

## Purpose of the Plan

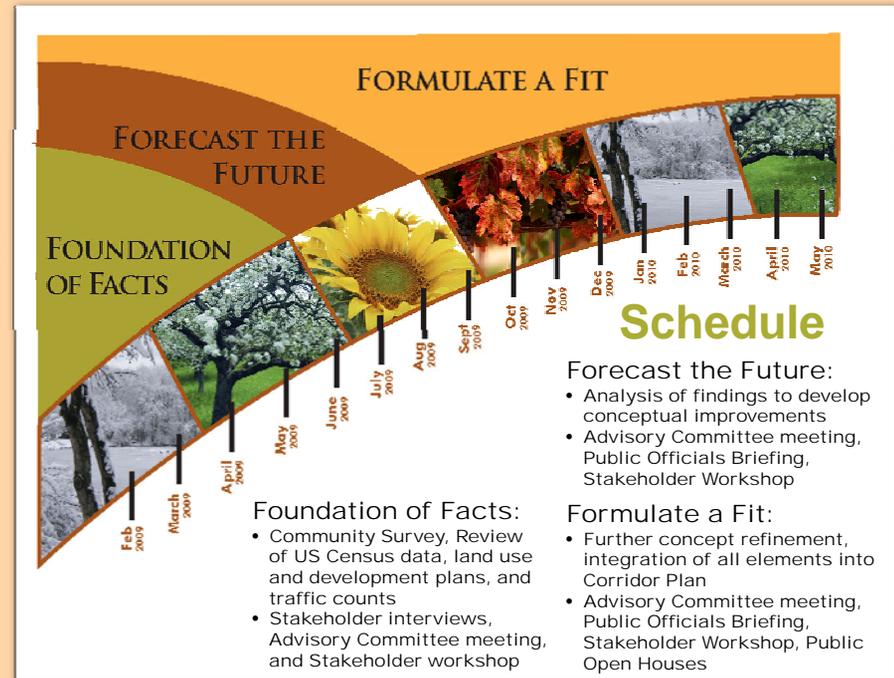
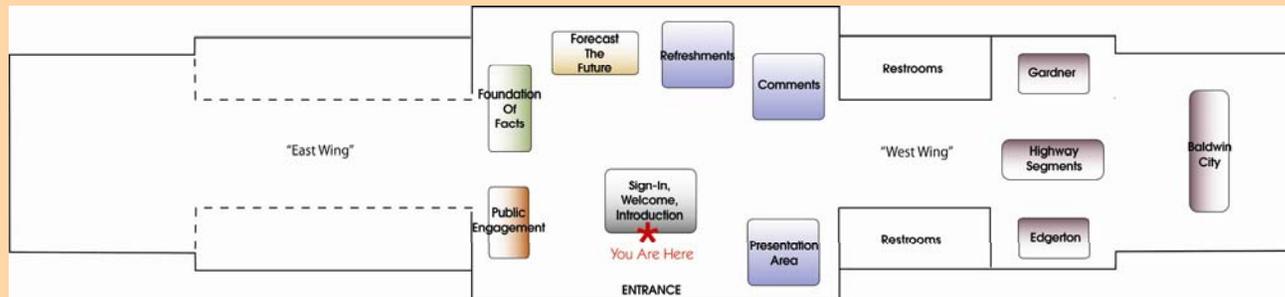
The purpose of the Corridor Management Plan is to improve access management and capacity along US-56 in a way that supports the needs of the corridor and its communities.

Because of an increased potential for economic development and sensitivity to the amount of traffic new development could cause in the area, the Kansas Department of Transportation (KDOT) and its partners have been and will continue to work together during the 15-month planning process on a Corridor Management Plan for a 22-mile stretch of US-56. The study area spans from US-59 west of Baldwin City in Douglas County to I-35 on the northeast edge of the city of Gardner in Johnson County. The Partners include: the Cities of Baldwin City, Edgerton, Gardner, Douglas and Johnson Counties, the Metropolitan Planning Organizations of Lawrence-Douglas County and the Mid-America Regional Council.

## Do You Have Questions?

Representatives from KDOT and the planning team are here to answer your questions. For instance....

- What is corridor management planning?**  
 Because highway projects are very complex and take several years to study, design, and build, KDOT uses a corridor management planning process to consider the variety of factors (physical, engineering, environmental, and social and economic constraints as well as plans for future land use and development, and community character) that can have an impact on a particular transportation route.
- When can I expect to see changes taking place on US-56?**  
 No funding currently exists for any of the conceptual improvements presented in the Plan. When funding does become available, the concepts must be further refined before implementation. Changes in access shown are conceptual in nature and are subject to a case-by-case review. Such access modifications may occur with a change in use of the property, when roadway improvements are constructed, and/or when a safety issues needs to be addressed.
- How can I provide input?**  
 Let us know what you think! Please complete your comment card before leaving this evening. You can also get involved by visiting the project's web site at [www.us56corridorplan.org](http://www.us56corridorplan.org), where you can find additional information and give us your input.



