Freight and the Environment in Kansas City

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Prepared by:
TranSystems

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Overview

The Kansas City Regional Freight Outlook (RFO) was prepared to sustain existing momentum and further expand the region’s presence in transportation and logistics. The overall vision for the Kansas City RFO is to positively impact and accommodate the growth of freight transportation and logistics in the 18-county study area.

The Mid-America Regional Council and Kansas City SmartPort initiated the Kansas City Regional Freight Outlook. The Kansas City RFO was developed in collaboration with the Kansas and Missouri Departments ofTransportations.

The overall study included a series of deliverables focused on identifying freight infrastructure needs and assessing Kansas City’s regional transportation advantages, resulting in targeted strategies and messages for the region. The following list details each of the study deliverables:

- **Freight Directory**: Inventory of the region’s 40 freight zones including modes, volumes, existing industries and presence of foreign trade zones
- **Business Survey**: Summary of 427 survey responses of businesses on freight topics important to the region
- **Focus Group Summary**: Major findings from five focus groups conducted with the general public, business and elected officials
- **Freight Infrastructure Investment Plan**: Focuses upon transportation infrastructure by freight mode and provides a set of transportation priorities for the region.
- **Regional Freight Assessment**: A comparative assessment of Kansas City against other cities in the U.S. in terms of freight activities and site selection characteristics.
- **Freight Flow Analysis**: A summary of the volume and value of freight flows in, out and through Kansas City by truck, rail, air and barge.
- **Freight and the Environment in Kansas City**: A brief white paper on environmental topics related to freight and the region.

Using the data and research from each element, a series of findings are outlined that help inform the Strategic Plan development. This Strategic Plan draws on the data and research completed as part of the overall Kansas City RFO elements related to infrastructure, freight flows and economics to create objectives, strategies, and tactics that support the regional vision. The freight Strategic Plan was created to help the region remain a vital national freight transportation hub attracting freight growth.

Finally, the Kansas City RFO Summary is a culmination of all the work completed on each individual element. The summary provides an overview of the study effort, information on infrastructure and freight flows, as well as, a summary of the surveys and comparative cities analysis. Key recommendations and critical actions are provided to narrow the focus on the near term and help to initiate and maintain the regional vision to positively impact and accommodate the growth of freight transportation and logistics in the 18-county study area.
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Introduction
In terms of Greenhouse Gas (GHG) emissions, transportation is the second largest national contributor with passenger vehicles accounting for nearly two-thirds and trucks accounting for one-fifth of all transportation emissions. With the projected growth in freight transportation in the Kansas City region, it is important for the region to understand the contribution to climate change from freight transportation.

The American Association of State and Highway Transportation Officials’ Primer on Transportation and Climate Change, April 2008, reports that climate change may have serious implications for transportation. Temperature increases can compromise pavement integrity and deform rail lines. These same temperature increases could change frost patterns forcing infrastructure redesign for roads, railroads, river ports and airports. More frequent and heavier rain events, and the potential increase in hurricanes, could increase flooding and require redesign and replacement of drainage structures and bridges. Each of these climate change implications could mean serious delays or rerouting for freight shipments if strategies are not put in place to account for these changes.

This white paper provides an overview of national and regional environmental impacts and potential programs to address future environmental concerns. The information is provided to start a dialogue within the region regarding best practices for freight transportation and how they can be and if they should be implemented in Kansas City.

National Level Existing Conditions
The Environmental Protection Agency (EPA) documents emissions by the following economic sectors: residential, commercial, industry, transportation, electricity generation, and agriculture, as well as U.S. territories. Transportation activities accounted for the second largest portion (28 percent) just after emissions from electricity generation (33 percent) of U.S. greenhouse gas emissions in 2005. Emissions from industry accounted for 19 percent of U.S. greenhouse gas emissions in 2005. Unfortunately, while emissions from industry have declined over the past decade the same cannot be said for the transportation sector, the second highest emissions category.1

Exhibit 1. GHG Emissions Allocated to Economic Sectors, 2005

Source: Environmental Protection Agency.

