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After the Storm: Understanding and Improving U.S. and Texas Disaster Recovery and Hazard Mitigation Policies

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After the Storm: Understanding and Improving U.S. and Texas Disaster Recovery and Hazard Mitigation Policies

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I. INTRODUCTION: GROWING STORMS AND GOVERNMENT'S ROLE

Even as the number and effects of major disasters have steadily increased, government has played an increasingly large and central role in the response and recovery efforts after major disasters.[1] Hurricane Harvey alone caused approximately $125 billion in economic losses.[2] The federal government allocated over $136 billion in assistance for 2017 major disasters.[3] Without adaptation and mitigation measures, researchers project that annual economic losses from storm, flood, and subsidence damage in the world's coastal cities will average over $1 trillion per year by 2050.[4] Even with adaptation and mitigation, annual losses in 2050 are still likely to exceed $60 billion per year.[5]

Between 1970 and 2017, natural disasters accounted for 19 of the world's 20 most costly insured catastrophes.[6] The exception was the September 11th attacks, which cost insurers just less than $26 billion—$4 billion less than Hurricane Harvey ($30 billion) and three times less than insured losses related to Hurricane Katrina ($82 billion).[7]

1. *See* BRUCE R. LINDSAY & FRANCIS X. MCCARTHY, CONG. RESEARCH SERV., R42702, STAFFORD ACT DECLARATIONS 1953-2014: TRENDS, ANALYSES, AND IMPLICATIONS FOR CONGRESS 15 (2014).

2. Memorandum from Jeff Lindner, Dir. of Hydrologic Operations/Meteorologist & Steve Fitzgerald, Chief Eng'r, Harris Cty. Flood Control Dist., to HCFCD Flood Watch/Partners 2 (June 4, 2018), https://www.hcfcd.org/media/2678/immediate-flood-report-final-hurricane-harvey-2017.pdf [https://perma.cc/Y5FH-GPGD].

3. WILLIAM L. PAINTER, CONG. RESEARCH SERV., R45084, 2017 SUPPLEMENTAL DISASTER APPROPRIATIONS: OVERVIEW 15 (2018).

4. Borja G. Reguero et al., *Comparing the Cost Effectiveness of Nature-Based and Coastal Adaptation: A Case Study from the Gulf Coast of the United States*, PLOSONE (Apr. 11, 2018), https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0192132&type=printable [https://perma.cc/78R8-G57V].

5. Stephane Hallegatte et al., *Future Flood Losses in Major Coastal Cities*, 3 NATURE CLIMATE CHANGE 802, 802 (2013).

6. STATISTA, https://www.statista.com/statistics/267210/natural-disaster-damage-totals-worldwide-since-1970/ [https://perma.cc/F982-G53D] (last visited Oct. 18, 2018).

7. *Id.* A substantial part of the large insured losses following Katrina were related to damage to oil and gas wells and refineries.

Notably, 15 of the top 20 insured catastrophes occurred, at least in part, on U.S. territory.[8] Even before Hurricane Harvey, Texas led the nation in the highest number of natural disaster declarations.[9]

This Article focuses on the role that the U.S., Texas, and local governments play, and pay for, in disaster recovery.[10] While disaster-struck communities develop plans for recovery, these communities rely more and more on federal assistance, even as they navigate a complex web of federal programs that focus heavily on recovery that acknowledge adaptation and mitigation but fail to prioritize them.[11]

II. FRAMEWORKS FOR DISASTER: THE COMPLICATED ROLE OF FEDERAL AGENCIES IN LOCAL DISASTER RECOVERY AND RESILIENCY

A. *Changing National Character: Disaster Recovery Between 1803 and 1974*

The federal government's role in disaster recovery has undoubtedly changed over time.[12] The federal government entered into disaster recovery assistance in 1803 when Congress provided aid to a New Hampshire town devastated by a large fire.[13] The U.S. Army Corps of Engineers (the "Corps") has managed civil works projects of national importance since 1824.[14] The Corps first responded to a federal emer-

8. *Id.*

9. Faith Barasa, *The US States Most Prone to Natural Disasters*, WORLD ATLAS (Mar. 22, 2018), https://www.worldatlas.com/articles/the-10-states-most-prone-to-natural-disasters.html [https://perma.cc/9445-HDHV].

10. FRANCIS X. MCCARTHY, CONG. RESEARCH SERV., RL33053, FEDERAL STAFFORD ACT DISASTER ASSISTANCE: PRESIDENTIAL DECLARATIONS, ELIGIBLE ACTIVITIES, AND FUNDING 3 (2011).

11. HOWARD KUNREUTHER ET AL., UNIV. PA., INSURANCE, ECONOMIC INCENTIVES AND OTHER POLICY TOOLS FOR STRENGTHENING CRITICAL INFRASTRUCTURE RESILIENCE: 20 PROPOSALS FOR ACTION 27 (2016), http://opim.wharton.upenn.edu/risk/library/WP2016Dec_CIRI-Phase-I.pdf [https://perma.cc/7NQJ-D3SS]; ANTHONY TORRES ET AL., LESSONS FROM HURRICANE SANDY: ANALYSIS OF VULNERABILITIES EXPOSED BY HURRICANE SANDY AND POTENTIAL MITIGATION STRATEGIES IN THE NORTHEASTERN UNITED STATES 20 (2015), http://climateknowledge.org/figures/Rood_Climate_Change_AOSS480_Documents/AOSS480_2015_Sandy_Climate_Case_Study_Narrative.pdf [https://perma.cc/UH22-YJBF].

12. *See* David A. Moss, *Courting Disaster? The Transformation of Federal Disaster Policy Since 1803*, *in* THE FINANCING OF CATASTROPHE RISK 307, 327 (Kenneth A. Froot ed., 1999) (providing an informative and highly readable history of disaster policy).

13. *About the Agency*, FEMA, https://www.fema.gov/about-agency [https://perma.cc/VKT7-L8X4] (last updated Mar. 26, 2018, 12:51 PM).

