

MEETING MINUTES

Technical Committee Meeting

Tuesday, August 2, 2011

1:30 p.m.

Room 113, County/City Building

Members Present: Greg MacLean, Public Works/Utilities; Roger Figard, Randy Hoskins, Public Works/Utilities/RTSD; Marvin Krout, David Cary, Planning; Don Thomas, Doug Pillard, County Engineering; Brian Praeuner, StarTran; Rick Thorson, Health Department; Mike Owen, Tom Goodbarn, Nebraska Department of Roads; Barb Fraser, Pedestrian & Bicycle Advisory Committee.

Others Present: Jesse Poore, Kaine McClelland, Nebraska Department of Roads; Chris Schroeder, Gary Bergstrom, Health Department; Virendra Singh, Public Works/Utilities; Mike Brienzo, Michele Abendroth, Planning.

The meeting was called to order at 1:33 p.m. The Nebraska Open Meetings Act was acknowledged.

1. Review and action on the draft minutes of the June 16, 2011 Technical Committee meetings

Figard moved approval of the June 16, 2011 Technical Committee meeting minutes, seconded by Pillard. The motion carried unanimously.

2. Technical Committee discussion on the draft Lincoln-Lancaster 2040 Long Range Transportation Plan and on recommendations to be forwarded to the Lincoln/Lancaster Planning Commission

Brienzo stated the Technical Committee is asked to comment on the draft 2040 Long Range Transportation Plan. These comments will be forwarded to the Planning Commission for their consideration. Planning Commission public hearings will take place on August 17, August 24 and September 7 with final action taking place on September 7. The next Technical Committee meeting is scheduled on September 15. The City Council and County Board will review the Plan in October, and the MPO Officials Committee is scheduled to review and vote on the Plan at its December 1 meeting. There are two opportunities for the Technical Committee to meet prior to December 1 if needed. The Plan must be adopted prior to the end of the year.

Brienzo then distributed the comments received on the L RTP from the Federal Transit Administration. In response to question #1 regarding a future main transit facility, Praeuner stated that there is not a need for a main transit facility; however, with changing technology and bus sizes, a larger facility to house the buses may be needed. Cary noted that there is a need for a transit development study in the future. We don't foresee in the next five years a need for a transit facility. In response to question #2 regarding mixed use centers, Cary noted that an explanation of the concept for mixed use centers will be provided to FTA. In response to question #3 regarding the \$13 million needed for transit, Praeuner stated that staff will provide the breakdown costs for each item to FTA. (FTA comments attached)

Brienzo stated that the County requested a change in wording on page 43 to state that projects become "eligible" for paving when the road experiences traffic levels of 300 trips per day.

Brienzo stated that the Health Department worked with LSA on an air quality report (attached). Bergstrom is the Air Quality modeler for the Lincoln-Lancaster Health Department explained that the MOVES model used in this analysis is the EPA's state-of-the-art tool for estimating emissions from highway vehicles. This model or simulator provides reliable measures of mobile source emissions pollution spread by car, trucks and other vehicles by applying the output emissions rates set by EPA to

link-level VMT from the MPOs travel demand model. Criteria air pollutants MOVES forecasts includes current and future year emissions for volatile organic compounds (VOC), Nitrogen Oxides (NOx), Carbon Monoxide (CO), Particulate Matter (PM 2.5), and Greenhouse Gases – Carbon Dioxide Equivalent (CO₂).

This model computes emission totals based on future projections for vehicle miles traveled and improvements in vehicle efficiency. He reviewed the emission rates for the pollutants from projections years including 2009, 2025 and 2040. We see a decrease in emission rates for these mobile source pollutants. This is primarily due to improvements in vehicle efficiency and more efficient travel speeds. The daily emission totals also decrease during the same time period. The one emission that does not decrease is CO₂. The forecast is that Lincoln's air quality will continue to improve at least to 2025 and possibly 2040 for all emissions except greenhouse gases.

Cary noted that the air quality report will become a part of the LRTP Technical Report.

