

## Documented Cost Savings



Height Modernization has resulted in the following costs savings:

- North Carolina, which has been involved in the program for more than 10 years and has complete LiDAR coverage, spent \$100 million on its program. It estimates on-going benefits of at least \$55 million annually.
- Michigan estimates a savings of more than \$33 million over 5 years in DOT construction costs.
- Wisconsin estimates a saving to homeowners of more than \$13 million over the life of their mortgages due to more accurate flood plain maps.
- In 1998, the NGS estimated the value of then current HMP to precision agriculture at \$1.7 billion.
- Wisconsin estimates cost savings of 83-89%, more than \$1.5 million per year, for photogrammetric control.
- An engineering firm in Illinois estimates that \$2000 to \$5000 could be on each building project with a densified network of benchmarks.

## Contacts

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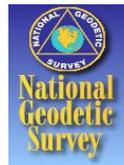
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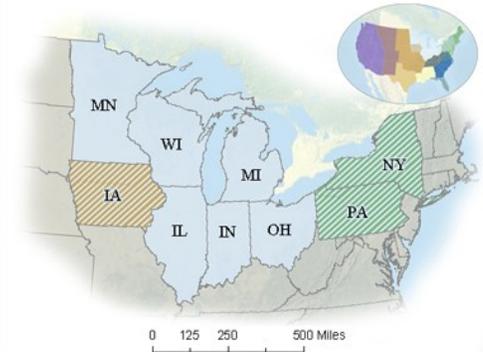
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### Or Visit Our Website at:

[www.ngs.noaa.gov/heightmod/GreatLakesRegional.shtml](http://www.ngs.noaa.gov/heightmod/GreatLakesRegional.shtml)



## Great Lakes Region Height Modernization Consortium



### What is Height Modernization?

Height Modernization is the establishment of accurate, reliable heights using global positioning satellites (GPS) technology in conjunction with traditional leveling, gravity, and modern remote sensing. The National Geodetic Survey (NGS), part of the National Oceanic and Atmospheric Administration (NOAA), provides funding to states for this effort through grants . . .

### Why a Coalition?

The Coalition is a Core Group of state and federal agency representatives, whose mission is to support NGS's National Height Modernization Program (HMP). The Coalition provides support by organizing, coordinating, and otherwise supporting projects and activities that further the mission and goals of the N-HMP. Regional goals and activities include: organizing and hosting conferences, educational forums and Web sites; pursuing regional grant applications; developing region-wide projects and techniques to address the unique HMP issues in the region; and analyzing and documenting specific benefits of the HMP to Coalition states.

# Height Modernization



## Program Components

Each state customizes its program to meet its particular needs. Common program elements include:

- Continuously Operating Reference Systems (CORS) that continually receive GPS and other satellite signals to provide Real-Time 3D corrections to other GPS users, improving the accuracy of GPS units. IN, MI, MN, NY, OH and WI are well along in developing their networks.
- Classical leveling and installation of benchmarks to replace those lost over the years or to densify the network. This is a major effort in all states.
- High-resolution digital elevation model of the earth's surface developed through such remote sensing tools as light detection and ranging (LiDAR). IL has this as a major component of its program.

## A Variety of Uses

- More accurate floodplain mapping and flood prediction to minimize damages
- More efficient field surveying and mapping of transportation infrastructure projects
- Greater efficiencies for planning and providing quality control and quality assurance of aerial mapping projects
- Improved aircraft navigational aids and safer approach and landing procedures
- More efficient application of fertilizer and pesticides in precision agriculture to save money and protect the environment
- Habitat analysis and wetland reconstruction
- Erosion control structure design



## Potential to Save Lives

- Safely landing aircraft in low visibility conditions
- Provide safe overhead clearance along highway routes
- Providing ships with safe under-keel and overhead clearance, to avoid grounding and collisions with bridges
- Update heights on Emergency Evacuation Routes

