from some vehicles presently subject to an inspection/maintenance (I/M) program and from some vehicles not subject to I/M. At the time of the consultation for *Horizon 2030*, the I/M program in Clark and Floyd counties was expected to be discontinued after 2006. Therefore, it was modeled in that way. Should this I/M program be continued, the effect should be to lower emissions for the years after 2006 and therefore increase the emission reductions relative to the budgets and/or 2002. The I/M program in Jefferson County was discontinued in 2003. The fuels which are used in Clark, Floyd, and Jefferson counties include reformulated gasoline (RFG) and reduced Reid vapor pressure gasoline (RVP). Unregulated gasoline is used in the new nonattainment areas of Bullitt and Oldham counties and the areas adjacent to the nonattainment area, and vehicles from these areas can be expected to travel in the Clark, Floyd, and Jefferson counties also. The emission factors for Clark, Floyd, and Jefferson counties used in the air quality analysis vary by county because they represent a VMT-weighted composite based on an estimate of travel in each county by vehicles from the various portions of the region. The assumptions used in developing the composites were consistent with those of the appropriate air quality agency for each of the counties. For Clark and Floyd counties, the assumptions of IDEM were used, and for Jefferson County, the assumptions of the APCD were used. These assumptions had been previously reviewed and accepted by the IAC partners.

The assumptions used in developing the emission factors for Clark, Floyd, and Jefferson counties were the same as those that were used in developing the updated VOC and NOx budgets (in 2003) with a few exceptions where newer data was incorporated during October, 2004 (the previous conformity determination). The changes made in October, 2004 which affected the VOC and NOx emissions were:

(1) the incorporation of the new vehicle registration data for Clark and Floyd counties,
(2) the development and use of new vehicle registration data for Jefferson County, and
(3) the use of arterial emission factors with VMT for rural local roads.

The first two of these changes were direct inputs to the MOBILE model. In addition, they were used with other available data to adjust the VMT mix input to the MOBILE model. As previously mentioned, the new vehicle registration for Clark and Floyd counties was made available to APCD from IDEM through KIPDA. The new vehicle registration data for Jefferson County was developed using information collected by the local I/M program (known as the Vehicle Emissions Testing or VET program) through January, 2003. This data was based primarily on 2002 data, which was the last full year the VET was in operation.

The third change did not affect the emission factors from the MOBILE model but rather their application. MOBILE recognizes four facility types of roadways—freeways, arterials, local roads, and ramps. The previous practice was to use local road emission factors for VMT for local roads. However, the emission factors for local roads were restricted to only one speed, which EPA has recently judged to be inappropriate for rural local roads. The recent EPA guidance has recommended that arterial emission factors for the appropriate speed or speed bin be used with local road VMT, and this recommendation was incorporated into the analysis.

The emission factors for Bullitt and Oldham counties were developed by KYDAQ. KYDAQ used the more traditional approach to developing emission factors. Most of the inputs to the MOBILE 6 model were defaults and/or data used in previous SIPs. Neither the maintenance nor the new nonattainment portions of Bullitt and Oldham counties has an I/M program. So it was not necessary to have I/M input information for MOBILE 6. However, reformulated gasoline (RFG) is required for the maintenance portions of Bullitt and Oldham counties while unregulated gasoline is used in the new nonattainment areas of the two counties. Input data was provided to the MOBILE 6 model to reflect this difference. KYDAQ received VMT and speed information by functional class from the Kentucky Transportation Cabinet (KYTC). Using the representative speed provided by KYTC, KYDAQ developed an emission factor for each functional classification for each portion of the counties.

As with the emission estimates and factors developed for Clark, Floyd, and Jefferson counties, the assumptions used for Bullitt and Oldham counties were the same as those for the 2003 budget updates with a few exceptions. The exceptions were that new VMT and speed estimates were used.

AIR QUALITY ANALYSIS PROCEDURES

The air quality analysis involved three steps. The first step was to review the projects to determine which projects were “regionally significant” and needed to be included in the regional emissions analysis. The second step was to develop estimates of travel behavior. The final step was to calculate the emissions associated with the travel. The second and third steps collectively are the Regional Emissions Analysis. Each of these steps is discussed below in greater detail.