Brienzo asked the State to review their comments with the Committee. Owen stated that on page 36, they would like the illustrative projects to be identified. He also requested the table on page 49 identify the Build Nebraska Act as LB 84. On page 88 of the Technical Report, the projects that are illustrative should be moved to the bottom and identified as illustrative. He noted that all in all, it is an excellent report and is easy to read.

Next, Brienzo reviewed the comments from the Federal Highway Administration. Most of the changes we received from Luther focus on clarification in process and methods used to complete the plan. He did not question any of the underlying assumptions in the planning process. He did request that all the tables and figures be identified by figure or page number for easier reference. He also would like to see documentation of the selection criteria for projects. He also wanted to see how we spend STP funds in the planning area and more discussion on how the projects are planned and staged. Since there is a direct relationship between land use and the plan, he would like a little more discussion on the affect this has on the needs based plan. He asked for more discussion on the Congestion Management Process and the criteria used for project selection. He also wanted to know if any freight bottlenecks have been identified. Some of the revenues listed on page 49 could use more clarification. On page 57, he noted that the ITS costs as well as others did not appear to be inflated. A somewhat major change is for us is to list the state projects along with city projects in a single list of projects on pages 62 and 63.

It was noted that staff will follow-up with Luther and FTA on these changes and regarding whether clarification needs to be put in the LRTP or Technical Report.

Figard asked how long we have to make changes. Brienzo stated that we would like to get the minor revisions to the Planning Commission by August 17 and major revisions to the Planning Commission by August 24.

Cary stated that the budget may have additional dollars available. Staff is monitoring the city budget process. The general assumption is that the general funding principles will not change, but projects would get done faster. In regard to the Technical Report, Luther requested more information on the Environmental Justice strategies.

Brienzo noted that staff will compile the recommended changes into a single document for the final Planning Commission review and recommendation.

3. Other topics for discussion

There being no further business, the meeting was adjourned at 2:39 p.m.

*** Please note that these minutes will not be formally approved until the next meeting of the Metropolitan Planning Organization Technical Committee. ***

Lincoln MPO draft Long Range Transportation Plan Comments

Federal Transit Administration – Region VII

The only additional comment to those that have already been provided by Justin is on page 31 of the Draft LRTP under Transit Needs.

Q & A

1. StarTran did not identify a need for a future main transit facility. Please confirm with the transit agency if this is correct and that they do not have a need for a new main facility. I don't know if the 2007 TDP identified it as a need. It must be identified in the LRTP as a possible project if they plan on using federal funds in the future.

Our definition of a "main transit facility" is basically the garage and administrative offices. Currently there is not a need for a new main transit facility. If StarTran were to relocate from the current location it would be based on two factors: 1) an increase in fleet size that would require more storage space than the current location could not accommodate and 2) new technologies in buses that are larger and require different fueling technology that cannot be accommodated by current location.

2. There were smaller facilities such as the Mixed Use Centers and Park and Ride stations identified. What are Mixed Use Centers?

Mixed Use Centers are locations identified in the new Lincoln-Lancaster County 2040 Comprehensive Plan land use element that have the potential to include residential units at multi-family densities. These areas are identified in the land use primarily at existing commercial areas and areas expected to redevelop over time. Such densities will make the provision of transit service to these areas more efficient and more likely over time as such redevelopment occurs.

3. It stated that transit would need at least \$13 million annually to complete all of the needs identified. Is there a breakdown in costs for each item and I'm assuming that the \$13 million is only for capital? The Technical Report stated on page 82 that it may increase to \$19 million due to increase in service.

The \$13 million is assumed for both capital and operating.

Lincoln MPO Long Range Transportation Plan Air Quality Analysis

An Air Quality Analysis for the Lincoln MPO Long Range Transportation Plan (LRTP) was performed using the regional travel model along with the **Motor Vehicle Emission Simulator** (MOVES) published by the United States Environmental Protection Agency (EPA). This analysis was based on MOVES2010a, the most current version released by EPA in August 2010.