14. *See* MARTIN REUSS, U.S. ARMY CORPS OF ENGINEERS, RESHAPING NATIONAL WATER POLITICS: THE EMERGENCE OF THE WATER RESOURCE DEVELOPMENT ACT OF 1986 4 (1991), https://www.iwr.usace.army.mil/Portals/70/docs/iwrreports/91-PS-1.pdf [https://perma.cc/7CB5-S9K5]; U.S. GOV'T ACCOUNTABILITY OFF., GAO-10-819, U.S. ARMY CORPS OF ENGINEERS: ORGANIZATIONAL REALIGNMENT COULD ENHANCE EFFECTIVENESS, BUT SEVERAL CHALLENGES WOULD HAVE TO BE OVERCOME 1 (2010), https://www.gao.gov/assets/320/310469.pdf [https://perma.cc/29CG-G6PA]; *see also* DAVID P. BILLINGTON ET AL., U.S. DEP'T OF THE INTE-

gency, and more specifically flood recovery response, just after the Civil War.[15] Between 1803 and 1947, Congress passed approximately 128 ad hoc pieces of legislation, less than one per year, in response to other natural disasters and did not have any set obligation to assist.[16]

Generally, states and local governments sought help from national charities, like the American Red Cross or the Salvation Army, before and in lieu of assistance from the federal government.[17] During severe droughts in Texas during the mid-1880s, Clara Barton, the founder of the American Red Cross, visited Texas.[18] After consulting Barton in 1887, President Grover Cleveland vetoed Congress's bill providing $10,000 in federal assistance to Texas.[19] Consistent with the contemporary view of government, President Cleveland reasoned that, "Federal aid in [cases of misfortune] encourages the expectation of paternal care on the part of the Government and weakens the sturdiness of our national character."[20] In 1905, Congress sought to officially limit its disaster assistance role by appointing the American Red Cross to act as its official agent in administration of disaster relief but did not provide funding to the charity.[21]

In 1917, Congress began to expand its responsibility under the Commerce Clause by funding improvements, not just for harbors and rivers, by passing the 1917 Flood Control Act.[22] The 1917 Act provided $45 million for flood control projects, such as levees, along the Mississippi River.[23] The federal government reconsidered its role in disaster response after the 1927 Mississippi River Floods.[24] President of both the United States and the American Red Cross at the time, Calvin Coolidge announced that government and private philanthropy should work together in responding to flooding that displaced 600,000 people along the Mississippi River.[25] With Coolidge leading both the federal and private efforts, the federal government provided approxi-

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RIOR, THE HISTORY OF LARGE FEDERAL DAMS: PLANNING, DESIGN, AND CONSTRUCTION IN THE ERA OF BIG DAMS 15 (2005), https://www.usbr.gov/history/HistoryofLargeDams/LargeFederalDams.pdf [https://perma.cc/FZ3A-R6D6] (providing a thorough history of the Corps' involvement in federal projects).

15. U.S. ARMY CORPS ENG'RS, https://www.usace.army.mil/About/History/Brief-History-of-the-Corps/Responding-to-Natural-Disasters/ [https://perma.cc/BF9N-B8V6] (last visited Oct. 19, 2018).

16. Moss, *supra* note 12, at 312; *About the Agency*, *supra* note 13.

17. *See* Moss, *supra* note 12, at 313.

18. *Id.*

19. *Id.* at 312.

20. *Id.* at 313 (alteration in original) (quoting President Cleveland's Veto Message of Feb. 16, 1887).

21. *Id.* (Calvin Coolidge's dual presidencies make more sense with the Red Cross's official designation).

22. REUSS, *supra* note 14, at 13.

23. *Id.*

24. Moss, *supra* note 12, at 313.

25. *Id.* at 308.

mately $10 million (3.3% of total damages) in financial assistance.[26] The Red Cross provided $17 million in cash and another $6 million in in-kind contributions.[27] The total assistance to the 1927 storms totaled about 13% of the $300 million in related damages.[28]

Further disasters in the 1920s and 1930s, including infrastructure failures and the Great Depression, accelerated changing attitudes on the role of government and paved the way for Franklin D. Roosevelt's New Deal.[29] With the New Deal's emphasis on public works, Congress passed an updated Flood Control Act and officially declared flood control a federal responsibility in 1936.[30] The Corps' role in emergency response and resiliency dramatically increased after the passage of the 1936 Flood Control Act.[31] The Act also required the Corps to design projects based on economic analysis such that in order to build a project, the project's benefits had to outweigh the project's costs.[32] In 1937, the Corps' chief of engineers ordered all engineering districts across the country to develop flood plans.[33] In 1938, Congress passed a second Flood Control Act that financed flood control infrastructure, including reservoirs, at 100%.[34]

That same year (a presidential election year), Congress created a crop insurance program as part of the 1938 Agricultural Adjustment Act.[35] In spite of a recent history of droughts, such as the Texas 1880s droughts, the private multi-peril crop insurance market was unavailable in the early twentieth century.[36] Because many farmers did not purchase crop insurance, the farmers willing to pay for coverage could not find policies.[37] After a series of droughts in the 1930s, President Roosevelt called on Congress to provide individual crop insurance.[38]

During the Roosevelt Administration, more federal entities gained the responsibility to assist natural disaster victims, such as the National Conservation and Reclamation Service and Federal Works Administration.[39] Later administrations sought to clarify and build upon

