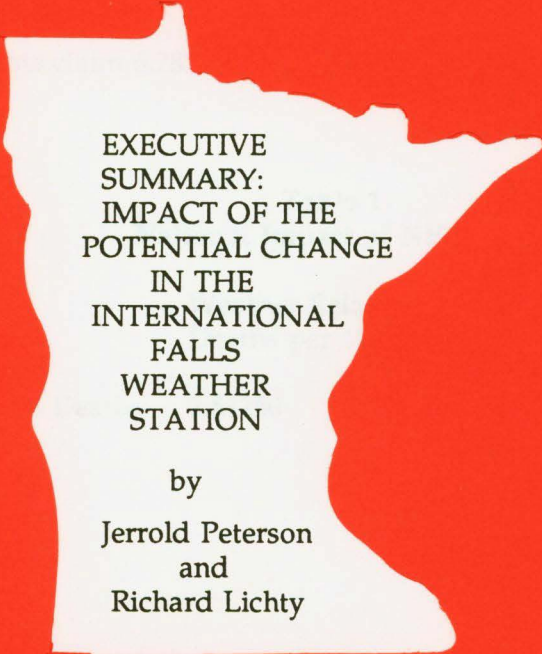


ARCHIVES  
PRINT  
44/15/20  
W-91-14  
1991  
COPY 2



**School of Business and Economics**  
**University of Minnesota, Duluth**  
**Duluth, Minnesota 55812**

A white silhouette of the state of Minnesota, serving as a background for the title text.

EXECUTIVE  
SUMMARY:  
IMPACT OF THE  
POTENTIAL CHANGE  
IN THE  
INTERNATIONAL  
FALLS  
WEATHER  
STATION

by

Jerrold Peterson  
and  
Richard Lichty

Working Paper

Bureau of Business and Economic Research

BUREAU OF BUSINESS AND ECONOMIC RESEARCH  
CENTER FOR ECONOMIC DEVELOPMENT  
SCHOOL OF BUSINESS AND ECONOMICS  
UNIVERSITY OF MINNESOTA, DULUTH

Working Paper No. 91-14

EXECUTIVE  
SUMMARY:  
IMPACT OF THE  
POTENTIAL CHANGE  
IN THE  
INTERNATIONAL  
FALLS  
WEATHER  
STATION

by

Jerrold Peterson  
and  
Richard Lichty

October 1991

Published by  
Bureau of Business and Economic Research  
Dr. Jerrold M. Peterson, Acting Director  
(218) 726-7256

The University of Minnesota is an equal opportunity educator and employer.

**Executive Summary:  
Impact of the Potential Change In The  
International Falls Weather Station**

A two billion dollar U.S. Weather system modernization program is underway that promises to improve hurricane and other weather forecasting capabilities of the national weather service. Based on new technology and advances in the science of meteorology and hydrology, the multi year program will result in more timely and precise weather and flood warnings for the nation.

The United States has the greatest variety of weather of any country in the world. Severe winter, droughts, and heat waves are not uncommon. Estimates suggest that in an average year, weather related accidents claim 6,282 lives and \$17.527 billion in property damage. (See Table 1.)

**Table 1  
National Impact of NEXRAD**

	Weather Related <sup>1</sup> Deaths per 100,000	U.S. Estimated Population	Estimated Annual Deaths
Estimated Annual Deaths	2.51280	250,000,000	6,282
Estimated Annual <sup>2</sup> Property Damage			\$17.527 billion

<sup>1</sup> See Table 3-A

<sup>2</sup> See Table 7-A

Currently, the obsolete weather forecasting systems hinder the rapid observation, analysis and communication of information on fast breaking, smaller scale events that produce severe thunderstorms, tornadoes, flash floods, or forest fire conditions. With the present outdated technology, too often warnings are issued only after the storm, flood or change in fire direction has been detected or is in progress.

If the weather service's NEXRAD weather forecasting system is to be installed, then clearly the service should expand the system to include a site at International Falls. The inclusion of such a site will provide \$3.08 in identified benefits for every \$1.00 in weather service costs. Of more importance, the establishment of the International Falls site would reduce Northern Minnesota weather related deaths by an estimated 36.07, almost three times the national estimate for an average NEXRAD site.

This study concludes that the weather service should give serious consideration to the additional spending of \$1.9 million a year to establish a site in International Falls.

If the weather service chooses not to establish such a site, then the service should consider maintaining their current weather station at International Falls even when the automated equipment is installed. The current station will provide sufficient additional information to improve the area's average forecast range from the predicted 56 percent under the NEXRAD system without the International Falls site to 60 percent currently available. The retention of the current seven man weather station will allow the service to provide to local weather forecast information necessary to maintain current information to the forest service to fight fires. The manned station will also provide coverage for the Lake of the Woods area not covered under the NEXRAD system without the International Falls site. In addition, the station will be able to provide local forecasts to ensure that the Cold Weather Resource Center and fire fighting activities continue at their present level. This would generate at least \$2,027,900 in net benefits at a weather service cost of \$314,748 per year. The weather service would be receiving \$6.44 in regional benefits for each dollar spent on its operation.

