

AASHTO Innovation Initiative

[Proposed] Nomination of Innovation Ready for Implementation

Sponsor

Nominations must be submitted by an AASHTO member DOT willing to help promote the innovation. If selected, the sponsoring DOT will be asked to promote the innovation to other states by participating on a Lead States Team supported by the AASHTO Innovation Initiative.

1. Sponsoring DOT (State): Florida Department of Transportation
2. Name and Title: Jennifer Marshall, P.E., Director, Office of Environmental Management

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Innovation Description (10 points)

The term “innovation” may include processes, products, techniques, procedures, and practices.

3. Name of the innovation:

Resilience Report – Area of Interest (AOI) Tool

4. Please describe the innovation.

The Resilience Report -- AOI provides a platform to analyze potential impacts from specific hazards -- such as sea level rise flooding and storm surge -- at the project level to identify vulnerabilities to state

facilities. The tool consolidates a diverse array of layered data in a consistent format from various agencies into a user-friendly report. It helps eliminate the need to reassess multiple data resources or speculate on the veracity of scenarios on a project-by-project basis to deliver consistent results across the spectrum of agency project development needs. The report can be utilized to aid in long-range planning and to analyze project alternatives to ensure FDOT addresses and promotes its strategic vision for a more resilient transportation network.

5. What is the existing baseline practice that the innovation intends to replace/improve?

The existing baseline was to gather data from multiple sites (e.g., [USACE-Sea Level Tracker](#), [NOAA-Sea Level Rise Viewer](#), [Sea Level Scenario Sketch Planning Tool](#), [USGS Water Resource](#), etc.) and then perform overlay analyses to evaluate the potential current and future flood impacts to projects. This practice led to the use of differing future scenarios and flood data sources, resulting in inconsistent evaluation of potential impacts. The Resilience Report centralizes these disparate data sources into one database and provides a standardized evaluation method by performing the overlay analyses and summarizing the estimated impacts.

6. What problems associated with the baseline practice does the innovation propose to solve?

Nationally, there has been a growing appreciation of the need to plan, design, construct, and maintain more adaptive and resilient infrastructure that is responsive to the hazards associated with the communities it serves. The Area of Interest Tool, and its associated Resilience Report, provides a framework to assess potential impacts the layered hazards – such as future sea level rise, frequency of flooding events, and high tides – may have on FDOT existing and proposed assets. The Resilience Report provides consistent reliable data to better understand the risk and potential consequences associated with these hazards on transportation infrastructure in a single report to drive project and policy decision making processes. The Report will play a key role in anticipating future needs and hopefully lead to a more adaptive and dynamic infrastructure that accounts for future inundation under changing climate conditions and other impediments than current processes.

7. Briefly describe the history of its development.

In 2013, the first version of the Sea Level Scenario Sketch Planning Tool (“Sketch Tool”) was developed to provide a broad level overview of potential impacts associated with current flooding and future flooding under various sea level rise scenarios. The Sketch Tool provides asset-level and segment-level analysis of three flood hazards (storm surge, floodplains, and sea level rise) for all coastal counties in Florida. The Sketch Tool allows users to compare potential impacts under various scenarios and time periods, which is useful for understanding the broad context of potential impacts for an area. However, evaluating impacts for a specific project requires that the data be exported for the tool and summarized for the specific project area.

The Resilience Report resolves this issue by allowing the user to define the area for analysis, thereby facilitating project level screening for flood exposure and assist transportation professionals with resilience decision making. The Resilience Report is integrated into the Environmental Screening Tool AOI to give users the ability to extrapolate data from a given polygon, line, or point to evaluate smaller areas of specific projects. This gives users the ability to form a more holistic picture of the risk associated with any given project derived from FDOT's database of over 400 data layers.

The

8. What resources—such as technical specifications, training materials, and user guides—have you developed to assist with the deployment effort? If appropriate, please attach or provide weblinks to reports, videos, photographs, diagrams, or other images illustrating the appearance or functionality of the innovation (if electronic, please provide a separate file). Please list your attachments or weblinks here.

