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Hough to lead new transportation initiative - SURTC



People need affordable, accessible transportation. They need to commute to work, obtain health care, access job opportunities, shop, socialize,

and vote, to attend worship and community events. In rural and small urban areas people are often at a disadvantage because they do not have adequate public transportation.

Jill Hough, director of the new Small Urban and Rural Transit Center at the Upper Great Plains Transportation Institute, wants to see public transportation become a practical lifeline for rural and small urban areas. She wants people to be able to get to where they need to be.

The purpose of the Transit Center is to work to improve the mobility and accessibility of rural and small urban city residents through rejuvenated public transportation.

"The SURTC program is rooted in the importance of mobility and

accessibility to an advanced socioeconomic system," Hough says. "Public transportation that provides the ability to conveniently and affordably access job opportunities is one of the key underpinning pillars of a working economy."

SURTC will conduct research and provide service, technology transfer, education and training. Research will look particularly at social equity, transit ridership, improved technology and air quality. The Center will provide information to transit agencies, businesses and communities to provide a link among transit users, transit providers, businesses and researchers.

The Center will provide and facilitate the exchange of information relevant to the transit industry. There will be a special focus on planning, operations and technologies emphasizing smart solutions to problems.

Training programs will be developed to specifically address small urban and rural

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(SURTC cont. from pg. 1)

transportation issues. Additionally, SURTC will work with North Dakota State University faculty members to develop and incorporate public transit into their curriculums.

The SURTC has and will continue to be coordinated with federal, state and local transportation partners. Key partners include the Federal Transit Association, Community Transportation Association of America, American Public Transportation Association of America and state transit associations. SURTC will coordinate efforts with other UGPTI programs including the Mountain-Plains Consortium, the Advanced Traffic Analysis Center and TEL8.

The states targeted by SURTC are North Dakota, South Dakota, Montana, Wyoming and western Minnesota. These states have a large proportion of elderly and disadvantaged citizens for whom public transportation is their lifeline. Transit services in these states are also under funded relative to large urban areas. SURTC will bring attention to this imbalance and work to meet the needs of rural and small urban areas. Without transportation people can become isolated, virtually living under house arrest.

Through a customer-oriented program, with a strong research focus, SURTC will provide the knowledge and human capital to sustain and enhance transit service to small urban and rural communities.

SURTC ideal innovation at UGPTI

The Upper Great Plains Transportation Institute continues to build transportation knowledge. The research support and outreach provided by the new Small Urban and Rural Transit Center, SURTC, exemplifies forward-thinking ideas and planning to help people on a daily basis.

Manufacturers move to market

Improving the competitive advantage of manufacturing firms in North Dakota is the goal of the second in a series of North Dakota Biennial Strategic Analysis Programs (2001-2003). The project will develop a strategic freight analysis focused on the role of transportation and logistics in North Dakota's manufacturing industry. Grain and oilseeds was the focus of the first analysis done in 1999-2001.

This project, when completed, will add value to North Dakota and the surrounding region by providing information and knowledge allowing private and public sectors to make better decisions regarding investment and operations.

It will provide agriculture producers, manufacturers and agricultural processors with the insight to change operating procedure. It will allow processing interests to more confidently develop new products and expand existing product lines.

The state will be better able to develop and maintain the transportation infrastructure so vital to industries' logistical requirements. The end result will be a better managed and more efficient and effective transportation and logistical system for North Dakota products.

Associate research fellow Mark Berwick and advanced research fellow John Bitzan of the Upper Great Plains Transportation Institute at North Dakota State University are conducting applied economic and business analysis to specific industrial sectors. Along with key personnel to the project, Gene Griffin, UGPTI director; Julie Rodriguez, UGPTI associate research fellow; and Rodney Traub, NDSU marketing and finance professor, they will disseminate the results of analyses, provide training for management and other employees, and develop intern programs for students interested in business logistics.

The project aims to do three things:

- Strengthen the North Dakota manufacturing sector by advancing a competitive advantage through the application of supply chain management and business logistics;
- Provide the information and analysis necessary to establish a viable intermodal container freight facility to serve all North Dakota businesses;
- Improve public policy by providing industry leaders and public policy makers with a better understanding of industry transportation and logistical needs.