26. *Id.* at 309.
27. *Id.*
28. *Id.*
29. *See* BILLINGTON ET AL., *supra* note 14, at 389-91.
30. Moss, *supra* note 12, at 314.
31. *Id.*
32. NICOLE T. CARTER, CONG. RESEARCH SERV., R45185, U.S. ARMY CORPS OF ENGINEERS: WATER RESOURCE AUTHORIZATION AND PROJECT DELIVERY PROCESSES 12 (2018).
33. U.S. ARMY CORPS ENG'RS, *supra* note 15.
34. Moss, *supra* note 12, at 314.
35. *Id.* at 320.
36. *Id.* The private market still provides crop-hail insurance. *See Background on: Crop Insurance*, INS. INFO. INST. (Sept. 1, 2015), https://www.iii.org/article/background-on-crop-insurance [https://perma.cc/7JBY-LKJ8].
37. Moss, *supra* note 12, at 320.
38. *Id.*
39. *Id.* at 314-15; Jason M. Sugarman, Note, *Still Underwater: The Need for Temporary Foreclosure and Mortgage Relief for Victims of Future Natural Disasters*, 50

the New Deal's basic assumptions on the federal government's role. Congress passed the Federal Disaster Relief Act of 1950, which provided federal assistance for natural disasters only if the following events occurred: (1) the President provided a disaster declaration in response to a governor's request; and (2) the assistance supplemented state and local relief and recovery efforts.[40] The Corps' reputation for disaster response led Congress to make it the primary agency in charge of emergency response under the 1950 Act, but the Red Cross retained control of the relief distribution.[41]

Congress subsequently began to provide funding for other types of assistance, such as debris removal and school repairs, provided through a variety of different federal agencies.[42] Local entities even received the ability to develop and manage projects and receive federal funding with oversight from the Corps as part of the 1968 Harbors and Rivers Act.[43] After twenty-nine major disasters in 1969, including Hurricane Camille, Congress passed the Disaster Relief Act of 1970, which provided new types of relief such as individual temporary housing, small business loans, and hazard mitigation.[44]

B. *Managing Disaster: The Stafford Act & the Federal Emergency Management Agency*

Congress passed the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C.A. § 5121 (Stafford Act), "to provide an orderly and continuing means of assistance by the Federal Government to State and local governments in carrying out their responsibilities to alleviate the suffering and damage [that] result from such disasters."[45] The Stafford Act retained the two conditions on federal assistance provided in the 1950 Act and set out to better organize existing disaster legislation and administration.[46]

The Stafford Act's framework allowed state governments to request assistance from the President after a natural disaster, and then provide

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COLUM. J.L. & SOC. PROBS. 583, 585 (2017); *A Brief History of NRCS*, NAT. RES. CONSERVATION SERV., https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/about/history/?cid=nrcs143_021392 [https://perma.cc/H4QF-HHZR] (last visited Nov. 11, 2018).

40. Federal Disaster Relief Act of 1950, Pub. L. No. 81-875, 64 Stat. 1109, 1109-10 (1950); *See* U.S. ARMY CORPS ENG'RS, *supra* note 15 (discussing the Corps' prominent role under the Act).

41. Moss, *supra* note 12, at 314-15.

42. *Id.* at 317.

43. U.S. GOV'T ACCOUNTABILITY OFF., GAO-17-97, U.S. ARMY CORPS OF ENGINEERS: BETTER GUIDANCE COULD IMPROVE CORPS' INFORMATION ON WATER RESOURCES PROJECTS UNDERTAKEN BY NONFEDERAL SPONSORS 14 (2016).

44. Moss, *supra* note 12, at 317.

45. Deborah F. Buckman, Annotation, *Construction and Application of Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), 42 U.S.C.A. §§ 5121 et seq.*, 14 A.L.R. Fed. 2d 173, § 2 (2006).

46. MCCARTHY, *supra* note 10, at 3.

federal agencies, like the U.S. Army Corps of Engineers, with authorization and funding to assist with response, recovery, and long-term planning.[47] Ironically, relief efforts after the Stafford Act were still initially unwieldy because the President, not an agency, coordinated the growing number of federal agencies that assisted natural disaster victims.[48]

President Jimmy Carter signed an executive order in 1979 that consolidated the coordination functions of emergency response agencies into one entity: the Federal Emergency Management Agency ("FEMA").[49] Although the executive order overhauled the structure and operations of the federal government's disaster relief system, it did not address the intersections between federal agencies and state and local governments.[50] In 1988, Congress amended the Stafford Act to grant FEMA the ability and responsibility to coordinate relief efforts across state, local, and federal levels once a state's governor calls a state of emergency and writes a formal letter to the President requesting relief under the Stafford Act.[51]

C. *Individual Disasters: Federal Flood and Crop Insurance Programs*

Like the 1930s crop insurance market, the 1960s private flood insurance market was unsuccessful because pricing the risk and retaining customers in many areas proved wholly unprofitable.[52] The National Flood Insurance Act of 1968 created the National Flood Insurance Program ("NFIP") to provide coverage that the private insurance industry did not effectively offer.[53] In NFIP, Congress sought to reduce individual homeowners' exposure to the damage of potential flooding and to deter future development in flood-prone areas by creating flood maps and pricing policies accordingly.[54] Congress also intended for NFIP to mitigate and reduce flood risk through mitigation projects.[55]

During this period, the thirty-year-old federal crop insurance program began to falter—primarily because farmers were unwilling to

47. *Id.* at 1.

48. Sugarman, *supra* note 39, at 585–86.

49. Exec. Order No. 12,127, 3 C.F.R. p. 376 (Apr. 1, 1979). *See also* REUSS, *supra* note 15, at 48–49 (providing insight into Jimmy Carter's distrust of the Corps based on the Corps' "computational manipulation" and possible deceit in pursuing dam projects while Carter was Georgia's Governor).

50. Sugarman, *supra* note 39, at 585.

51. *Id.*

52. Moss, *supra* note 12, at 320.

53. Sugarman, *supra* note 39, at 592.

54. Alexander S. Mendelson, Note, *Taking Away the Tightrope*: *Fixing the National Flood Insurance Program Circus Via Eminent Domain*, 83 BROOK. L. REV. 1519, 1520 (2018).

