

**Memorandum of Understanding**  
**Between**  
**Center for Risk-Based Community Resilience Planning and National Institute of Standards and Technology Engineering Laboratory**  
**And City of Joplin**  
**For the Implementation of the NIST Playbook for Community Resilience Planning and IN-CORE**

**Article I. Scope, Objectives, and Authority**

The Center for Risk-Based Community Resilience Planning (CoE) and National Institute of Standards and Technology (NIST) plan to partner with six communities for development of resilience plans using the CoE IN-CORE (Interdependent Networked Community Resilience Modeling Environment) and NIST Community Resilience Planning Guide For Buildings And Infrastructure Systems: A Playbook (hereafter referred to as the “Playbook”).

The community should lead the resilience planning effort and define the scope of the planning process. CoE and NIST intend to provide technical support and guidance by their research investigators and staff, including travel and preparation time, over a 36-month period defined by this agreement.

The purpose of this collaboration is to support resilience planning, evaluation, and decision making by the City of Joplin through the piloting of interdisciplinary resilience planning tools provided by IN-CORE and the NIST Playbook. The purpose of CoE and NIST involvement is to make IN-CORE useful and applicable to a wide range of communities, and to understand what data and information communities need for decision support with respect to community resilience. In addition, the CoE and NIST want to build a user base for IN-CORE and enhance IN-CORE usability and responsiveness to community needs.

CoE, NIST, and City of Joplin intend to document, in writing, the scope of the intended collaboration and accomplishments prior to starting the collaboration. If necessary, binding agreements may be established for access to confidential information (e.g. nondisclosure agreement)

NIST and CoE enter into this Agreement under the authorities granted by:

- Title 15 United States Code Section 272 (b)(10), which authorizes NIST to cooperate with other departments and agencies of the Federal Government, with industry, with state and Local governments, with private organizations in establishing standard practices, codes, specifications, and voluntary consensus standards.

- Title 15 United States Code Section 272 (b)(11), which authorizes NIST to advise government and industry on scientific and technical problems.

## **Article II. Background**

CoE is developing IN-CORE as a computational environment which will allow users to optimize community resilience planning and post-disaster recovery strategies using models of interdependent physical systems combined with socio-economic systems. The NIST Playbook six-step process supports community resilience planning, including an inclusive planning process, linking social and economic functions with the built environment, and establishing priorities to improve resilience for a range of natural hazards. The CoE is integrating IN-CORE and the NIST Playbook so that the six-step planning process can be informed by IN-CORE analyses. IN-CORE results are based on models of the community and natural hazard events to determine corresponding infrastructure damage, social and economic impacts, and recovery time, and evaluation of alternative policies and projects to improve community resilience. The combined use of the Playbook and IN-CORE can support informed, risk-based decision making for community resilience.

The COE and NIST would like to make IN-CORE and the Playbook useful and applicable to a wide range of communities by conducting studies on how IN-CORE and the Playbook are used by communities to support resilience planning and decision making. NIST and COE are primarily interested in answering the following questions about how IN-CORE and the Playbook can be applied in communities:

- What information communities need for decision support with respect to community resilience?
- What works well in IN-CORE and the Playbook for informing community resilience decisions?
- Where are the gaps and challenges in guidance, models, or outputs?
- What are the best approaches to communicate the outputs of IN-CORE and the Playbook with community stakeholders and decision makers?

Accordingly, the CoE and NIST intend to partner with six communities to both make IN-CORE available to them for resilience planning and use stakeholders' input throughout the development, enhancement, and implementation of IN-CORE.

The community will determine and be responsible for the scope of its planning process and implementing the results of the collaborative effort utilizing the Playbook and IN-CORE.

At the completion of the collaboration, the CoE, NIST and the community will document and share the lessons learned so that IN-CORE and the Playbook can be improved to become more useful and applicable to a wide range of communities for resilience planning.