Project Review

The first step involved determining which transportation plan projects were “regionally significant” and therefore to be included in the regional emissions analysis. During the development of

Horizon 2030, a group of projects have been proposed for the plan, reviewed by conformity partners, and incorporated into the plan.

As in prior plans, some of the projects in *Horizon 2030* have been excluded from the regional emissions analysis. Most of the projects which were excluded were exempt projects as defined in the Code of Federal Regulations in 40 CFR 93.126 and 40 CFR 93.127. In addition, a few projects were excluded from the regional emissions analysis due to a lack of sufficiently detailed information. They include:

1. TSM Projects

   Incident Management Program:
   This project involves providing the motorist with information concerning reduced capacity of the facility. At this time, the route for diversion is totally at the discretion of the motorist. Therefore, there is insufficient information to quantify the emission impacts using the travel demand model approach.

   Spot Improvements:
   This is a funding mechanism for undetermined intersection improvements which would have minimal air quality impacts. No projects with air quality impacts are currently proposing use of these funds.

2. TSM Corridors

   A group of corridors was identified for improvements utilizing TSM. At this point, sufficient detail is lacking for inclusion in the air quality conformity analysis.

3. Roadway Projects

   I-264 / Muhammad Ali Blvd./ River Park Dr. interchange:
   At this point, sufficient detail is lacking for inclusion of this project in the air quality conformity analysis.

These projects continue to be excluded from the regional emissions analysis.

Regional Emissions Analysis

As previously mentioned, the procedures in Bullitt and Oldham counties varied slightly from those used in Clark, Floyd, and Jefferson counties. In addition, there were two projects which could not be analyzed using the travel model. These were evaluated using spreadsheet methods. The procedures for each portion of the nonattainment area and for the other two projects follow.

The emission estimates for Clark and Floyd counties, IN and Jefferson County, KY were determined in the following manner. First, the KIPDA travel demand forecasting model was used to estimate travel behavior in the region. Second, the output from the travel model was adjusted using the adjustment factors discussed previously, and the adjusted VMT was placed in five miles per hour speed bins compatible with the MOBILE emission factor model. Third, the VMT

in each of the speed bins was multiplied by the appropriate MOBILE emission factor to determine the emission levels for VOCs and NOx.

The emission estimates for Bullitt and Oldham counties were developed by the KYDAQ in the following manner. KYTC utilized HPMS VMT estimates to forecast VMT by functional classification for the maintenance and new nonattainment portions of each county for each of the analysis years. As previously mentioned, KYDAQ developed an emission factor for each functional classification for each portion of the counties. For each functional class in each portion of the counties, the VMT estimate was multiplied by the appropriate emission factors to determine the emissions for that class and portion of the county. The emissions for the various functional classes were summed for each portion for each county. This was done because the results had to be separate to be used for the various conformity tests.

Two projects could not be included in the travel model. These two projects were the Louisville Traffic Signal Improvement Program (in Jefferson County) and TARC's new and restructured transit service (in Clark and Jefferson counties). Estimates of the emission reductions of these projects were developed using spreadsheet methodologies. The emission reductions from these projects are minor and were included in the calculation of the emissions for Clark and Jefferson counties, where appropriate.

The VOC and NOx emission values were summed to determine the emission totals for each pollutant for the appropriate geographic areas. The calculation of the VOC and NOx emission totals allowed for comparison with the emission budgets in the Indiana and Kentucky SIPs and comparison with the 2002 totals.

RESULTS OF THE ANALYSIS

The transportation plan, *Horizon 2030* has been examined to determine if it is in conformity with the SIPs of Indiana and Kentucky. The examination has been based on an air quality analysis to determine that:

(1) air pollutant emissions of the (former 1-hour) maintenance area did not exceed the budgets set in the SIPs,
(2) the 2009 emissions for the five-county area were less than 2002 emission levels, and
(3) the 2012, 2020, and 2030 emissions for the new nonattainment portions of Bullitt and Oldham counties were less than 2002 emission levels for the same area.

As previously mentioned, the other criterion for determining conformity would have been the progress in implementation of the Transportation Control Measures (TCMs) contained in the SIPs. However, since previous consultation had determined that there were no approved TCMs, that criterion did not affect the determination of conformity. The results of the regional emissions analysis are discussed below.

