NEBRASKA

Good Life. Great Journey.

STATEWIDE TRANSPORTATION PLAN

Recommendations

April 5, 2021

This technical memorandum comprises the efforts under Task 10 of the Nebraska Department of Transportation's Statewide 2040 Transportation Plan. Contained within this memorandum are data and information relating to the recommendations included in the 2040 Statewide Transportation Plan.

Contents

1		Int	roduction	2
2		Ree	commendation Development Process	4
	2.1	R	ecommendation Sources	4
	2	2.1.1	Nebraska Documents	4
	2	2.1.2	Best Practices	4
	2	2.1.3	Transportation Experts	4
	2	2.1.4	Stakeholder Advisory Committee and Public Input	5
	2.2	R	ecommendations Revision Process	5
3		Ree	commendations List	7
3	3.1		commendations List xpand Data-Driven Decision-Making	
3	3.1 3.2	E		7
3		E	xpand Data-Driven Decision-Making	7 . 10
3	3.2	E Iı L	xpand Data-Driven Decision-Making ncrease Multimodal Choices	7 . 10 . 12
3	3.2 3.3	E Ir U E	xpand Data-Driven Decision-Making ncrease Multimodal Choices Ipgrade Infrastructure Resiliency	7 .10 .12 15
3	3.2 3.3 3.4	E II E E	xpand Data-Driven Decision-Making ncrease Multimodal Choices Ipgrade Infrastructure Resiliency mbrace Technology Opportunities	7 .10 .12 15 .18

i

Introduction

1 Introduction

The purpose of the Nebraska 2040 Statewide Transportation Plan (2040 STP) is to set a twenty-year course for evaluating and -- where appropriate -- implementing policy and process adjustments to standing operating protocols that will better prepare Nebraska for challenges and opportunities on the road ahead and assure success in its mission to provide the best possible statewide transportation system for the movement of people and goods.

2

As a part of preparing the 2040 STP, NDOT has developed recommendations in seven focus areas that will help NDOT and its partners make adjustments in policy direction where needed to best support Nebraska's transportation system over the next two decades:

- **Expand Data-Driven Decision-Making:** By leveraging the power of data, NDOT can better align decision-making on scoping, selection, and programming and of projects with system users' priorities and needs.
- Embrace Technology Opportunities: Use technology to keep users safer, improve their mobility, and better support economic and community quality of life concerns shared by all Nebraskans, whether they live in cities or rural areas of the state.
- Increase Multimodal Choices: Adoption of emerging and technologyenabled multimodal transportation choices will mean better support for the evolving mobility needs of Nebraska's citizens.
- **Upgrade Infrastructure Resiliency:** Take actions to ensure the resiliency of the transportation network not only against natural threats like extreme weather, but also human-caused threats that will grow with the expansion of technology in transportation.
- **Expand Collaboration with Stakeholders:** Make transportation function seamlessly across governmental divisions to better serve customers' mobility needs by strengthening collaboration among NDOT and its partners.
- Improve Organizational Effectiveness: Continue to explore opportunities to improve organizational effectiveness in ways that foster efficiency, safety, and innovation.
- **Build Education and Awareness:** Ensure users and stakeholders understand and support mission-critical issues for Nebraska's transportation system.

This technical memo describes the process used to develop the recommendations and lists each recommendation and the long-range transportation plan goal(s) it supports.

2 Recommendation Development Process

2 Recommendation Development Process

4

To develop the recommendations supporting the Nebraska 2040 Statewide Transportation Plan, the NDOT team reviewed existing strategy and planning documents from NDOT and other Nebraska agencies, national and statewide best practices, and input from transportation experts external to and within NDOT and the Stakeholder Advisory Committee (SAC). The list of potential recommendations was revised in consultation with NDOT and organized into categories by topic area.

2.1 **Recommendation Sources**

2.1.1 Nebraska Documents

The NDOT project team reviewed many Nebraska-specific plans and strategic documents to extract relevant recommendations. Documents reviewed included the Nebraska Freight Plan, NDOT's Transportation Asset Management Plan, the Nebraska Department of Transportation Annual Report, the NDOT Highway Safety Improvement Program, the NDOT Strategic Highway Safety Plan, the NDOT Transit Asset Management Plan, the Nebraska Emergency Management Agency Hazard Mitigation Plan, Nebraska's Statewide Technology Plan, and NDOT research documents, among others.

