

Upper Great Plains Transportation Institute 2019-2021 Budget Request

Presented to
the Senate Appropriations Committee
by Denver Tolliver, Director
March 20, 2019

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UGPTI's 2017-2019 Base Level Budget

Line	Item	Amount	Percent
1.	General funds	\$3,443,174	15.5%
2.	Special funds	\$6,338,850	28.5%
3.	Federal funds	\$12,478,218	56.0%
4.	All funding sources	\$22,260,242	100.0%

2019-2021 Budget Passed by House

Item	Base Level	Adjustment	Appropriation
Total all funds	\$22,060,242	\$777,487	\$22,837,729
Less est. income	\$18,617,068	\$257,255	\$18,874,323
General fund	\$3,443,174	\$520,232	\$3,963,406
FTE positions	43.88	0.00	43.88

Detailed Changes Made by House

Item	Adjustments or Enhancements			
	Salary & Benefit Increases	Misc. Expenses	Road & Bridge Study	Total House Changes
Total all funds	\$398,350	(\$70,863)	\$450,000	\$777,487
Less est. income	\$257,255	\$0	\$0	\$257,255
General fund	\$141,095	(\$70,863)	\$450,000	\$520,232

Recommendation of SBHE and UGPTI Advisory Council

Item	Amount
Base level budget	\$3,443,174
County road & bridge center	\$975,000
Total general fund request	\$4,418,174

Economic Importance of County and Local Roads

- County & township roads are heavily utilized for
 - Movements from farms to storage/transfer facilities
 - Crude oil movements from wells to pipeline and rail transfer facilities by truck
 - Inputs for oil and ag. production: often delivered by truck to dispersed production sites located off the state highway system
- County and township roads are essential to the state's rural economy

Benefits of Road Investments

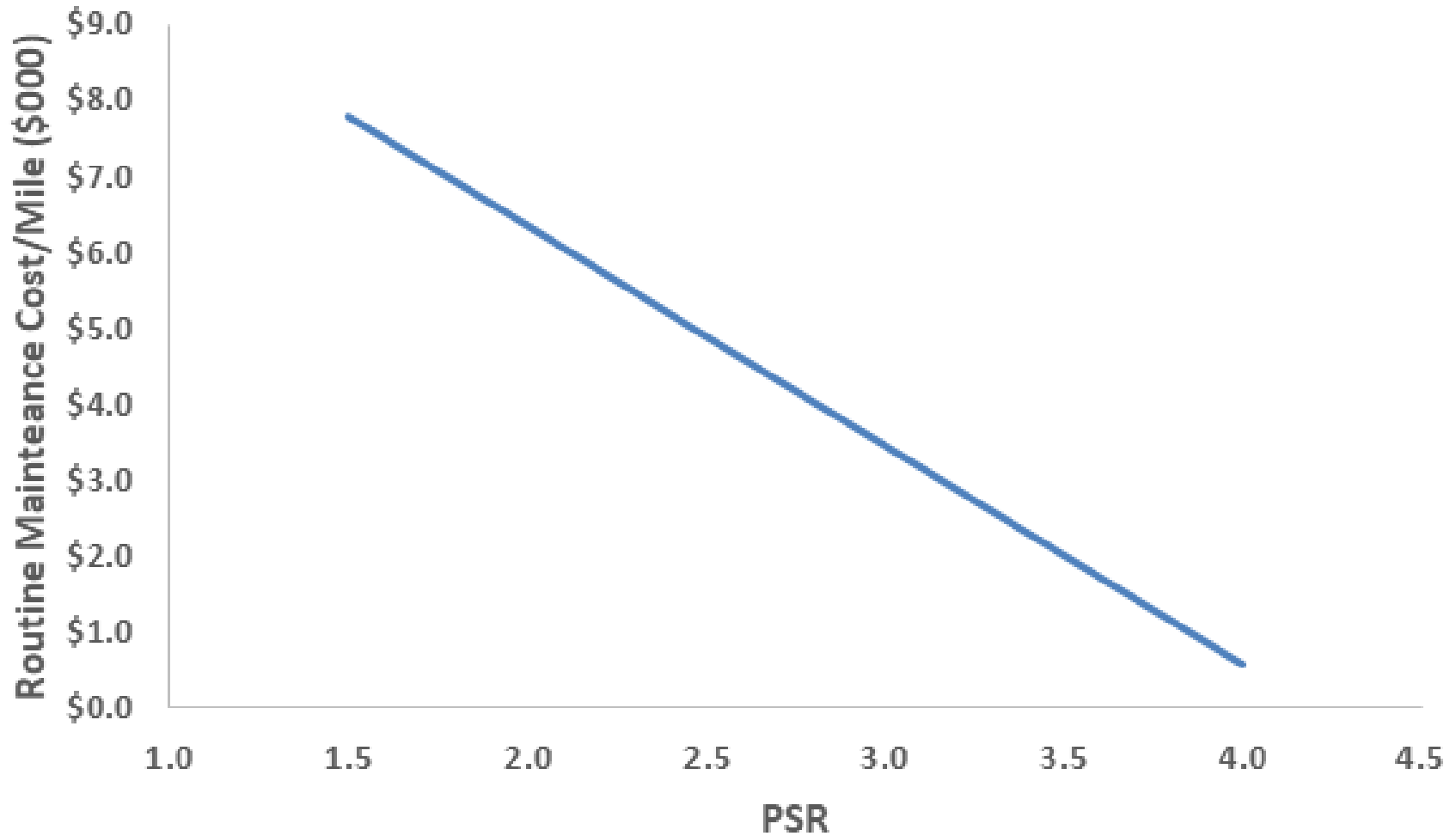
- According to FHWA, average benefit/cost ratio from highway and bridge investment (considering all benefits) > 5.0
- B/C ratio > 2 for resurfacing low volume rural roads
- Broader benefits to the economy are much greater
 - Reduction in total industry logistics costs
 - Multiplier effects from lower input prices