The regional emissions analysis was conducted to provide estimates of the levels of emissions of volatile organic compounds (VOCs) and oxides of Nitrogen (NOx) for the various scenarios. These emission levels were then compared to the budgets in the maintenance SIP and to each other to determine if the conformity tests agreed to during consultation were passed.

The results of the regional emissions analysis are summarized in Tables 5, 6, 7, and 8. Table 5 shows the vehicle-miles-traveled from the analysis. Table 6 shows that for 2012, 2020, and 2030, the VOC and NOx emission levels for the (former 1-hour) maintenance area are less than the emission budgets established in the maintenance SIP. Table 7 shows that the 2009 VOC and NOx emission levels for the 8-hour nonattainment area are less than those for 2002. Table 8 shows that for 2012, 2020, and 2030, the VOC and NOx emission levels for the new nonattainment areas of Bullitt and Oldham counties are less than those for 2002.

The regional emissions analysis of the projects in *Horizon 2030* indicates that the plan is consistent with the goals and emission budgets established in the State Implementation Plans of Indiana and Kentucky. The cumulative effect of the results shown in Tables 6, 7, and 8 indicates that *Horizon 2030* has met the requirements of conformity under the 8-hour ozone standard. In summary, it can be concluded that *Horizon 2030* conforms to the SIPs and meets the requirements of the federal conformity rule.

TABLE 5

DAILY VEHICLE MILES TRAVELED (VMT) ESTIMATED FOR THE 8-HOUR NONATTAINMENT AREA (in 1000's of vmt/day)			
YEAR	**INDIANA**	**KENTUCKY**	**TOTAL**
2002	6514	24007	30521
2009	7506	27228	34734
2012	7985	28541	36526
2020	9018	31911	40930
2030	10432	36630	47062

TABLE 6

DAILY EMISSIONS FOR THE (FORMER 1-HOUR) MAINTENANCE PORTION OF THE NONATTAINMENT AREA (kg/day)			
EMISSION LEVELS FOR VARIOUS YEARS			
YEAR	**VOCs**	**NOx**	**PASS**
2012	19385	34177	YES
2020	13414	15502	YES
2030	13393	13535	YES

NOTE: The criteria for conformity are as follows: Regional emission levels for VOCs must be below the maintenance plan emission budget of 47.28 tons/day or 42,890 kg/day. Regional emission levels for NOx must be below the maintenance plan emission budget of 111.13 tons/day or 100,810 kg/day.

TABLE 7

DAILY EMISSIONS ESTIMATED FOR THE 8-HOUR NONATTAINMENT AREA (kg/day)			
EMISSION LEVELS FOR VARIOUS YEARS			
YEAR	**VOCs**	**NOx**	**PASS**
2002	38658	89900	----------
2009	26377	53407	YES

NOTE: The criteria for conformity are as follows: The emission levels for 2009 must be no greater than those for 2002.

TABLE 8

DAILY EMISSIONS ESTIMATED FOR THE NEW NONATTAINMENT AREAS OF BULITT & OLDHAM COUNTIES			
EMISSION LEVELS FOR VARIOUS YEARS			
YEAR	**VOCs**	**NOx**	**PASS**
2002	3239	6051	----------
2012	2077	3583	YES
2020	1751	2195	YES
2030	1905	5204	YES

NOTE: The criteria for conformity are as follows: The emission levels for 2012, 2020, and 2030 must be no greater than those for 2002.