MOVES is EPA's state-of-the-art tool for estimating emissions from highway vehicles. MOVES accounts for emissions under new car and light truck energy and greenhouse gas standards. This simulator provides reliable measures of mobile source emissions pollution spread by car, trucks and other vehicles by applying the output emissions rate from MOVES to link-level VMT from the MPOs travel demand model. Criteria air pollutants MOVES forecasts includes current and future year emissions for volatile organic compounds (VOC), Nitrogen Oxides (NO_x), Carbon Monoxide (CO), Particulate Matter (PM 2.5), and Greenhouse Gases – Carbon Dioxide Equivalent (CO₂).

The MPO worked with the Lincoln-Lancaster Health Department and LSA, Inc. to transition to the MOVES air quality postprocessor. This allows data from the MPO's TransCAD traffic model to apply MOVES as an emissions rate model for the metropolitan planning area. In this process, the MPO applies local inputs on vehicle activity, vehicle mix, and emissions factors where applicable and makes use of the standardized national inputs provided by the EPA with the MOVES model.

MOVES Emissions Forecasts

The MOVES model can simulate many different types of vehicle emissions. To better understand the impacts of technology, growth, and transportation planning on air quality, results for the following pollutants are summarized:

- **Ozone Precursors:** Ozone precursors, such as volatile organic compounds (VOCs) and nitrogen oxides (NO_x), combine in the atmosphere to form ground level ozone (O₃). High levels of ozone can cause difficulty breathing and irritate lungs. Ozone is particularly harmful to children and people with asthma¹. Ozone is most problematic in the summer.
- **Carbon Monoxide:** Carbon monoxide (CO) is a colorless, odorless gas that can reduce oxygen delivery to the body's organs and tissues². Carbon monoxide tends to be most problematic during winter months.
- **Particulate Matter:** Particulate matter consists of fine particles of solids or liquid droplets that can get deep into the lungs and cause serious health problems, such as difficulty breathing, development of chronic bronchitis, and an irregular heartbeat³. Particulate matter is separated into small (10 micron and smaller) and very small (2.5 micron and smaller) categories. Particulate matter tends to be most problematic in winter months when sand and gravel treatments are present on roadways.

¹ Ground Level Ozone (EPA) <http://www.epa.gov/glo/health.html>

² Carbon Monoxide (EPA) <http://www.epa.gov/airquality/carbonmonoxide/>

³ Particulate Matter (EPA) <http://www.epa.gov/pm/health.html>

- **Greenhouse Gases:** The MOVES simulator can quantify levels of greenhouse gas emissions generated by on-road vehicles. While unlike the pollutants described above, some greenhouse gas emissions do not pose immediate localized health threats. Instead, greenhouse gasses are suspected contributors to global climate change. Greenhouse gasses include carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄), and others. To simplify analysis of greenhouse gas emissions, total emissions can be measured in units of an equivalent amount of CO₂ that represents impacts of all greenhouse gas emissions.

MOVES Inputs

MOVES uses information about Lancaster County such as temperature, humidity, and altitude. MOVES also uses data provided by the State of Nebraska regarding the type and age of vehicles owned by residents of Lancaster County. This information is used for forecasting future year emissions based on the same distribution of age and vehicle type as current year. As an example, if 3% of all current year vehicles are one year old and they are passenger vehicles, the same 3% of all vehicles in 2025 or 2040 would be one year old passenger cars.

Input to MOVES also includes data from the traffic model, such as vehicle miles of travel (VMT), travel speeds for freeways, urban arterials, and rural roads.

This information is used along with travel model results to simulate emissions of various types of pollutants today and in the future.

Emission Rates

The City of Lincoln and Lancaster County passenger vehicle emission curves for existing conditions (2009), 2025 conditions, and 2040 conditions are presented in Figure 1. Similar curves are developed by MOVES for all vehicle classifications.