Furthermore, when emissions from electricity are distributed among these same sectors, industry accounts for the largest share of U.S. GHG emissions (28 percent), followed closely by emissions from transportation activities, which also account for 28 percent of total emissions. In all sectors except agriculture, carbon dioxide accounts for more than 80 percent of GHG emissions, primarily from the combustion of fossil fuels.2

In 2003, about 81 percent of transportation GHG emissions in the United States came from “on-road” vehicles, with passenger vehicles (e.g., automobiles, SUVs, motorcycles) accounting for 62 percent of total transportation emissions. Heavy-duty vehicles, which include trucks and buses, were responsible for 19 percent of total transportation emissions. Other non-road sources include boats and ships (3 percent), rail (2 percent), and pipelines (2 percent). Aircraft accounted for 9% of all transportation emissions.3

Exhibit 2. Transportation GHG Emissions by Source, 2003

According to EPA’s SmartWay program, rail and truck transport emit over 350 million metric tons of carbon dioxide per year. That means that rail and truck transport consume 35 billion gallons of diesel fuel every year. If that trend continues, in the next five years ground freight transportation could potentially use over 45 billion gallons of diesel fuel and emit over 450 million metric tons of carbon dioxide; an increase of 25 percent over today’s levels.4

Regional Level Existing Conditions

The Kansas City metropolitan area measures ground-level ozone at eight locations between April 1 and October 31 each year. The EPA has set a nationwide goal of 84 parts per billion (ppb) during an eight-hour period for a community to maintain positive air quality or “attainment” status. However, in 2011 the goal will be 75 ppb and the current intent is to achieve this value ahead of mandates. Based on EPA standards, four sites in the Kansas City region have three-year average readings above the nationwide thresholds (see Exhibit 3).

Since the ozone readings in the region exceed the designated threshold, there is potential for the region to move into “non-attainment” status. If the EPA designates the region as non-attainment, a new regulatory plan to reduce emissions in Kansas City would be required. If the EPA is confident Kansas City will return to compliance levels in the short term, the region could retain its attainment status.

New regulations that could result from designation as non-attainment may mean significant costs for area businesses. It has also been reported that non-attainment areas often have trouble recruiting new businesses because of the additional costs that are incurred to operate under more stringent air quality standards.5

In addition to regional-level air quality monitoring, the City of Kansas City, Missouri has prepared their own climate protection plan including GHG emissions modeling. According to Kansas City’s Climate Protection Plan, July 2008, transportation represents the largest contributor to GHG emissions community wide (37%).

Exhibit 4. City of Kansas City, Missouri Recent Changes and Predictions of Community-Wide Annual Greenhouse Gas Emissions (in Equivalent Carbon Dioxide Metric Tons)

Source: City of Kansas City, Missouri Climate Protection Plan

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The plan predicts that by the year 2020, if actions are not taken in the city, GHG emissions will increase by 14%. The biggest increases in emissions are projected to be in transportation and residential energy consumption.

**Freight Sustainability Programs**

**National**

As of 2008, the United States has not specifically adopted Greenhouse Gas Emission reduction goals. However, because 28 percent of Greenhouse Emissions stem from transportation activities, it is important to consider policies that would address this impact and focus on reducing GHG emissions from transportation sources. In terms of National legislation, the proposed Cap and Trade policy is reported to be one of the better solutions. Under this doctrine, allowances for emissions would be allocated by the government and the price for emissions would increase to the point where a given industry would reduce emissions directly or purchase allowances from others. The idea of a carbon tax could also have a similar outcome.\(^6\)

Specific to the freight sector, the EPA has developed the SmartWay Transport program which is a voluntary and collaborative effort to improve energy efficiency, reduce greenhouse gas and air pollutant emissions, and improve energy security. Companies can benefit by participating in SmartWay Transport programs by saving money, reducing fuel consumption, and being recognized for their social responsibility and sustainability practices.

