Visioning Transportation Futures
2045 Scenarios At-A-Glance

Scenario 1: Regional Hubs in 2045

Technology helps sustain and invigorate the prosperity of rural areas of Kansas, which are buoyed by growing area hubs. New mobility solutions in these areas are keys to supporting economic growth, quality of life and access to critical services like healthcare.

Demographics/Land Use	Mobility as a Service	Broadband	Healthcare Access
• Population in rural areas is steady or growing with an increase in citizens who are 65+ • Rural communities have renewed economic vitality powered by area hubs.	• New travel options go beyond traditional transit (typically buses) to address the special challenges of transportation outside metropolitan cities.	• Good quality - accessible across the State.	• Access is good statewide. • Technology is helping overcome barriers to healthcare access in rural communities.

Scenario 2: Resiliency Challenged in 2045

Weather extremes hit infrastructure hard and create unprecedented economic and social disorder and force difficult choices about where to invest scarce dollars in resiliency improvements.

Demographics/Land Use	Mobility as a Service	Broadband	Healthcare Access
• Kansans flock towards metropolitan areas, leaving rural communities. • People from outside Kansas move into metropolitan areas of the State to escape coastal weather impacts causing population to slowly increase.	• Primarily in metropolitan areas as providers require resilient infrastructure.	• Poor service in rural communities, but available in hubs and metropolitan areas.	• Worsening in rural areas because of a lack of convenient, cost-effective access to services.

Scenario 3: Cities and Advanced Agriculture Win the Day in 2045

People across America embrace city-oriented, tech-driven lifestyles. Population growth is concentrated in places like the Kansas City region or Wichita that absorb most out-of-staters moving to Kansas, job growth and new housing. This growth is often in areas with more dense housing offering services and entertainment within easy walking distance. Advanced agriculture, benefitting from a tech revolution, sees productivity increase and economic viability strengthened.

Demographics/Land Use	Mobility as a Service	Broadband	Healthcare Access
• State population is growing faster than expected with more people moving to metropolitan cities to take advantage of the ability to live, work and play all in the same walkable area.	• Mostly in metropolitan cities. A sizeable share of city dwellers do not own cars.	• Good in cities, but also available in rural regions.	• Worsening in rural areas because of a lack of convenient, cost-effective access to services.

	Population	Examples
Metropolitan City	50,000 & up	Manhattan, Olathe, Wichita
Regional Hub	10,000 to 49,999	Emporia, Salina, Hays, Pittsburg, Hutchinson, Dodge City
Area Hub	2,000 to 9,999	Hiawatha, Concordia, Russell, Chanute, Pratt, Ulysses
Rural Community	Less than 2,000	

Scenario 1: Regional Hubs in 2045

More Kansans are living in rural areas than was forecasted in population projections. The rural resurgence in Kansas is led by **prospering area hubs** – small cities and towns statewide with **good broadband access** and **creative rural mobility-as-a-service (MaaS)[1] options** that transform access to jobs and essential services for an aging population, many of whom are healthy enough to work into their 70s. These changes are attracting new residents to rural areas and the digital improvements also spur **high-tech agriculture advances**. The same factors mean people are relying less on personal vehicles for the first time in a century.

Key Drivers:

Land use	**Demographics**	**Mobility-as-a-service:**	**Health Access**	**Broadband**
Rural areas have a renewed economic vitality powered by area hubs.	Population is steady or growing around area hubs because Kansans are living longer in better health and some rural areas are seeing people moving into them.	New travel options go beyond traditional transit (typically busses) to address the special challenges of transportation outside metropolitan cities.	Technology is helping overcome barriers to healthcare access in rural areas.	Agriculture, government, social services and economic activity all benefit from good access.

People live less 'tethered' to their location

- Inexpensive and widespread drone delivery service – a homegrown industry for Wichita-based Unmanned Aerial Vehicle (UAV) manufacturers – helps give area hubs convenient access to amenities like same-day delivery of goods.
- Rural Kansans enjoy high-speed broadband and the things it enables like virtual access to quality medicine and education and precision agriculture.
- Many professional services jobs can be done remotely, attracting more young people to rural areas.