Study reflects efforts to diversify economy

Since North Dakota was first settled in the 1800s, natural resources were the state's recognized products. Small grain and animal agriculture, and coal and oil were the top sellers.

This worked for the state in its early history. The last 50 years have seen significant change in the socioeconomic environment however, and three reasons strongly suggest change is needed to see positive growth:

- Efficient global transportation has cut North Dakota's competitive advantage in marketing its natural resources. This created slower growth in the state's overall economic growth;
- The cyclical nature of natural resource based economies is volatile. This resulted in wide swings in state and local tax revenues, limiting state and local government ability to provide necessary infrastructure and services, and;
- The heavy reliance on natural resource industries created an out-migration of the state's most valuable resource – its young people.

Economic events in the last half century resulted in renewed efforts to diversify North Dakota's economy, while maintaining a strong production agriculture sector.

The state's manufacturing sector experienced significant growth during the past 20 years. In 1999, that growth showed 9 percent of the state's gross product was valued at \$1.5 billion. This was twice as high as the agriculture contribution of \$701 million.

Right place, right time, right price

While North Dakota's manufacturing industry is multi-faceted, the biggest challenge is still how to move goods to distant markets.

Top quality durable and perishable goods must be delivered at competitive prices for manufacturers to survive in a challenging economy. Producers and suppliers must transport products long distances and most have few options.

Economic development in rural communities faces special challenges. While value-added agricultural processing has been an economic development tool, most communities have limited transportation. Local trucking companies and rail are the primary movers. Trucking is costly because of North Dakota's long distances, even though it is door-to-door and timely. Rail transportation is low cost but is not timely or convenient, and does not offer the security demanded by manufactured products shippers and receivers.

The strategic freight analysis study adds another research component to the distant market scenario. Some evidence suggests smaller North Dakota firms do not have the resources necessary to manage logistics strategies effectively.

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North Dakota companies face two extra challenges. They must overcome remote location and lack of transportation options while overcoming the obstacle of implementing logistics strategies with fewer resources than their larger competitors. This study will provide assistance to firms to improve their competitive edge.

North Dakota firms must have the necessary information and analysis to participate in the process of a changing business logistic and transportation environment that the UGPTI study will provide.

Information for future growth

This examination of North Dakota strategic freight analysis has significant goals and objectives.

An *initial economic analysis* of the manufacturing sector and specialized marketing provides important background information to determine forward-focus concepts.

Case studies of several representative North Dakota manufacturing firms will focus on ways these companies can become more competitive through applying logistics as a management tool. One of the ways this will help state firms is being able to share insights with other manufacturers in North Dakota.

A *customized logistics-training program* will jumpstart an improved use of logistics as a competitive tool for manufacturers, specialized agricultural producers and the carriers who serve them.

UGPTI's partnership with NDSU means a *student intern program* will be developed to provide manufacturers with students who are interested in business logistics. This will serve the dual role of providing industry with student help and serve as a recruitment tool.

An *extensive market analysis*, in combination with an operational analysis of specific sites, will look at the role and feasibility of intermodal facilities. Two or more sites will be considered.

Strategies to improve the competitive position of manufacturers, agricultural processors and specialized agriculture sectors will be developed on a statewide and local basis based on the results of the study. This will include issues such as state support for facilities, development of shipping associations, and infrastructure planning and investment.

UGPTI's combination of data will give North Dakotans what they need to move forward with information critical to transportation and logistics in North Dakota.

TRB meeting generates excitement for students

Ten North Dakota State University students attended the Transportation Research Board (TRB) 81st annual meeting Jan. 13-17 in Washington, D.C., where two UGPTI staff members presented papers. The conference provides an opportunity to gain and share knowledge with colleagues and learn about the latest developments in transportation.

During the past three years, the Upper Great Plains Transportation Institute has sent active participants of the Transportation Student Association (TSA) to TRB. The TSA chapter was formed to include all students interested in the field of transportation and includes affiliations with the Institute of Transportation Engineers (ITE) and American Road and Transportation Builders Association (ARTBA).