Many of the recommendations drawn from Nebraska plans and strategic documents have already begun to be implemented by the relevant divisions within NDOT. NDOT also works closely with the Federal Highway Administration (FHWA) to ensure that NDOT complies with any related FHWA requirements.

Additionally, NDOT's Research Section coordinates NDOT's federally funded and in-house research and has several recent and ongoing research projects whose findings are relevant to the Nebraska 2040 Statewide Transportation Plan's goals and objectives.

2.1.2 Best Practices

The NDOT project team reviewed published strategies from peer states to identify relevant best practices for NDOT's consideration. States reviewed included Minnesota, Iowa, Maryland, Texas, and Kansas, among others. Recommendations were also drawn from best practices published by FHWA, The American Association of State Highway and Transportation Officials (AASHTO), and the Pew Research Center.

2.1.3 Transportation Experts

NDOT convened three Future of Transportation Technology Forum webinars which featured expert speakers on connected and automated vehicles, connected corridors, rural transit, electric freight and passenger vehicles,

> Recommendations April 5, 2021

smart cities, mobility technology, e-commerce, mobile data systems, and next-generation work zones. Ideas and feedback from the Forums were incorporated into the recommendations as appropriate and relevant.

5

2.1.4 Stakeholder Advisory Committee and Public Input

The NDOT team used input from the SAC's meetings 1 and 2 to develop original recommendations based on SAC members' priorities and feedback. In addition, results of online survey questions related to strategies were reviewed from the planning public outreach.

2.2 **Recommendations Revision Process**

The NDOT team consolidated and clarified the original list of recommendations to ensure they meet NDOT's needs and address the future influences identified in Task 4 and the goals and objectives developed in Task 7. Initially, the revised recommendations were organized by goal and objective to ensure that each objective was supported by relevant recommendations.

The revised list of recommendations was reviewed by NDOT management, NDOT subject matter experts, personnel, and division heads during phone calls with the NDOT project team. The NDOT team incorporated feedback from each meeting to develop the final list of proposed recommendations.

> Recommendations April 5, 2021

3 Recommendations List

3 Recommendations List

3.1 Expand Data-Driven Decision-Making

Transportation is entering a period of great change – advances like driverless cars and mobility-as-a-service are indicators of physical transformations ahead. Another feature of this transformation is growth in data related to just about every aspect of transportation. By turning data into knowledge, NDOT can maintain and improve alignment of its investment decisions with system users' changing priorities and needs in an anticipated era of aging infrastructure, hard-to-predict resiliency challenges, more vehicles on the road, shifting freight patterns, rising demand for transit and active transportation solutions, and emerging technologies.

	Asset Preservation	Mobility Choices	Secure & Resilient	Safety	E&C Vitality
Highlighted Recommendation					
Expand opportunities to use predictive performance data-based tools & techniques to strengthen transportation-related decisions NDOT uses data to drive decisions and forecast performance with bridge and pavement asset management tools through the NDOT Transportation Asset Management Plan (TAMP). NDOT should continue to examine historically observed data and develop strategies to use predictive, performance data-based tools, and techniques in transportation decisions.					

	Asset Preservation	Mobility Choices	Secure & Resilient	Safety	E&C Vitality
Make wider use of travel time reliability (TTR) data at NDOT Everyday congestion is expected to grow on some urban portions of Nebraska's transportation system. While travelers and shippers expect and plan for delay, it is the unexpected congestion on a day-to-day basis that troubles them the most; travelers, shippers, and truck drivers want reliability in their travel times. Beyond use of TTR data in complying with national performance measures, NDOT should consider how to incorporate TTR data in tracking transportation system performance, providing traveler information, and as part of performance-based decisions about capacity projects.					
Expand data sharing collaborations State DOTs are developing data-sharing collaborations with the private sector to obtain real-time travel information in exchange for information about construction schedules and reported incidents. NDOT should establish partnerships with private vendors and with other units of government to share mutually beneficial data where this information will improve basic NDOT functions like operations management or project development.					