The 65+ population is rising as people live longer

- There is a growing demand for social and health services.
- Most people have convenient, cost-effective access to health and social services even in far flung corners of the state because they can depend on: 1) telemedicine services that replace the need to make in-person trips, and 2) autonomous vehicle MaaS services that replace the need to drive.
- With that access, more seniors in Kansas are able to stay in rural areas.

Economies are thriving in hubs across the state

- Breakthrough technologies allow workers to live and work further from metropolitan cities.
- The steady population growth in all areas has made the housing shortage even more pronounced. Rents in cities and regional hubs continue to skyrocket while new housing development continues to lag making housing available to fewer Kansans.
- Rural areas have banded together to build their economic development muscle and tap a new generation of entrepreneurial leaders.
- Farmers and ranchers have adapted to drought and warmer temperatures. Additionally, incentives have encouraged cover crops on land that previously sat empty to reduce carbon emissions, boosting incomes overall.

Rural MaaS is catching up to big city MaaS

- With greater demand for convenient mobility options in rural areas, services like Uber and Lyft are becoming available in rural settings which means people don't have to rely on owning a car or using traditional transit.
- Empty cars making long "dead-head" trips to pick up rides are a common sight and make MaaS more expensive in a rural state like Kansas.
- With a high user cost and limited availability in very rural areas, many in Kansas still don't have access.

[1] **Mobility-as-a-Service** (**MaaS**) describes a shift away from personally-owned cars and trucks and instead is a model where transportation is provided as a service. It's envisioned as public and private transportation providers working together to provide a combined service which users can pay for with a single account. Users can pay per trip or a monthly fee for a limited distance. The key concept behind MaaS is to offer travelers solutions based on their travel needs.

Scenario 2: Resiliency Challenged in 2045

Frequent statewide and regional-scale emergencies – from flooding and tornadoes to snowstorms and heat waves - are **damaging infrastructure and disrupting economic activity and communities** at unprecedented levels. Kansas fares better than coastal states, however, and even sees a **population influx to its metropolitan areas**. In Kansas' lowest population areas, a desire for the **'build it all back' approach is challenged** by the overwhelming cost to rebuild infrastructure. Tough choices must be made about where or what to rebuild. In urban areas, economic prosperity is hindered as transportation lifelines like Kansas City's freight rail hub experience repeated damage and summer power 'brown outs' slow commerce. While weather cannot be changed, decision-making demands a **focus on innovation** to cope with the new 'normal.'

Key Drivers:

Resiliency
Infrastructure replacement needs soar. Investment priority goes to more populated areas for road/bridge repairs and upgrades to accommodate the influx of people and help alleviate congestion.

Economic health
Kansas agricultural economy is hurting. Persistent drought is making farmers less competitive with wheat production overseas.

Land use
Population in the State's rural areas decline as Kansans as well as out-of-staters flock towards Kansas' metropolitan cities to escape the disproportionate impacts of severe weather on rural areas.

Electrification
Ag's adoption of electric vehicles helps spur broader change across Kansas towards electric powered mobility. Kansas' place as a leader in wind energy helps drive down energy costs in the state.

Weather resistant infrastructure upgrades are expensive

- Many roads, bridges and other infrastructure were built in 1995 or earlier and those designs aren't able to safely handle more frequent and more severe natural events, like flooding.
- Funding is limited and can't meet all the needs identified – particularly as revenue from the gas tax is down, hurt by the increase in electric vehicles.

Agricultural mainstays in Kansas are hard hit with droughts interspersed by extreme flooding

- Crop yields are down which is cutting into state GDP.
- The hunt is on to keep agriculture competitive and electric vehicles around farms have proven to be a winner for cutting transportation costs, which is prompting rapid build out of a robust electric charging grid across the state.
- The State's place as a leader in wind energy production aids the hunt to keep agriculture competitive by reducing energy costs.
- Upgrades to water and rail freight transportation are a top priority for supporting agricultural exports.