In addition to attending conference sessions and workshops, students participated in activities hosted by ITE, including a luncheon and

networking reception. Students met key leadership of ITE, including ITE International President Jenny L. Grote. Students discussed current issues and needs of the transportation industry. When they returned from TRB, the students made presentations at a campus TSA meeting about the conference.



Students who attended were Maria Barnhardt, Corey Bergman, Ryan Erickson, Matthew Gangness, Matthew Linneman, Matthew Martimo, Joe Pihlaja, Khaled Shouman, Mark Vizecky and Stephanie Weigel.

UGPTI shares research

Brenda Lantz, director of the Transportation Safety Systems Center (TSSC), presented a paper about commercial vehicle driver traffic conviction data to identify high safety risk motor carriers.

The TSSC continuously researches ways to improve the carrier prioritization method used by the Federal Motor Carrier Safety Administration. This method includes how they prioritize to visit commercial vehicle companies for an on-site safety compliance review, as well as how they prioritize to inspect certain commercial vehicles and rivers on the roadside.

Lantz's main purpose was to determine if adding driver conviction data to this prioritization method would be useful – the overall conclusion, yes. Now the challenge will be determining how to successfully implement this new data element into the prioritization method.

Driver conviction information comes from the Commercial Driver License Information System (CDLIS). Through Lantz's study, new knowledge of high-risk companies and better focus of enforcement efforts should reduce crashes and fatalities on the highways. The study showed that carrier driver history is significantly correlated with carriers' out-of-service rates (OOS), accident rates and SafeStat Safety Evaluation Area (SEA) scores. She concludes that carriers with higher negative driver history measures are also more likely to have higher OOS rates, accident rates and SEA scores.

Kiel Ova, UGPTI associate research fellow, presented the paper "Evaluation of Signal Priority Strategies for Small-Medium Cities," at the Issues in Transit Priority session on Jan. 15. Ova used the microscopic traffic simulation model, VISSIM, to model a transit signal priority application in the downtown region of Fargo, N.D. His results indicated potential bus travel time savings as high as 14 percent with a decrease in bus stopped delays of 38 percent. Impacts to the local transportation system were investigated as well, showing network person-delay increased as much as 5 percent.

Transit Signal Priority (TSP) is the process of providing special treatment to buses, similar to emergency vehicles, but having less impact on the system. These applications are mainly applied in larger metropolitan areas where demand for transit service is moderate to high.

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They came, they saw, they learned

Matt Linneman and Stephanie Weigel heard about the North Dakota Department of Transportation Support Center (DOTSC) in their North Dakota State University classes. The two seniors are pleased they did. Their work led directly to the jobs they'll begin after graduating in May.

They will both work for the North Dakota Department of Transportation (NDDOT), Linneman in Fargo and Weigel in Bismarck. Last fall the NDDOT interviewed students on campus. With their DOTSC experience and excellent work records they were offered positions. They were, as Linneman says, "locked in early."

They both view the experience at DOTSC as valuable. Learning how to do things the right way, they agree, is the best. Ron Henke, who is their daily mentor, guide and teacher, stresses that they must follow DOT standards down to the final detail.

Learning the software is a real benefit. As seniors, they know they can help the rookies coming into the Hastings Hall office – something they like to do. The rule, they say, is try to figure something out, then talk to Henke.

The collaborative atmosphere is something they both appreciate. Henke, who Weigel says, has at least half the specification, code and standard books memorized, encourages students to research and ask questions. He also supports teamwork, helping each other find the best way to complete a project.

Henke also led both of them to the Order of the Engineer. In December when he graduated with his degree, he received the stainless steel ring he wears on the fifth finger of his working hand. Both Linneman and Weigel intend to show their pride in engineering by wearing their own rings.

The ring symbolizes acceptance of the obligations of an engineer to the public and to the profession. Only those who graduate or are close to graduation from an ABET-accredited engineering program or hold a professional engineer license are eligible.

Henke leads by example at the Center. His encouragement of professionalism in every engineering aspect for students and staff has a visible symbol in his ring – and in the rings of those to come.

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Ova's study evaluated theoretical TSP applications to Fargo, where demand for transit service is low. TSP applications in small-medium cities may be used as a mechanism for attracting more transit users and providing better service to existing bus routes.

