



# CITY OF HOUSTON

Stephen C. Costello

Chief Recovery Officer

Mayor's Recovery Office  
Interoffice Memo

**To:** Mayor Sylvester Turner  
Costello

**From:** Stephen C.

Chief Recovery Officer

**Date:** February 5<sup>th</sup>, 2019

**Subject:** Houston HMGP Projects Memorandum

Mayor Turner,

As the Recovery Team strives to move the Hazard Mitigation Grant Program (HMGP) projects forward in the FEMA review process, I would like to provide you with the following summary containing information regarding the HMGP program and project selection process, the City of Houston's projects in consideration, major constraints, and actions taken towards resolving the constraints.

Although the actions taken have set a path-forward towards obtaining resolution, additional efforts are needed to expedite the review, approval, and implementation of Lake Houston Dam, Inwood Forest, North Canal, TIRZ 17, and Home Mitigation projects.

As summarized in this memo, main agencies have worked together to address discrepancies in information requests, obtain approval for a Programmatic NEPA Review, and utilizing alternative tools for calculation of benefits for projects. However, further assistance is needed to obtain final resolution with FEMA leadership, including pre-award activity and project phasing to enable timely delivery of projects. The complexity and scale of projects within Houston will require all involved agencies to continue to work together to deliver the transformational projects proposed.

We hope that this memo provides the level of detail required to inform individuals on the status of the City of Houston's HMGP progress.

Thank you,

Stephen C. Costello, P.E

Chief Recovery Officer

# City of Houston Hazard Mitigation Grant Program

February 2019

## Overview

According to Federal Emergency Management Agency (FEMA), hazard mitigation measures are any sustainable actions taken to reduce or eliminate long-term risk to people and property for future disasters. Studies show that every for \$1 spent, \$4 in future damages mitigated. **FEMA's Hazard Mitigation Grant Program (HMGP), authorized under section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, is designed to support cost-effective post-disaster projects in areas following a Presidential Major Disaster Declaration.** The amount of HMGP funding available is based on the estimated total federal assistance, subject to a sliding scale formula outlined in Title 44 CFR Section 206.432(b). HMGP is typically funded 75% by FEMA; 25% being provided by local-matching sources.

Following Hurricane Harvey, the total calculated amount for HMGP funding in Texas is expected to be over \$1 billion. **Based on extensive engagement with the Texas Division of Emergency Management (TDEM) and FEMA, the City Recovery Team has estimated that Houston will be eligible for approximately \$230 million of HMGP project grants. The City of Houston has evaluated a range of different projects and has submitted 5 applications, totaling \$354.5 million in estimated project costs.** To make projects more favorable, the City of Houston and local partners estimate providing 38% of local match costs (\$220 FEMA/\$134.5 local-match). Exhibit 1 attached describes the projects in priority order in detail.

## HMGP Project Submittal Process

The program follows an extensive submittal and review process to ensure that all projects meet the specified criteria. Projects are prepared and submitted by sub-applicants (City of Houston), reviewed and submitted by the applicant (TDEM – representing the State), and reviewed and approved by FEMA. If approved, the funds would flow from FEMA to the sub-applicant for project implementation.

**For submittal, applications must demonstrate cost effectiveness through a favorable benefit-cost ratio (BCR), address environmental concerns and permitting requirements, and provide long-term solutions to improve resiliency and reduce impact of future events.** There are 7 key steps in the application process which include: 1. Project Scoping; 2. Project Development; 3. Project Submission; 4. Project Review; 5. Project Award and Obligation; 6. Project Implementation and Monitoring; 7. Award Closeout. FEMA estimates steps 1-5 can take up to 18 months, following a 36-month period for project completion in Step 6. Step 7 can take up for 90 days. **Currently, all City of Houston applications are in Step 4 - in review by either TDEM or FEMA.** Exhibit 2 depicts example HMGP timeline vs. actual timeline for Inwood Forest.

## Project Summary – February 2019

**Lake Houston Dam** The Lake Houston Dam project proposes the addition of 10 gates to supplement the existing dam structure and allow for controlled releases. The initial application estimated a benefit to over 35,000 residents in Houston and provide benefit to over 5,000 structures. The cost of the project is \$48.5 million and local partners included Harris County Flood Control District (HCFCD), where a combined local match of \$12 million (25%) would be provided. Initial calculations indicated a BCR greater than 2; however, the current BCR estimate is 0.75. The initial application was submitted in July 2018 and the City has received 2 Requests For Information (RFI) forms in September and November 2018. Responses to RFI 1 were provided promptly; however, an extension was requested for RFI 2 due to ongoing conversations with TDEM and FEMA. Currently, the City is working on addressing the issues that have been discussed with TDEM and FEMA to submit the response to the RFI. These include methodology on the Benefit-Cost Analysis (BCA) calculations, scope of work and budget, potential downstream impacts, alignment with HCFCD's San Jacinto Watershed Study, and environmental aspects.