55. DIANE P. HORN & JARED T. BROWN, CONG. RESEARCH SERV., R44593, INTRODUCTION TO THE NATIONAL FLOOD INSURANCE PROGRAM (NFIP) 2 (2018).

buy policies and relied on disaster assistance instead.[56] The Federal Crop Insurance Act of 1980 attempted to eliminate disaster assistance payments to farmers and strengthen the market by requiring commercial farmers to purchase crop insurance and to provide subsidies to private farmers.[57] In spite of these subsidies and likely due to ongoing and generous disaster assistance payments, fewer than 50% of farmers obtained crop insurance after 1980.[58] Congress passed the Federal Crop Insurance Reform Act of 1994, which restricted disaster assistance and mandated that the program cover 80% of arable land.[59] After these reforms, the crop insurance program returned to solvency.[60]

In an attempt to make NFIP as sustainable as crop insurance, Congress required NFIP to collect premiums from policyholders so that the sum of these premiums would cover losses from natural disasters.[61] NFIP implemented a Community Rating System in 1990 to encourage participating communities to voluntarily exceed NFIP minimum standards to reduce premiums.[62] Congress passed the Flood Insurance Reform Act of 1994 to reduce and eliminate repetitive flood damage and claims.[63] The 1994 Act created the Flood Mitigation Assistance Grant Program, and it prohibited loans for structures in "high-risk areas" unless the borrower obtained flood insurance.[64] In spite of the additional requirements and mitigation program, annual payouts routinely exceeded collected premiums.[65] One primary reason for these losses in annual payouts was that Congress directed FEMA to subsidize rates for homes built before flood plain maps—this date may be as early as December 31, 1974, but varies by community.[66] In 2006, the Government Accountability Office placed NFIP on its High-Risk List.[67]

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56. Moss, *supra* note 12, at 320.

57. *Id.*

58. *Id.* at 320; *Background on: Crop Insurance*, *supra* note 36 (stating that the federal crop insurance program currently insures over 80% of arable farm land, meeting statutory requirements).

59. Federal Crop Insurance Reform and Department of Agriculture Reorganization Act of 1994, Pub. L. No. 103-354, 108 Stat. 3178 (1994).

60. *See* National Flood Insurance Reform Act of 1994, Pub. L. No. 103-325, 108 Stat. 2255 (codified at 42 U.S.C. § 4001 et seq.).

61. *See* Mendelson, *supra* note 54, at 1521–22.

62. FED. EMERGENCY MGMT. AGENCY, COMMUNITY RATING SYSTEM FACT SHEET (2017), https://www.fema.gov/media-library/assets/documents/9998 [https://perma.cc/UTS4-H44L].

63. FED. EMERGENCY MGMT. AGENCY, FY 2018 FLOOD MITIGATION ASSISTANCE (FMA) GRANT PROGRAM FACT SHEET (2018), https://www.fema.gov/media-library-data/1534266359629-01e90efe4f62f4510898f244a5501f41/Fact_Sheet.pdf [https://perma.cc/M8BG-MW7M].

64. National Flood Insurance Reform Act §§ 522, 553.

65. *See* Sugarman, *supra* note 39, at 593–94.

66. HORN & BROWN, *supra* note 55, at 15.

67. Mendelson, *supra* note 54, at 1520.

In recognition of ongoing problems with NFIP, Congress undertook efforts to remove subsidies and bring the program back into solvency with the Biggert-Waters Flood Insurance Reform Act of 2012.[68] This resulted in higher premiums for homeowners who, in turn, convinced Congress to reinstate many of the subsidies through passage of the Homeowner Flood Insurance Affordability Act of 2014.[69] As reformed, private insurance companies, contracted by FEMA and hired by homeowners, administer NFIP claims from a pool of money used to fund the flood program.[70]

The NFIP pool includes premiums received from homeowners and, as natural disasters become costlier, the number of flood insurance claims filed and homes damaged increases as well.[71] Once the insurance companies' pool of money ran out, FEMA paid the remainder.[72] Hurricane Sandy demonstrated that having a flood insurance policy through NFIP does not guarantee that the policy owner will receive an appropriate amount of relief, if any at all.[73]

Six times between December 2017 and July 2018, Congress reauthorized NFIP, cancelling $16 billion of the $36 billion NFIP owed to the U.S. Treasury and leaving NFIP with over $20 billion in debt and just under $10 billion in additional borrowing authority so NFIP could continue to pay claims.[74] To pay claims related to Hurricanes Harvey, Irma, and Maria, Congress authorized NFIP to borrow just under $11 billion from the U.S. Treasury.[75] As of February 2018, NFIP provided over $1.28 trillion in coverage to over 5 million individual homeowners through purchased insurance policies in participating communities.[76] Over 22,200 communities located in areas with serious flooding potential voluntarily participated in NFIP.[77] Homeowners with federal mortgages who live in "high-risk areas"—meaning greater than a 25% chance of flooding during a thirty year mortgage—must purchase flood insurance through the NFIP.[78] In Texas, 83% of the homes that flooded from Harvey did not have flood insurance.[79]

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68. *Id.* at 1521.

69. *Id.* at 1522.

70. Sugarman, *supra* note 39, at 593–594.

71. *Id.* at 594.

72. *Id.*

73. *Id.*

74. HORN & BROWN, *supra* note 55, at Summary.

75. *Id.* at 24.

76. *Id.* at 1.

77. Sugarman, *supra* note 39, at 593.

78. *Id.* at 594.

79. ANDREW S. NATSIOS, TEX. GEN. LAND OFF., HURRICANE HARVEY: TEXAS AT RISK 5 (2018), http://www.glo.texas.gov/recovery/files/texas-at-risk-report.pdf [https://perma.cc/QR4G-BA4Z].

