MITIGATE NY 2.0

MitigateNY 2.0 will propel New York State's ongoing transformation of hazard mitigation planning. While the 2018 SHMP was an innovative approach to delivering information historically presented in unmanageably long and static paper documents, the 2023 SHMP will be the next iteration of interactive, data-forward planning that provides access to information in ways more useful to analysis and decision making.

MitigateNY 2.0 will be comprised of three (3) distinct yet fully integrated platforms: the Central Data Repository (CenRep), 2023 State Hazard Mitigation Platform and Plan (SHMP 2.0) and Local Hazard Mitigation Platform and Plans (LHMP 2.0).

Central Data Repository (CenRep)

- Web-based data warehouse and database management system
- Allows authorized users to access externally sourced and MNY user-generated data to create, edit and manage custom data visualizations and digital content for planning, analysis, and decision-making purposes
- Stand-alone platform regularly updated to leverage the best publicly available data
- Stores and manages data created by SMHP and LHMP platform users during plan updates
- Eliminates the need for extensive data discovery or expensive data processing during hazard mitigation planning processes
- CenRep dashboards will provide comparative data analysis for multiple geographies/plans

2023 State Hazard Mitigation Platform and Plan (SHMP 2.0)

DHSES will deploy a new, more user-friendly Content Management System (CMS) to support the 2023 web-based SHMP update that will include:

- Accessibility - 508 Compliance features – Language access
- PDF export with designed formatting for accessibility and ease of printing
- Sitewide Content Navigation including sitewide search, tagging tool, site map and index
- "Drag and drop" web page creation and organization for real-time website customization
- Batch uploader for import of large quantities of excel data
- Straightforward content formatting, including
- Mobile responsiveness
- "Hit counter" to document and assess website traffic

Local Hazard Mitigation Platform and Plans (LHMP 2.0)

Upon completion of the 2023 SHMP update, DHSES will integrate the CenRep, SHMP CMS and accessibility enhancements, and other improvements previously documented by FEMA, users and DHSES to launch LHMP 2.0 for use by all counties in the State

The **MitigateNY 2.0** program will include a comprehensive User Program with standardized training modules, technical tutorials, and a *User Program Handbook* to support users of all three platforms. The User Program will be heavily informed by the external stakeholder engagement (comprised of local representatives, state and federal partners, non-profit stakeholders, and hazard mitigation planning experts) and beta-testing to launch the deliverables described above. A user authentication dashboard managed by DHSES will provide local, state, and federal users appropriate levels of access to the entire MitigateNY system.

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Task 1: Migrate MitigateNY software to NYS ITS Servers

The first iteration of MitigateNY required and warranted an outside entity to develop and host the platform and data associated with New York State's Hazard Mitigation Plan. To ensure its long-term success, viability and security, NYS will transfer the hosting of the platform to NYS servers.

Task 2: Central Data Repository (CenRep)

To support and ensure the continued availability and integration of data utilized for and created by the Local Hazard Mitigation Plan (LHMP) MitigateNY platform and the State Hazard Mitigation Plan (SHMP) MitigateNY platform, DHSES intends to create a single Central Data Repository (CenRep). The CenRep will be a web-based data warehouse hosted on NYS servers with software to allow authorized users to access, create, edit, manage, and publish digital content.

The CenRep will host, at a minimum, the data outlined within this task. Access to some of the data will be publicly available and some will require user authentication. The CenRep will include a tool to allow authorized users to create and export (download) customizable tables, graphs, and maps for state and local planning, analysis, and decision-making purposes, initially and specifically for hazard mitigation planning, and extensible for other integrated planning efforts.

The CenRep will host **externally sourced "best available" data** vetted and processed for quality, applicability, and visualization capabilities. It will also host **user-generated data** created and sourced during the update and maintenance processes of state and local planning using data collection methods and entry templates aligned with existing and proposed NYS priorities and practices. User-generated data will be entered via forms, zones and/or excel batch entry and editable by authorized users.