Candidate partner communities will be asked to describe their interest and resilience goals and challenges they want to address for enhancing community resilience. Six community collaborations will be formed by considering several factors including size and planning capacity, region of the country they are located in, and type of hazards they experience or are exposed to. Partner communities will represent variability with respect to these features.

### **Article III. Forms and Areas of Cooperation**

#### **A. NIST/COE intend to:**

1. Provide IN-CORE models paired with the Playbook planning steps, and list of datasets needed for running the models
2. Provide technical guidance on how to use the IN-CORE interface in community resilience planning efforts
3. Provide user instructions in the form of guides and handouts for community resilience professionals
4. Present default policy portfolios to be considered for adoption by the community based on the results of IN-CORE models and resilience priorities of the community

#### **B. Community commits to:**

1. Establish scope of the resilience planning effort that will be supported by the Playbook and IN-CORE.
2. Identify and form the City's "Core Resilience Team" (CRT) to include a diverse, cross-section of participants including resilience professionals who will be representatives of and vested in a resilient future for your community.
3. Lead the resilience planning process and use the Playbook and IN-CORE in that process.
4. CRT members join and provide input during the CoE engagement workshops, review and provide written feedback on draft reports and handouts developed by the CoE, such as metrics development, resilience planning profile, resilience policy portfolio development, and the IN-CORE interface.

#### **C. Areas of collaboration may include but are not limited to:**

1. Technical support by CoE and NIST representatives on the use of IN-CORE and the Playbook.
2. Technical guidance on translating IN-CORE outputs into resilience projects and policies.
3. A comprehensive profile of the community's resilience, vulnerabilities, and institutional resilience planning capacity to be used during the application of the Playbook process.

## Article IV. Anticipated Results

### CoE/NIST

1. Evaluation of Playbook and IN-CORE usability and features (e.g., interfaces, visuals, input and output data, and metrics) for community use and decision-making support.
2. CoE report on community use of IN-CORE and the Playbook in its resilience planning activities and community feedback to enhance alignment of IN-CORE and Playbook with planning objectives.
3. Case study of community resilience planning using the Playbook and IN-CORE and other key lessons learned or considerations for other communities utilizing the Playbook and IN-CORE.
4. Training materials for use by other communities.

### Community

1. Evaluation of current vulnerabilities and existing resilience plans and policies.
2. Community resilience goals and metrics to inform future planning
3. A set of policies and projects to improve resilience
4. Community report on evaluation and recommended resilience plan updates (e.g., community goals, plan updates and integration, updated or new policies, prioritized projects).

## Article V. Miscellaneous

- **No funding:** Cooperative activities under this Agreement are subject to and dependent upon the availability of appropriated funds, personnel, and resources. Nothing in this Agreement should be interpreted to constitute an obligation of funds. Each participant should pay all its own expenses and costs related to activities pursued under this agreement, unless some other arrangement is to be mutually agreed upon in advance by a separate written and binding agreement. Any financial arrangements should be negotiated on a case by case basis, as permitted by relevant law and regulations, and should be detailed in separate written agreements.
- **Confidential Information:** No confidential or proprietary information will be shared under this agreement. If at some point the parties wish to exchange such information, such exchange shall occur pursuant to a separate written and binding non-disclosure agreement.
- **Non-binding Agreement:** This agreement is a statement of intent of the parties to cooperate and collaborate as outlined. This agreement is not legally binding and does not create legally binding duties or obligations. This Agreement shall not be the basis of any legal claim between the parties.

## **Article VI. Duration of Agreement and Discontinuation**

This Agreement is to commence on the date of the last signature for a period of three (3) years, unless discontinued earlier by either Party in writing. A Party should endeavor to provide advanced notice of its intent to discontinue its participation in the Agreement. This Agreement may be extended if needed by mutual written consent of the Parties.

This Agreement may be modified by mutual written consent of the Parties. The Parties may review and decide to continue their cooperation at regular intervals.