## What's On Display?

Tonight's meeting is an informal open house for the community to learn more about the US-56 Corridor Management Plan. You can:

- Talk with team members
- View project maps
- Discuss recommendations for access management, land use, and community character, and
- Give us your input

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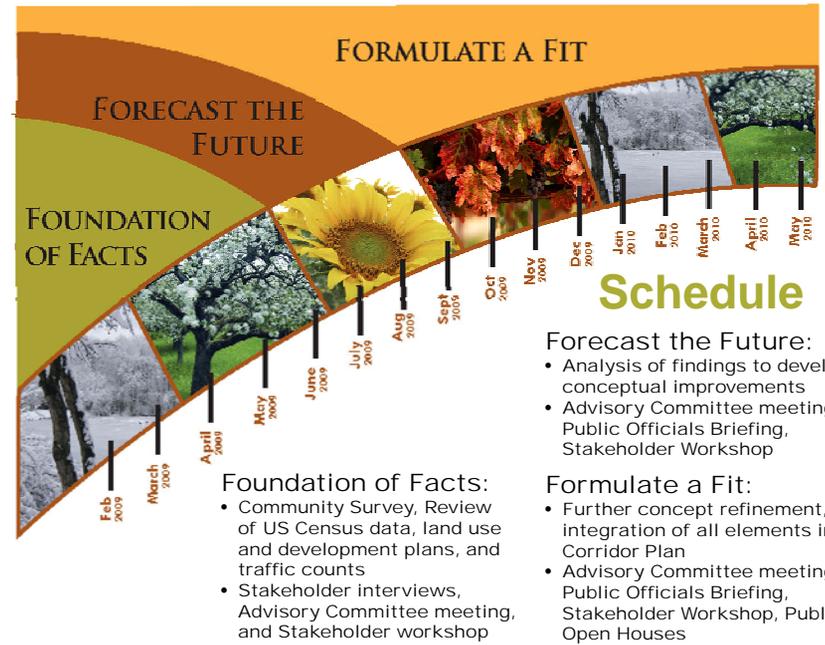
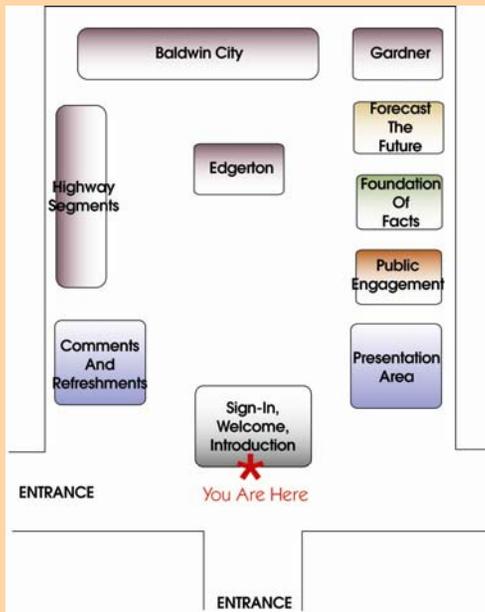
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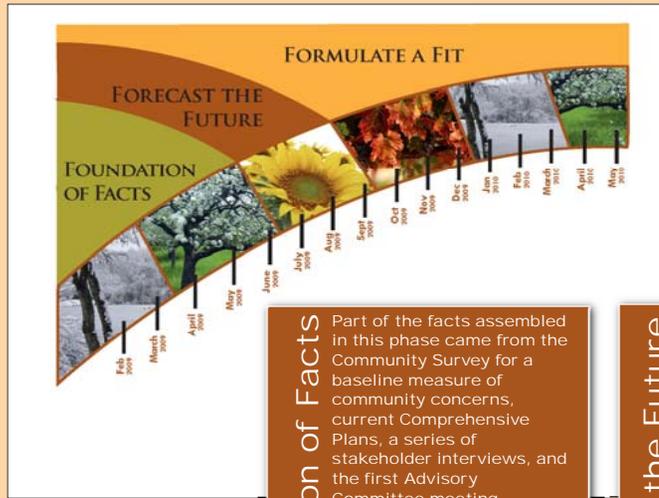
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## Developing the Plan

KDOT, its partners, and a diverse group of stakeholders were involved in the planning process. They participated in Advisory Committee meetings, group interviews, and workshops during a 15-month planning process that will end in the spring of 2010. Their primary role has been to offer viewpoints that reflect both the interests of particular areas of the corridor and those of the corridor as a whole. The overall goal for the stakeholder groups is to collaborate with KDOT and its partners in an effort to determine what, if any, changes are necessary to respond to community needs.



**Foundation of Facts**

Part of the facts assembled in this phase came from the Community Survey for a baseline measure of community concerns, current Comprehensive Plans, a series of stakeholder interviews, and the first Advisory Committee meeting.

This phase concluded with the Community Issues Workshop, resulting in a list of issues that were addressed throughout the planning process.

**Forecast the Future**

KDOT and its partners worked through land use and transportation concepts with the goal of developing recommendations based on input from the second Advisory Committee meeting, a Public Officials Briefing, and a Land Use and Corridor Character Workshop where a consensus land use scenario and varying access management and corridor character elements were reviewed.

**Formulate a Fit**

This phase integrates land use, transportation, access management, and community character considerations into the Corridor Management Plan along with appropriate implementation tools.

Input will be incorporated from the final Advisory Committee meeting, a Public Officials Briefing, Corridor Assessment Workshop, and Public Open Houses on such aspects as the roadway elements and community character of US-56.

