U.S. Department of Transportation
Federal Highway Administration

Federal Highway Administration
RESOURCE CENTER

PLANNING

Highway Economic Requirements System, State Version

HOT Priority, Market Ready Technologies and Innovations 2003

Problem: Transportation Agencies Need Planning Tools that Help Contain Improvement Costs While Enhancing System Performance

In the past, transportation agencies have had to rely on engineering applications for long-range planning and programming. However, many agencies are beginning to focus on system performance rather than simply on dollars spent or miles improved. This Transportation Asset Management approach has created a demand for planning tools that incorporate economic factors, especially user benefits and costs, in addition to traditional engineering considerations. Because existing engineering software packages were not designed specifically for managing transportation assets, they did not adequately address these agencies' changing needs.

To address this problem, the Federal Highway Administration (FHWA) developed the Highway Economic Requirements System, State Version (HERS-ST) from the national-level HERS program that FHWA has used since the early 1990s.

Putting it in Perspective

Transportation agencies need resources for:

- Long-range planning.
- "What if" analyses.
- Governmental Accounting Standards Board (GASB) 34 compliance.
- Congestion management.
- Needs assessment.
- Data management.
- Legislative decision support.

Solution: HERS Uses Engineering and Economics to Improve System Performance

The concept of adapting the national-level HERS model for State use began when the State of Oregon recognized that HERS had great potential for Statewide planning, and created a version of HERS to meet their needs. FHWA then launched a HERS-ST pilot program to gauge State interest. The response was very positive—14 States are using HERS-ST.

What is HERS-ST?

HERS-ST is a user-friendly Microsoft® Windows® application that helps transportation agencies plan and schedule highway work, and determine future highway system needs. This software uses engineering principles to simulate future highway conditions and performance levels, and identify deficiencies. The program then applies economic criteria to select the most cost-effective mix of improvements for systemwide implementation.

How does it work?

HERS-ST accepts highway-section records input in the Highway Performance Monitoring System format. For each highway section, the model predicts future condition and capacity deficiencies, identifies alternative improvements to correct each deficiency, and determines a benefit-cost ratio for each potential improvement. To calculate benefits, the analysis considers the value of travel time, safety, vehicle operating costs, emissions, and highway agency costs. The model identifies the most economically attractive improvement for each section, and then determines the improvements to be implemented by comparing the benefit-cost ratios. HERS-ST can optimize highway investment given funding constraints or performance objectives specified by the analyst. The software allows users to view the analysis output spatially in a built-in Geographic Information System (GIS) view. HERS-ST users also can create customized charts and reports.

Successful Applications: Quantifying the Impact of Highway Investments

HERS-ST can help a State maximize the return on its highway investments. Transportation agencies can use HERS-ST to estimate the impact of investment strategies on future system performance. HERS-ST will provide decisionmakers with information about the impacts of current and future highway improvements on agencies, highway users, and the environment.

In 2003, FHWA provided free onsite briefings and workshops on HERS-ST for nine States. In 2004, this onsite assistance will be expanded to include implementation support for States that need help to setup and run HERS-ST. FHWA can provide assistance in assembling the program input data, adjusting the software's various parameters and controls, understanding the output generated, and creating customized reports.

Benefits

- Improves system performance.
- Enhances customer satisfaction.
- Combines engineering and economics to maximize return on investment.

Additional Resources

FHWA will release a new version of the software in January 2004, along with a new user's guide and technical report. To learn more about HERS-ST, visit **www.fhwa.dot.gov/infrastructure/asstmgmt/hersindex.htm**. The Web site hosts a HERS-ST community of practice, where visitors can post questions and comments. The new software and user's guide also will be posted on the website.

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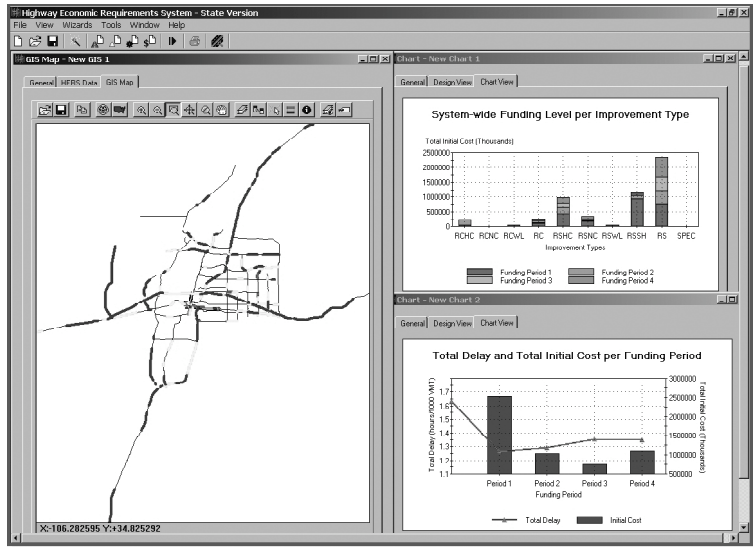

HERS-ST software image

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