D. *Unmet Needs: The Community Development Block Grant Disaster Recovery Program*

The Department of Housing and Urban Development ("HUD") also provides substantial federal assistance after natural disasters, focusing on unmet needs not addressed by FEMA and other agencies in disaster response.[80] Established in 1974, the Community Development Block Grant ("CDBG") Program "provides local communities the flexibility to decide for themselves how best to meet their own community development needs."[81]

HUD has awarded CDBG funds to state and local governments based on a formula weighing several factors, including "population, poverty, and other housing variables."[82] Local project sponsors receive CDBG funds only if their projects meet at least one of three national objectives: "[1] principally benefit low and moderate-income persons; [2] aid in eliminating or preventing slums or blight; or [3] meet particularly urgent community development needs because existing conditions pose a serious and immediate threat to the public."[83]

The CDBG Disaster Recovery Grant Program ("CDBG-DR") serves the third national objective—addressing an immediate threat to the public.[84] Congress first authorized supplemental CDBG-DR grants in 1993 and has provided these grants after most major natural disaster declarations.[85] CDBG-DR grants come in two broad categories: public assistance and hazard mitigation.[86] State and local governments may use the CDBG-DR public assistance grants for a variety of activities, including providing temporary housing assistance, repairing homes and buildings damaged by a natural disaster, and for meeting local match requirements.[87] The CDBG-DR grants supplement funding from disaster programs implemented by other federal agencies, such as FEMA.[88]

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80. *See* EUGENE BOYD, CONG. RESEARCH SERV., RL33330, COMMUNITY DEVELOPMENT BLOCK GRANT FUNDS IN DISASTER RELIEF AND RECOVERY 1 (2011).

81. *The Community Development Block Grant (CDBG) Program's 40th Anniversary*, U.S. DEP'T HOUSING & URB. DEV., https://www.hud.gov/program_offices/comm_planning/communitydevelopment/CDBG_Turns_40 [https://perma.cc/7ZKJ-5P55] (last visited Oct. 19, 2018).

82. Sugarman, *supra* note 39, at 598.

83. BOYD, *supra* note 80, at 1.

84. *Id.*

85. *Id.* at 2; *Community Development Block Grant-Disaster Recovery Program—Stakeholder Perspectives: Hearing Before the Subcomm. on Oversight and Investigations of the H. Comm. on Fin. Servs.*, 115th Cong. 42 (2018) (prepared statement of Carlos Martin, Senior Fellow, Urban Institute).

86. *See* BOYD, *supra* note 80, at 1.

87. *Id.* at 3, 5.

88. *Id.* at 2.

FEMA post-disaster grants are often non-partisan but variable and inconsistent.[89] FEMA awarded $90.7 billion in post-disaster public assistance grants between 1998 and 2018.[90] Hurricane Katrina and Superstorm Sandy generated $24 billion and $18 billion respectively in post-disaster grants.[91] Since 2011, Texas has been eligible for approximately $9 billion, or 20%, of the $47 billion the total post-disaster grant funds allocated by Congress.[92]

Recovery and resiliency in Texas efforts after Tropical Storm Alison, Hurricane Ike, and flood events in 2015 and 2016 proved less effective in terms of aid received than responses to storms in other states, such as Hurricane Sandy in New York and Hurricane Katrina in Louisiana.[93] Texas experienced seventy-two major disaster declarations. Hurricane Ike generated approximately $3 billion post-disaster public assistance, and so far, Hurricane Harvey, the second costliest storm in U.S. history, has generated $5 billion in post-disaster public assistance funding.[94] Texas' disasters in 2015 and 2016 alone affected over 21 million people, which is more than 76% of the state's population and a larger population than forty-eight other states.[95]

E. *Changing the New Deal: The Corps and the Water Resource Development Act*

The broad federal planning authority and funding that the New Deal provided the Corps came to an end around 1965.[96] Changing public attitudes and mistrust of the Corps and government in general led to a series of conflicts and congressional acts that frustrated large Corps projects by 1970.[97] Congress did not authorize any new major water projects between 1970 and 1985 and scaled back several author-

89. *Cf.* Rachel Brasier & Jesse Thompson, *FEMA to Play Long-Term Role in Recovery from Harvey*, SW. ECON., Second Quarter 2018, at 15, 15–16 (comparing federal emergency response funding involving storm events).

90. *Id.* at 17.

91. *Id.* at 16–17.

92. *Community Development & Revitalization*, TEX. GEN. LAND OFF., http://www.glo.texas.gov/recovery/about/about-cdr/index.html [https://perma.cc/PC2T-8TNV] (last visited Oct. 19, 2018).

93. *See* Brasier & Thompson, *supra* note 89, at 15–16.

94. *Id.* at 17; TEX. GEN. LAND OFF. CMTY. DEV. & REVITALIZATION PROGRAM, STATE OF TEXAS PLAN FOR DISASTER RECOVERY: AMENDMENT 1 8 (2018).

95. *Community Development & Revitalization*, *supra* note 92.

96. *See* BILLINGTON ET AL., *supra* note 14, at 383–85; U.S. ARMY CORPS ENG'RS, *supra* note 14, at 49; CONG. BUDGET OFFICE, PUBLIC SPENDING ON TRANSPORTATION AND WATER INFRASTRUCTURE, 1956 to 2014 16 exhibit 8 (Mar. 2015) (showing a sharp decline in federal spending on water transportation projects beginning in 1965); *id.* at 17 exhibit 9.

97. BILLINGTON ET AL., *supra* note 14, at 399–400; *see* CARTER, *supra* note 32, at 26 ("[t]he 1969 National Environmental Policy Act (42 U.S.C. §4321) and the Endangered Species Act of 1973 (16 U.S.C. §1531) required federal agencies to consider environmental impacts, increase public participation in planning, and consult with other federal agencies.").

ized projects.[98] Congress passed the first Water Resources Development Act in 1974, the same year that the Stafford Act passed—marking a departure from Congress's normal method of appropriating funding (albeit without authorizing new projects) for water infrastructure spending.[99]

Reflecting changing environmental attitudes, Jimmy Carter campaigned for President in 1976 stating, "We ought to get the Army Corps of Engineers out of the dam-building business."[100] Members of Congress, especially Democratic members with dam-related projects in their states and districts, fought back against President Carter.[101] President Carter reached a compromise with Congress to allow some authorized Corps projects to go forward in 1977 but, in the process, managed to anger both Congress and his environmental supporters.[102] The year 1977 proved to be the high-water mark for federal spending on water and transportation infrastructure, reaching 38% of total U.S. infrastructure spending (with state and local governments providing 62%).[103]