## One Phase at a Time

The US-56 Corridor Management Plan has been conducted in three phases: Foundation of Facts, Forecast the Future, and Formulate a Fit. With your help, the team is currently working through the third and final phase of the planning process.

## Seeking Input: What You've Said



- Advisory Committee**
- City of Baldwin City
  - City of Edgerton
  - City of Gardner
  - Douglas County
  - Johnson County

- Stakeholders**
- Local Government
  - Business Owners
  - Transportation Specialists
  - Public Officials
  - Land Owners
  - Chamber of Commerce
  - Environmental Associations

- KDOT/Partners**
- KDOT
  - Cities of Baldwin City, Edgerton, and Gardner
  - Douglas and Johnson Counties
  - Lawrence-Douglas County MPO
  - MARC

**You!**

**Community Survey Summary**  
A survey of 742 corridor residents was conducted to gather opinions regarding US-56.

Major findings include:

- 83% of those surveyed indicated they felt either "very safe" or "somewhat safe" driving the corridor.
- Regarding the number of driveways entering onto US-56, residents felt there were "too many" driveways entering onto US-56 primarily through Gardner (38%) and Baldwin City (19%).
- There was support from those surveyed for directing future residential development inside or near the cities (86%).

**Stakeholder Interview Summary**  
Questions were asked related to future development, character of the corridor, and recommendations for roadway improvements. Highlights of the interview include:

- The US-56 corridor is very diverse in terms of land use and character, and it is important to preserve those unique identities.
- There are concerns with truck traffic, sight distances at key locations, and narrow shoulders. Safety (including that of pedestrians) is a top priority.
- Various improvements suggested by stakeholders include: improve sight distance at key locations; add travel lanes or dedicated turn lanes at specific intersections to improve flow and alleviate congestion; and add shoulders for disabled vehicles, and emergency management needs.

## Forecast Land Use Scenarios

The US-56 Corridor Management Plan is a comprehensive analysis of both land use and transportation elements, mutually reinforcing each other and complementing the unique character zones found along the corridor.

To help guide future development along US-56, two land use scenarios were developed with the goal of framing an agreed upon or "Consensus" Land Use Scenario. The methodology and assumptions for developing the "Low Growth Development Scenario" and "High Growth Development Scenario" are presented here. The Land Demand Analysis projects the amount of land needed to accommodate residential and non-residential uses between now and the planning horizon of 2030.

## Methodology Overview for Scenario Development

### Assumed:

- Land use considerations were confined to the Study Area boundaries, and therefore did not include all of Gardner
- Adopted Land Use Plans from the three Cities were used as the basis for developing the scenarios
- Infrastructure constraints such as the provision of sewer and water

### Avoided:

- Environmentally sensitive areas
- Developed areas within the cities' growth boundaries

### Applied:

- Residential and Non-Residential market demand based on population and employment projections in growth areas utilizing US Census data, building permit trends, MARC Metrodata Line Projections of Population and Employment, Secretary of State by Division of the Budget, and other sources
- Study Partners, Advisory Committee, and Stakeholder input



## Low-Growth Scenario Highlights

- Demand was calculated to equal the market demand
- Focusing upon infill first, and then developing around key intersections
- Baldwin City and Edgerton have far more Residential and Non-Residential capacity than projected demand by the year 2030
- Gardner may need to build more densely or expand their growth area to meet future demand.

## High-Growth Scenario Highlights

- Demand was calculated to be 3 times the market demand
- Avoided areas difficult to serve with sewers unless needed for market demand
- For Baldwin City and Edgerton, even 3 times the demand for Residential and Non-Residential acreage could be accommodated
- For Gardner, accommodating 3 times the projected demand would require building at greater densities or expanding growth boundaries

