

Economic Benefits of Natural Infrastructure

Local governments can make the most of taxpayer dollars by integrating natural infrastructure for flood mitigation. These solutions are low-cost practices that help protect public infrastructure, private property, and lives.

Flood Mitigation and Reduced Risks

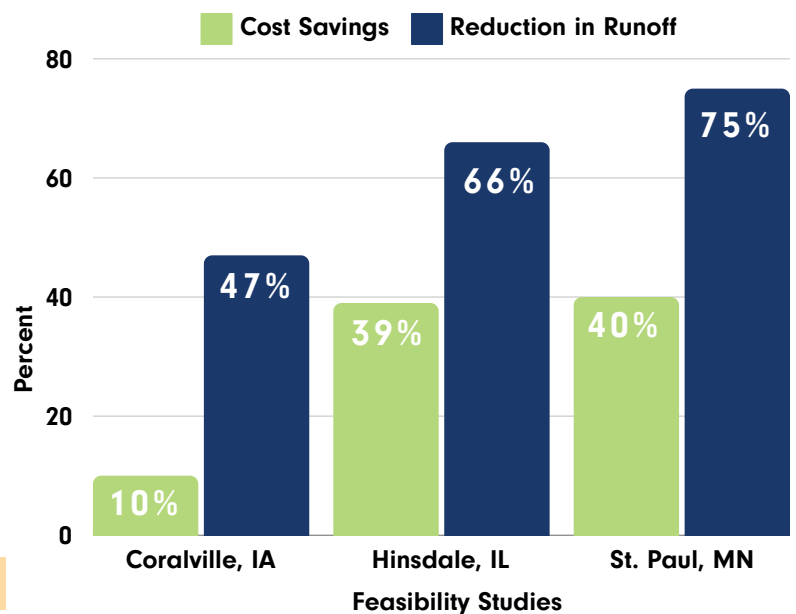
“Gray infrastructure,” such as dams, levees, culverts, and detention basins, are often seen as a quick fix to channel water away from an area or hold it until it can be drained. However, these structures can create a false sense of security, push flooding to new areas, or even fail catastrophically during extreme events.

Natural infrastructure, such as wetlands, oxbow restorations, and bioswales, works with topography to slow the runoff and infiltrate stormwater, offering more resilient flood protection. An example of success is Nahant Marsh in Scott County. The City of Davenport estimated that during 2019's flooding the marsh absorbed 1 trillion gallons of water.

Benefits for All Taxpayers

- In Coralville, IA, a reconstructed roadway project, which included a combination of natural and gray infrastructure, **reduced capital costs** by 10% while reducing 5-year stormwater runoff volume by 47%.
- In Hinsdale, IL, utilizing natural infrastructure for a flood management project saved 39% in capital costs (\$15 million compared to \$24.4 million) while **reducing peak runoff** by 66% during a 50-year flooding event.
- In St. Paul, MN, a natural infrastructure option for stormwater management not only cost 40% less per acre than a gray infrastructure system, but it also **provided 75% more effective downstream flood protection.**

Cost Savings & Effectiveness of Natural Infrastructure for Flood Mitigation



Barr Engineering Co. (2016). Saint Paul, MN: Capital Region Watershed District.
HR Green, Inc. (2016). Coralville, IA: Watershed Improvement Review Board.



Nahant Marsh - Davenport, IA

Benefits for All Taxpayers

- Before infrastructure projects are sited, extensive hydrologic modeling and cost-benefit analyses are completed to ensure effectiveness and feasibility.
- A study of 480 projects by the American Society of Landscape Architects found that 75.5% of projects with natural infrastructure had lower or similar costs compared to gray infrastructure solutions.

On-site flood mitigation solutions have been shown to increase property values by 2-5% for all properties in the flood plain.



Cost Savings Over Time

Gray infrastructure often requires costly ongoing maintenance and eventual replacement. Natural solutions can be more cost-efficient to proactively operate, repair, and maintain because they have a longer lifespan, requiring fewer replacements.

If more water is held upstream in natural features, less water will enter the traditional gray infrastructure. The reduced need for holding capacity will result in less large-scale gray infrastructure downstream and lower infrastructure replacement costs.

Natural infrastructure not only delivers direct cost savings but also provides long-term economic, environmental, and societal benefits. Real-world case studies show that natural infrastructure is a viable, cost-efficient choice for communities looking to expand the flood management tools in their toolbox.

References

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