Federal funding for major water infrastructure projects did not return to previous levels after Ronald Reagan's election in 1980 as the Reagan Administration wrestled with inflation and other economic policy issues.[104] When the Reagan administration proposed to bring major water infrastructure projects forward in 1982, its proposal drastically reimagined the federal government's position.[105] Between 1938 and 1978, the federal government had paid on average 87% of major water infrastructure project costs.[106] In 1982, the Reagan administration proposed to essentially turn the tables, with the federal government paying for 21% of projects, leaving local sponsors to pay for the remaining 79%.[107]

Four years of debate ensued with fiscal hawks, local project sponsors, and environmentalists unable to agree on an approach to planning and funding major water infrastructure projects even as infrastructure repairs became increasingly necessary.[108] President Reagan and Congress eventually reached a compromise: the 1986

98. CARTER, *supra* note 32, at 26.

99. Water Resources Development Act of 1974, Pub. L. No. 93-251, 88 Stat. 12; U.S. GOV'T ACCOUNTABILITY OFF., GAO 10-819, U.S. ARMY CORPS OF ENGINEERS: ORGANIZATIONAL REALIGNMENT COULD ENHANCE EFFECTIVENESS, BUT SEVERAL CHALLENGES WOULD HAVE TO BE OVERCOME 40 (2010).

100. REUSS, *supra* note 14, at 49.

101. *Id.* at 49–50.

102. *Id.* at 50–51.

103. CONG. BUDGET OFFICE, *supra* note 96, at 14.

104. REUSS, *supra* note 14, at 65.

105. *Id.* at 80–81.

106. REUSS, *supra* note 14, at 81.

107. *See id.*

108. *See id.* at 132.

Water Resource Development Act ("1986 WRDA").[109] The 1986 WRDA provided cost-sharing and planning requirements for Corps projects, funding 181 projects with $11.5 billion while constraining the Corps' planning, funding, and execution.[110] The 1986 Act also made these projects comply with the requirements of the 1969 National Environmental Policy Act ("NEPA").[111] The 1986 WRDA also made water resource projects much more dependent on the market economy by tying federal project funding to tonnage fees, the fuel tax, and other revenue sources and requiring local cost sharing of at least 25%.[112]

Ten years after hitting its peak, federal spending on water and transportation infrastructure fell to approximately 25% of federal spending in 1987 and remained relatively consistent until 2001.[113] To a certain extent this funding decrease was offset by establishing the State Revolving Fund, administered by the EPA, which still provides low-interest loans to state and local governments and facilitated $125 billion in clean water infrastructure investments over two decades.[114] Federal funding rose from 2001 until 2003, then fell 19% between 2003 and 2014.[115]

After the passage of 1986 WRDA, Congress and successive Presidential administrations authorized new WRDA projects every other year until 2004.[116] In 2007, Congress was able to pass a bill ("2007 WRDA") and override President Bush's veto to providing funding and authorizations projects under the WRDA process.[117] The "standard" WRDA process starts with congressional authorization and then proceeds to a feasibility study by a sponsor, either the Corps or a local agency (which requires local input), a Corps Chief's Report, and congressional approval, before the sponsor can construct projects consistent with Congressional authorization.[118] Under WRDA, projects must make it through NEPA review—which requires approval from the Environmental Protection Agency ("EPA")—and the 1936 requirement of economic benefit analysis.[119]

Local sponsors and critics expressed frustration with the constraints of the standard WRDA process and the seeming failure on timely pro-

109. *See id.*
110. *Id.* at 183.
111. CARTER, *supra* note 32, at 11.
112. *See* REUSS, *supra* note 14, at 197–98.
113. *Id.* at 197.
114. *See* 33 U.S.C. § 1383 (2011); *see also* TEX. WATER DEV. BD., WATER FOR TEXAS 2012 STATE WATER PLAN (2012), http://www.twdb.texas.gov/publications/state_water_plan/2012/2012_SWP.pdf?d=12861.89999995986 [https://perma.cc/WQ9U-57WW].
115. CONGRESSIONAL BUDGET OFFICE, *supra* note 96, at 14.
116. CARTER, *supra* note 32, at 4.
117. *Id.*
118. *Id.* at 7.
119. *Id.* at 11–12.

ject delivery.[120] In 2010, the Government Accountability Office ("GAO") provided a report to Congress recommending that the Corps receive a more reliable source of funds to improve project delivery.[121] The GAO provided another report to Congress in 2013 with a less than favorable review of the standard WRDA process and suggested that local sponsors have more opportunities to lead projects.[122] Congress provided the Corps with alternative delivery options in the 2014 and 2016 Water Resources Development Acts (the "2014 WRDA" and "2016 WRDA").[123] The 2014 WRDA included the Water Infrastructure Finance and Innovation Act ("WIFIA"), which allowed both the EPA and the Corps to create direct loans and loan guarantee programs for certain categories of water project.[124]

As of February 2018, the U.S. Army Corps of Engineers had a list of authorized construction and dam safety projects totaling $96 billion but an average annual appropriation of $1.9 billion.[125] The Corps failed to implement the WIFIA Program as of 2018, meaning that the $175 million provided under WIFIA is not available.[126] The Corps did implement its Continuing Authority Programs ("CAPs"), which provide the Corps with an internal process for reviewing, funding, and implementing projects under $10 million for identified purposes, such as erosion control, and receives up to $20 million per year.[127] Congress has also authorized a Rehabilitation and Inspection Program ("RIP") that allows the Corps to undertake projects to inspect and repair levees after storms with a 20% local match.[128]

F. *Mitigation Attempts: FEMA and EPA Reforms in the Twenty-First Century*

Congress passed the Disaster Mitigation Act of 2000 ("2000 DMA") to require local governments to assess risk and develop hazard mitigation plans in order to qualify for greater assistance from FEMA in disaster response and recovery.[129] The legislation aimed to incentivize preventative efforts by states and capped individual home repair assistance at $5,000 per household.[130] The implementation of the hazard-mitigation plans required under 2000 DMA has been

