

North Dakota State University

Upper Great Plains Transportation Institute

Overview of Programs and Activities

Overview

- Established by legislature in 1967 as a specialized research institute at NDSU with an advisory council
- Primary intent: study effects of transportation on state's economy and marketing of goods
- Evolved from a freight/ag. logistics center to a comprehensive multimodal/multidisciplinary center
- Three locations: Fargo campus, Bismarck, Lakewood (CO)
- Mountain-Plains Consortium (MPC): 8 universities with NDSU as lead (CO, UT, WY, SD, and ND)

UGPTI Advisory Council

- Assoc. General Contractors of ND
- Grand Forks Area Transit
- Lignite Energy Council
- ND Aeronautics Commission
- ND Association of Counties
- ND Chamber of Commerce
- ND Department of Agriculture
- ND Department of Commerce
- ND Dept. of Transportation
- ND Farmers Union
- ND Grain Dealers Association
- ND Grain Growers Association
- ND League of Cities
- ND Motor Carriers Association
- ND Wheat Commission
- Phoenix International, Inc.
- Red River Valley & Western RR

Mountain-Plains Consortium

- Competitively selected university transportation center (UTC) in Region 8
 - Colorado State University, University of Denver, University of Colorado-Denver
 - University of Utah and Utah State University
 - University of Wyoming and South Dakota State University
- Primary focus: infrastructure and safety
- Intermodal freight transportation
- Traffic analysis/metropolitan planning
- Technology transfer & workforce development

Road and Bridge Infrastructure

- Forecast truck traffic statewide for a 20-25 year period (year-by-year)
- Detailed modeling of oil- and ag-related traffic
- End result: estimates of truck trips and axle loads on individual road segments
- Traffic forecasts used to estimate investment needs for county and township roads to governor and legislature
- Major improvement over traditional method of trending historical traffic

Highway Infrastructure Needs

- Develop traffic models for NDDOT to predict flows over state highways
- Provide comprehensive estimates of investment needs for all highways for 20-year planning period
- Quantify the benefits of making road and bridge improvements
 - Traveler and freight operator cost savings, maintenance savings, safety benefits
- Technical assistance in asset management, rail transportation, freight planning

Advanced Traffic Analysis Center

- Technical and planning assistance to small to medium-size cities
- Critical information for MPOs and NDDOT
- Travel demand modeling
- Traffic simulation and operations
- Intelligent Transportation Systems
- Field data collection: 1000+ traffic counts around the state in 2013
- Exemplary township and county traffic data

Agriculture & Freight Center

- Provide key information to improve competitive positions of producers and businesses in the state
- Economic analysis of railroad, truck, and intermodal transportation options
 - Service levels and practices
 - Costs and rates
 - Shipper logistics
- Freight planning

Technology Applications/Deployments

- Advancements in low-power sensing, wireless communications, and mobile computing
- Cost-effective real-time monitoring of shipments, traffic patterns, pavements and structures
- Example: frequent collection of pavement roughness through vehicle sensors, accelerometers, and smart phone applications
- Potential rail and motor carrier applications

DOT Support Center (DOTSC)

- Quick response/targeted analysis for the NDDOT, primarily in highway engineering and planning
- Student roadway design section supervised by on-site NDDOT design staff to employ, train and utilize undergraduate students in NDDOT design projects
- Provides real-life experience for engineering students

ND Local Technical Assistance Program (LTAP)

- Part of nationwide LTAP network
- Focus: exchange of transportation technology among local units of government and other transportation agencies
- Provides training, technical assistance, and information services
- Extensive program of county road technical assistance in western North Dakota
- On-site and on-line training (via TLN Transportation Learning Network)

Transportation Learning Network (TLN)

- Workforce training initiative linking the transportation departments in Montana, North Dakota, South Dakota, and Wyoming and the MPC universities
- Provides training, professional development and technology transfer in transportation engineering
- Uses modern communication technology to offer a variety of learning options: videoconferences, webinars, online modules
- Unique learning management system

Transportation Safety Systems Center

- Based in Lakewood, CO: develops and maintains software used by state and federal safety specialists nationwide at weigh stations and ports-of-entry for inspecting commercial vehicles
- Software also used by safety specialists during on-site reviews of commercial carriers
- Safety-related research to improve targeting of enforcement

Small Urban & Rural Transit Center

- Provides workforce development for transit providers, users, and stakeholders
- Facilitates information exchange and training in technology deployment, management, and operations
- Goal: increase the mobility of small urban and rural residents through improved public transportation
- Examples: transit coordination, ITS applications, and mobility planning

Rural Transportation Safety and Security Center

- Promote and enhance the region's transportation safety and security through research, education, and outreach, in partnership with stakeholders
- Collaborative effort between UGPTI and the NDDOT with funding from the Federal Highway Administration
- Recently established Transportation Safety Advisory Committee [NDDOT, NDHP, NDES, FMCSA, FRA, PHMSA]

Graduate Education

- UGPTI coordinates NDSU's multidisciplinary education programs through the Transportation & Logistics Program
- Doctorate in Transportation & Logistics
- Master of Managerial Logistics
- Master of Transportation and Urban Systems
- Transportation Leadership Graduate Certificate

Tribal Outreach

- Long-term commitment
- Partner with NDDOT, Tribal Technical Assistance Program centers and tribes
- Technical and planning assistance
 - Traffic forecasting
 - Road planning
 - Safety
- Designated tribal transportation coordinator
- On-site safety management training

Emerging Areas

- Multimodal/waterway corridor planning
 - US Army Corps of Engineers Center
 - Provide technical assistance in transportation cost and benefit analysis
 - Focus: Upper Mississippi/Illinois Waterway
- Air services planning [collaboration with UND Aerospace]
- Transportation security
- Energy logistics

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