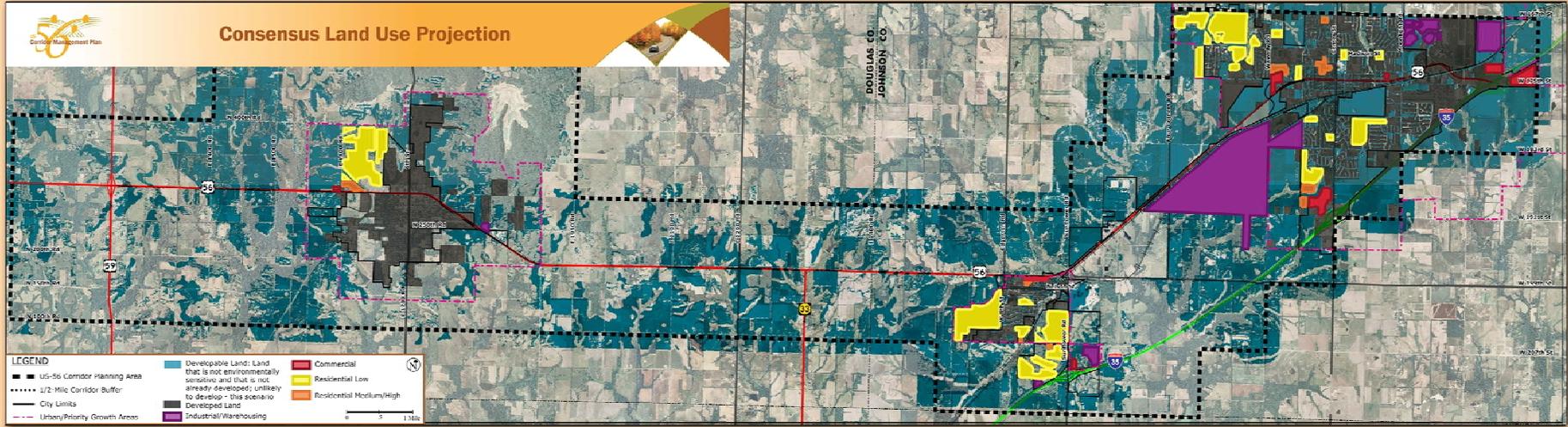


# Consensus Land Use Scenario

The Consensus Land Use Scenario is an integration of the Low Growth and High Growth Scenarios, and reflects input from Advisory Committee, Partners, and Stakeholders. It includes Low Growth Scenarios for Baldwin City and Gardner, and a High Growth Scenario for Edgerton. It was determined that no development would occur at regional intersections along rural segments of the corridor.

It is important to note that when performing the 2030 market demand analysis to determine initial land capacity and demand, the employment projections and estimated acreage assumed the proposed BNSF Intermodal Facility would be located within the Gardner city limits.

As the planning process continued, the assignment of the projections associated with the proposed Intermodal Facility to a specific municipality began to change. Consequently, the assignment of employment projections may change to the Cities. Nonetheless, the proposed Intermodal Facility is considered a committed project and its projections are included as part of the Consensus Scenario.



## Baldwin City Low-Growth Scenario

**POPULATION FORECAST FOR 2030**

2000 Population: 3,460  
 2030 Population Forecast: 6,400  
 Estimated Number of New Dwelling Units: 1,200

**EMPLOYMENT FORECAST FOR 2030**

2000 Employment: 1,309  
 2030 Employment Forecast: 1,875

**NET REFINED DEVELOPABLE LAND**

1,700 acres available for development;  
 less 290 acres for residential and  
 less 40 acres for non-residential development  
 EQUALS 1,370 acres remaining developable

## Edgerton High-Growth Scenario

**RESIDENTIAL DEMAND FOR 2030**

2000 Population: 1,440  
 2030 Population Forecast: 2,800  
 Estimated Number of New Dwelling Units: 500

**EMPLOYMENT FORECAST FOR 2030**

2000 Employment: 374  
 2030 Employment Forecast: 580

**NET REFINED DEVELOPABLE LAND**

800 acres available for development;  
 less 100 acres for residential and  
 less 20 acres for non-residential development  
 EQUALS 680 acres remaining developable

## Gardner Low-Growth Scenario

**RESIDENTIAL DEMAND FOR 2030**

2000 Population: 9,396  
 2030 Population Forecast: 47,800  
 Estimated Number of New Dwelling Units: 14,300

**EMPLOYMENT FORECAST FOR 2030**

2000 Employment: 4,408  
 2030 Employment Forecast: 16,016

**NET REFINED DEVELOPABLE LAND**

4,900 acres available for development;  
 less 3,600 acres for residential and  
 less 1,300 acres for non-residential development  
 EQUALS 0 acres remaining developable

## Context and Assumptions

US-56, from US-59 to I-35, serves as a local highway to the overall region. While providing important access to the communities along the corridor, it is not utilized as a significant through corridor, such as I-35, I-70 or even K-10 and US-59.

Traffic volumes were projected out to Year 2040 to evaluate a long-term scenario for the corridor that included several major assumption. Among those:

- K-7 Highway would be upgraded to a freeway, extending from the new interchange at 159<sup>th</sup> Street/Lone Elm on I-35 to I-70.
- A new southern Johnson County interchange would be construction on I-35, somewhere in the vicinity of 199<sup>th</sup> Street, Waverly Road or Homestead.
- The BNSF facility, and surrounding Logistics Park, would be developed.
- While the communities of Baldwin City, Edgerton and Gardner are anticipated to continue to grow and expand, the unincorporated areas in Douglas and Johnson Counties would remain rural in nature.



## Changes in Travel Patterns

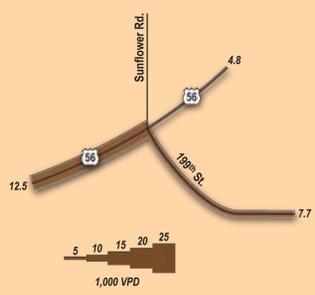
Several factors contribute to a significant change in travel patterns by year 2040.

- The location of a new interchange in the vicinity of I-35 and 199<sup>th</sup> Street, Waverly Road or Homestead will create a more direct option to drivers headed to Edgerton and Baldwin City, allowing them to by-pass Gardner.

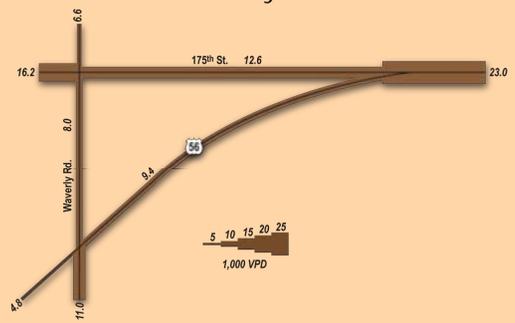
- The anticipated development in the northwest portions of Gardner results in a greater volume of traffic on Santa Fe/175<sup>th</sup> Street and Waverly Road than on US-56 in this west gateway of Gardner.