	Asset Preservation	Mobility Choices	Secure & Resilient	Safety	E&C Vitality
Harvest NDOT fleet data to support analysis The data recorded by NDOT fleet vehicles can provide helpful insights on traffic issues as they happen, particularly events like winter weather emergencies. NDOT should develop ways to harvest and analyze its fleet data to inform decisions about issues like traffic flow, system redundancy, or bottlenecks and maintaining mobility during severe weather and other emergencies.					
Develop flood data analytics partnerships Monitoring and analyzing flood data can help NDOT better understand threats to the transportation system. NDOT should establish partnerships with public, non- profit, and academic organizations to coordinate flood monitoring, mapping, and forecasting.					
Improve availability and analysis of safety data Improving the quality and timeliness of crash data will ensure that the most recent and most valuable data is being used to program and plan safety projects. NDOT should continue to expand access to comprehensive and timely crash data and analysis that helps NDOT and MPOs plan and program safety projects.					

3.2 Increase Multimodal Opportunities

With changing demographics ahead - including an older population, more people living and working in Nebraska's cities, and a need to sustain dispersed rural communities - all Nebraskans can benefit from emerging and often technology-enabled multimodal transportation that supports the evolving mobility needs of communities where they live and work.

	Asset Preservation	Mobility Choices	Secure & Resilient	Safety	E&C Vitality
Highlighted Recommendation					
Develop and adopt a 'complete streets' policy 'Complete streets' policies provide roadway design guidelines that prioritize safe, comfortable transportation by relevant users, including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities. A 'complete street' is designed to balance safety and convenience for everyone using the road. NDOT should develop and adopt its own 'complete streets' policy and produce a 'complete streets' manual. Complete streets policies help planners and engineers design roads that improve safety and mobility for all relevant users, depending on the need and the physical context of the project.					

	Asset Preservation	Mobility Choices	Secure & Resilient	Safety	E&C Vitality
Provide leadership on sharing public information about transit options For a decade, Nebraska's statewide 'mobility management' initiative has created a vision of all modes of transportation working together to deliver enhanced transportation choices in rural and urban areas of the state. The trends that hatched mobility management are expected to accelerate in the next 20 years; public transportation will have a growing role in meeting social, economic, energy, and healthcare challenges. NDOT should provide leadership and support for continuing and improving access to information about mobility options statewide through the Nebraska 'mobility management' project and other channels.					
Strengthen partnerships with external stakeholders to support multimodal transportation improvements statewide Multimodal transportation options help sustain quality of life for all Nebraskans. NDOT should strengthen collaboration with external stakeholders - from local governments to advisory and advocacy groups - to pursue activities such as collaborative identification of needs and development of tools and guidance, technologies, or investment solutions that support safe and efficient active transportation options, preservation of general aviation facilities, reliable rural & intercity transit connections with regional centers and cities, and the promotion and improvement of transit service support for healthcare services.					

Recommendations April 5, 2021

3.3 Upgrade Infrastructure Resiliency

With weather extremes expected to occur more frequently in the future, Nebraska's transportation infrastructure faces uncertain risks and NDOT should take actions to ensure the resiliency of the transportation network not only against natural threats like extreme weather but also against human-caused threats like cyber-attacks.

	Asset Preservation	Mobility Choices	Secure & Resilient	Safety	E&C Vitality
Highlighted Recommendation					
Incorporate findings of the NDOT vulnerability assessment into the planning and design of NDOT's highways and bridges. NDOT is in the early stages of a vulnerability assessment to analyze the risk of flooding along NDOT roadways and bridges. NDOT should incorporate the findings of the ongoing flood vulnerability assessment into planning and design activities to reduce the flood risks of the assets included in the assessment.					

	Asset Preservation	Mobility Choices	Secure & Resilient	Safety	E&C Vitality
Update flood-resilient design standards With the risk of more frequent and more damaging flooding likely to increase in the future, NDOT should investigate the causes of past highway failures related to flooding and develop recommendations for new design standards or hydraulic guidelines in cooperation with the Board of Public Roads Classifications and Standards.					
Develop an 'after-action' event reporting process To learn from asset-damaging events, NDOT should develop a process for after-action reporting that includes clear recommendations - where appropriate - for infrastructure improvements or changes in maintenance and operations procedures following extreme weather or other events that cause damage to transportation assets.					
Inventory drainage structure flood risks Failure of aging, undersized, and poorly maintained culverts and other drainage structures creates flood risks on roadways in Nebraska; but without data on drainage structure location and condition, decision-making about repair and replacement cannot be optimized. NDOT should create and manage an inventory of drainage structures and use it to develop methods for remote assessment and management of flooding risks based on estimated storm discharge and capacity data.					