Ultimately, SmartWay Transport’s goal is not only to reduce how freight transport impacts the environment, but also to allow industry to experience rewards from doing so. The goal is to reduce fuel consumption of truck and rail freight and in turn, reduce the operating costs that are associated with freight delivery. The result could be a reduction in carbon dioxide levels as well as Nitrogen Oxide, particulate matter (PM) and other air toxics.\(^7\) According to the SmartWay Plan, this could potentially save up to 6.6 billion gallons of diesel fuel per year allowing industry partners to save what could translate to $10 billion in operating costs every year. Therefore, not only will this benefit the environment, but it will benefit the bottom line in operating costs for the freight sector.

Nationally, the importance of reducing the impact of freight on the environment is an important initiative to explore, but in order to truly be effective, states and regions must encourage environmental stewardship. Typically, through grants and loans, funding can be provided to help ease the economic pressure of working toward environmental stewardship. Below is a summary of programs from other states.

**California**

California has a program, the Carl Moyer Program, which offers grants to private companies and the public for voluntarily reducing emissions created by heavy-duty engines. Projects that are eligible include emission reduction retrofits, idle reduction retrofits, engine replacements and purchases of newer, cleaner vehicles.\(^8\)

**Minnesota**

Minnesota has a program that provides small business loans to companies seeking to purchase SmartWay’s Upgrade Kits which include idle technologies, emission control devices, trailer aerodynamics and single wide-base tires.\(^9\)

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\(^6\) **Primer on Transportation and Climate Change.** American Association of State and Highway Transportation Officials. April 2008.

\(^7\) SmartWay, U.S. Environmental Protection Agency available at: http://www.epa.gov/smartway/

\(^8\) California Air Resources Board, Carl Moyer Memorial Air Quality Standards Attainment Program, http://www.arb.ca.gov/msprog/moyer/moyer.htm

\(^9\) SmartWay Funding Options available at http://www.epa.gov/smartway/transport/what-smartway/financing-fundingoptions.htm
Oregon
Oregon has a program that focuses on retrofitting engines with diesel emission controls. “The tax credit is a dollar-for-dollar credit used to reduce a taxpayer’s Oregon tax liability by 50 percent of the certified eligible cost of retrofitting the diesel engine.”

Wisconsin
In Wisconsin, the state’s Department of Commerce provides grants that help cover up to 50% of the cost of installing idling reduction equipment.

Regional
Currently the Kansas City region, through the Mid-America Regional Council, is taking voluntary actions to maintain air quality through the Clean Air Action Plan (CAAP). The CAAP is the first systematic and comprehensive clean air strategy outside of a regulatory requirement enacted by the region. A specific, voluntary strategy focused on freight transportation listed in the Plan promotes retrofits for on-road diesel engines. Although no regional funding is available for this strategy, it is recommended that contract language be used that requires transportation providers work toward reducing vehicle emissions. Other strategies include:

- Truck Stop Electrification
- Idling Reduction Programs for Public and Private Diesel Fleets
- Switching Locomotive Emissions Control Technologies
- Adopt land use policies to protect air quality

One specific regional project that can have an impact on the environment, although not its stated goal, is the Cross Town Improvement Plan (C-TIP). This effort is focused on the movement of intermodal freight in the region. Typically, freight movement requires the use of multiple truck moves in addition to the primary movement by rail or air to reach its destination. This is done in order to take advantage of favorable cartage rates, delivery or scheduling requirements, and sometimes infrastructure limitations make it necessary. Cross-town interchanges via truck create conditions that adversely affect the efficiency of the transportation network, the safety of the motoring public, and the security and quality of life of citizens in the communities through which they take place. They add to overall traffic congestion, increase the volume of pollutants and in the case of empty moves, represent inefficiencies and safety risks.

The overall goal of the project is to identify ways to reduce the number of cross-town moves. This essentially reduces freight transportation emissions because fewer vehicles will be on the road and more efficient operations will result. Projects like this may not have a primary goal related to environmental sustainability but they should be recognized as a part of the total effort to reduce the impacts of climate change.