The figures below illustrate the future traffic volumes in these areas, with volumes shown in 1,000 vehicles per day (vpd).

US-59 and 199<sup>th</sup> Street/Sunflower Road



US-59, Santa Fe/175<sup>th</sup> Street and Waverly Road



## Traffic Forecasting

Forecasted traffic volumes were developed based on the City of Gardner's Transportation Forecasting Model, combined with historical growth trends and supplemental information developed as part of the proposed BNSF facility.

### TRUCK TRAFFIC

While projections along the corridor were made for the total volumes of traffic, an assessment of truck traffic that takes into account the new freight-generating facilities anticipated for the corridor was also made.

The Mid-America Regional Council (MARC) has established criteria to assess the regional significance of freight corridors based on the volume of truck traffic, designating corridors as having National, Regional or Local significance.

Corridor Designation	Daily Truck Volume
National	>4,000
Regional	>1,000
Local	>500

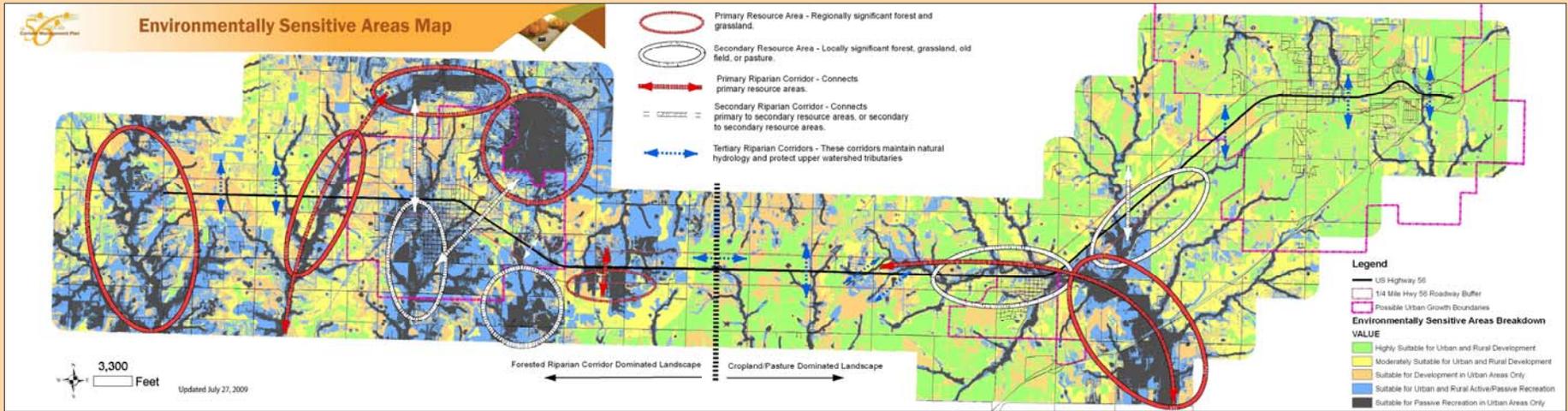
For comparison, I-35 south of US-56 carries approximately 5,600 trucks per day and is therefore designated as a National Freight Corridor.

Location	Existing		2040 Projections	
	ADT	Trucks	ADT	Trucks
US-59 to 1600 Road	4,900	280	7,500	900
Baldwin City	7,500	280	14,000	1,000
1900 Road to K-33	4,600	260	5,500	900
K-33 to Edgerton Road	4,700	270	6,500	900
Edgerton	4,900	270	12,000	800
199th Street to Waverly	4,900	270	4,800	500
Waverly to Center	9,000	270	30,000	1,200
Center to Moonlight	17,500	270	37,500	1,100
Moonlight to I-35	25,000	800	47,000	1,800

By 2040, the majority of the US-56 corridor is anticipated to operate as a local freight corridor.

In Gardner, US-56 is projected to cross the threshold and operate as a regional freight corridor.





## Environmental Sensitivity for Land Use Forecasts

The corridor study area has significant streams, floodplains, wetlands, and regionally and locally significant forest and grasslands. Identifying these sensitive areas when reviewing potential future development helps to protect valuable recreation areas, protect water quality, reduce flooding, and provide wildlife habitat.

Key GIS data was assigned weights producing a graphic classification of land ranging from "Highly Suitable for Urban and Rural Development" (shown above in green) to "Suitable Only for Passive Recreation" (shown above in dark grey). Weighted data included soil classifications, hydrology, land cover, slopes, land use, and habitat.

## Land Capacity vs. Developable Land

The capacity of land is a measure of how much future development the undeveloped lands can accommodate. Not all of the undeveloped areas, however, are open to development due to environmental constraints and natural resources. Accounting for land that is not already developed and not environmentally sensitive is the basis for determining what areas are deemed developable.

