

## EDC-5 STATE IMPLEMENTATION PLAN

*The State Implementation Plan will not be collected at this time - this document is to help in developing the Implementation Plan. The items **highlighted below** will be requested as part of the EDC-5 baseline report – due January 25, 2019*

### EDC Innovation: **Collaborative Hydraulics: Advancing to the Next Generation of Engineering (CHANGE)**

**Program Need:** The NMDOT Drainage Design Bureau is responsible for preparing drainage reports (hydrology and hydraulics) supporting rehab of existing and design of new bridges. In fact a substantial portion of our workload (maybe as much as 40%) involves development of hydraulic models for bridges. The CHANGE innovation will provide the tools and methodology for developing better models (more detailed, more accurate, and more informative) quicker and with greater confidence. Better models will lead to better and often less expensive bridge designs.

**Implementation Goal:** Indicate the current state of the practice of the tool or innovation in your State as of January 2019 and the implementation stage of where you want to be in two years (Goal). *Check one box in the Baseline Jan 2019 column and one box in the Goal Dec 2020 column.*

Innovation Implementation Stages <i>(see State of Practice Form for the innovation specific implementation stage definitions)</i>	Jan 2019 <b>(Baseline)</b>	Dec 2020 <b>(Goal)</b>
<b>Not Implementing:</b> The CHANGE innovation has not been used anywhere in the state, and the State is not interested in pursuing 2D hydraulic modeling and visualization tools.	<input type="checkbox"/>	<input type="checkbox"/>
<b>Development Stage:</b> The State is in the process of implementing CHANGE and 2D hydraulic modeling. A champion or champions has(have) been identified, staff have received training and participating in EDC CHANGE related workshops and webinars.	<input type="checkbox"/>	<input type="checkbox"/>
<b>Demonstration Stage:</b> The State is testing/piloting CHANGE with use of 2D hydraulic modeling on at least one project.	<input type="checkbox"/>	<input type="checkbox"/>
<b>Assessment Stage:</b> The State is using 2D hydraulic modeling on multiple projects and assessing its use for bridge scour evaluations. At this level, states have not yet integrated 2D modeling verbiage and guidance into their drainage manual or other policy documents.	X	<input type="checkbox"/>
<b>Institutionalized:</b> The State has adopted 2D hydraulic modeling as a standard practice for complex bridge hydraulics and integrated its use into the state’s drainage and policy manuals, where appropriate. Additionally, the state has used 2D hydraulic modeling results to perform bridge scour evaluations for at least one project.	<input type="checkbox"/>	X
<p><b>Description of Current Status of this innovation in your State:</b> <i>(include state DOT and local agencies to the best of your knowledge)</i></p> <p>We have used or are currently using 2D models to develop bridge designs for 5 different bridge projects. We are also working to develop a 2D guidance addendum for our Drainage Design Manual. We anticipate that within the next 2 years the majority (70%) of new bridge projects will be developed using the CHANGE innovation (SMS/SRH-2D hydraulic modeling). One of the biggest hurdles was acquisition of adequate terrain data, but during 2018 NMDOT Survey obtained and is now using UAV systems to greatly expand our ability to obtain the needed data.</p>		
<p><b>Description of State Innovation Goal (Benefit Goal):</b> <i>In other words, after 2 years “What would success look like for your state?” (i.e. X innovation will save X time, money, or lives.) These benefits are what elected officials and the traveling public can relate to and help to support the level of resources invested in the deployment of innovations under EDC.</i></p>		

**Innovation Implementation Team Members:**

- State DOT Team co-chair: • Burke Lokey
- FHWA Team co-chair: Thiet Nguyen •
- •

## EDC-5 STATE IMPLEMENTATION PLAN

*The State Implementation Plan will not be collected at this time - this document is to help in developing the Implementation Plan.*

**Obstacles:** (What is perceived as hindering the State in meeting the implementation goal?)

**Performance Metrics:** (What are the **measurable targets** to assess your progress?) Percentage of Bridge Hydraulic Studies prepared using 2D modeling, Hydraulic Analysis Development Time (elapsed working days),