Additionally, the City of Lawrence, Kansas is engaged in a program called ECO2, which is a long-term plan for the advancement of industrial/business parks and open-space preservation. The plan was formally adopted by the Douglas County and Lawrence City Commissions in spring 2007. The city found that the dual goals of open-space preservation and economic development are linked and must be pursued concurrently without favoring one over the other. Landowner participation in the industrial/business park and open space development program is entirely voluntary and partnerships with developers, land trusts, and other parties maximize the advancement of the dual goals of this program.

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11 Wisconsin Diesel Truck Idling Reduction Grant Program, http://www.commerce.state.wi.us/BD/BD-CADiesel-Grant-Program.html
Considerations for the Kansas City Region

As part of the Regional Freight Outlook, the region should look to put voluntary strategies in place that will benefit the environment. There are simple ways that freight can be part of the solution to climate change. However, the dialogue must continue to better understand the full impact of freight on the environment and the complimentary solutions. The following considerations are the first steps in starting that dialogue and outlining steps for our region to take to promote more environmentally-friendly freight transportation.

Land Use and Freight Development

Currently, there is a trend of moving freight-related developments out of city centers and into suburban sectors of cities. Developing in suburbia is often cheaper because of the increase in land availability. One idea that takes advantage of the wider land availability is the concept of freight villages.

Freight villages typically offer multi-modal service, warehousing and distribution facilities, intermodal terminals and customs facilities which serve freight needs. Another feature of freight villages are the secondary services associated with them. Some of those services include restaurants, living accommodations, retail and banking services. Freight villages have the potential to optimize the efficiency of freight movement and accommodate the increase in freight volume. The benefits to any economic region like Kansas City mean a reduction of truck vehicle-miles traveled (VMT) which is the result of several facilities being concentrated in one area, decreasing overall transport costs which in turn can lead to higher quality transport services.

As a region there are several opportunities to encourage this type of land use. The Centerpoint-KCS Intermodal Center, Logistics Park KC and the KCI Intermodal BusinessCentre are three large developments that could benefit by co-locating transportation facilities, industry and services for employees in one location.

Idling Compliance

As new developments are built in the region more discussion on ways to curtail idling are occurring. Truck idling is not currently noted as a region-wide issue but future large-scale developments are increasing the concern for certain communities.

Diesel engines are significant sources of nitrogen oxide. Reductions in diesel engine emissions can be achieved easily and at little cost by simply establishing policies that limit idling when trucks are parked for extended periods. In the Kansas City maintenance area there are currently nine truck stops that have 50 or more parking spaces. Installing HVAC, electrical and phone and data line infrastructure in truck stop parking lots would enable drivers to shut off their engines while parked which would reduce nitrogen oxide and particle emissions. Offering driver respite by providing restrooms and break rooms at intermodal facility parking lots is also a cost effective solution that would encourage drivers to turn their engines off. Furthermore, shipping companies who choose to adopt no idling policies may potentially see substantial costs savings as a result of reducing fuel consumption.\(^{12}\)

Relaxing Truck Size and Weight Restrictions

While truck size and weight has been a topic for many years in regard to pavement damage and safety, it has recently become part of the environmental discussion. By allowing heavy or longer combination vehicles on the road there would be an immediate reduction in emissions due to fewer vehicles on the roadways.

Although there is much controversy with this topic, the region could explore limited applications of relaxed restrictions. Building on the freight village concept, there may be value in allowing heavier dray moves within these developments. Typically, international container (some exceed highway weight restrictions) are loaded into domestic 53-foot trailers near dock at the port of entry and then trucked to their final destination. With the new intermodal facilities in the region there is an opportunity for these containers to move intact to Kansas City and be sorted into

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trailers if the drayage of the container could occur within the development. Not only would this be an economic benefit to the region but it could reduce the number of trailers inbound to our region, therefore positively impacting the environment.

These steps are simple ways that freight can be part of the solution to climate change. By utilizing some of these strategies, the region could see both an environmental and economic benefit. The overarching theme that must continue to be stressed is creating balance between environmental needs and the needs of the freight community. With continued dialogue, the region has great potential in promoting environmentally-friendly freight transportation.