

BACKGROUND AND PROJECT GOALS

In this last year of the six-year EWITS project, the Steering and Advisory Committees have chosen to continue to support the four broad objectives of the Eastern Washington Intermodal Transportation Study:

- Facilitate existing regional and statewide transportation planning efforts.
- Forecast future freight and passenger transportation service needs for Eastern Washington.
- Identify gaps in Eastern Washington's current transportation infrastructure.

- Pinpoint transportation system improvement options critical to economic competitiveness and mobility within Eastern Washington.

This six-year study is in Phase II, the multifaceted second half of the study. The study is funded jointly by the federal government and the Washington State Department of Transportation. Dr. **Kenneth Casavant** of Washington State University serves as the director of the study, guided by a Steering Committee and an Advisory Committee from the region. The Advisory Committee has representation from a broad range of transportation interest groups (see page 2).

EWITS Steering Committee

Jerry Lenzi, Chair
WSDOT, Eastern Region

Richard Larson
WSDOT, South Central Region

Don Senn
WSDOT, North Central Region

Charles Howard
WSDOT, Planning Manager

Eric Berger, Executive Director
County Road Administration Board

Tom Green
Washington State Transportation Commission

WHAT DID EWITS DO AND WHAT CAN EWITS DO IN THE FUTURE?

THE ANSWER IS AT THE FORUM!

Since its initiation in 1993, EWITS has produced analyses on a varied range of transportation issues facing Eastern Washington including future commodity transportation needs, future passenger transportation needs for both cities and counties in the region, railroad and water traffic patterns and potential impacts resulting from river drawdowns. As part of its mission to facilitate planning, EWITS has also generated data that can be used by local, state and regional planners for future transportation planning efforts. A summary of all EWITS research reports documenting the progress of the study to date will be provided at the EWITS Forum set for May 13.

Underlying much of the activity and effort of EWITS's approach is the concept that: "Research + Planning + Political Support = Success".

This is the theme of the EWITS Forum to be held at Moses Lake. The results of the six-year study and a full discussion of the current legislative direction for transportation funding will be the focus of the Forum. Participants are encouraged to attend and discuss EWITS and legislative results, helping to impact future priorities of planners, decision makers, political representatives, etc.

Invited speakers are Governor Locke, Ambassador Tom Foley, Karen Schmidt, chair of the Legislative Transportation Committee, and Gene Prince, chair of the Senate Transportation

Committee. Additionally, local city and county officials, business firms, ports, transportation modes, and development organizations will be represented and will participate in panel discussions during the day.



Washington State Department of Transportation



Washington State
University



Note from the Project Director

YA'ALL COME, YA HEAR!

As project director, I have to be a bit careful. I don't know if it is pride in past accomplishments or excitement about the use of EWITS in the future, but I do hope most of the recipients of this newsletter will consider attending the EWITS Forum set for May 13 in Moses Lake. Our six years of EWITS activities (25-plus studies and 9 working papers) have produced some of the most detailed information and data bases ever seen for a transportation and planning ef-

fort. Key legislative and state policy leaders will discuss EWITS findings and outline policy issues. The focus of the Forum will then turn to consideration of how recent legislative and congressional funding packages can be combined with those findings and issues into an agenda for eastern Washington's transportation and economic development future.

Yes, I am obviously proud and excited about the Forum. Please, "ya'all come, ya hear!"

[HTTP://EWITS.WSU.EDU](http://ewits.wsu.edu)



EWITS' reports and working papers are now available on the Internet with a comprehensive home page on the World Wide Web. Distribution and utilization of the materials produced through the study have been two of the principal goals of EWITS since its inception. Similarly important is the support provided to Internet users from all over the globe seeking general information or

specific examples of the treatment of topics in transportation. Not only are the major documents from the study contained here, but we also have displayed the EWITS mission statement, a short introduction with an explanation of the background of the project, and contact information for the Steering and Advisory committees and project director.

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The UPDATE newsletter is published to disseminate information from the Eastern Washington Intermodal Transportation Study.