2.1 Externally Sourced Data

For externally sourced data, DHSES will contract out the research, vetting and processing of data to be formatted in alignment with the needs of hazard mitigation (and other integrated) planning processes. During initial phases of data sourcing, data discovery efforts will inform which data is appropriate for inclusion, visualization, and/or analysis.

The contractor will deliver a **Data Management Plan (DMP)** that organizes all datasets into a catalog of data sources appended with recommendations and metadata for each dataset. The Data Management Plan will outline data maintenance needs including data refresh interval schedule and costs, methodology considerations, database requirements, source info (name, link, and date), export and visualization needs, data uses, metadata, and relevant crosswalks for fusion datasets. The Data Management Plan is a living document that will be utilized, maintained, and altered through the course of research and development.

Externally Sourced Data will be supported by a **Database Management System (DBMS)**. The DBMS generally manipulates the data itself, the data format, field names, record structure and file structure, and defines rules to validate and manipulate this data. The DBMS is a backend Extract, Transform, and Load (ETL) system that pulls data from source systems, converts it into a consistent format, and then loads the integrated data into the CenRep.

Data to be hosted will include:

1. Risk Assessment (some of these overlap with other best available data listed below)
    a. Digital Flood Hazard Data
        i. Base Level Engineering (BLE), and/or Draft, Preliminary and Effective Flood Insurance Rate Maps, whichever is most recent
    b. FEMA National Risk Index (NRI)
    c. AVAIL - FEMA CTP Hazard Loss data
    d. National Flood Insurance Program (NFIP)

    e. Dam Inventory
        i. NYS (DEC) dam inventory and dam hazard classifications
        ii. FERC dam inventory
    f. USACE National Levee Inventory (NLI)
    g. NYS bridges, major (and small, where available) culverts, and stream crossings
    h. Coastal Erosion Hazard Areas (CEHA) (DEC)
    i. Hazus
        i. Inventory existing Hazus runs across NYS and outputs (risk areas and impacts)
        ii. Identify gaps to determine next steps
    j. Iowa State University – Iowa Environmental Mesonet Watch, Warning and Advisories
    k. Additional hazard risk data (to be provided to the contractor by DHSES for spatial visualization)
        i. Earthquake
        ii. Landslides – Soil Stability
        iii. Extreme Heat
        iv. Wildfire
        v. Tornado
2. National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI) Storm Events *
3. Disaster
    a. Federal Emergency declarations
    b. State Emergency declarations
    c. Local Emergency declarations (NYResponds)
    d. FEMA Hazard Mitigation Grant Program (HMGP) funded projects
    e. FEMA Public Assistance (PA) damages (potentially via AVAIL/FEMA CTP)
    f. Small Business Administration (SBA) 7(a) & 504 Loan Data Reports
4. Demographic
    a. American Community Survey (ACS)
        i. Changes in Population
5. Vulnerable/disadvantaged populations
    a. Center for Disease Control and Prevention (CDC) Social Vulnerability Index (SVI)
    b. NRI/University of South Carolina Social Vulnerability Index (SoVI)
    c. Climate Leadership and Community Protection Act (Climate Act) - Disadvantaged Communities
    d. Environmental Justice (EJ) communities
6. Asset
    a. Microsoft US Building Footprints
    b. Open Street Map (OSM)
    c. Office of General Services (OGS) – State Owned Buildings
    d. Homeland Infrastructure Foundation-Level Data (HIFLD)
        i. Critical Assets
        ii. Shelters
    e. NYS Tax and Finance – Parcel Dataset
    f. National Flood Insurance Program (PII TBD)
    g. Land Use (municipal zoning)

2.2 User / Plan Generated Data

Authorized users will be given multiple methods for entering and editing user-generated data including Excel templates, web-based forms, and software features embedded into scenario tools. Excel templates, finalized and approved by DHSES, will serve as the foundation for web-based forms. Excel templates will support large "batch uploads" of data, for efficient upload of pre-existing or large quantities of data. Web-based forms will allow users to enter and edit individual data points in real time in the CenRep. Software features embedded in the scenario tools will allow users to create data (zones and potential asset edits).

