Attachment 3 – LIP MOD Detail

The GCRPC Local Infrastructure Program (LIP) Method of Distribution (MOD) allocates available funding in a manner similar to the methodology utilized by the GLO to distribute HUD CDBG-DR funding to regions throughout the affected area.

I. LIP MOD for the 80/20% LIP Allocation Groups as Required by HUD in the Federal Register of February 9, 2018, and the GLO in the Draft State Action Plan (SAP).

a. Public Assistance

A Public Assistance factor was generated in order to provide each entity with a minimum funding requirement to address potential local infrastructure projects. This factor is represented by the sum of all Public Assistance requests for an eligible entity.

b. Unmet Need

Unmet need was calculated using a 10% matching requirement of total project costs. The matching requirement percentage is based on the 90/10 cost sharing requirement for FEMA Public Assistance Funding.

c. Resiliency

A resiliency factor was calculated as 15% of total project costs. The resiliency factor represents the enhancements, improvements, or other components integrated into a structure to increase its capacity to respond to, or recover from, a disaster more quickly that if these components had not been integrated.

d. Social Vulnerability

Both HUD and the GLO recommended the use of a social vulnerability factor in determining the distribution of CDBG-DR funding. Thus, GCRPC has utilized the same Social Vulnerability Index data utilized by the GLO in its distribution of HUD CDBG-DR funds to the Hurricane Harvey impacted regions in Texas.

The raw Social Vulnerability Index indices utilized by the GLO in its distribution of HUD funds to the 49 impacted counties were obtained from Dr. Christopher Emrich at the University of Central Florida, a leading expert in the development of the Social Vulnerability Index (SoVI). The Social Vulnerability Index (SoVI), was created by Cutter et al. (Cutter, S. L., Boruff, B. J., & Shirley, W. L. (2003). "Social vulnerability to environmental hazards," Social Science Quarterly, 84(2), 242–261). The idea behind social vulnerability, and its relevance in the context of the distribution methodology presented here, is that social vulnerability arises from certain geographically identifiable population groups who have limited access to political power and resources; have certain physical limitations; or are bound by customs, social capital, beliefs, and characteristics of the built environment (such as density and infrastructure type, building age and stock, etc.). The idea of social vulnerability is that it makes the socially vulnerable people (here,

counties, cities, or ZIP codes) more susceptible and less resilient to catastrophic events. Vulnerable groups are less likely to have the ability to respond and recover from catastrophic events on their own. The index is useful to quantify, describe, and understand the social burdens of risks, such as catastrophic natural disasters.

The mathematical development of the original SoVI began by identifying social characteristics consistently seen, in research literature, as contributing to social vulnerability. A literature review process was used by the inventors of SoVI to distill the universe of possible vulnerability measures down to a subset of variables including, wealth, proportion of elderly residents in a county, race, social status variables, Hispanic ethnicity, percent of residents without health insurance, persons with special needs, service industry employment, Native American population, and gender, etc.. These variables are entered into a statistical principal component factor analysis resulting in 11 components that explains 76.4% of the variance in social vulnerability relative to the original data set. The resultant SoVI index for a county is a linear combination of the factors derived. The latest SoVI index now uses 29 variables and synthesizes socioeconomic variables obtained from data sources primarily from the United States Census Bureau. A more extensive discussion and presentation of SoVI is given at http://artsandsciences.sc.edu/geog/hvri/sovi%C2%AE-0.

For purposes of these analyses, a SoVI scale was needed to compare social vulnerability across affected eligible entities in the GCRPC region (7 Counties). The SoVI scale utilized for this distribution methodology is a duplicate of the scale used by the GLO. The GLO's SoVI analysis utilized 48 impacted counties since Harris County was identified for individual funding separately from these analyses.

Dr. Christopher Emrich completed the SoVI computations and supplied the SoVI scores for all of the 49 declared disaster counties to the GLO. Dr. Emrich is the Boardman Endowed Associate Professor of Environmental Science and Public Administration and a member of the National Center for Integrated Coastal Research at the University of Central Florida.