EXEMPT PROJECTS

KIPDA ID	Project Name	County
1389	1st St.	Oldham
1388	6th St.	Oldham
297	8th St.	Clark
303	10th St.	Clark
304	10th St.	Clark
523	15th St. East	Floyd
1386	28th St.	Jefferson
246	34th St.	Jefferson
247	41st St.	Jefferson
486	Access to Jobs	Regional
248	Aiken Rd.	Jefferson
1387	Algonquin Pkwy.	Jefferson
565	Allison Ln.	Clark
237	Alternative Fuel Project Implementation	Jefferson, Oldham, & Bullitt
487	Applegate Ln.	Clark
1320	Applegate Ln.	Jefferson
249	Arnoldtown Rd.	Jefferson
1309	Automatic Passenger Counters	Regional
1310	Automatic Vehicle Location (AVL)	Regional
380	Bashford Manor Ln.	Jefferson
252	Baxter Ave.	Jefferson
1353	Baxter Ave. Corridor Transportation Management & Enhancement Study	Jefferson
1275	Bear Camp Rd.	Jefferson
1113	Beargrass Creek Recreation Area Trail System	Jefferson
1196	Bernheim-Fort Knox Wildlife Corridor	Bullitt
965	Bethany Rd.	Clark
1186	Bicycle & Pedestrian Access Improvements Along Selected Corridors	Jefferson
371	Bicycle & Pedestrian Coordinator/Education & Promotion Program	Jefferson, Oldham, & Bullitt
1159	Bicycle Racks on Buses	Clark & Floyd
1378	Big Four Bicycle & Pedestrian Bridge	Jefferson
1117	Bike Racks & Pedestrian Access for the KY State Fairgrounds	Jefferson
1291	Biofuels Rebate Program for Kentucky Public Schools	Jefferson
1394	Blackiston Mill Rd.	Clark
489	Blackiston Mill Rd.	Clark & Floyd
262	Brentlinger Ln.	Jefferson
1326	Bridge Improvements	Jefferson
496	Bridge Inspection	Clark
221	Bridge Replacements	Jefferson
323	Bridge Replacements	Jefferson
263	Briscoe Ln.	Jefferson
499	Broadway	Clark
264	Brook St.	Jefferson
1391	Butchertown Greenway Extension & Safety Improvements	Jefferson

List continued on following page.

EXEMPT PROJECTS (continued)

KIPDA ID	Project Name	County
1285	Campus Connector Shuttle for University of Louisville	Jefferson
1384	Catalpa St.	Jefferson
1118	Charlestown Inner City Multi-Modal Facility	Clark
1160	Charlestown Inner City Multi-Modal Facility	Clark
559	Charlestown Rd.	Floyd
1207	Charlestown Rd.	Clark
1245	Charlestown Rd.	Floyd
65	Charlestown Rd.	Clark & Floyd
512	Charlestown-Memphis Rd.	Clark
988	Charlestown-New Market Rd.	Clark
213	Chenoweth Ln.	Jefferson
1054	Clarksville CSX Rail Trail	Clark
1111	Comprehensive Campus Improvements for Pedestrians & Bicyclists, Phase II	Jefferson
1112	Comprehensive Campus Improvements for Pedestrians & Bicyclists, Phase III	Jefferson
222	Cooper Chapel Rd. Phase 1	Jefferson
271	Cooper Chapel Rd. Phase 2	Jefferson
517	Cooper Ln.	Clark
549	CR 9	Floyd
550	CR 12	Floyd
542	CR 12	Floyd
527	CR 55	Floyd
1305	Crestwood Sidewalks	Oldham
308	Daisy Ln.	Floyd
1231	Davis Tavern - Wetherby House	Jefferson
94	Dutch Ln.	Clark
274	East Pages Ln.	Jefferson
1351	Eastern Blvd.	Clark
1366	Eastwood Village Neighborhood Transportation Study	Jefferson
1380	Echo Trail	Jefferson
525	Emery Crossing Rd.	Clark
277	English Station Rd.	Jefferson
188	English Station Rd.	Jefferson
1365	Fairdale Area Transportation Management Plan	Jefferson
281	Fairground Rd.	Jefferson
1195	Fairmount Rd.	Jefferson
283	Fairmount Rd.	Jefferson
1330	Ferndale Rd.	Jefferson
1323	Flat Rock Rd.	Jefferson
1315	Fleet Replacement & Expansion	Regional
1317	Floyd Co. Bicycle/Pedestrian Master Plan	Floyd
1318	Floyd Co. Hazard Elimination & Safety	Floyd
286	Floyd St.	Jefferson
1362	Frankfort Ave. Corridor Transportation Management Study	Jefferson

List continued on following page.