	Asset Preservation	Mobility Choices	Secure & Resilient	Safety	E&C Vitality
Increase focus on stormwater infrastructure maintenance Preserving the pavement surface of a roadway alone may not address challenges and threats to the system from inadequate or outdated stormwater drainage infrastructure. To address this, NDOT should enhance the regular maintenance of stormwater drainage infrastructure including swales, inlets, pipes, and basins to ensure these assets are able to sufficiently handle storm drainage.					

3.4 Embrace Technology Opportunities

Technologies like 'smart' infrastructure, electric cars, autonomous vehicles, or unmanned aerial devices are already starting to change transportation in many ways. Taking advantage of technology advances can help NDOT be the best steward for a Nebraska transportation network that keeps its users safer, improves their mobility, and better supports economic and community quality of life concerns shared by all Nebraskans, whether they live in cities or rural areas of the state.

	Asset Preservation	Mobility Choices	Secure & Resilient	Safety	E&C Vitality
Highlighted Recommendation Prepare for smart corridors in Nebraska 'Smart corridors' use a range of technologies to help overcome challenges like congestion, incident management, or severe weather. By continuously monitoring traffic and road conditions, for example, smart corridors can use automated tools like variable speed limit signs, electronic message signs, queue detection and warnings, dynamic junction and lane use controls, real- time truck parking information, adaptive ramp metering, or traffic signal management to improve traffic flow. NDOT should identify and prepare for deployment of smart corridors across Nebraska in partnership with neighboring states and local and regional governments. With these partners, NDOT should leverage findings from				Safety	
the Advanced Transportation and Congestion Management Technologies Deployment multi-state pilot project along I-80, which offers lessons for other important transportation corridors in the state.					

	Asset Preservation	Mobility Choices	Secure & Resilient	Safety	E&C Vitality
Highlighted Recommendation Create a connected and automated vehicle (CAV) committee CAVs promise more mobility choices, improved safety, and congestion relief, but could mean more vehicles on Nebraska's roads and require infrastructure improvements to accommodate them safely. To prepare for CAVs, NDOT should consider setting up a committee that can guide NDOT's efforts to examine CAV-related challenges in areas such as law enforcement, wireless data connectivity, infrastructure gaps, or outreach and education needs. This may help create new partnerships around CAV adoption in Nebraska.					
Develop smart work zone guidelines Maintaining and upgrading Nebraska's roadways makes work zones inevitable. Unfortunately, drivers who do not adhere to traffic control measures in work zones raise the risk of crashes. Smart work zones incorporate ITS technology and real-time information to improve safety. NDOT should develop smart work zone guidelines and criteria with a focus on high traffic routes and specific safety problem areas. As part of this effort, NDOT could evaluate use of variable speed limits (VSL) within some work zones and during weather emergencies, which would require partnering with law enforcement and possible legislative changes.					

	Asset Preservation	Mobility Choices	Secure & Resilient	Safety	E&C Vitality
Add electric vehicles to NDOT's fleet Electric vehicles (EVs) are increasingly viable as a cost- effective and environmentally beneficial component in many public sector fleets. NDOT should explore cost- effective EV acquisition strategies for its fleet.					

3.5 Expand Collaboration with Stakeholders

By fostering stronger partnerships and more collaboration, NDOT can leverage the reach of its work via more engaged and supportive stakeholders who help create a more seamless transportation network across Nebraska that bridges governmental divisions to better serve customers' mobility needs.

	Asset Preservation	Mobility Choices	Secure & Resilient	Safety	E&C Vitality
Highlighted Recommendation					
Engage with key stakeholders to make progress in broadband initiatives The private telecommunication sector has experience in providing and expanding access to broadband for Nebraska's businesses and residents. NDOT can benefit from sharing knowledge with the private sector telecommunication industry through coordination with the private telecommunication providers and other governmental entities to increase access to broadband across Nebraska. NDOT should participate in statewide plans and initiatives to increase access to broadband or other forms of digital connectivity like 5G.					

