



Vulnerability Evaluator

RESILIENCE

It has never been more crucial for communities to understand their vulnerabilities to ever-changing natural hazards.

Faced with economic pressures and an uncertain future, our Vulnerability Evaluator can help communities make the most of their limited resources and chart a path to resilience, advancing a strategy of preparedness, response, mitigation, and adaptation.

Building resilient infrastructure

Communities and agencies want to make their assets more resilient and extend the life of critical infrastructure. Many funding programs now prioritize vulnerability assessments to secure sound investments before implementation and construction. Without an industry-standard tool for large-scale quantitative vulnerability assessments, our team developed a scalable solution to provide asset-level assessments for any infrastructure type.

Stantec's Vulnerability Evaluator, part of our Infrastructure Performance Suite, helps clients optimize spending and enhance

resilience by identifying vulnerabilities within their systems on a large scale. It offers detailed analysis and scores for each asset based on user-defined criteria. The scoring considers the physical attributes of an asset and its spatial overlap with natural hazards data. While the scoring process is automated, inputs are customized for each project based on available data and user needs. The tool uses various industry-standard scoring methods, including factors like exposure, sensitivity, adaptive capacity, and criticality.

Results are easily viewed through web mapping applications or dashboards.

Infrastructure Performance Suite

Our Infrastructure Performance Suite brings quantitative, GIS-based assessments and asset management planning tools into one place—so owners can customize assessment criteria, understand risk, prioritize investments, and plan capital projects with confidence.

Benefits

Optimized Capital Spending:
Helps clients focus their spending on the most vulnerable assets—using resources efficiently and effectively.

Scalable and Reliable Assessments: Similar tools often rely on macros in Excel, which can lead to errors. Stantec’s Vulnerability Evaluator integrates with GIS, allowing for largescale assessments that Excel alone cannot handle.

Identification of Programmatic Trends: Users can identify trends that protect their investments, such as changes needed in design standards, key assets that require monitoring, or adjustments to maintenance programs.

Assess Vulnerabilities Spatially: Connects to spatial data in GIS, providing a more comprehensive analysis and allows for automated asset assessment through spatial and tabular analysis. This enhances the accuracy and reliability of the results.

Resilience is reducing risk and lessening the impacts of disruptive events.

Streamlined Visualizations: Integrates results with existing asset data, making it easy to incorporate into current GIS practices, online map viewers, and data visualization tools.

Enhanced Infrastructure Assessment: Automates the scoring process based on user defined scoring thresholds and data sources which makes the assessment process easier. The increased efficiency allows for more detailed assessments and metrics to be utilized.

Supports Project Prioritization: Incorporates asset-specific risk factors and client priorities (including feasibility, funding eligibility, and timelines) to identify and categorize projects, setting projects up for the next phase of implementation.

Vulnerability Evaluator in action

We’ve recently used the Vulnerability Evaluator to support statewide assessments for multiple transportation departments. We used the tool to evaluate tens of thousands to hundreds of thousands of assets against various natural hazards under two climate scenarios.

Our Vulnerability Evaluator can also support other sectors needing quantitative vulnerability assessments, such as water system risk assessments, municipal assessments of critical facilities, and private community assessments. The tool’s flexibility allows it to be applied to any type of infrastructure with geospatial data containing attributes.



Transportation



Water



Energy



Contact Us

Stantec is a global leader in sustainable architecture, engineering, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what’s previously been done on critical issues like climate change, digital transformation, and futureproofing our cities and infrastructure. We innovate at the intersection of community, creativity, and client relationships to advance communities everywhere, so that together we can redefine what’s possible.

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