EXEMPT PROJECTS (continued)

KIPDA ID	Project Name	County
102	Grantline Rd. Pedway	Floyd
490	Greenville-Borden Rd.	Floyd
1382	Hale Ave.	Jefferson
4	Hamburg Pike	Clark
1297	Henryville-Blue Lick Rd.	Clark
1333	Highl&s-Douglass Neighborhood Transportation Plan	Jefferson
383	Hikes Ln.	Jefferson
485	Historic Concrete Arch Bridge #70	Floyd
981	HOV/High Occupancy Toll Interstate Study	Regional
384	Hubbards Ln.	Jefferson
1398	Hybrid Bus Upgrade	Regional
351	I- 64	Jefferson
989	I- 64	Floyd
582	I- 64	Jefferson
1162	I- 64	Jefferson
1243	I- 64	Floyd
181	I- 64 / Hurstbourne Pkwy.	Jefferson
1390	I- 65	Clark
1371	I- 65	Clark
1260	I- 65	Bullitt
1228	I- 65	Jefferson
1258	I- 65	Bullitt
29	I- 65	Clark
1101	I- 65	Clark
1259	I- 65	Bullitt
1261	I- 65	Bullitt
203	I- 65	Jefferson
1257	I- 65	Jefferson & Bullitt
1237	I- 65	Clark
395	I- 65	Jefferson
224	I- 65	Jefferson
391	I- 65 / 1st St. / Liberty St.	Jefferson
393	I- 65 / Liberty St. / Floyd St.	Jefferson
1019	I- 71	Oldham
1279	I- 71	Oldham
396	I- 71	Oldham
405	I-264	Jefferson
969	I-264	Jefferson
404	I-264	Jefferson
962	I-264 / Cliff Ave. Pedestrian Bridge	Jefferson
397	I-264 / I- 64	Jefferson
1375	I-264/I-64	Jefferson
1103	I-265	Floyd

List continued on following page.

EXEMPT PROJECTS (continued)

KIPDA ID	Project Name	County
409	I-265	Jefferson
353	I-265	Jefferson
197	I-265	Jefferson
354	I-265	Jefferson
179	I-265	Jefferson
1017	I-265	Jefferson
1251	I-265	Jefferson
1341	I-71 Improvement Plan - HOV HOT Addendum	Jefferson & Oldham
1397	Implementation of Walkable Community Workshops/Safe Routes to Schools	Jefferson, Oldham, & Bullitt
572	IN 60	Clark
1104	IN 60	Clark
1370	IN 60	Clark
1098	IN 60	Clark
574	IN 62	Floyd
312	IN 62	Clark
587	IN 62	Clark
1096	IN 62	Clark
1095	IN 62	Clark
1094	IN 62	Clark
1105	IN 62	Clark
1093	IN 62	Clark
1097	IN 62	Clark
1208	IN 64	Floyd
1343	IN 64	Floyd
59	IN 64	Floyd
79	IN 111	Floyd
986	IN 111 Sidewalks/Pedway	Floyd
1000	IN 160	Clark
1239	IN 160	Clark
319	IN 203	Clark
1242	IN 403	Clark
133	Interstate Traffic Management	Jefferson
315	Interstate Traffic Management	Clark & Floyd
973	Jeffersonville-Charlestown Pike	Clark
1329	Johnson School Rd.	Jefferson
225	Johnsontown Rd.	Jefferson
370	Kentuckiana Air Education	Clark & Floyd
369	Kentuckiana Air Education	Jefferson, Oldham, & Bullitt
231	Kentucky Center for African American Heritage	Jefferson
548	Koetter Ln.	Clark
362	KY 22	Jefferson
1304	KY 22	Oldham
413	KY 22	Jefferson & Oldham

List continued on following page.

EXEMPT PROJECTS (continued)

KIPDA ID	Project Name	County
493	KY 44	Bullitt
416	KY 44	Bullitt
417	KY 44	Bullitt
415	KY 44	Bullitt
141	KY 44	Bullitt
1114	KY 44 East	Bullitt
1252	KY 53	Oldham
1300	KY 53	Oldham
1290	KY 53 Access & Congestion Management	Oldham
1193	KY 61	Jefferson
425	KY 61	Jefferson
1319	KY 61 Sidewalks	Bullitt
427	KY 146	Oldham
956	KY 155	Jefferson
1399	KY 155	Jefferson
431	KY 245	Bullitt
430	KY 245	Bullitt
432	KY 329	Oldham
367	KY 393	Oldham
147	KY 393	Oldham
1303	KY 393	Oldham
949	KY 864	Jefferson
255	KY 864	Jefferson
357	KY 864	Jefferson
269	KY 864	Jefferson
954	KY 864	Jefferson
453	KY 1065	Jefferson
365	KY 1065	Jefferson
1172	KY 1065	Jefferson
256	KY 1065	Jefferson
454	KY 1142	Jefferson
344	KY 1450	Bullitt
379	KY 1526	Bullitt
1173	KY 1631	Jefferson
195	KY 1631	Jefferson
253	KY 1703	Jefferson
385	KY 1747	Jefferson
1347	KY 1747	Jefferson
177	KY 1793	Oldham
1302	KY 1818	Oldham
233	KY 1819	Jefferson
257	KY 1819	Jefferson
261	KY 1932	Jefferson