Improvements in technology have the greatest impact on expected future emissions. As older vehicles wear out and are replaced with newer, cleaner burning vehicles, significant reductions in emissions are to be expected. The MOVES simulator reflects replacement of older vehicles using the technology available today and also includes assumptions about future improvements in technology. These assumed improvements in technology result in lower rates of emissions per VMT over time.

Emission rates can also be reduced by reducing the amount of congestion in which vehicles travel. Stop and go driving, resulting in slower overall average vehicle speeds, produces more emissions than driving in uncongested conditions. This pattern continues until vehicles reach high speeds (about 70 MPH). After this point, emission rates begin to rise due to lower operating efficiency.

The resulting emission rates for all vehicle types and travel speeds are presented in Table 1. These figures also demonstrate the reduction in emission factors over time due to improvements in technology.

Figure 1: Emission Rates for Passenger Vehicles

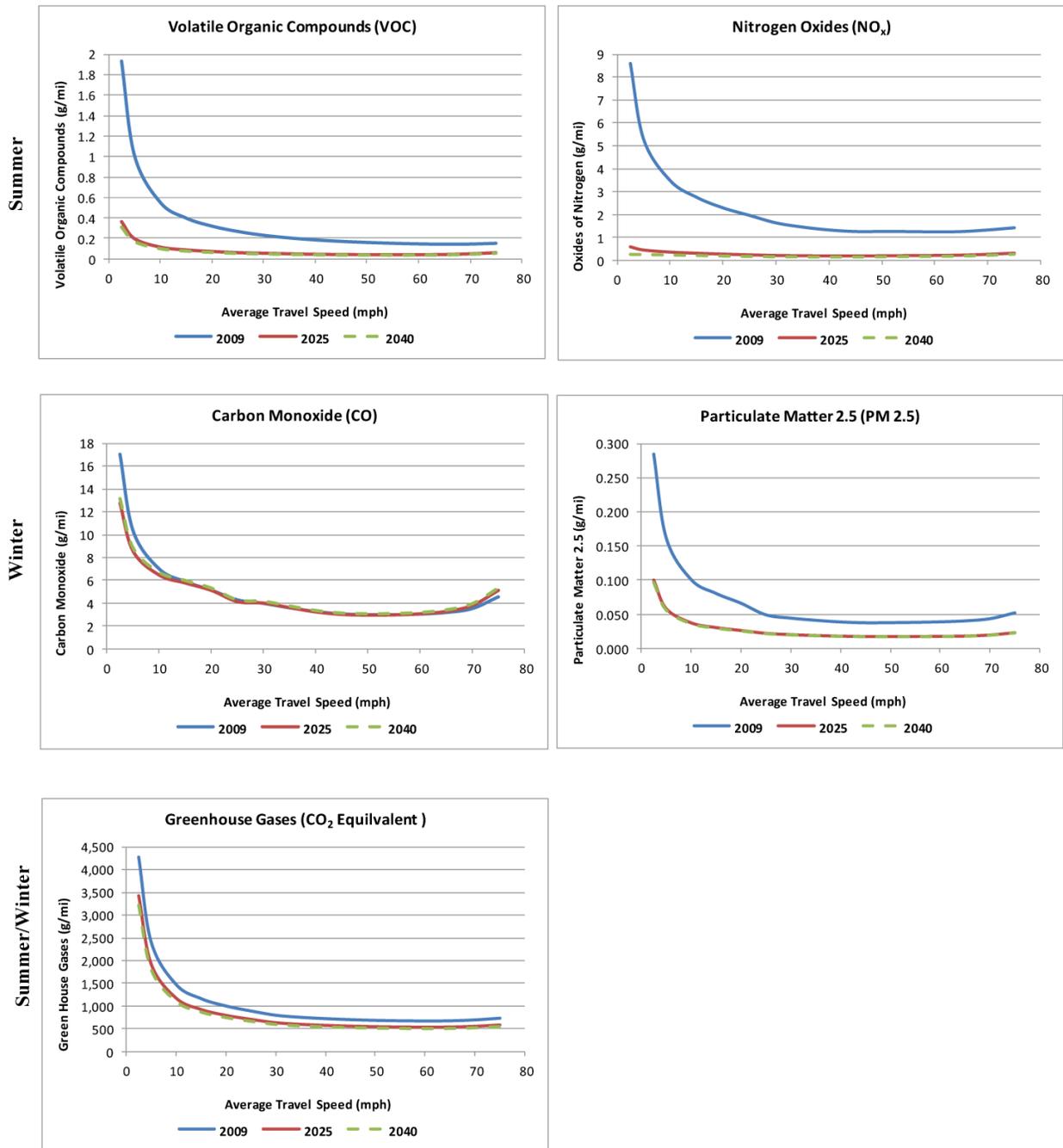


Table 1: Emission Rates

Emission Type	2009	2025	2040
VOC (grams/VMT) – Summer	0.81	0.23	0.14
NO _x (grams/VMT) – Summer	1.44	0.35	0.28
CO (grams/VMT) – Winter	11.8	7.0	5.9
PM 2.5 (grams/VMT) – Winter	0.058	0.023	0.020
Greenhouse Gases / CO ₂ Equivalent (grams/VMT) – Summer / Winter	505	424	408

As presented, the future year emissions for the City of Lincoln and Lancaster County for an average of vehicle types and travel speeds will result in lower emissions per VMT. The data suggests that improved vehicle efficiency and more efficient travel speeds has a greater impact on reducing emissions of VOC, NO_x, CO, and PM_{2.5}, which are reduced by about 50-80%, than on CO₂ emissions, which are reduced by about 20%.

Total Emissions

Total City of Lincoln and Lancaster County emissions by type for 2009, 2025, and 2040 are presented in Table 2 and Figure 2. Also included in this table are forecast VMT for comparison. As can be seen, VMT will increase by approximately 30% by 2025 and by 60% by 2040.