DHSES will develop and implement data update features for user generated data, to document and track mitigation progress and to support annual reports on the maintenance and implementation of hazard mitigation plans. These features will support a larger initiative (identified in Task 9.2) to support annual plan maintenance and funding prioritization.

A "Completed Action" form will also be created to support post-disaster assessments and future planning efforts. Users will have the opportunity to input data related to completed actions that will be visualized as a case study and on a map that will be made publicly available.

User / Plan Generated Data will include:

1. Proposed Actions (web-based forms & Excel)
2. Capabilities (web-based forms & Excel)
    a. State-agency programs
    b. Local capabilities
3. Hazards of Concern (web-based forms & Excel)
4. Potential Mitigation Measures (web-based forms & Excel)
5. Asset, Critical Infrastructure and Zone Data Analysis (embedded within the Scenario Tool)
    a. Zone data analysis: aggregate footprint level data (# of buildings, $ value, hazard scenario-intersection, etc.)
    b. Editable attributes for all building footprints
    c. Critical infrastructure, community lifeline and critical community asset building footprint user designation
6. Completed Actions (web-based forms & Excel)
    i. Hazard Mitigation Assistance (HMA) Funded Projects (HMGP, PDM/BRIC, FMA)
    ii. Option to include mitigation projects funded through other sources

CenRep data will be available for customized reporting and/or editing via a Content Management System (CMS). A web-based CMS is software that allows authorized users to create, edit, manage, and publish digital content (including text, images, etc.). This system will be used in a collaborative workflow where multiple users will develop, monitor, and manage the content and data.

CMS software development, beta testing and debugging is included in multiple tasks of this SOW. The proposed CMS includes standard expectations such as word processing and design formatting. The bullets called out in each task are those specific and important for successful completion and implementation of that task.

2.3 Data Manager

The Data Manager is a tool inside MitigateNY, that has pages for each dataset. Each data page provides a description, metadata, ability to download, and visualized statistics for change over time (vintage to vintage) and quality assurance. Authenticated administrative users can utilize the data manager for user-generated data tasks, such as data entry, editing, and cleaning.

Task 3: 2023 SHMP Content Management System (CMS) & Site Design

The beta 2018 SHMP-MNY CMS does not include functionality for customization of visualizations, structural architecture, formatting, standardized naming conventions that parallel the "front end" public facing content, etc. DHSES, with contractor support, will develop and deploy a new, user-friendly CMS to support enhanced planning efforts and plan maintenance.

3.1 2023 SHMP CMS Components ("back-end" / authorized user features)

1. Accessibility - 508 Compliance features – Language access
2. PDF export with designed formatting for accessibility and ease of printing
3. Sitewide Content Navigation
    a. Sitewide search functionality
    b. Tagging tool (to group, search and view site content by policy requirements, subject, community, etc.)
    c. Site Map: presents a hierarchical and comprehensive view of the site in its totality
    d. Site Index: organized alphabetically to help site visitors easily locate specific content, pages, or tags
4. "Drag and drop" web page creation and organization
5. Components for customized data visualization, import and export capabilities, to include data signature (source, date, time, username) for each element, which allow users to design MitigateNY visualizations while creating a plan.
6. Web-based data entry forms
7. Batch uploader, to include
    a. Automated data signature for all entries to include:
        i. As of date:
            1. Ex. Batch uploaded by *username* on *5/2023*
            2. Ex. Form edited (individual entry) by *username* on *7/2023*
    b. User comments
8. Straightforward content formatting, including
    a. Word processing (including hyperlinks) and formatting
    b. Image upload and formatting
    c. Embed feature to easily "import" data from external sources
    d. Saving in-progress content vs. publishing complete content
9. PDF hyperlink generator ("files" feature in LHMP-MNY CMS)
10. Mobile responsiveness
11. "Hit counter" to document and assess website traffic
12. User-centered design for ease of use and overall user experience