**Inwood Forest Golf Course Detention** The Inwood Forest Golf Course Detention project proposes the construction of a set of detention basins that will provide approximately 1,300 acre-feet of storage to reduce flooding in the Inwood Forest community, along White Oak Bayou. This project is estimated to benefit over 30,000 residents in Houston directly and benefit over 4,000 building in the 10, 50, 100, and 500-year floodplains. The total cost of the project is \$48.6 million and local partners include HCFCD and the City, where a combined local match of \$12 million (25%) would be provided. Current calculations estimate the BCR at 1.45, indicating a favorable project. The application was submitted in June 2018 and the City received 3 RFIs in July, September and November of 2018. Responses were provided in a prompt manner for RFIs 1 and 2, however, an extension was requested for RFI 3 due to ongoing conversations with TDEM and FEMA. Currently, the City is working on addressing the issues that have been discussed with TDEM and FEMA to submit the response to the RFI. These include methodology on the BCA calculations, scope of work and budget, agreement on project phasing, and environmental aspects.

**North Canal** The North Canal project proposes the diversion of White Oak Bayou, the construction of a downstream channel for the I-45 realignment project, and the reconstruction of upstream bridges in Heights and Yale. This project is estimated to benefit over 35,000 residents in Houston and provide benefit to approximately 1,200 structures in the 10, 50, 100, and 500-year floodplains. The current total cost of the project is \$151 million and local partners include TxDOT, HCFCD, TIRZ 5, and the City, where a combined local match of \$84 million (55%) would be provided. Current calculations estimate the BCR at 1.1, indicating a favorable project. The application was submitted in July 2018 and the City received 1 RFI in September 2018. Responses for RFI 1 were provided in a prompt manner; however, following conversations with TDEM and FEMA, the application was resubmitted in December 2018 to reflect changes in scope of work and increased local match described above. Currently, TDEM is reviewing application.

**TIRZ 17 – Memorial** The TIRZ 17 Memorial project proposes the construction of an underground detention basin and improvements to storm water system for additional storage and conveyance capacity. This project is estimated to provide benefit to over 114 structures and reduce inundation on roadways in the area. The current total cost of the project is \$60.4 million and local partners include TIRZ 17 and the City, where a \$15 million local match would be provided. Current calculations estimate the BCR at 1.1, indicated a favorable project. The application was submitted in December 2018 and the City has not received an RFI as it is currently in review by TDEM.

**Individual Home Mitigation** The Individual Home Mitigation applications propose elevation and buyout for homes in Houston. 244 elevations and 3 buyout applications have been submitted in 6 batches in (2 in June, July, Sept, October and November 2018). The total amount of funding requested is approximately \$53.2 million, where a local match of \$13.3 would be provided from various sources including from Community Development Block Grant Disaster Recovery (CDBGDR) funds and homeowners. These numbers have slightly varied from the Harvey Recovery Report due to updated information. Currently, all batches are being review by TDEM and Batch 2 has been placed as an alternate project, which means they would be considered after review of all HMGP applications. No applications have been reviewed by FEMA.

## Constraints and Reasons for Delay

**The City of Houston has encountered several constraints throughout the application process for HMGP projects. These include authorization of pre-award activity, project phasing, environmental reviews, inconsistency in information requested, and use of HAZUS for estimation of project benefits.** The City has submitted modification requests to these requirements to facilitate project submission and expedite the submittal and review processes.

FEMA has a policy that does not allow for reimbursement of costs incurred before grant approval, with the exception of grant application costs. While FEMA has the authority to allow pre-award costs, it has done so in a limited basis (Louisiana and Mississippi for mitigation of residential or commercial structures). **The City has sought authorization of pre-award costs, including property and right-of-way acquisition, which are critical to meeting the HMGP project timeline of 36 months. However, this authorization has not yet been granted.** FEMA may be restricted in its ability to allow grantees to acquire property and therefore, this issue is being further explored.