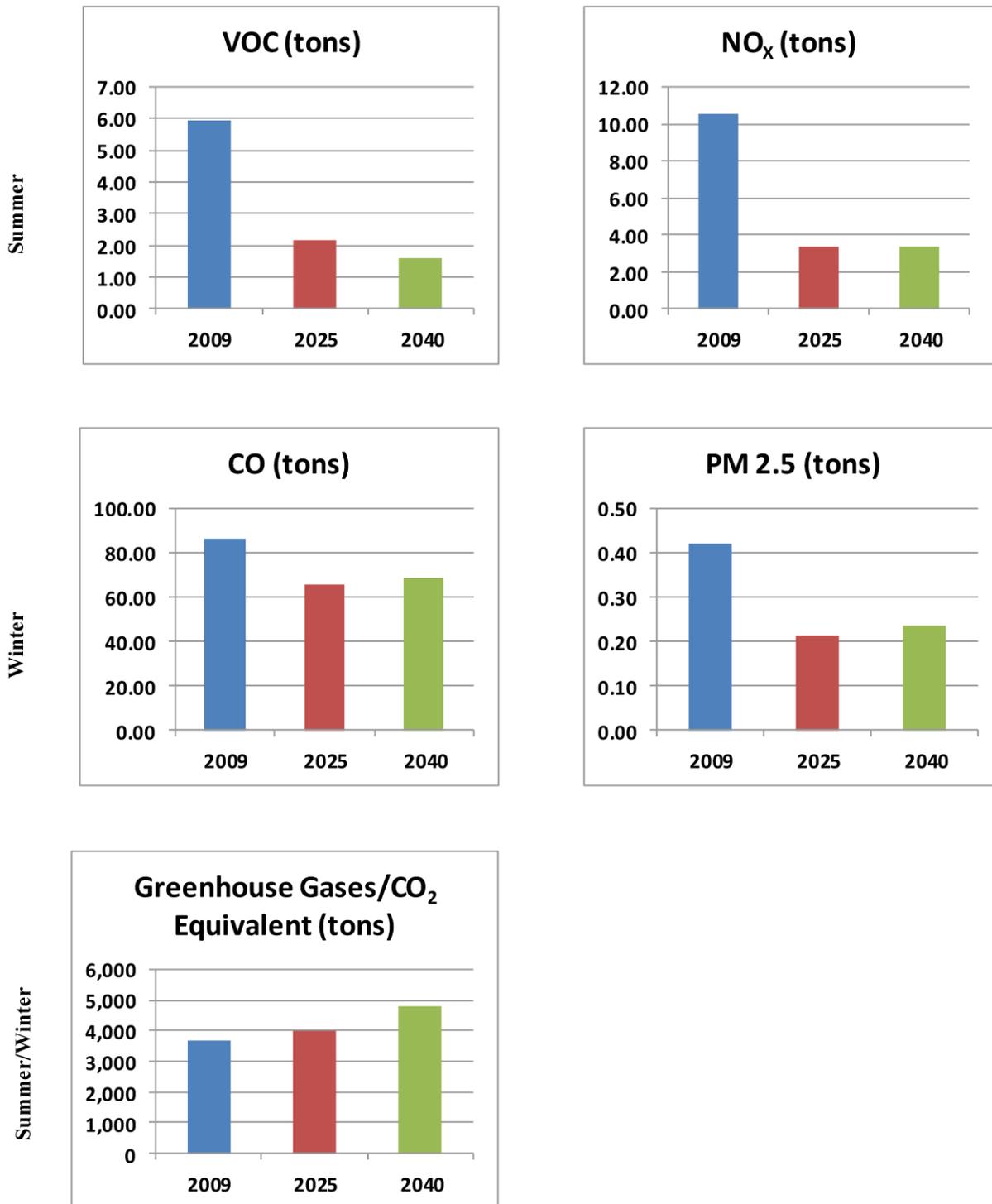
Table 2: Daily Emission Totals

Emission Type	2009	2025	2040
VMT (Thousand VMT)	6,623	8,587	10,610
Volatile Organic Compounds (Tons VOC) – Summer	5.9	2.2	1.6
Nitrogen Oxides (Tons NO _x) – Summer	10.5	3.3	3.3
Carbon Monoxide (Tons CO) – Winter	86.1	65.8	68.9
Particulate Matter (Tons PM 2.5) – Winter	0.42	0.21	0.23
Greenhouse Gasses (Tons CO ₂ Equivalent) – Summer / Winter	3,687	4,012	4,771

As presented, the summer emissions of VOC and NO_x will drop between today and 2025 and continue to drop to 2040, even with a 60% increase in VMT. The winter emissions of NO_x and CO will similarly see a drop between today and 2025, but remain relatively flat between 2025 and 2040 as the increase in VMT will out-pace current projected reductions in vehicle emissions.

The one forecast area of impact is greenhouse gases. Greenhouse gases trap heat in the atmosphere and are suspected contributors to global climate change. Unlike the other emissions that impact the local region, greenhouse gases impact the world, regardless whether they were produced in Lincoln, Nebraska or any other place in the world.

Figure 2: Total Emissions



Conclusions

Based on traffic forecasts of the Lincoln/Lancaster Comprehensive Land Use and Transportation Plan, coupled with air quality forecasts from MOVES, air quality will continue to improve due to vehicle emission and fuel technologies for most emission types, even with increased VMT. This technology has resulted in significant improvements in air quality over the past few decades and will continue to provide reductions in VMT emission with current vehicle fuel efficiency and emission mandates scheduled for the future. The question that is asked, will these VMT emission reductions continue to outpace growth in VMT? Based on the MOVES analysis, the answer is yes. Future air quality is forecasted to continue to improve at least to 2025 and possibly 2040 for all emissions except greenhouse gases.

Because greenhouse gases (CO₂) is a natural product of the burning process of fossil fuels, the long-term solution is through further improvements in gas mileage and reductions in VMT. The proposed City of Lincoln and Lancaster County Comprehensive and Long Range Transportation Plan does include elements to help reduce the growth in VMT through promoting more walkable, mixed-use activity centers and providing alternative transportation choices.