	Asset Preservation	Mobility Choices	Secure & Resilient	Safety	E&C Vitality
Expand support for resource agency environmental review of transportation projects As NDOT works toward full 'NEPA assignment' of National Environmental Policy Act environmental review responsibilities from FHWA, NDOT should expand its partnerships with resource agencies to support streamlined completion of environmental mitigation, permitting, and approval processes. This will expedite project delivery while preserving environmental quality and would support flexibility in project decision-making while ensuring environmental requirements are met.					
Strengthen local technical assistance programs Ownership of Nebraska's transportation network is shared among many jurisdictions. While NDOT controls the system's most heavily traveled backbone and the DOT is staffed by a multidisciplinary team of experts in transportation, the myriad of local governments with responsibility for small, but important connections to the backbone may not have the staffing expertise needed to meet every emerging challenge. NDOT should continue and strengthen its technical assistance to local partners such as MPOs, counties, and cities that strengthens their capabilities and awareness related to topics like preservation practices or low-cost safety improvements.					

	Asset Preservation	Mobility Choices	Secure & Resilient	Safety	E&C Vitality
Consider establishing 'metro travel improvement studies' as a template for engaging with major Nebraska metros about future needs The Omaha region-focused Metro Area Travel Improvement Study (MTIS) has proven an effective template for NDOT and its partners to collaborate on identifying transportation projects at a region-wide scale. NDOT should consider conducting periodic travel improvement studies for all major Nebraska metro areas to better coordinate local and state transportation needs.					
Expand economic development collaboration efforts Targeted transportation investments have long been recognized as an important public sector strategy for creating long-term economic payoffs through attraction, retention, or growth of businesses. NDOT should continue to expand and strengthen its partnerships with statewide economic development agencies and their stakeholders to better identify transportation projects that improve local and regional economies and job accessibility. In particular, this effort should include partnering with the Nebraska Department of Economic Development to integrate land use and development plans related to future intermodal facilities and inland ports with transportation plans for first- and last-mile connections.					

	Asset Preservation	Mobility Choices	Secure & Resilient	Safety	E&C Vitality
Strengthen local transportation support Every day, as Nebraskans use the state's transportation system, they move back and forth from locally owned and managed system elements to elements owned and managed by NDOT and they expect a seamless travel experience. NDOT should continue and strengthen its efforts to promote its existing local programs and explore opportunities to develop others to similarly support vital local multimodal preservation needs.					
Expand safety enforcement partnerships for truck freight Truck safety continues to be important as changes in trucking include an increase in e-commerce and home deliveries and an increase in oversize vehicles carrying large, automated equipment. NDOT should continue to expand collaboration with local law enforcement and the trucking industry to maintain truck safety enforcement and monitoring programs to adapt to the changing trucking industry.					

3.6 Build Education and Awareness

By making changes in the ways NDOT educates and learns from its partners, the traveling public, and its own team, the agency can build its capacity to create a more seamless transportation network across Nebraska.

	Asset Preservation	Mobility Choices	Secure & Resilient	Safety	E&C Vitality
Highlighted Recommendation					
Continue to support and expand on a distracted driver awareness campaign While improvements in vehicle equipment like seat belts, airbags, or brake assist technology have helped reduce the danger of crashes, driver distraction caused by digital devices in vehicles is a fast-growing problem on Nebraska's roads that poses a rising threat to vehicle occupants, as well as to pedestrians and bicyclists who share the roads. NDOT should continue to partner with stakeholders through the Drive Smart Nebraska Coalition to continue to provide, update, and expand upon education to the public about the dangers of distracted driving.					