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BOTH ENERGY AND THE ENVIRONMENT ARE AFFECTED BY RIVER DRAWDOWNS

The ability to transport agricultural products efficiently and cost effectively is a crucial component to the success of Washington producers. Producers, consumers and policy-makers are more and more concerned with not only the least cost transportation mode, but also with minimizing energy consumption and emissions output, hence, the study detailed in EWITS report #23.

Since 1970, overall energy intensities (consumption) for truck, rail and barge have decreased. Truck energy intensity fell by nearly 9 percent, rail fell by over 46 percent, and barge fell by over 31 percent. Rail is now slightly the least energy intensive, using 372 Btu's per ton-mile, followed closely by barge at 374 Btu's per ton-mile and by truck at 551 Btu's per ton-mile.

Changes in energy intensity and emissions output for Washington become apparent when

one mode of freight transportation becomes unavailable.

A pilot study of a drawdown of the Snake River above the Tri-Cities shows both energy usage and emissions output increase when barge is not available. Energy intensity increases by 1.5 percent and emissions increase by 4 percent in the case of wheat transportation. For barley, energy usage increases by 41 percent and emissions output increases by 24 percent.

Energy intensity and emissions output have indeed decreased over time for freight transportation modes. However, changes in transportation policy, such as a drawdown of the Snake River, may likely cause increases in energy consumption and the output of emissions from the movement of wheat and barley in Washington.

ROAD DAMAGE STUDIES CONTINUE: ESTIMATES GET MORE PRECISE

A review is continuing of various studies that estimate highway impacts from traffic. Few published studies exist but the degree of information useful to analysts and decision makers is increasing. An early 1989 study by Casavant and Lenzi generated estimates for county roads and lightly-built state highways. These estimates were then applied, quite broadly, to other applications in several studies, since they were the only estimates avail-

able. Fortunately, new EWITS estimates are giving more precise and more road type specific information.

Current EWITS findings used in the latest Eriksen and Jessup study are \$.002 per ton-mile, \$.01 per ton-mile and \$.04 per ton-mile for interstate, state highway and county roads, respectively. The 1998 estimates show the decrease in estimates of road damage per ton-mile that has occurred in recent years resulting from these new studies.

Highway Impact Coefficient Estimates			
	\$ Ton-mile Cost Coefficient		
Study	Interstate	State Highway	County Road
Casavant and Lenzi (1989)			
Resurfacing Cost	N/A	.01 to .06	.02 to .09
Tolliver (1995)			
Resurfacing Cost	.003 to .006	.007 to .016	.02 to .04
Reconstruction Cost	.01 to .02	.03 to .06	.08 to .17
Casavant, Jessup, Lenzi (1996)			
Resurfacing Cost	N/A	.071	.1065
Casavant, Jessup, Lenzi (1996)			
Resurfacing Cost	.002	.002 to .012	N/A
Jessup and Casavant (1998)	.002	.01	.04



LINKAGES AMONG MODES REVEAL IMPACT OF RIVER DROWDOWN

A potential drawdown of the Columbia-Snake is under sustained debate in the state and region. Such a drawdown brings with it a loss of barge transportation and impacts state and local highways as river-bound commodities now move to railheads.

This issue was earlier studied by EWITS personnel, finding road damage could decrease while shipper's costs would increase, as long as railcars were available. Subsequent analysis stretched the situation being examined. The linkages between the modes were used to examine the impact of a drawdown if railcar availability

were constrained, if railroads raised their rates (due to lack of competition or need to invest in additional railcars), or if the truck-barge rates were raised (to cover the decrease in barge traffic and/or increased demand for trucking).

SR 395, SR 26, SR 260, SR 17 and SR 12 were found to receive the heaviest truck impact from a Snake River drawdown, with transportation costs increasing by up to 8.4 cents/bushel and 8.6 cents/bushel for wheat and barley shipments, respectively. Using new coefficients developed for this study, infrastructure investment needs reach as high as \$8.5 million for wheat and \$1.1 million for barley. The analytical model used for this study, a combination of a Geographic Information System (GIS) with a Generalized Algebraic Modeling System (GAMS), is now available for future policy question inquiries (EWITS report forthcoming).