### Developable Acreage Within Each City's Growth Boundary

<b>Baldwin City</b>	<ul style="list-style-type: none"> <li>1,700 net acres of developable land remain (3,700 acres are developed/sensitive)</li> </ul>
<b>Edgerton</b>	<ul style="list-style-type: none"> <li>800 net acres of developable land remain (600 acres are developed/sensitive)</li> </ul>
<b>Gardner</b>	<ul style="list-style-type: none"> <li>4,900 net acres of developable land remain (4,600 acres are developed/sensitive)</li> <li>Note: 40-50% of Gardner's growth boundary is not within the Study Area and therefore not included</li> </ul>

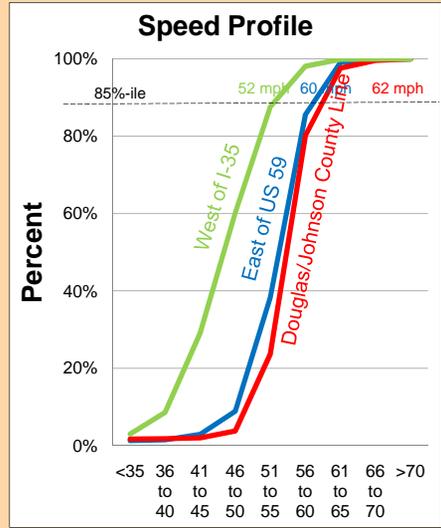
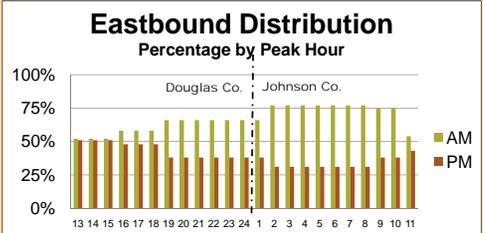
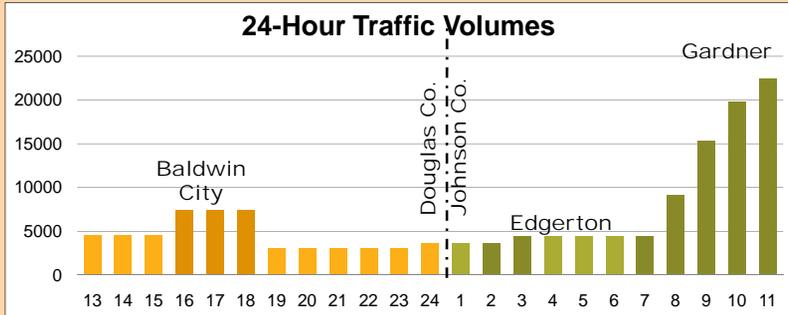


## Traffic Volumes (2009)

Traffic volumes have a significant spread along the corridor, ranging from a low of 3,400 vehicles per day (vpd) (between Baldwin City and Edgerton) to over 22,400 vpd in Gardner near the I-35 interchange. Peak hour traffic volumes mimic the daily pattern along the corridor including the increase of traffic volumes within city limits.

The AM and PM total volumes are nearly identical (PM is slightly higher), yet the distribution by direction along the majority of the corridor indicates an eastbound bias in the AM and the reverse direction (westbound) in the PM. However, west of Baldwin City, the directional distribution is equally split. Truck percentages range from 5% to 7% of all traffic representing between 200 and 830 truck per day.

Traffic speeds have also been collected and indicate an 85<sup>th</sup> percentile speed to be more consistent with the recent posted speed increase to 60 mph.



## Traffic Safety

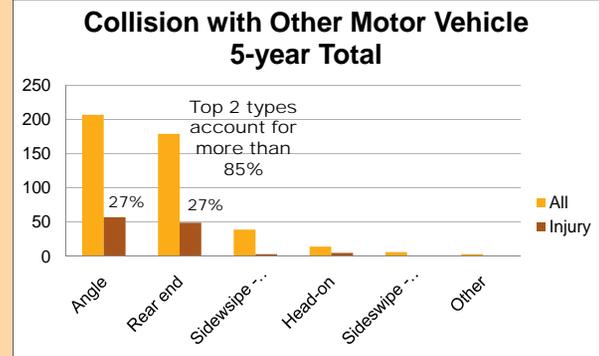
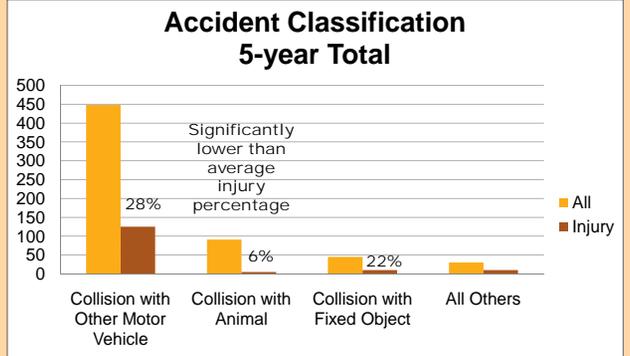
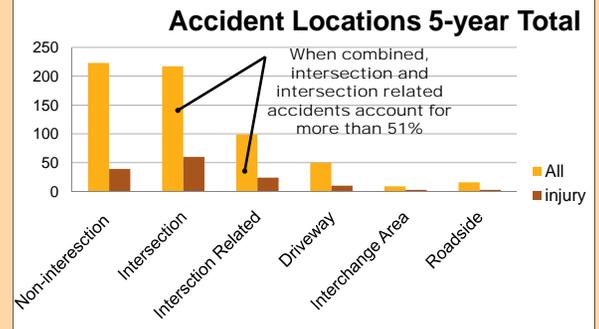
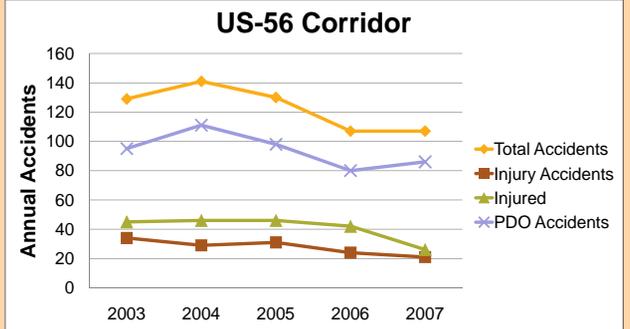
### Three Locations Account for 44% of Intersection Crashes