**FEMA considers project phasing to be a two-step process: 1. Design and Permitting, and 2. Construction, where all design must be completed prior to the start of the construction.** This method is not favorable for larger-scale projects as typically these phases are performed simultaneously. **Section 404 of the Stafford Act does not appear to prohibit project phasing. However, the requirement from FEMA has led to major delays in progress of the Inwood Forest project, where the scope of work and project plan had to be modified despite having design plans for construction of the first phase of the detention completed.** Following this model, work on site would be delayed until the entire design of the basins is complete.

The environmental review process is typically time consuming, requiring individual Environmental Assessments (EA) or Environmental Impact Statements (EIS) for each project. This can take from 6-12 months or 2-4 years, respectively. The environmental requirements for large-scale projects can negatively impact the HMGP project timeline. **Due to the complexity and proximity of projects on a watershed level and the goal to expedite project delivery, the City and HCFCD have requested approval of a Programmatic Environmental review.** Through Section 404, the President can devote adequate resources to expedite such process. **The City and HCFCD have requested a meeting with the Unified Federal Review Board (UFR) to obtain authorization of the Programmatic NEPA Review process.**

Since the submittal of projects, the City has received 3 RFIs for Inwood Forest, 2 for Lake Houston Dam, 1 for North Canal, and none for TIRZ 17 or the Home Mitigation applications. However, in submitted responses to subsequent RFIs for Inwood Forest and Lake Houston Dam, major discrepancies were identified in questions posed (same questions in different RFIs, different information requested, etc). **Following conversations with FEMA and TDEM, it was identified that meetings with reviewers and project technical team were needed to discuss specific line items and questions to provide the appropriate responses.**

The BCA is a lengthy process that requires use of various tools for benefit estimation. RFIs have indicated the need to do a more thorough analysis for Inwood Forest and Lake Houston Dam. **The use of HAZUS model as a method to estimate project benefits is not currently approved by FEMA Region VI.** However, according to FEMA's 2011 Supplement to the Benefit-Cost Analysis Reference Guide specifies that utilizing HAZUS can be an appropriate method for determining the proposed project benefits for certain applications. **The City has proposed an approach that would be consistent with FEMA approved HAZUS guidance for the estimation of benefits of Inwood Forest and Lake Houston Dam projects. A final determination**

has not yet been made by FEMA as specific data from the City needs to be provided. The applications will need to be modified to include the HAZUS analysis for completion of the preliminary BCA.

## **Action Taken to Address Constraints**

### ***Meetings with FEMA and TDEM Leadership***

On October 11<sup>th</sup>, 2018, City of Houston and HCFCD met with **FEMA and TDEM leadership to provide general recovery updates and present the three requests for HMGP process modification**. These include pre-award activity authorization, project phasing, and programmatic NEPA review. During the same meeting, RFI discrepancies were addressed. A formal memo followed this meeting, sent to TDEM's Chief Nim Kidd on October 22<sup>nd</sup>, 2018. A second meeting, on December 10<sup>th</sup>, 2018 the same group convened to discuss similar topics in detail. **It was determined that a UFR meeting would be required to determine the approval of a programmatic NEPA review. Pre-award activity and project phasing was further discussed; however, no additional guidance was provided as it was determined that FEMA did not have authorization to issue such approvals.**

### ***Technical HMGP Application Review Meetings***

Following the December 10<sup>th</sup>, 2018 meeting, it was determined that **City of Houston, FEMA and TDEM application reviewers would hold regularly scheduled face-to-face meetings to discuss applications and address questions raised in the RFIs**. The intent was to meet regularly to discuss each of the applications. The first meeting was held on December 12<sup>th</sup>, 2018 where the Lake Houston Dam application was discussed. Changes to the budget and scope were provided; however, an extension was requesting to provide further analysis to determine benefits. Changes to the other applications were also reflected by December 31<sup>st</sup>, 2018. The second meeting was held on January 8<sup>th</sup>, 2019 and addressed issues with the Inwood Forest application specifically. In this meeting, environmental concerns with project phasing and environmental were highlighted. In addition, the City proposed the use of HAZUS model as an acceptable BCA estimation tool for both Inwood Forest and Lake Houston Dam. The changes required to deem application acceptable were captured and are being incorporated. No further meetings have been held to discuss the remaining projects. As a follow-up to the HAZUS discussion, a meeting with FEMA technical support for BCA was held on January 22<sup>nd</sup>, 2019 discuss the use of HAZUS. On January 30<sup>th</sup>, 2019, the City was notified that HAZUS would be reviewed pending data submittal. **Currently, the City of Houston and consultant are providing responses for each respective RFI. Another extension request for these RFIs was submitted on January 31<sup>st</sup>, 2019 and granted and supported by TDEM. The next meeting is scheduled for Feb. 28<sup>th</sup>, 2019.** It is important to note that the recent government shutdown has impacted the frequency of these meetings and its expected outcomes (ie. obtaining approvals).