IF YOU BUILD RURAL TRANSIT, HOW MANY WILL COME?

Two models for predicting rural transit ridership from secondary data sources are being developed for use in rural counties in Washington state. The first model predicts ridership using readily available census data for total population in the county, population aged 65 and over, the number of mobility-limited individuals, and the number of people living below the poverty level. A second, more detailed model uses a separate equation for each population subgroup. The model can easily be modified for various factors such as the percentage of school children using the transit system, the percentage of mobility-limited

individuals aged 16 to 64 who commute daily and the percentage of elderly that use the transit system.

Four rural area, regional transit systems were used to develop these models. They include Clallam Transit in Clallam County, Jefferson Transit Authority in Jefferson County, Pacific Transit System in Pacific County and LINK in Chelan and Douglas counties. Separate models for public transit in rural and urban areas are needed due to substantial differences in these services. Even within any one county, differences in types of transit services provided are apparent.

A final report under completion this spring will present these two models and the underlying data for the four county transit systems used to develop these models. Surveys of the population currently using transit systems as well as the general population can be very useful in determining response to expanded services, especially if these surveys are conducted in the area under study. Some examples of these types of surveys and how they may be used in a modeling sense will be presented. The census data needed to run the models for each rural county will be included in the report's appendix.



RAILROADS CONNECT WASHINGTON TO ALL MARKETS

Three times as much rail volume comes into the state as is shipped out.

Rail lines and rail shipments are vital components of the freight transportation system in Washington. The rail system has three types of intermodal connections: ports (deep water marine and river), road terminals, and shipper connections such as grain elevators, which help keep Washington and the Pacific Northwest economically connected to the rest of the country and international markets.

Over 42.4 million tons of commodities arrived in Washington by rail in 1995 (EWITS #19). The vast majority of the commodities (grain and farm products) coming into Washington was from Nebraska and Montana. In contrast, the majority of products arriving from Illinois (Chicago is the freight transportation hub of the Midwest) was miscellaneous manufactured goods. Little seasonal movement, except for farm products, was noted.

The 14 million tons of commodities leaving Washington in 1995 by rail were concentrated in farm products and pulp and paper products being shipped to Oregon and California, and miscellaneous manufactured products going to Illinois. Seasonal patterns of movements out of Washington were apparent for farm products with peaks in October and March. Seasonal effects of agriculture were even more pro-

nounced in commodity movements to and from eastern Washington.

Intrastate movements between western and eastern Washington reflected the urban and rural dichotomy between the two regions. Western Washington is more industrial while eastern Washington is obviously more rural and agricultural.

The rail system so important to Washington's economy is not without some shortcomings. The rail exchanges at Washington marine ports which help link the state with international markets are approaching full capacity. Increased exports and imports to and from the Pacific Rim are pushing the marine port rail facilities to new limits.



WHERE DID THE LOGS GO AND HOW?

Surveying the key enterprises involved in the transporting of forest products, including raw log transporters, mills and commercial truck transporters of forest products, a recent EWITS study found that nearly all of the finished forest product shipments from commercial firms were shipped by trucks to the product's final destination. For mill transporters, 54 percent of finished products such as plywood, lumber, posts, poles and pilings were shipped by truck to final destinations, while 63 percent of hogfuel, woodchips and sawdust shipments and 54 percent of raw log shipments to their final destination were by truck. Raw log transporters rely exclusively on trucks to ship raw logs from harvest areas to mills.

SR 395, SR 195, SR 12 and SR 2 are important roadways for raw log and commercial truckers. SR 395 had the highest volume reported by survey participants with more than 900,000 tons of forest product movements. Other highways with high volume included the Okanogan County stretch of SR 155 and SR 21. County roads with high volume of shipments include Aladdin Road (Stevens County), Campbell and Elder Roads (Spokane County), and Inchelium and Bridge-Cache Creek Roads (Ferry County).

The information for this study was collected through three separate surveys of raw log transporters, mills and commercial truck transporters of forest products. EWITS Research Report #22 provides a summary of the results.