Effect of Road Condition on Trucking Cost

Road Condition	Present Serviceability Rating (PSR)	Cost Index
Excellent	5	0.91
Good	4	0.93
Fair	3	1.00
Poor	2	1.14
Very Poor	1	1.26

Source: TRB Special Report 227

Effect of Road Condition on Maintenance Cost



Impact of Deferring Road Investment

Improvement	Thickness (inches)	PSR Threshold	Cost/Mile (\$000)
Thin Overlay	2	2.5	\$200
Structural Overlay	4	2.0	\$375
Rehabilitation		1.8	\$600-\$1,000
Reconstruction		< 1.8	\$1,250

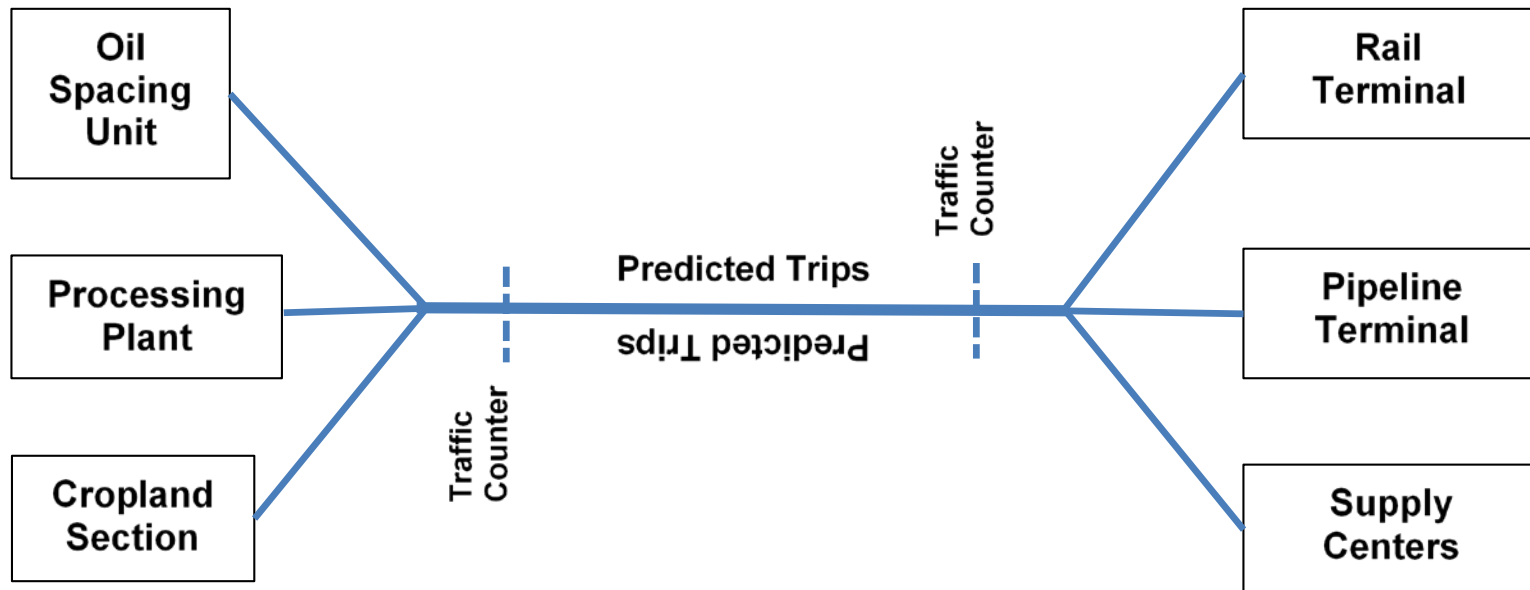
Biennial Condition/Needs Report

- UGPTI will collect traffic data in partnership with NDDOT > 1,000 locations on county/local roads
- Develop current estimates of surface conditions
- Forecast truck traffic levels from economic activity in the state: specifically
 - Oil, produced water, drilling inputs
 - Crop production
 - Processing/manufacturing
- Inputs used to predict resurfacing, rehabilitation, graveling and other maintenance needs

History of UGPTI Studies

- In 2012, 2014, and 2016 UGPTI provided the Legislature with reports of needed investments in county, township, tribal roads
- Studies were financed with one-time appropriations
- No funding was provided for a 2017-19 study
- Latest traffic, road condition, and investment needs estimates are three years old

UPGTI's Traffic Model



Truck trips predicted from and to each oil spacing unit, cropland section, and major processing plant → Predicted trips accumulated for road segments → Predicted trips compared to observed truck volumes on principal road segments → Model is calibrated against observed traffic levels in the base year

Road Asset Management

- Holistic approach that minimizes long-term cost and makes roads last longer under heavy traffic
- Preserve road condition by applying the best treatment at the proper time
- \$1 spent on maintenance at the right time could save \$4 to \$5 in the future