He notes small-medium-size cities often have a transit service with large headways, often greater than 30 minutes. During peak periods, traffic congestion causes missed connections at transfer points and can increase the transit rider's total trip time by as much as one hour.

MPC-X meets niche needs

MPC-X, a new series on TEL8, overlaps the expertise of Mountain-Plains Consortium (MPC) researchers and TEL8 network expertise to disseminate topics from MPC research. These are focused topics, meeting niche information needs.

MPC-X is an ongoing series of discussions and presentations. In addition to including complete MPC research, the series would like to include projects getting underway. This makes it possible for others in the MPC and Departments of Transportation to serve as a sounding board for research projects.

Mark Berwick, who most recently talked about the “Logistics of the North Dakota Potato Industry,” said his experience with the MPC-X course was good. He appreciated the opportunity for immediate interaction with those most interested in the topic. Berwick, an associate research fellow at the Upper Great Plains Transportation Institute, said the feedback from his presentation was especially valuable because of ongoing research using the same model. Corn was the first logistical study and wheat will be the next in the research series.

Getting input at the beginning of a project through MPC-X can help clarify points, offer guidance toward conclusions and assure the fully completed, on-the-shelf research is both appropriate and available.

TEL8 is the communication channel between university research and DOT practitioners. The MPC, one of 10 competitively selected University Transportation Centers, is a national resource and focal point supporting research and training. TEL8 is an interactive telecommunications network that links several universities and DOTs in the western United States.

For information on upcoming classes, contact Julie.Rodriguez@ndsu.nodak.edu. For technical information on TEL8, contact Mitch.Hoffart@ndsu.nodak.edu.

‘We all learn from Ron’

Ron Henke, in his own words, “can’t stop going to school. I constantly have to learn new software. I need to understand the why of things – not just that the book says it.”

Colleagues and students who work in the Department of Transportation Support Center (DOTSC) laud Henke’s knowledge, professionalism and helpfulness. Dennis Jacobson, DOTSC director, says: “He’s one of the best state employees the NDDOT (North Dakota Department of Transportation) has. I’m not talking just engineers now, I’m talking all around professional. He’s extremely productive and he’s innovative. He keeps you on your toes because he sets high standards for performance. It’s great just to be associated with him. We all learn from Ron, no matter where we are in our careers.”

Jacobson points as well to Henke graduating last December for the second time. Henke did this while working full-time with a project load of more than \$106 million worth of designs, Jacobson adds.

Henke first graduated from North Dakota State University in construction management in 1988. In 2001 he earned a second bachelor of science degree, this time in construction engineering. He joined the North Dakota Department of Transportation (NDDOT) in 1990, moving to Fargo in 1997.

In autumn 1997 he became a full-time employee with the DOT, working in the construction division. That’s also when he started working on his second degree. Then in January of 2000 the DOTSC began. Jacobson, who initiated the Center, recruited students in classes. Henke began work with four students. Now, nine students keep him busy teaching and mentoring.

In its first year the DOTSC has expanded the perception on campus of transportation engineering as viable and interesting, bringing an awareness the NDDOT hoped would happen. Jacobson and Henke both work to keep interest growing.

Last October he took the eight-hour engineering-in-training exam and has applied to take the professional engineers exam. The DOT helped with degree expenses.

As the daily manager in DOTSC, Henke enjoys himself. He likes working with students. The real world designs they do help them learn about the transportation field, encourage transportation as a professional prospect for the students and assists the work load for the NDDOT.

A list of some of the work students, with Henke’s guidance, have done in the past year includes:

- Construction signage for the multi-million dollar I-29 project through Fargo
- A reconstruction project that included subgrade, base and concrete
- Structure removal concept and plans for an abandoned railroad, taking out ties and flattening
- Shadowing of technicians on work sites last summer
- Surveying on re-construction projects
- Inventorying and collecting data
- Looking at safety enhancements for roadways

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UGPTI to study commercial airline fares

The Upper Great Plains Transportation Institute is studying and evaluating the pricing behavior of commercial airlines operating in small and medium communities. UGPTI will assess airline-pricing behavior to find the reasons there are differences in fares across markets.