120. *Id.* at 16.
121. REUSS, *supra* note 14, at 30.
122. CARTER, *supra* note 32, at 16–17.
123. *Id.* at 17.
124. *Id.* at 16.
125. *Id.* at 15.
126. *Id.* at 16.
127. *Id.* at 17.
128. *Id.* at 20.
129. ANDREA M. JACKMAN, GARY S. NESTLER & MARIO G. BREUVIDES, UNITED NATIONS OFFICE FOR DISASTER RISK REDUCTION, THE DISASTER MITIGATION ACT OF 2000: IMPLICATIONS FOR THE PRACTICE OF RISK REDUCTION IN AMERICAN LOCAL GOVERNMENT 1 (2015).
130. LINDSAY & MCCARTHY, *supra* note 1, at 17.

somewhat lacking with only Florida qualifying for the enhanced mitigation funding.[131] Some jurisdictions have failed to update, or in some cases even complete, the required plans.[132]

President George W. Bush created the Department of Homeland Security ("DHS") in 2003 in response to the terrorist attacks of September 11, 2001.[133] DHS began supervising many federal agencies, including FEMA.[134] In 2005, when Hurricane Katrina struck New Orleans, it tested FEMA's new structure and placement within DHS, which uncovered systemic failures.[135] Review of FEMA's response concluded that FEMA's mismanagement during Katrina cost taxpayers up to $2 billion.[136] Congress then enacted the Post-Katrina Emergency Management Reform Act of 2006, which reorganized FEMA, made it more autonomous within DHS, and removed FEMA's anti-terrorist responsibilities.[137] The 2006 Act also put additional burdens on state and local entities to prove that expenditures were not wasteful or fraudulent.[138] Several amendments to the Stafford Act were proposed before and after Superstorm Sandy in 2012.[139]

Flood-related disasters between 2000 and 2018 totaled over $750 billion in economic losses.[140] Despite attempts to emphasize mitigation in the 2000 DMA, pre-disaster mitigation funding decreased between 2004 and 2014 from $157 million to $19 million while FEMA public assistance grants between 1998 and 2018 totaled $90.8 billion.[141] During the 2004 to 2014 period, federal agencies committed over $277 billion in disaster-related funding—less than $1 billion of this funding was for pre-disaster mitigation funding.[142] FEMA's Flood Mitigation Assistance Grant Program received only $160 million in FY 2018.[143] Many organizations from the Pew Charitable Trust to the West Houston Association have encouraged Congress to expand the

131. JACKMAN, NESTLER & BREUVIDES, *supra* note 129, at 6.

132. FED. INS. AND MITIGATION ADMIN. (FEMA), HAZARD MITIGATION PLAN STATUS (2018), https://www.fema.gov/media-library-data/1534266359629-01e90efe4f62f4510898f244a5501f41/Fact_Sheet.pdf [https://perma.cc/C4EE-U736].

133. Sugarman, *supra* note 39, at 586–87.

134. *Id.*

135. *Id.* at 587.

136. *Id.* at 587 (quoting Eric Lipton, *'Breathtaking' Waste and Fraud in Hurricane Aid*, N.Y. TIMES (June 27, 2006), http://www.nytimes.com/2006/06/27/washington/27katrina.html [https://perma.cc/P8G8-HE9F]).

137. *Id.* at 588.

138. *Id.*; 152 CONG. REC. H3,329 (daily ed. May 25, 2006) (statement of Rep. Jindal) ("I have an amendment to reduce FEMA waste, fraud, and abuse.").

139. *See* Sugarman, *supra* note 39, at 587, 591.

140. *Needed: A New Federal-State Partnership for Flood Mitigation*, PEW (Mar. 20, 2018), https://www.pewtrusts.org/en/research-and-analysis/fact-sheets/2018/03/needed-a-new-federal-state-partnership-for-flood-mitigation [https://perma.cc/J25Y-NNXJ].

141. *Id.*

142. U.S. GOV'T ACCOUNTABILITY OFF., GAO-16-797, FEDERAL DISASTER ASSISTANCE REPORT TO CONGRESSIONAL COMMITTEES 1–2 (2016).

143. FED. INS. AND MITIGATION ADMIN. (FEMA), FACT SHEET: FY 2018 FLOOD MITIGATION ASSISTANCE (FMA) GRANT PROGRAM 1–2 (2018) https://www.fema

State Revolving Loan Program, administered by the EPA, to include flood-control projects that would increase pre-disaster mitigation funding.[144]

G. *Sharing Risk and Rewards: The Gulf of Mexico Energy Security Act*

Congress passed the 2006 Gulf of Mexico Energy Security Act ("GOMESA"), which had been introduced years earlier, after the hurricanes of 2004 and 2005 caused extensive coastal damage.[145] GOMESA opened section 181 and 181 South in the Gulf of Mexico (approximately 2.5 million acres) to offshore drilling within one year of its enactment.[146] GOMESA requires revenue sharing on new areas of production in the 181 Area from FY 2007 through 2016 as follows: (1) 50% of the revenues from this project will be deposited into the Federal Treasury; (2) 37.5% of the revenues will be deposited with the Gulf-producing states (Texas, Louisiana, Mississippi and Alabama); and (3) 12.5% of the revenues will be deposited in the Federal Land and Water Conservation Fund.[147]

Each state receives a minimum of 10% of shared revenue and coastal political subdivisions of each state receive 20% of the state's revenue[148] These revenues directed to the states are restricted in that the money only can be used for coastal protection; mitigation of damage to wildlife or natural resources; implementation of a federally-approved marine, coastal, or comprehensive management plan; onshore infrastructure projects; or up to 3% of funds for planning assistance and administrative costs of compliance.[149]

Congress chose to share royalties with states in GOMESA even though the judicial branch had not required it to do so.[150] The passing of GOMESA marked a compromise between environmental concerns of coastal states and calls for national energy development.[151] Con-

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.gov/media-library-data/1534266359629-01e90efe4f62f4510898f244a5501f41/Fact_Sheet.pdf [https://perma.cc/NKE7-JBFG].