A ranking of crashes at intersections indicates a pattern of crashes at three locations along U.S. 56. The top three locations include Moonlight Road (Gardner), U.S.-59, and 6<sup>th</sup> Street (Baldwin City). Fortunately the number of crashes has been decreasing for a total of 30 crashes at these three locations in 2003 to just six (6) in 2007.

The predominant type of accident is angle accidents at 80%. The percentage of injury accidents vary by location, with the U.S. 59 junction having a high percentage of injuries, including two fatalities in 2006.

### Three Fatal Crashes Occur In One Year (2006)

A total of five (5) fatal crashes occurred over the five year period. Three of the five fatal accidents occurred in 2006. Two of these occurred at the junction of US-59. Four of the fatal accidents were with "other motor vehicles", of which three were angle accidents and the other a rear-end collision. Two of the four "other motor vehicles" occurred at intersections while the other two were classified as intersection related. Causes cited for these fatal crashes included: "traveling too fast", "exceeding posted speed", "failure to yield", and "improper turn".



# Physical Conditions

## BRIDGE CONDITIONS

There are a total of twelve (12) bridges along the 22-mile long corridor. The majority of bridges cross natural features such as creeks, while only five bridges cross over roads or railroads. The longest bridges over natural features are 112 feet long, while the majority (5) are less than 40 feet. The two longest bridges, over 400 feet in length, carry US-56 in the eastbound and westbound directions over I-35.

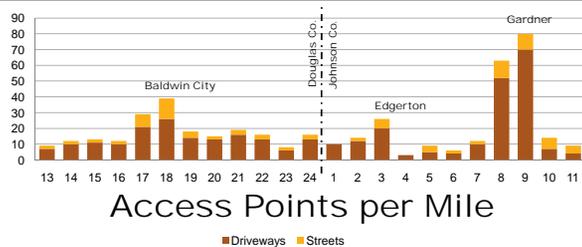
Only four of the bridges are greater than 50 years old, the remainder being less than 25 years old. The age of the bridges is reflected in their sufficiency index. Two bridges have a sufficiency index less than 50, while half have a sufficiency index greater than 90. The two with less than 50 are identified for replacement, while a third bridge is identified for rehabilitation. All three bridges are located in Douglas County.



## PAVEMENT CONDITIONS

In general, the overall pavement condition along the US-56 roadway is in acceptable conditions. The majority of the roadway (> 80%) consists of composite materials while the remainder varies between bituminous (1 mile) and concrete pavement (approximately 3 miles). As is seen above, shoulders are narrow and terrain is often rolling.

Several different assessments of the pavement reinforce the overall acceptable conditions rating. In terms of roughness, only 3 miles are rated "tolerable", one of those miles being the bituminous pavement and the other two miles essentially within Baldwin City. Approximately 5 miles have been identified as crack seal candidates, all in Douglas County. From a pavement performance assessment, only 6 miles are rated as "tolerable", all in Johnson County.



# Access Management



Using KDOT's data set of access points, a rate of access points per mile rate was calculated that shows a range from 8 to over 60 access points per mile in the chart above. As could be expected, access points rates increase in the city limits where traffic volumes increase, speed slows and commercial activity increases. Public street access points are also shown.

How do these rates compare to accepted practice? Are there access point rate "standards" that should be applied?

Comparative access point rates vary based upon rural high-speed characteristics as well as low- to moderate-speed suburban/urban characteristics. In rural areas, a guideline of 8 to 10 access points per mile is suggested. This is achieved along much of Douglas and Johnson County. Rural areas can exceed this threshold and occurs when where six 5-acre residential parcels each have with direct access to US-56.

For urbanized areas, a guideline of 20 to 30 access points per mile is suggested. On a mile basis both Baldwin City and Edgerton are within or below this threshold. However in the City of Gardner, essentially Waverly through Moonlight, the access point rate per mile are more than double the guideline rates.

Access point rates aren't the only means to assess access conditions. Other aspects such as maintaining the functional area of intersections is important as well as the spacing of traffic signals. Yet access point rates do offer a sense of the task ahead if the intent is to bring access point rates into a desired range. Techniques such as removal or consolidation of access points can result in a reduction of rates.