There are 370 small to medium-size metropolitan areas in the United States, accounting for 22.3 percent of the population. These cities have a population of 400,000 or fewer, and are also called second-tier cities. In addition to representing a significant portion of the population, these cities serve as major service centers for rural America.

Rural America may represent an opportunity for economic expansion – an alternative to already congested major metropolitan areas. Small and medium cities are generally less costly than larger areas. Economic growth cannot happen without adequate air service at reasonable prices.

In evaluating this important issue, UGPTI will include:

- A comprehensive survey and review of literature related to airline pricing
- A careful examination of airline pricing behavior nationwide, with segregation by market types and the number and types of airlines serving various markets.
- Development of a detailed, theoretically sound, and testable economic model to explain airline pricing behavior
- Development and estimation of econometric models to test the hypotheses developed by the economic model, and
- A summary of results, along with a discussion of the implications of UGPTI findings for desirable policies that maximize social welfare.

This is the first such study by UGPTI.

(Ron cont. from pg. 8)

Students also discover the complexity of learning how to work with people while learning how to do multiple engineering tasks. For any of the DOT projects there may be as many as 100 or more letters to people interested in projects who might want more information or who may have objections or suggestions to a plan.

Then it's compiling the viewpoints and making a decision statement. How to do a job and developing alternatives on how to do it are always challenges they face, together.

Downstairs in Hastings Hall, the DOTSC students keep busy. They use the industry standard GEOPAK and MicroStation formats. They figure things out – they learn how to think like engineers.

With Henke's guidance they learn to combine engineering and people skills – a good day's work by any standard.

ATAC researchers embrace new focus area

The Advanced Traffic Analysis Center (ATAC) Work Program has been approved by the Federal Highway Administration and covers activities through late 2003. ATAC is working with the North Dakota Department of Transportation (NDDOT) on several major projects including facilitating the development of a Traffic Operation Center (TOC) in Fargo, N.D., as well as supporting other Intelligent Transportation Systems initiatives across the state.

ATAC Director Ayman Smadi says they are extremely excited about the relationship with NDDOT, as well as local partners in the Fargo-Moorhead (Minn.), Grand Forks and Bismarck, N.D., areas. These areas, he notes, are making great strides toward modernizing their traffic control and traveler information systems.

By late spring 2001, ATAC began working with state and local partners to establish a new focus area that provides travel demand modeling support for NDDOT and North Dakota Metropolitan Planning Organizations. The primary focus in the short-term will be to support modeling needs in North Dakota, using enhancements to the Fargo-Moorhead MPO as the focal point of this effort. The ultimate goal for this program is to develop a resource for transportation planning modeling suited for small-medium size urban areas. Specifically, this program will:

- Support MPO transportation planning model improvements
- Ensure consistency across North Dakota in travel demand/transportation plans development
- Explore potential applications of new modeling tools or systems

- Facilitate greater institutional cooperation by providing a neutral source for modeling expertise
- Provide training opportunities on developing and improving transportation planning models
- Increase the number of qualified civil engineering students who can fill transportation planning positions in North Dakota, including at the NDDOT, MPOs and consulting engineering firms.

ATAC moving

Another major initiative is the ATAC move to Hastings Hall at NDSU, just across the street from UGPTI and across the foyer from the North Dakota Department of Transportation Support Center (DOTSC). The new space will provide ATAC with a more integrated space, including a spacious training room with state-of-the-art equipment and a more open Traffic Lab with increased work areas, as well as office space for ATAC research staff. The move, Smadi says, could not have come at a better time because ATAC is preparing to host even more training programs.

Student numbers growing

Student numbers continue to grow along with their contributions. ATAC students who are active in the ITE Student Chapter at NDSU, attended the Annual ITE Meeting in Chicago and had an opportunity to learn and to interact with their peers. Recognizing the interdisciplinary approach to transportation problems, ATAC prides itself on having students from such diverse backgrounds as civil engineering, electrical engineering, computer science, business and communication. Electrical

engineering students are working to develop a cost-effective controller-interface-device part of their senior design project.

Contact ATAC

Smadi encourages people to become familiar with the ATAC program and utilize its resources. ATAC is developing a library of selected reports, studies and links, most pertaining to small-to-medium size cities. Please visit www.atacenter.org often.

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