

## **RECOMMENDED MODIFICATIONS TO THE HARRIS COUNTY FLOOD CONTROL DISTRICT PRIORITIZATION FRAMEWORK**

December 14, 2021

The previously adopted “Prioritization Framework for the Implementation of the Harris County Flood Control District 2018 Bond Program” (Prioritization Framework), was a major step forward for Harris County. Two years have passed since the Prioritization Framework was adopted, and its original use was to help determine the order in which 2018 Bond Projects were initiated. We are now proposing a modified Prioritization Framework that will be used to help allocate funding from the Flood Resilience Trust, as well as help prioritize new projects not included in the 2018 Bond Program.

As the 2018 Bond Program continues to develop, we recommend three modifications to the current Prioritization Framework for Commissioners Court to consider:

- 1. The Prioritization Framework should place greater emphasis on the number of people a project benefits.**
- 2. The Prioritization Framework should no longer consider potential partner funding as a separate factor.**
- 3. The Prioritization Framework should recognize projects that address structural flooding both inside and outside the 100-year mapped floodplain.**

## **OVERVIEW OF CURRENT ADOPTED PRIORITIZATION FRAMEWORK**

Below is an overview of the current Prioritization Framework. Eight factors, each with a specific weight, give the project a total score. Four factors, comprising 50% of the total weight, are primarily measures of technical and economic factors. Four other factors, comprising the remaining 50% of the total weight, are primarily equity and environmental factors.

<b>Measure</b>	<b>Description</b>	<b>Weight</b>
Flood Risk Reduction	% of structures in a watershed from which the 100-year floodplain is removed	25%
Project Efficiency	Total cost of project / structures benefitted in 100-year floodplain	10%
Partnership Funding	Estimated partner funding as % of project cost	10%
Long-Term Maintenance Costs	Long-term operating costs of project	5%
<b>Subtotal – Technical and Economic Factors</b>		<b>50%</b>
Environmental Impacts	Does project require Corps permit? Does it require mitigation credits? Does it significantly avoid environmental impacts?	5%
Potential for Multiple Benefits	Does project provide recreational or environmental benefits?	5%
Existing Conditions – Drainage Level of Service	Based on a capacity of Flood Control District channels to manage a flooding event. Lower level of service means a higher score.	20%
Social Vulnerability Index	CDC measure of communities’ ability to survive and recover from a disaster	20%
<b>Subtotal- Equity and Environmental Factors</b>		<b>50%</b>
<b>GRAND TOTAL</b>		<b>100%</b>

## **RECOMMENDATIONS FOR MODIFICATIONS TO THE ADOPTED PRIORITIZATION FRAMEWORK**

The recommendations for updating the Prioritization Framework primarily address the Technical and Economic Factors. The total weight of these factors (50%) remains unchanged, but the calculation is simplified and would now cover more projects.

### **Recommendation 1: The Prioritization Framework should place greater emphasis on the number of people a project benefits.**

Under the current Prioritization Framework, only one factor, “Project Efficiency,” directly measures the number of structures benefitted—and the number of structures is the best available proxy for the number of people benefitted. Another factor, “Flood Risk Reduction,” measures only the *percentage* of structures in a specific watershed that a project benefits, not the *number* of structures benefitted. This has shown to have the unintended consequence of equally scoring projects in the category, even though one may have a dramatically higher number of structures benefitted. For example, using the current Prioritization Framework, Bond ID C-25 in the Halls Bayou watershed, which will benefit more than

2,500 structures, receives the full 10 points under Project Efficiency, but Bond ID CI-027 in the Sims Bayou watershed, which will benefit 50 structures, also receives the full 10 points.

We recommend the two existing factors, Project Efficiency (10% weight) and Flood Risk Reduction (25% weight) should be combined into a single metric called “Benefits Efficiency.” This new metric would be calculated as the cost of a project (net of any committed partner funds) divided by the number of structures the proposed project will protect from flooding during a 1% flood. The new factor, Benefits Efficiency, would receive a 45% weight. The new metric has a simple meaning: how many County dollars does it take to protect a structure (and thus people) from a 100-year rain or flood event.

**Recommendation 2: The Prioritization Framework should no longer consider potential partner funding as a separate factor.**

Potential partner funding should not be considered in project prioritization, as the purpose of the Flood Resilience Trust is to fill in for partner funding that was anticipated but is not realized. Committed partner funding should instead be treated as a reduction of costs in other measures, specifically Benefits Efficiency. Partner funding would be removed as a separate factor. The 10% weighting assigned to this score would be reflected in a 10% increase in weighting to the Benefits Efficiency metric (see above)

**Recommendation 3: The Prioritization Framework should recognize projects that address structural flooding both inside and outside the 100-year mapped floodplain.**

A significant amount of flooding occurs outside of the FEMA effective (mapped) 100-year floodplain. In part, this is because floodplain maps must be updated to account for new design rainfall rates, development, and advances in engineering technology. However, the primary reason flooding occurs outside the limits of the mapped floodplain is due to inadequate local drainage systems which do not effectively convey water to the Flood Control District’s channel system during very intense and/or prolonged rainfall events. Neighborhoods may flood even when the channel system is effectively doing its job.

The responsibility of upgrading and maintaining the local drainage system typically resides with cities, municipal utility districts (MUD’s), other entities, and/or Harris County. The County continues to take steps to upgrade local drainage and partner with other entities. These local drainage investments are essential not only to reduce flood risk but to ensure the maximum benefit is derived from large-scale channel investments.

The current Prioritization Framework quantifies benefits by estimating the number of structures in the 100-year floodplain which are benefitted. In order to include benefits from local drainage projects, there must be an alternative calculation that instead recognizes all structures benefitted by a project, regardless of location inside or outside of a 100-year floodplain. As a substitute, we recommend using the number of structures which will be protected during a 100-year rainfall. This provides an apples-to-apples measure by focusing on all structural benefits derived from any type of project.

To measure the “Existing Level of Service” for a local drainage project area, we recommend looking at the average annual number of FEMA flood claims or other documented instances of flooded structures in the project area since 1977. While this is an imperfect measure, we believe it is the best available estimate of the actual levels of flood protection service.

**OVERVIEW OF RECOMMENDED MODIFICATIONS TO THE PRIORITIZATION FRAMEWORK**

<b>Measure</b>	<b>Change</b>	<b>New Weight</b>
Flood Risk Reduction	Eliminated	0%
Benefits Efficiency (formerly “Project Efficiency”)	Total cost of project to County / structural benefits (and thus people) in 100-year rainfall	45%
Partnership Funding	Eliminated	0%
Long-Term Maintenance Costs	No Change	5%
<b>Subtotal – Technical and Economic Factors</b>		<b>50%</b>
Environmental Impacts	No Change	5%
Potential for Multiple Benefits	No Change	5%
Existing Level of Service	Add comparable measure for local drainage projects based on documented instances of flooding	20%
Social Vulnerability Index	No Change	20%
<b>Subtotal- Equity and Environmental Factors</b>		<b>50%</b>
<b>GRAND TOTAL</b>		<b>100%</b>

Proposed Next Steps

1. Harris County Flood Control District and the Office of County Administration should present the proposed, updated Prioritization Framework to the Community Flood Resilience Task Force for their input, and return to Commissioners Court with a finalized framework for approval in January 2022.
2. The modified Prioritization Framework does not affect the start date for 2018 Bond Program projects, all of which have already been started. Instead, the updated Framework should determine how funds in the Flood Resilience Trust are applied, beginning immediately after adoption.