# Operating Conditions

## HIGHWAY SEGMENTS

Two-Lane Highway segments are evaluated primarily by the ability for drivers to pass and travel at their preferred speed. The rural highway segments, from US-59 to Baldwin City, from Baldwin City to Edgerton, and from Edgerton to Gardner, all operate today with acceptable conditions, albeit the segment from Edgerton to Gardner is beginning to approach the thresholds of acceptable conditions due to the heavy directional split of traffic (eastbound in the morning and westbound in the evening).

## INTERSECTIONS

In communities, traffic operating conditions are measured by the amount of delay experienced by drivers at intersections. For signalized intersections an average delay is calculated for all drivers while for stop-controlled intersections delay is calculated for movements that must yield to other traffic, such as a side-street approach or a left-turn off of US-56.

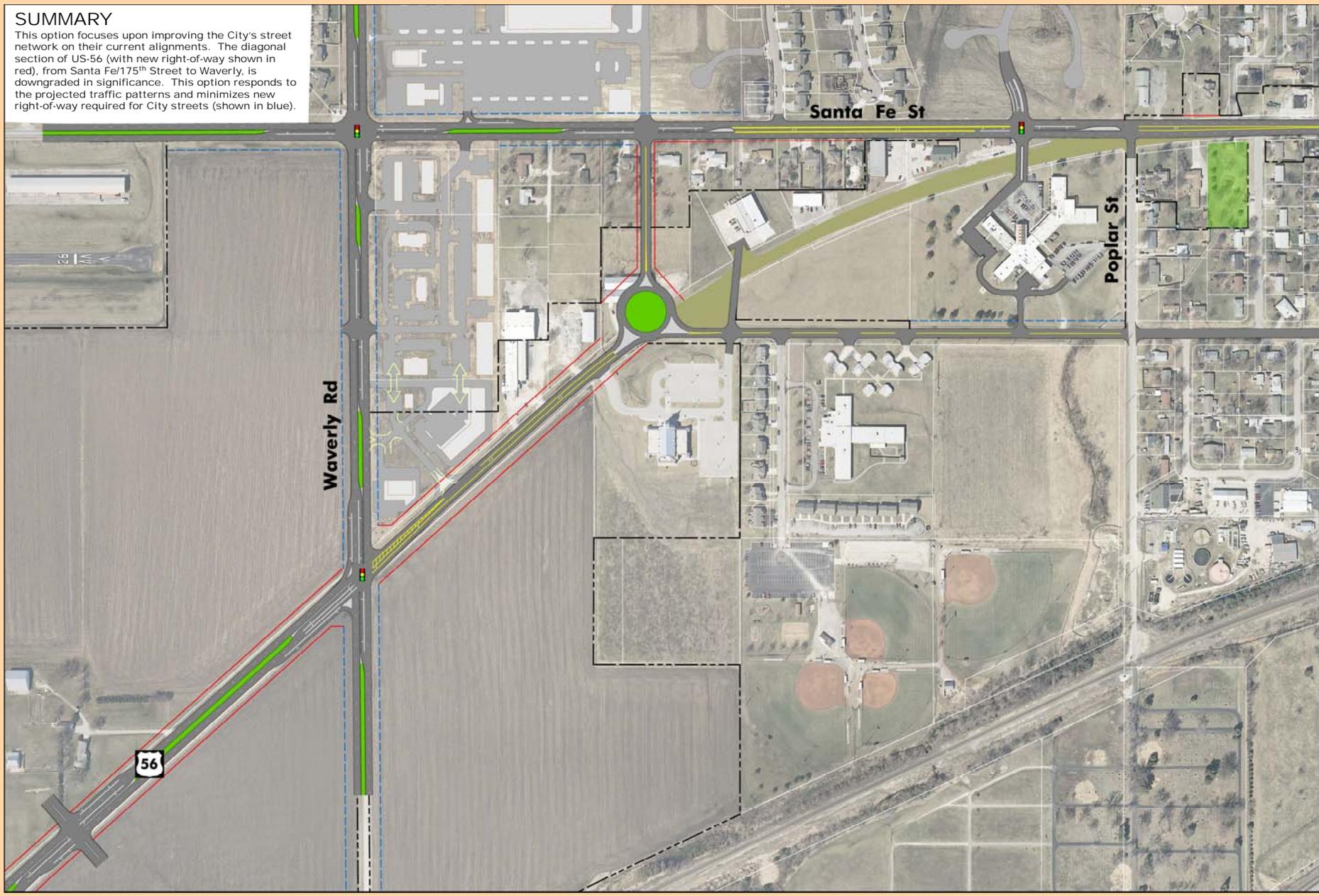
With the improvements currently under construction at Moonlight and US-56, all of the intersections operate with acceptable conditions today.



# US-56 Corridor Management Plan West Gateway – Option 1

## SUMMARY

This option focuses upon improving the City's street network on their current alignments. The diagonal section of US-56 (with new right-of-way shown in red), from Santa Fe/175<sup>th</sup> Street to Waverly, is downgraded in significance. This option responds to the projected traffic patterns and minimizes new right-of-way required for City streets (shown in blue).



# US-56 Corridor Management Plan West Gateway – Option 2

## SUMMARY

This option continues the emphasis on US-56, requiring the City street network of Waverly Road and Santa Fe/175<sup>th</sup> Street to be improved on new alignments. The option minimizes new right-of-way required for US-56 (shown in red), but substantially increases the right-of-way required for City streets (shown in blue).