	Asset Preservation	Mobility Choices	Secure & Resilient	Safety	E&C Vitality
Formalize asset management best practice training As infrastructure in the U.S. ages, advances in the field of transportation asset management (TAM) are helping ensure past infrastructure investments are preserved for future generations. To keep pace with new TAM tools and techniques, NDOT should formalize a robust, timely, and regular asset management training program for relevant NDOT staff to ensure deployment of 'best in class' practices for keeping infrastructure in a state-of-good- repair.					
Continually improve safety training The safety of Nebraska's transportation system depends on NDOT and its partners following safety best practices and coordinating their efforts. To stay up-to-date, NDOT should continually improve and periodically re-evaluate first responder, emergency management, and rescue training programs, and continue to provide safety training to Districts.					
Produce a 'value of freight' awareness campaign Changing economics - driven by issues like e-commerce and global export market transformations - is creating new freight transportation needs in Nebraska. Changes in the way Nebraskans shop and do business will impact future freight needs. NDOT should consider developing a campaign to raise awareness about the critical role efficient freight movement has in Nebraska's economy.					

	Asset Preservation	Mobility Choices	Secure & Resilient	Safety	E&C Vitality
Update and expand on a work zone safety awareness campaign Work zones are a necessity for maintaining and upgrading Nebraska's roadways. Unfortunately, drivers who do not adhere to the traffic control measures in work zones areas raise the risk of crashes that may cause fatalities, injuries, and delays. Through the Drive Smart Nebraska Coalition, NDOT should expand upon and update the public education campaign to improve work zone safety; these efforts can help keep everyone safe.					

3.7 Improve Organizational Effectiveness

To achieve its Statewide Transportation Plan goals, NDOT must continue to explore opportunities to improve its organizational effectiveness in ways that foster efficiency, safety, and innovation.

	Asset Preservation	Mobility Choices	Secure & Resilient	Safety	E&C Vitality
Highlighted Recommendation Further expand the use of practical design principles where appropriate NDOT's project designs are increasingly shaped by 'practical design' approaches that evaluate whether strictly uniform standards can sometimes be replaced by design elements tailored to better achieve project-level goals and objectives. NDOT should seek to further expand the use of practical design approaches where applicable via updates to its road design manual.					
Develop and use new strategies to increase project bid competition Project costs partially depend on the bids that NDOT receives from contractors to complete the work. In order to encourage competitive bids, NDOT should implement best practices for increasing bid competition; for example, bundling projects where appropriate, increasing the advertising period, selectively allowing flexible "working days" on certain projects, and evening out the number of projects included in each letting to reduce costs.					

	Asset Preservation	Mobility Choices	Secure & Resilient	Safety	E&C Vitality
Maintain and enhance Stakeholders, Engineering, Economics, Priorities (StEEP)-style approach for incorporating economic analysis into selection of capacity projects Directing limited dollars wisely to select the best transportation improvements for Nebraska is one of NDOT's most important responsibilities. NDOT should continue to expand its use of economic analysis to help inform choices among capacity investments as part of the project selection process to ensure benefits related to jobs, productivity, and economic development are considered as part of investment decisions.					
Develop an agency vision and guidance for sustainability NDOT is committed to its role of environmental stewardship and continues to incorporate best practices in sustainability in its daily functions. To continue to facilitate sustainable initiatives and to coordinate these efforts across the agency, NDOT should consider development of an agency-wide plan for sustainability including guidance for sustainable project development efforts and policies for agency operations such as fuel-efficiency and recycling.					

	Asset Preservation	Mobility Choices	Secure & Resilient	Safety	E&C Vitality
Continue to expand stormwater best management practices Uncontrolled runoff can cause environmental damage, flooding, and excessive erosion along Nebraska's roadways. Extreme weather events are expected to be more frequent in the future, and runoff is therefore also likely to increase over time. NDOT should continue and improve methods to mitigate stormwater runoff and protect sensitive ecosystems with green infrastructure features such as bioswales and tree plantings and continue to research and implement recommendations for improving roadside plant communities to prevent soil erosion, provide habitat, and filter water runoff.					
Enhance management of fleet and facilities NDOT's fleets and facilities are important assets to the agency. To streamline and improve the management of these assets, NDOT should enhance facility and fleet inspection, maintenance, and management programs with technology-based management solutions and training.					
Increase railroad grade crossing closures NDOT has a program that funds local governments' efforts to close at-grade railroad crossings or add safety improvements. To encourage more safety improvements and closures, NDOT should study the efficacy of railroad grade crossing closure funds, propose new measures to increase the number of closures, and continue to support safety improvements at remaining railroad crossings.					