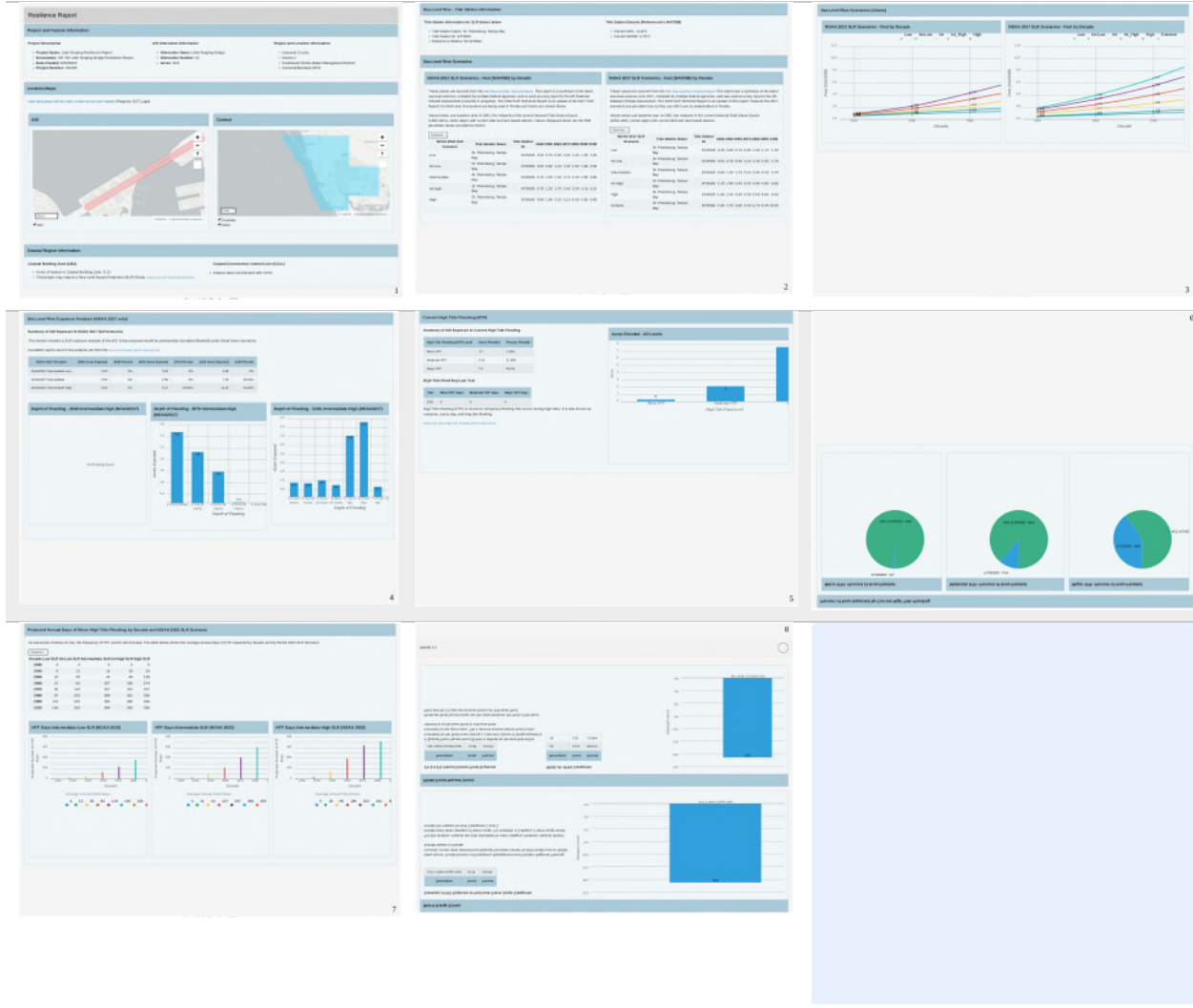
Training materials and user guides have been developed (links below). Two virtual training webinars were conducted in late March and April 2023, with 129 participants attending.

- Resilience Report User Guide:
https://sls.geoplan.ufl.edu/content/pdfs/AOI_Resilience_Report_UserGuide.pdf
- Resilience Report Quick Guide:
https://sls.geoplan.ufl.edu/content/pdfs/AOI_Resilience_Report_QuickGuide.pdf
- Training Webinar:
<https://www.gotostage.com/channel/22b88b2683d647b4907e8b2457d8b350/recording/0ee5e5dee38f4562b122e1fddf8ab0ef/watch>

While the Resilience Report AOI Tool is behind a secure login, a web version of the Resilience Report with test projects can be viewed (link below). Users have the option of viewing the web version of their requested Resilience Report or downloading a PDF version:

- <https://apex.geoplan.ufl.edu/ords/r/prod/resilience-report/home>

Attach photographs, diagrams, or other images here. If images are of larger resolution size, please provide as separate files.