Rural communities experience disinvestment

- Many people and businesses leave for cities with a growing workforce and more transportation options.
- With an eroding tax base, many rural communities simply cannot afford to rebuild after devastating disasters like floods or tornadoes.
- A growing senior population across rural Kansas is experiencing unmet demand for social and health services as repeated damage to critical transportation and broadband infrastructure disrupts efforts to provide convenient, cost-effective access to such services.
- Innovation- particularly in economic development - is seen as a way to save hurting rural communities.

Urban population is growing

- People from outside of Kansas are moving to regions like Kansas City and Wichita, which offer a safer location than frequently flooded or wild-fire prone cities on the east and west coasts.
- Many rural Kansans leave for cities that are better equipped to deal with devastating disasters.
- More people in urban areas means more congestion headaches and pressure for added highway and transit capacity.

MaaS stays in urban areas

- MaaS offerings improve greatly, but providers require resilient infrastructure to protect and operate their assets, so they limit their services to areas less impacted by weather-related events with a focus on urban areas which have better resiliency.

Scenario 3: Cities and Advanced Agriculture Win the Day in 2045

Cities across the U.S., including those in Kansas are denser and bigger and remote rural towns are losing population. **Widespread adoption of technology** – in transportation, agriculture and other areas – powers economic growth, which is concentrated in vibrant mobile cores with ultra-fast Internet and on high-tech farms where most work is automated. With employers who value face-to-face interaction over remote work environments and a society that embraces city-oriented life, **growth is concentrated in places like the Kansas City region, Wichita and Manhattan** that must absorb the state's increase in population, jobs and new housing. This growth is often in areas with more housing that is closer together with services and entertainment within easy walking distance.

Key Drivers:

Demographics	**Land use**	**Driverless cars**	**Mobility as a Service**
Kansas is growing, but cities are winning at the expense of rural towns.	More people are moving to metropolitan cities to take advantage of the ability to live, work and play all in the same walkable area.	Those with means opt for a driverless experience, which is re-shaping cities, but traditional vehicle use persists, particularly for low-income populations.	A sizeable share of city dwellers do not own cars, however more miles are being driven than ever before thanks to the convenience of driverless cars. Congestion is controlled by solutions offered by driverless technology.

Population growth concentrated in urban areas

- Depopulation of rural areas and smaller area hubs is at historically high levels.
- Employment in manufacturing has declined, but jobs in professional services, education, health care, leisure and finance are growing.

Developers and businesses demand density

- Businesses say that attracting young and skilled workers to Kansas requires infrastructure investments in more densely populated areas providing more MaaS/transit-friendly home and work environments.
- Pressure is on state and local governments to find creative ways to promote high-density development.

Advances in driverless technology

- Advances are transforming the driving experience, but primarily it's only for those who can afford the expensive new vehicles/ownership models.
- Connected and Autonomous Vehicles (CAVs) have become common on Kansas roads in urban areas and on long-haul routes across the state, increasing safety by reducing human error.
- Most rural residents and many metropolitan residents, however, still rely on personally owned human-driven or semi-autonomous vehicles.
- One of the most significant developments for CAVs is in agriculture where almost every aspect of the business is using autonomous technology - from UAV crop spraying to autonomous tractors and hauling of harvests to markets.

Transportation access and choices vary by geography and income-level

- Traffic volumes are at historic highs in metropolitan and regional hub cities, where most residents live and work, but a combination of CAVs , MaaS-driven transit and advanced technology for managing transportation networks makes commuting a breeze most days.
- Walking and biking are the fastest growing modes in urban areas, considered as practical and environmentally friendly options, however crashes involving pedestrians and cyclists are growing.
- Unequal access to transportation is a concern. The cost of new technologies, the large number of seniors on fixed incomes and disparities in access to transportation technologies (such as shared CAVs between urban and rural areas) have resulted in access to transportation being highly unequally distributed among Kansans.
- Traffic deaths and injuries are at historic lows particularly in cities where most residents live and work, but the opposite is true for rural areas where CAVs are more likely to mix with driver-operated vehicles.

Freight is robust and adapting to changing patterns of demand

- The nature of the freight industry has changed. For example, 3D printing means that many products are produced in small facilities close to customers. The multimodal long-distance freight industry is often focused on shipping raw materials.