NEW STUDIES IN NEW AREAS PRODUCE NEW FINDINGS



A "Adaptive research" is the study approach used by EWITS to determine topics to be researched and analyzed. Original topics of research are modified or adapted as the Steering and Advisory committees identify critical and current issues arising in state and regional debates. The breadth of this adaptive research is evident as the most recent studies range from use and concerns of freight mobility to selected forest and wheat economies, and to environmental policy issues of salmon recovery, energy consumption and vehicle emissions.

A five-report series on the forest products industry reviewed the economic activity and structure of the industry and transportation characteristics and needs of industry members.

Another EWITS product now available is an in-depth analysis of rail movement into and out of Washington and Eastern Washington (EWITS Report #19). It complements previous

EWITS reports on truck and barge transportation in the state. Truck transportation is further detailed in individual reports for every county in the state in EWITS Series #21.

The wheat industry receives special attention in EWITS #20, a Geographic Information System (GIS) presentation on production, storage and modal availability for each eastern Washington county. Previously unpublished on-farm storage location and capacity data are unique components of this report. Similarly, the changing modal distribution in grains arriving at ocean terminals in the region is revealed in Working Paper #9.

Finally, recent work has improved the analysis of river drawdown by adding real-world constraints and impacts. EWITS Report #23 dove into the potential energy and environmental emissions impacts of any river drawdown.

NO SHELF FOR THESE STUDIES!

The demand for EWITS output continues to rise. Over 1,100 copies of EWITS reports have been produced and delivered in response to requests. The mailing list of people or organizations requesting or receiving information grows every week, now numbering over 800 names. Every county in Washington and 30 states have been sent reports useful to their issues and responsibilities. Additionally, the research and planning results have recently reached decision-makers through the following:

State

- Two presentations to the Washington State Transportation Commission
- Six talks at local Rotaries, Chambers of Commerce, etc.
- Paper at Public Transportation Conference in Spokane
- Presentation to Agricultural Outlook Conference in Pasco
- Kick-off speaker at Governor's Rural Economic Development Summit in Port Angeles
- Presentation to Joint Planning Conference in Spokane
- Presentation at the Eastern Washington RTPO Transportation Forum in Moses Lake

Regional

- Four papers were presented at meetings of the Pacific Northwest Regional Economic Conference
- Invited talk to the Idaho Wheat Commission
- Presentation at the American Planning Association Fall Conference

National

- Two presentations at the American Agricultural Economics Association in San Antonio, Texas
- Talk to Transportation Research Board Committee in Washington, DC
- Invited paper at National Freight Planning Applications Conference in San Antonio, Texas
- Paper presented at the GIS-T Conference

International

- Presentation to the Transportation Research Forum in Montreal
- Published in Proceedings of OECD Sustainable Transportation Conference in Vancouver, British Columbia
- Paper at the Canadian Transportation Research Forum in Toronto
- Three papers accepted for the 1998 World Conference on Transportation Research in Antwerp, Belgium



WHERE'S THE GRAIN?

The tremendous amount of data collected through EWITS studies is now being used by professionals with various transportation related concerns. Preparing and distributing useful tools for these professionals provided the spark for creating EWITS Report #20.

By connecting an EWITS produced database containing information on the size and location of all commercial grain elevator storage facilities and private, on-farm grain storage sites in twenty eastern Washington counties with a Geographic Information System (GIS), an extremely visually descriptive and easy to read set of maps has been produced. The results of this work are represented by graphics showing the location of the grain storage facilities in each of the counties, along with the relative size of each facility. These graphics are accompanied by corresponding representations of the cities, towns, highways, roads and rail lines located

within the individual county.

The response to the report has been immediate, as evidenced in the quote from Glen Squires of the Washington Wheat Commission. Others who may be interested in this data set are producers, planners, and policy makers, as well as those trying to market eastern Washington agricultural products to those not familiar with the area.

"EWITS Report #20 is proving to be highly useful for identifying critical roads used in wheat movement, and has great potential in meeting the needs of wheat exporters as a niche-marketing tool."