State of Development (40 points)

Innovations must be successfully deployed in at least one State DOT. The All selection process will favor innovations that have advanced beyond the research stage, at least to the pilot deployment stage, and preferably into routine use.

9. How ready is this innovation for implementation in an operational environment? Please select from the following options. Please describe.

- Prototype is fully functional and yet to be piloted
- Prototype has been piloted successfully in an operational environment
- Technology has been deployed multiple times in an operational environment
- Technology is ready for full-scale implementation

The Resilience Report AOI tool has been available to EST Users since April 2023 and is gaining traction. Additional steps are being discussed to include it in the regular project development process as a standard report.

10. What additional development is necessary to enable implementation of the innovation for routine use?

Enhanced guidance and policy regarding utilization of Resilience Reports within the project development process that can shape project alternative development and can be effectively integrated during the design and construction process.

11. Are other organizations using, currently developing, or have they shown interest in this innovation or of similar technology?? Yes No

If so, please list organization names and contacts. Please identify the source of this information.

Organization	Name	Phone	Email
Florida Department of Environmental Protection (FDEP) Sea Level Impact Projection Tool	Eddy Bouza	(850) 245-7562	Eddy.Bouza@FloridaDEP.gov
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.

Potential Payoff (30 points)

Payoff is defined as the combination of broad applicability and significant benefit or advantage over baseline practice.

12. How does the innovation meet customer or stakeholder needs in your State DOT or other organizations that have used it?

The Resilience Report – AOI tool can utilize the most up-to-date and accurate data on infrastructure resilience vulnerability and needs. The tool can provide easy identification and visualization of project areas and offer a standardized risk assessment that can help stakeholders understand the potential infrastructure and environmental risks associated. Additionally, the tool can aid in the long-term planning and project identification of climate change risks to infrastructure.

13. Identify the top three benefit types your DOT has realized from using this innovation. Describe the type and scale of benefits of using this innovation over baseline practice. Provide additional information, if available, using quantitative metrics, to describe the benefits.

Benefit Types	Please describe:
Risk Identification	Report helps identify potential at risk infrastructure.
Informed Decision Making	Enables decision makers to make informed decisions regarding project designs and materials leading to long-term sustainability and resilience of infrastructure.
Choose an item.	Click or tap here to enter text.

Provide any additional description, if necessary:

Click or tap here to enter text.

14 How broadly might this innovation be deployed for other applications. in the transportation industry (including other disciplines of a DOT, other transportation modes, and private industry)?

The Resilience Report could be utilized in other planning products, emergency response planning, prioritizing infrastructure investment, supporting implementation of FDOT's Resilience Policy and associated resilience efforts, ensuring FDOT's mission of providing a safe transportation system that ensures the mobility of people and goods, enhances economic prosperity, and preserves the quality of Florida's environment and communities.

Market Readiness (20 points)

The All selection process will favor innovations that can be adopted with a reasonable amount of effort and cost, commensurate with the payoff potential.

15. What specific actions would another organization need to take along each of the following dimensions to adopt this innovation?

Check boxes that apply	Dimensions	Please describe:
<input type="checkbox"/>	Gaining executive leadership support	Click or tap here to enter text.
<input type="checkbox"/>	Communicating benefits	Click or tap here to enter text.
<input type="checkbox"/>	Overcoming funding constraints	Click or tap here to enter text.
<input type="checkbox"/>	Acquiring in-house capabilities	Click or tap here to enter text.
<input type="checkbox"/>	Addressing legal issues (if applicable) (e.g., liability and intellectual property)	Click or tap here to enter text.
<input type="checkbox"/>	Resolving conflicts with existing national/state regulations and standards	Click or tap here to enter text.
<input type="checkbox"/>	Other challenges	Click or tap here to enter text.

16. Please provide details of cost, effort, and length of time expended to deploy the innovation in your organization.

Cost: Cost will vary depending on the prior level of applications in place.

Level of Effort: FDOT had the GIS database in place prior to developing the Resilience Report, level of effort would be tied to the planning and discussions leading into which datapoint to include.

Time: Resilience planning has been present from before 2012 in FDOT, however the Resilience Report was developed from 2021 and released in early 2023 for utilization.

17. To what extent might implementation of this innovation require the involvement of third parties, including vendors, contractors, and consultants? If so, please describe. List the type of expertise required for implementation.

FDOT leverages consultant support and contracts with the University of Florida GeoPlan Center with project development, infrastructure planning, GIS application, database management, and