### ***Upcoming UFR Meeting***

Following the requests with FEMA and TDEM leadership and thorough discussion with the technical HMGP application review team, **a meeting convening with the UFR board is scheduled for February 14<sup>th</sup>, 2019**. HCFCD and City of Houston will present scenarios which will demonstrate the need for a programmatic NEPA review by watershed, as projects are complementary. In addition, this meeting will serve to understand the UFR board's data needs on a project-by-project basis to give final approval. If a programmatic NEPA review is authorized, there will be a significant reduction in time required to prepare environmental components for each project. This meeting was intended to be scheduled for early January, however, it was postponed due to the recent government shutdown and the inability of key federal agency representatives to attend.

## *Legislation*

**The City of Houston Government Affairs team has engaged with the congressional delegation to obtain assistance for pre-award activity authorization and project phasing approval.** A meeting will be held with FEMA to understand the specific limitations and define whether legislative action is needed to grant this authority.

## **Summary**

HMGP can be a very successful tool in assisting cities in need to deliver transformation projects that can mitigate risk and protect lives and property. Throughout the HMGP process, the City of Houston has encountered several constraints which have delayed the advancement on projects. These include:

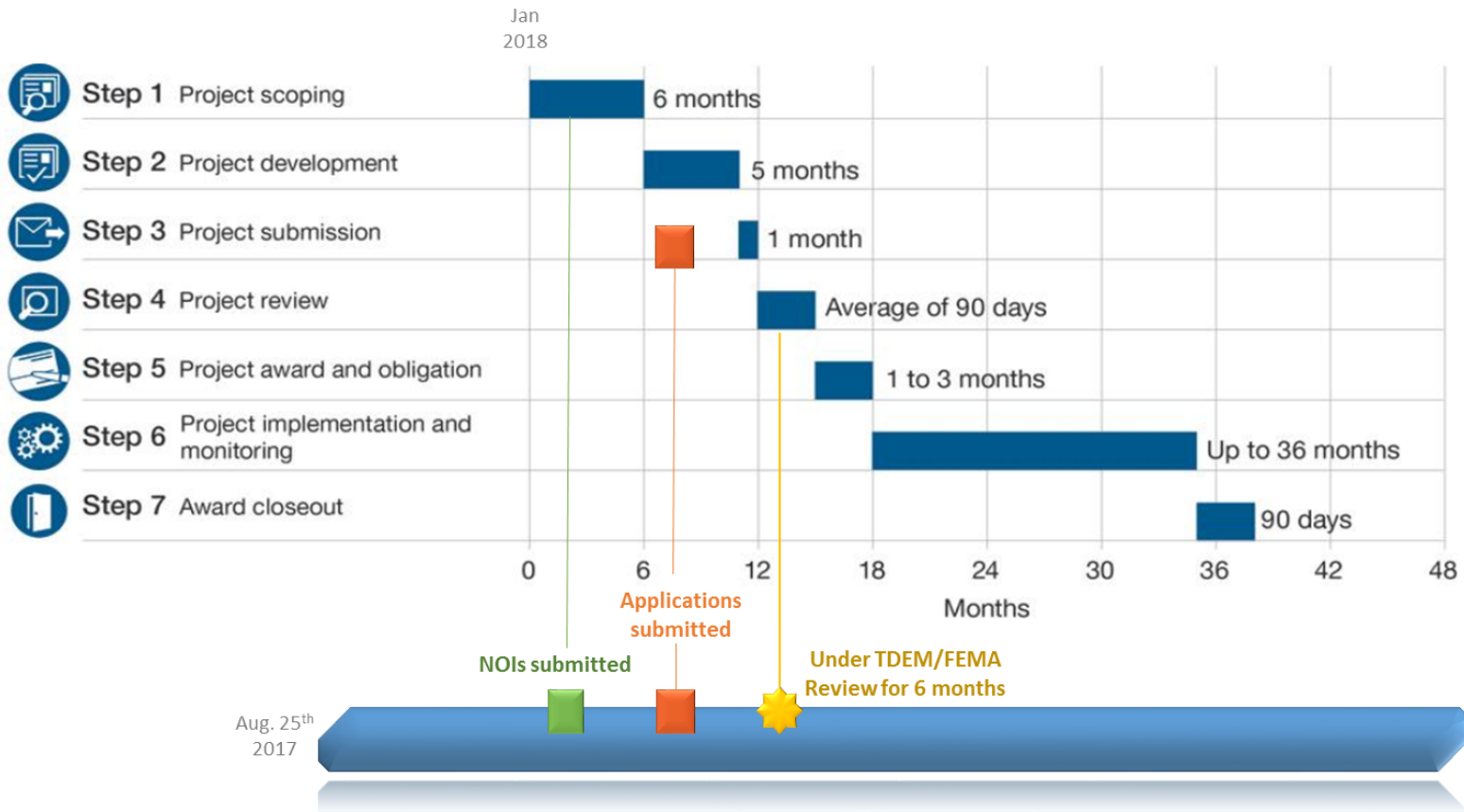
- Pre-award activity authorization
- Project phasing
- Programmatic NEPA Review approval
- Use of HAZUS as an accepted benefits estimation tool
- RFI discrepancies