<b>Implementation Plan Activities</b>		
Activity No.	Description of Activity	Target Completion Date
1	Develop and utilize status report form to track progress and key dates for new bridge projects. Initially form will provide baseline info but ultimately would be used to identify, track, and trend performance metrics.	March 1, 2019
2	Determine additional training needs/opportunities for NMDOT staff.	March 29, 2019
3	Work w/ BRIDGE Bureau to develop listing and timelines for upcoming bridge projects. Timeline must include dates for survey (request and delivery), BRIDGE development milestones, and GEOTECH.	June 28, 2019 (ongoing)
4	Prepare standard RFP and contract language incorporating 2D hydraulic modeling requirements for new projects.	June 28, 2019
5	Compare results of scour analyses using conventional methods to scour estimates prepared using FHWA 2D modeling/Hydraulic Toolbox method.	August 16, 2019
6	Publish 2D Modeling Guidance Addendum to NMDOT Drainage Design Manual	September 30, 2019

**Action Items to follow up with after the EDC Summit:**

# Collaborative Hydraulics: Advancing to the Next Generation of Engineering (CHANGE)

[https://www.fhwa.dot.gov/innovation/everydaycounts/edc\\_5/change2.cfm](https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/change2.cfm)

## State of Practice Form – Implementation Stages Defined

Implementation Stage Definitions		Guidance Questions
*State is all-inclusive (e.g., state agency, local municipalities, contractors, consultants)		Prompt questions to help assess your current state of practice.  <i>NOTE: Not all questions have to be affirmatively answered to meet any given stage; judgment is required; call the CHANGE Deployment Team w/ questions.</i>
	<p><b>Not Implementing:</b> The CHANGE innovation has not been used anywhere in the state, and the State is not interested in pursuing 2D hydraulic modeling and visualization tools.</p>	<ul style="list-style-type: none"> <li>• After learning its benefits, has the State indicated that 2D modeling is not beneficial to their project delivery?</li> <li>• Does the State lack the internal resources or access to consultant expertise to begin an evaluation of 2D modeling?</li> <li>• Has the State shown no interest in hosting or sending staff to a 2D modeling training course?</li> </ul>
	<p><b>Development Stage:</b> The State is in the process of implementing CHANGE and 2D hydraulic modeling. A champion or champions has(have) been identified, staff have received training and participating in EDC CHANGE related workshops and webinars. In some states, the champion duties may be filled by a consultant.</p>	<ul style="list-style-type: none"> <li>• Does the State have a 2D modeling implementation champion or team?</li> <li>• Has the State hosted 2D modeling training or sent staff to training (e.g. NHI Course 135095, Two-dimensional Hydraulic Modeling of Rivers at Highway Encroachments)?</li> <li>• Has the State participated in workshops, webinars, or peer exchanges related to 2D modeling?</li> <li>• Has the State sponsored or requested a showcase presentation on 2D modeling?</li> </ul>
	<p><b>Demonstration Stage:</b> The State is testing/piloting CHANGE with use of 2D hydraulic modeling on at least one project.</p>	<ul style="list-style-type: none"> <li>• Has the State requested 2D hydraulic modeling technical assistance for a project?</li> <li>• Has the State completed at least one hydraulic analysis using 2D modeling (either in-house or by a consultant)?</li> <li>• Has the State compared 2D modeling results with any previous 1D modeling results or measured data?</li> </ul>
	<p><b>Assessment Stage:</b> The State is using 2D hydraulic modeling on multiple projects and assessing its use for bridge scour evaluations. At this level, states have not yet integrated 2D modeling verbiage and guidance into their drainage manual or other policy documents.</p>	<ul style="list-style-type: none"> <li>• Has the State used 2D modeling on several projects?</li> <li>• Does the State plan to incorporate 2D modeling into their design manuals, contract language, and other documents?</li> <li>• Has the State used 2D modeling to: calculate bridge scour, analyze floodplain or floodway changes, and/or evaluate environmental impacts?</li> </ul>
	<p><b>Institutionalized:</b> The State has adopted 2D hydraulic modeling as a standard practice for complex bridge hydraulics and integrated its use into the state’s drainage and policy manuals, where appropriate. Additionally, the state has used 2D hydraulic modeling results to perform bridge scour evaluations for at least one project.</p>	<ul style="list-style-type: none"> <li>• Does the State routinely use 2D hydraulic modeling and graphical visualization tools on projects including for bridge scour calculations and analysis of impacts?</li> <li>• Has 2D modeling language been successfully integrated into the State’s policies, procedures, and guidance (e.g., design manuals)?</li> </ul>

Please note: For states that participated in EDC-4, the definitions for the assessment and institutionalized stages have been revised to incorporate the focus on bridge scour and floodplain assessment.