Upon completion of the 2023 SHMP CMS, updated SHMP content developed through the current SOW will be uploaded. Beta testing and site design will occur. DHSES will rely on contracted research and data analysis support to ensure the new SHMP website and MitigateNY system at large is designed in accordance with NYS branding and has high quality performance and optimal response time with minimal to no latency and <7 sec overall end user load speed for. This will include diagnostic analytics to optimize website performance and user experience. Items below are not exhaustive, but high priority.

3.2 2023 SHMP Critical Website Design Features ("front-end" / public facing product)

1. Easily interpretable data visualizations related to hazards history, hazard risk, vulnerable populations, etc.
2. Sitewide navigation
3. Public user experience: usability, page load times, graphic design
4. Executive Summary design features
    a. Options to select and export components for customizable Executive Summary report
5. Local Hazard Mitigation Plan Status map - interactive map with links to County Profiles, county website and most recently published hazard mitigation plan per county
6. County Profiles with CenRep data and content TBD

Task 4: State-Owned Asset Inventory

A unique, state-owned built asset dataset was created during the 2018 SHMP update. Each asset is included in a statewide map and is associated with attributes related to building value, ownership, land-use type, and population data. Currently, state-owned assets are intersected with flood scenario modeling (1%, .2%) provided via DFIRMs. The State-Owned Asset inventory will be updated to a 2023 vintage as part of the Risk Assessment in Task 2 and will be updated once more during the project period to a newer vintage.

DHSES will include this data in the CenRep for authorized state agency users for continued data collection, visualization, and assessment of state-owned assets.

DHSES will host in-person and virtual engagement sessions with state agency personnel to share the current iteration of the state-owned asset inventory and validate the data. DHSES will collect feedback and identify opportunities for enhancement and broader use by agency partners. Results of these meetings will be documented, assessed for feasibility, and cost, and made available to state leadership for determination of next steps.

Task 5: Interim LHMP Support

The beta LHMP-MNY planning tools funded and piloted via DRs 4322 and 4348 HMGP planning grants are deployed and actively in use.

DHSES, with contract support, will provide technical and user support for plans developed in the current platform and for plan updates initiated during the contract period. The CenRep, beginning with data collection methods and batch uploader capabilities described above, will be made available to LHMP-MNY users upon its completion. As the deliverables detailed above are completed, integration with the LHMP-MNY platform will allow DHSES to continue collection and management of local hazard mitigation plan data and outputs statewide. The continuation of this web-based data collection is critical to NYS' hazard mitigation programs and improved plan maintenance.

This task will include items related to the integrated LHMP-MNY 2.0 (including diagnostic research and a detailed data plan), outlined below in Task 6.

Task 6: Organizational development and deliverable debrief

Throughout the implementation of this project, a third-party facilitator will engage DHSES, the contractor, and stakeholders (when appropriate) through an organizational development process to evaluate progress, strategies, and intended deliverables. The facilitator will identify and implement opportunities to collect feedback from external test users prior to completion of final product deliverables, and document discussions, agreed upon solutions, and outcomes.

Once the final scope of deliverables is deployed and available to diverse users, it is expected that system features will require refinement, enhancement and/or additional orienting material. The organizational development process (including process documentation, external stakeholder engagement, and DHSES/contractor response to findings) will be iterative and adaptive to actual user experience and will continue throughout the lifecycle of the 2023 New York State Hazard Mitigation Plan.