However, various actions have been taken to expedite the review and address the constraints for the five HMGP projects submitted by the City of Houston. Through transparent communication with FEMA and TDEM, via extensive meetings with leadership and technical staff, the City aims to move forward with the applications. A clear path-forward for resolving the RFI discrepancies, obtaining Programmatic NEPA Review approval, and utilizing HAZUS model needs to be coordinated with FEMA leadership. In addition, further assistance is needed to obtain resolution of pre-award activity and project phasing with FEMA leadership to enable timely delivery of projects. The complexity and large-scale of projects within Houston will require all agencies involved to continue to work together to deliver the transformational projects proposed.

**Exhibit 1 City of Houston – Hazard Mitigation Grant Program Projects**

<b>Project</b>	<b>District</b>	<b>Watershed</b>	<b>Description</b>	<b>Status</b>	<b>Total Cost Estimate (\$ Millions)</b>	<b>Match Split FEMA/Local Match</b>	<b>B/C</b>
<b>Inwood Golf Course</b>	A, C, & B	White Oak	227-acre golf course to be converted to a set of detention basins, providing approximately 1,300 acre-feet of storage	Application was submitted 6/22/2018. The City has received 3 RFIs and has formally responded to RFI No. 1 and 2. Responses to RFI No. 3 are anticipated to be submitted by 1/31/2019.	\$48.6	\$36.6/\$12	1.45
<b>North Canal</b>	C, H, & I	Buffalo; White Oak	Diversion channel at the confluence of White Oak and Buffalo bayous, southern/downstream channel for additional mitigation following I-45 realignment , and upstream reconstruction bridges in Heights and Yale for overall 100 year WSE reduction along White Oak and Buffalo Bayou	Application submitted on 7/24/2018. The City has received and responded to 1 RFI. Currently awaiting TDEM's recommendation of project to FEMA for further review. Project budget was modified on 12/31/2018 to increase local match to cover over 50% of project costs.	\$151	\$67/\$84	1.1
<b>TIRZ 17</b>	G	Buffalo	Underground detention basins and storm water system improvements and connections for additional storage and conveyance capacity	Application submitted on 12/31/2018. Awaiting TDEM and FEMA review.	\$60.4	\$45.4/\$15	1.1
<b>Lake Houston Dam</b>	E	San Jacinto	Addition of 10-gate structure to complement existing dam to allow for controlled releases	Application submitted on 7/23/2018. The City has received 2 RFIs and has formally responded to RFI No. 1. Currently in the process of reviewing and updating application in response to RFI No. 2. Formal response to RFI No. 2 is anticipated to be submitted by 31/1/2019.	\$48.5	\$36.5/\$12	0.75
<b>Individual Home Mitigation</b>	All	All	Buyouts, elevations, demolition, and rebuild application for individual homes	Applications have been submitted from June-December 2018. Awaiting TDEM and FEMA responses regarding award of funds.	\$53.2	\$39.9/\$13.3	

Exhibit 2 City of Houston – Sample Hazard Mitigation Grant Program Project Timeline vs, Actual timeline for Inwood Forest



Biweekly meetings with TDEM and FEMA are being held to discuss projects and expedite review and approval of applications