For the purpose of utilizing the SoVI score as a part of the allocation process, an adjustment of the raw SoVI was needed to make it positive. This was accomplished for each eligible entity by subtracting the minimum raw SoVI value among all counties in the region from the particular county SoVI value, and then adding one to the result. This makes all SoVI values greater than or equal to one.

e. Unmet Need Per Capita

An Unmet Need Per Capita factor was calculated to help represent the ability of a county, city, or ZIP code, population to sustain and/or recover from the disaster by raising or utilizing their own funds. This factor also helps account for differences in population between rural and urban areas. For each county, city, or ZIP code the unmet need per capita was calculated by dividing the unmet need amount (plus resiliency factor) developed by severity level by the population size.

f. Distribution of Funds

The allocation of funds involved a weighted combination of 1) the unmet needs per county or city, 2) the positive SoVI, and 3) the per capita unmet need for each county. To facilitate this a separate distribution percentage was determined for each of these three factors which were subsequently combined for a single distribution percentage across all eligible counties/cities.

The initial distributions for the 80% allocation (HUD Most Impacted Counties) and the 20% allocations (Impacted Counties and Most Impacted ZIP Codes were determined through the guidance provided by the Federal Register and the GLO SAP. Thus, for the 80% allocation group the distribution percentage based on unmet need plus resiliency was calculated for each entity by taking 1) the county unmet need plus (+) resiliency and dividing (/) it by 2) the sum of the unmet need plus resiliency over all eligible entities in the 80% allocation group. Similarly, for the SoVI based distribution percentage of 1+(Raw SoVI - Min(Raw SoVI)), the 1) 1+(Raw SoVI - Min(Raw SoVI)) value for the county was divided by 2) the sum of the 1+(Raw SoVI - Min(Raw SoVI)) values over all counties in the 80% allocation group which gives the distribution percentage for the positive SoVI scores. Finally, for the distribution percentage based on unmet needs per capita, the 1) county per capita unmet need plus (+) resiliency for a county was divided (/) by 2) the sum of the unmet need per capita value across all counties in the HUD Impacted Counties/Cities 80% allocation group for Local Infrastructure Program (LIP) funding. An analogous process was used for the HUD Impacted Counties/Cities 20% allocation group for LIP funding.

Integration of these distribution percentages (1. Unmet Needs Plus Resiliency, 2. Positive SoVI, and 3. Per Capita Unmet Need Plus Resiliency) was achieved by using a 50-40-10 model that takes a weighted combination of the three distributions percentages: 50% weight given to Unmet Needs Plus Resiliency, 40% weight to Positive SoVI, and 10% weight to Per Capita Unmet Need Plus Resiliency. This 50-40-10 weighting determines a final distribution percentage for each eligible entity by using the same county data utilized by HUD and the GLO to allocate funding to regions in the affected area.

Minimum allocation amounts, using the 50-40-10 model without imposing any additional constraints on the amount of HUD funding, were obtained by applying the percentage distribution values for each eligible entity to the total dollar amount to be allocated (80% of the available funds in the 80% group (HUD Most Impacted Counties, Cities, and Zip Codes) and 20% of the funds in the 20% group (Impacted Counties and Cities)). A shortfall (or surplus) amount was calculated to represent an entities unmet needs plus resiliency allocation versus the amount they would receive using the unconstrained 50-40-10 model dollar allocation. The GLO SAP requires a minimum allocation amount ($100,000) for eligible entities to assist entities with costs associated to 1) applying for LIP funding, 2) creating LIP policies and procedures, and hiring/maintaining personnel to implement the processing and distribution of allocated LIP funds. In order to avoid over-allocating funds to an eligible entity (beyond their unmet need requirement), a maximum allocation amount constraint was imposed with a cap being set at 100% of the Unmet Needs Plus Resiliency amount for the funding of eligible entities if all eligible entities in the group have not yet received their Unmet Need Plus Resiliency allocation amount. These two numbers (cap and floor) provide constraints on the funding an eligible entity can receive in a given allocation. If an eligible entity reached the higher of the minimum distribution or the maximum allocation, any surplus funds were made available for reallocation

and distribution to other eligible entities. This reallocation process was performed in a sequential process of surplus allocations, however, funding allocated to the GCRPC region was inadequate for all eligible entities to receive a minimum distribution of 100% of Unmet Need Plus Resiliency.