List continued on following page.

EXEMPT PROJECTS (continued)

KIPDA ID	Project Name	County
1277	KY 1934	Jefferson
1008	KY 1934	Jefferson
464	KY 2052	Jefferson
1396	KY 2053	Jefferson
448	KY 2053	Jefferson
445	KY 2845	Jefferson
961	KY 2845	Jefferson
1357	KY 61 Corridor Transportation Management & Enhancement Study	Jefferson
1358	KY 61 Corridor Transportation Management Enhancement Study	Jefferson
1232	LaGrange Historic Welcome Center	Oldham
1233	LaGrange Presbyterian Church	Oldham
1012	Lewis & Clark Bicentennial Plaza	Clark
1238	Lewis & Clark Pkwy.	Clark
1312	Long-Range Regional Transit Plan	Regional
373	Louisville Alternative Fuel Program/Fleet	Jefferson
228	Louisville City-Wide Traffic Signal System	Jefferson
1374	Louisville Medical Center Parking Facility	Jefferson
617	Louisville Metro Loop Trail	Jefferson
1335	Louisville Metro Urban Greenway	Jefferson
1225	Louisville Waterfront/Frankfort Ave. Historical Entryway	Jefferson
1328	Main St.	Clark
1230	Main St.	Jefferson
546	Market St.	Floyd
95	McDonald Ln.	Floyd
1331	McNair Rd.	Jefferson
545	Memphis-Blue Lick Rd.	Clark
1296	Memphis-Blue Lick Rd.	Clark
1189	MSD Dedicated CNG Fuel Vehicles	Jefferson
51	Mt. Tabor Rd.	Floyd
309	Mt. Tabor Rd.	Floyd
1377	Mt. Washington Rd./Cedar Creek Rd./Beulah Church Rd.	Jefferson
449	Mud Ln.	Jefferson
239	Multi Modal Transit Access Plan	Regional
1217	Next Bus Passenger Information Demonstration & Traffic Probe Research Project	Jefferson
471	Nia Center	Jefferson
450	Northwestern Pkwy.	Jefferson
451	Oak St.	Jefferson
1393	Ohio River Greenway	Clark
1109	Ohio River Levee Trail - Phase III	Jefferson
1272	Ohio River Levee Trail Phase IIb	Jefferson
1325	Old Heady Rd.	Jefferson
1255	Old LaGrange Rd.	Jefferson
1287	Oldham Co. Transit Demonstration Express Bus	Oldham

List continued on following page.

EXEMPT PROJECTS (continued)