—Glen Squires, Washington Wheat Commission

ALL WASHINGTON COUNTIES ARE COVERED

Detailed characteristics of freight truck movement for each county in Washington state are now available in 39 separate county-level reports. These reports were created using the statewide survey of truck traffic movements conducted under the Eastern Washington Intermodal Transportation Study (EWITS). These reports capture truck movement that passed through one of the survey sites located on major routes throughout the state (see box, right). For this reason, considerable intra- and intercounty traffic is not included for some counties depending on their proximity to a survey site. Hence, these truck characteristics reflect only the truck movements as reported at the statewide survey locations.

Truck traffic characteristics at the county level were analyzed for trucks whose trips either originated or ended in a particular county. Detailed truck traffic characteristics for each of Washington's 39 counties by season included number of trucks with freight destined for that county per day, their payload weight and commodity type; road usage, including number of trucks per day, freight weight and commodity

type; and number of trucks per day, freight weight and commodity type by city of cargo origin and destination. Truck traffic, analyzed on an annual basis covered the following characteristics: county road usage, average and total truck tonnage and number of trucks by commodity; distribution of freight weight by commodity and by road; type of commodity hauled by truck configuration; and truck carriers' home base for truck trips originating or ending in that county.

Overall, this county-by-county disaggregation of truck movements shows the powerful impact of particular commodity movements on certain roads and during certain seasons. Farm commodities are hauled from the field to the processor or market on a seasonal basis. Lumber harvest has considerable seasonal variation as well. Construction or closures on major roads used for these purposes will need to be planned accordingly. As different industries grow or shrink, they create specific demands on the transportation infrastructure that may need to be accommodated in future transportation planning.

Weigh Station	Road
Brady	SR12
Cle Elem	I90
Deer Park	SR395
Douglas (BC border)	I5
Everett	I5
Goldendale	SR97
Kelso	I5
Othello	SR17
Pasco	AE395
Peshastin	SR2
Plymouth	SR395
East Port Angeles	SR101
Sea Tac	I5
Spokane	I90
Tokio	I90
Umatilla POE, OR	SR395
Vancouver	I5
Walla Walla	SR12, SR395, SR730
Osoyoos, BC (BC border)	SR97
Oroville (US border)	SR97

Quotable Quotes

“EWITS was indispensable to EWfmac . . . the state should support collecting and maintaining such data and expertise that is so objective, available and helpful in framing the appropriate questions.”

Kristine Lund
Lund Consulting Inc.,
commenting on the
contribution of EWITS to
freight mobility planning

EWITS AND EWfMAC ARE GOOD PARTNERS

In 1996, the Washington State Legislature appointed the Freight Mobility Advisory Committee to recommend a freight mobility investment strategy that results in the highest return to Washington state citizens. The next year, the legislature dedicated funding to study the freight mobility needs of Eastern Washington focusing on the following elements: strategic rail corridor analysis, truck origin and destination study, truck volume study, and Snake/Columbia river port access issues. This study (EWfmac) sorted and prioritized strategic freight projects for Legislature Transportation Committee potential support.

Much of the hard data underlying many of these assignments came from existing EWITS data bases and reports. EWITS provided assistance in baseline data for origin and destination traffic flows, offered the framework for the Columbia-Snake port study and provided the data

and analytical model to examine drawdown impacts. Kristine Lund of Lund Consulting Inc., team leader of the study said, “The EWITS data were indispensable to the EWfmac committee, consulting team and all work for the study; it provided benchmarks for measuring change when new data were compiled. Further, it helped frame the questions to be asked.”

Findings included individual profiles of the economic activities at each port, the infrastructure serving the port and the high priority freight mobility projects. Dramatic shifts in freight origin and destination traffic in Washington over the past five years were detailed using the initial EWITS data as a bench mark. Finally, the impact of a river drawdown was analyzed, allowing identification of a system of “Strategic Agricultural Haul Roads” within the critical corridors. Yes, indeed, EWITS and EWfmac were good partners.

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EWITS FORUM
REGISTRATION FORM
ENCLOSED!