1. Identify intended users and defined use-cases
    a. Identify documentation needed per user type
2. Assess needs of intended users, establish quantifiable metrics to gauge software performance and user experience
3. Identify points of integration with DHSES grant administration and DHSES / FEMA planning workflows and regulatory framework
    a. Assess current workflow tasks to identify all potential parallel systems for data gathering

4. Document the outcomes of above to produce a Use Case Inventory and Engagement Plan, to outline a-e below and validate/revise processes and deliverables associated with Tasks 7 and 8:
    a. System: the product, service, or software
    b. User: an individual, organization, another system, etc.
    c. Scenarios: a use case instance the describes actions and interactions between the system and user.
    d. Use Case Outcomes: describes the success and failure scenarios that can occur when users interact with the system. Establishes the main success scenario (the most desirable outcome of a system/user interaction).
    e. Use Case Model (as applicable): a visual representation of the use case. The use case model (also known as use case diagram) may represent the functionality/workflow of the system, key system-user scenarios, or use case template.

Task 7: LHMP-MNY 2.0

Following the successful completion of the 2023 SHMP update DHSES, with contract support, will integrate and align the new SHMP CMS and CenRep with the beta LHMP-MNY tools to create the LHMP-MNY 2.0.

Features and software development identified in earlier phases that were not completed or are discovered as a result of task phases listed above, will be implemented, as well as CMS feature updates specific to LHMP organization.

This task will include:

1. The early identification and subsequent completion of feasible post-pilot (HMGP 4322-0001 and 4348-0004) software recommendations by FEMA, DHSES, AVAIL and other users and reviewers of the beta LHMP-MNY tools.
2. Inclusion of all CMS features developed for the 2023 SHMP as part of Task 3.
3. Inclusion of SHMP and CenRep visualization features developed in Tasks 2 and 3.
4. Graphic design and site reorganization resulting from beta testing, the 2023 SHMP update and support of users during Task 5.
5. Transfer beta-LHMP content to LHMP 2.0

Task 8: MitigateNY 2.0

Following the deployment of the Central Data Repository, completion of the 2023 SHMP, and the LHMP-MNY 2.0 update, DHSES will launch MitigateNY 2.0: NYS' comprehensive hazard mitigation planning program. DHSES will roll out the MitigateNY 2.0 User Program including standardized training modules that will occur virtually and at in-person meetings, technical tutorials, and the *MitigateNY 2.0 User Program Handbook* with content related to all user-levels.

DHSES, with contractor support, will manage a user authentication dashboard to provide local, state, and federal users appropriate levels of access to the entire MitigateNY system.

During the deployment stage of MitigateNY 2.0, DHSES will engage external stakeholders to solicit feedback and testing. DHSES will conduct outreach to local representatives, state agency liaisons, federal partners, non-profit stakeholders, and hazard mitigation planning experts and vendors active in New York State to offer opportunities for beta-testing and input.

During and following the conclusion of stakeholder engagement, DHSES will utilize contract support to provide a long-term plan for the ongoing data maintenance of the MitigateNY system and user program, including system functionality, bug identification and repair, and technical support for LHMP-MNY 2.0.

1. User authentication dashboard
2. Dashboard data analysis overviews (visualized assessments of actions, capabilities, hazards, and other data TBD)
    a. View and filter by geography (census tract, jurisdiction, county)

    b. Select and view data for multiple geographies at one time for comparative analyses
3. Determine and document long-term maintenance needs
4. Develop and deploy MitigateNY 2.0 User Program
    a. Review and revise DHSES LHMP grant administration and technical support materials to include reference to and guidance for utilizing MitigateNY
    b. Design and develop instructor-led training modules and technical tutorials
        i. Training materials– videos, PowerPoint presentations, self-paced (click-through) training
        ii. Live training, as time and resources allow
    c. MitigateNY: Program Handbook
        i. User guidance for planning within the MitigateNY ecosystem
        ii. Technical guidance for planning process participants to conduct planning exercises in alignment with, but outside of, the MitigateNY ecosystem for process parity and data integration
5. External Stakeholder engagement, testing and deployment
6. Train DHSES staff to become power users, with ability to train stakeholder users (“train the trainer”)