- Ultimate vision: all counties use same system
 - Generate consistent condition/performance measures
 - Ensure consistency/compatibility across counties
 - Avoid duplication of efforts and minimize cost

Near-Term Objectives

- Continue development of online Geographic Roadway Inventory (GRIT) and mapping tools
- Already being used by many counties
- Current information, available from all sources:
 - Roadway width, surface, type, etc.
 - Condition
 - Truck traffic
 - Construction history and improvements plans
- Consistent data that can produce statewide performance measures

Decision Support Tools

- Surface selection (paved vs. aggregate surface)
- Preservation treatment selection
 - Select from improvement types: thin overlay, structural overlay, rehabilitation, shoulder improvements, etc.
 - Maintenance treatments: e.g., chip seal, crack sealing, patching, microsurfacing
 - Unpaved roads: frequencies of blading, graveling, dust control, gravel depth

Benefits of County Road/Bridge Program

- ≈ 6,000 miles of paved county road in North Dakota
- Should be resurfaced ideally when PSR reaches 2.5
- Without UGPTI's biennial study, road investments could be pushed into the future
- Deferring investment until rehab. increases capital cost by \$400k to \$1 million dollars per mile
- If just one 5-mile segment is identified, improved in a timely manner, and rehab. is avoided, \$2 million to \$4 million can be saved.

Benefits of County Road/Bridge Program (Continued)

- Based on 2016 study, it is likely that 10% of paved county road-miles have PSR values > 2.5
- Another 14% have PSR values from 2.5 to < 3.0
- If investments in just 100 miles of these roads are optimized, UGPTI's program will save the State \$40 million to \$80 million in capital costs
- If investments in 500 miles of county road are optimized, UGPTI's program will save the State \$200 million to \$400 million in capital costs

Thank you!