KIPDA ID	Project Name	County
327	Oldham County Bicycle & Pedestrian Trail	Oldham
1273	Olmsted Pkwys. Multi-Use Path System	Jefferson
1314	Online Transit Trip Planning	Regional
1116	Paroquet Springs Dr. Sidewalks	Bullitt
1306	Passenger Information: Next Bus Arrival	Jefferson
1307	Passenger Information: Next Bus Arrival	Jefferson
970	Pedestrian Signal Information Plaques	Jefferson
1055	Pedestrian/Bicycle Coordinator	Floyd
298	Perrin Ln.	Clark
1185	Perry Crossing Rd.	Clark
1383	Poplar Level Rd.	Jefferson
1294	Portersville Iron Bridge	Clark
1332	Portl& Neighborhood Transportation Plan	Jefferson
971	Queen Ave.	Jefferson
1115	Raymond Rd.	Bullitt
462	Rehl Rd.	Jefferson
1211	River Rd.	Jefferson
1392	River Ridge Commerce Center	Clark
103	Riverwalk	Clark
1235	Rose Isl& Amusement Park	Clark
539	Salem-Nobel Rd.	Clark
1293	Section 5310 Specialized Transportation Capital Assistance	Jefferson, Oldham, & Bullitt
1321	Shaffer Ln.	Jefferson
463	Shelby St.	Jefferson
1090	Shepherdsville Trail	Bullitt
1056	Sidewalks/Pedway Construction	Floyd
1334	South Broadway Transportation Management & Enhancement Plan	Jefferson
1210	Specialized Transportation Capital Assistance	Clark & Floyd
538	Spring St.	Floyd
1194	St. &rews Church Rd.	Jefferson
964	St. John Rd.	Clark
585	TARC Capital Improvement Program	Jefferson, Oldham, & Bullitt
1227	TARC Maintenance Annex	Jefferson
1373	TARC Trolley Purchase	Jefferson
1400	Terminal Storage/Distribution Infrastructure for Biodiesel	Jefferson
56	Ticket To Ride	Clark & Floyd
162	Ticket To Ride	Jefferson, Oldham, & Bullitt
1313	Transit Access Pedestrian & Bicycle Improvements	Jefferson
1250	Transit Bus Replacement	Regional
1311	Transit Farebox Upgrade	Regional
1316	Transit Level of Service Analysis	Regional
1301	Transit Signal Priority	Jefferson
1308	Transit Vehicles as Traffic Probes	Regional

List continued on following page.

EXEMPT PROJECTS (continued)

KIPDA ID	Project Name	County
1248	Trevilian Way	Jefferson
472	Tucker Station Rd.	Jefferson
1368	Tyler Neighborhood Transportation Management Plan	Jefferson
1187	Ultra-Low Diesel Fuel for Bus Fleet	Jefferson, Oldham, & Bullitt
1154	Upper Hunters Trace	Jefferson
473	Urton Ln.	Jefferson
1099	US 31	Clark
581	US 31	Jefferson
251	US 31E	Jefferson
1356	US 31E Corridor Transportation & Enhancement Study	Jefferson
1354	US 31E Corridor Transportation Management Study	Jefferson
1355	US 31E Corridor Transportation Management Study	Jefferson
244	US 31W	Jefferson
273	US 31W	Jefferson
1360	US 31W Corridor Transportation Management & Enhancement Corridor	Jefferson
1361	US 31W Corridor Transportation Management Enhancement Study	Jefferson
1359	US 31W Transportation Management & Enhancement Study	Jefferson
1271	US 42	Jefferson & Oldham
477	US 42	Oldham
230	US 42	Jefferson
478	US 42	Oldham
948	US 60	Jefferson
1395	US 60	Jefferson
1276	US 60	Jefferson
1155	US 60	Jefferson
287	US 60	Jefferson
953	US 60	Jefferson
1364	US 60 Corridor Transportation Management Study	Jefferson
1352	US 60 Corridor Transportation Management Study	Jefferson
1363	US 60 Corridor Transportation Management Study	Jefferson
275	US 60A	Jefferson
1254	US 60A	Jefferson
1369	US 150	Floyd
586	US 150	Floyd
1163	US Marine Hospital	Jefferson
1295	Utica Pike Clark Co. Bridge No. 3	Clark
536	Utica-Sellersburg Rd.	Clark
174	Various	Jefferson, Oldham, & Bullitt
173	Various	Jefferson, Oldham, & Bullitt
175	Various	Jefferson, Oldham, & Bullitt
992	Various	Clark & Floyd
1229	Various	Jefferson, Oldham, & Bullitt

List continued on following page.

EXEMPT PROJECTS (continued)

KIPDA ID	Project Name	County
1270	Various	Jefferson, Oldham, & Bullitt
172	Various	Jefferson, Oldham, & Bullitt
329	Various Bicycle & Pedestrian Facilities Metro Wide	Jefferson
1379	Vehicle Lending Library	Jefferson
1327	Water St.	Clark
1324	Watterson Tr. South	Jefferson
1121	Wheels & Heels Trail	Clark
1367	Wolf Pen Branch Neighborhood Transportation Improvement Study	Jefferson
1256	Wood Rd.	Jefferson
1385	Woodland Ave.	Jefferson