144. *Needed: A New Federal-State Partnership for Flood Mitigation*, *supra* at note 140; West Houston Association, Resolution in Support of Expanding the Federal State Revolving Loan Program to Include Flood Control Projects (May 22, 2018); *see* Ben Chou et al., *Using State Revolving Funds to Build Climate-Resilient Communities*, NAT. RESOURCE DEF. COUNCIL (June 2014), https://www.nrdc.org/sites/default/files/state-revolving-funds-IP.pdf [https://perma.cc/Q6RM-PW46] (suggesting that SRF amendments could be used in a variety of ways to improve resiliency, including flood control).

145. 53 ROCKY MTN. MIN. L. INST. 5-1 (2007).

146. Patrick B. Sanders, Note, Blanco v. Burton*: Louisiana's Stuggle for Cooperative Federalism in Offshore Energy Development*, 69 LA. L. REV. 255, 276 (2008).

147. *Id.*

148. 53 ROCKY MTN. MIN. L. INST. 5-1 (2007).

149. *Id.*

150. Sanders, *supra* note 146, at 277.

151. *Id.* at 277–278.

gress acted somewhat conservatively by delaying royalty sharing for a number of years and including only a small area of the Gulf in the program.[152] However, Congress may have set the stage for cooperation in future offshore energy development.[153] Because royalty sharing is critical for continued financing of coastal restoration, states like Louisiana hope that Congress will pass additional legislation to expand this model.[154]

According to the Bureau of Ocean Energy Management, GOMESA currently provides an estimated $125 million per year.[155] GOMESA funding is ostensibly intended to address environmental risks associated with off-shore drilling in the Gulf of Mexico. Mary Landrieu, a former United States Senator from Louisiana, suggested that Texas could use this funding for coastal storm surge protection. Such a large revenue stream, if stabilized, could secure bonds for coastal protection for citizens and industry close to the coast.

III. THE STATE OF TEXAS UNDER THE FEDERAL FRAMEWORK: SUPPLEMENTING LIMITED GOVERNMENT

Hurricane Harvey provides a case study on how the State of Texas navigated through the challenges of recovery, how it engaged with the federal government via the Stafford Act, and its desire to change policy and craft long-lasting solutions.

For a conservative state that prides itself on small government, Texas has some large agencies and resources that have proved useful, if not exemplary, in disaster recovery. The Legislature could adopt a variety of changes suggested by state leaders and others, making Texas an international example on emergency response and flood mitigation planning.

A. *Rebuild Texas: State Government Response to Hurricane Harvey Under the Stafford Act*

As of 2018, Texas leads the nation in the number of natural disaster declarations.[156] In 2011 alone, Governor Rick Perry signed fifty-seven major disaster declarations.[157] Until August 22, when Hurricane Har-

152. *Id.* at 278.
153. *Id.*
154. *Id.* at 279.
155. BUREAU OF OCEAN ENERGY MGMT., *Gulf of Mexico Energy Security Act (GOMESA)*, https://www.boem.gov/Revenue-Sharing/ [https://perma.cc/V9MN-D9QX] (last visited Oct. 19, 2018).
156. FEMA, *Disaster Declarations by State/Tribal Government*, https://www.fema.gov/disasters/state-tribal-government/ [https://perma.cc/ALD8-2F42] (last visited Oct. 18, 2018).
157. FEMA, *Data Visualizations: Disaster Declarations for States and Counties*, (Texas Slide) https://www.fema.gov/data-visualization-disaster-declarations-states-and-counties [https://perma.cc/RTF9-2LAS] (last updated May 03, 2018).

vey's intensity began to grow at an alarming rate, 2017 seemed like a relatively calm year.[158]

Governor Abbott requested a major disaster declaration for Hurricane Harvey on August 23, 2017.[159] Two days later on August 25, the day Hurricane Harvey made land fall, President Donald Trump signed the "Texas Disaster Declaration" and authorized assistance for actions beginning on August 23.[160] Over the next five days, Hurricane Harvey poured a record-breaking 34 trillion gallons of water over coastal areas; overshadowing other storm impacts, including the initial landfall and storm surge in Aransas County and tornadoes in the southern region of Harris County and the surrounding area.[161]

The hurricane may have received less national attention if it had not affected commodities such as petroleum.[162] Because of Hurricane Harvey, U.S. gasoline prices surged by $0.33 in the weeks following the storm.[163] With few exceptions, all businesses along the Texas coast from ports, trade, energy production, tourism, and agriculture faced shutdown or significant interruption for a week or longer.[164]

On September 7, Governor Abbott tapped the Texas A&M University System's Chancellor and former Democratic State Comptroller John Sharp to lead the disaster aid recovery efforts and put together the state plans required under the Stafford Act.[165] On September 18, FEMA approved $1.09 billion in federal funding for individual assis-

158. FEMA, *Disasters*, https://www.fema.gov/disasters [https://perma.cc/CF5Z-ZHTP] (click on Texas and limit to 2017) (last visited Oct. 19, 2018).

159. Greg Abbott, *Governor Greg Abbott Extendeds the State Disaster Declaration for Texas counties affected by Hurricane Harvey.*, OFF. TEX. GOVERNOR (Aug. 7, 2018) https://gov.texas.gov/news/post/governor-greg-abbott-extendeds-the-state-disaster-declaration-for-texas-counties-affected-by-hurricane-harvey [https://perma.cc/449L-N2DX]; The selection of Chancellor Sharp makes more sense when the role of university systems in the development Texas Hazard Mitigation Plan is considered. *See* TEX. DIV. OF EMERGENCY MGMT., STATE OF TEXAS HAZARD MITIGATION PLAN, 2013 UPDATE 2 (Oct. 15, 2013) (providing information on the plan development).

160. THE WHITE HOUSE, *President Donald J. Trump Approves Texas Disaster Declaration*, (Aug. 25, 2017), https://www.whitehouse.gov/briefings-statements/president-donald-j-trump-approves-texas-disaster-declaration/ [https://perma.cc/2P58-BPEM].

161. TEX. GEN. LAND OFF. CMTY. DEV. & REVITALIZATION PROGRAM, STATE OF TEXAS PLAN FOR DISASTER RECOVERY: HURRICANE HARVEY AMENDMENT NO. 1 4 (2018).

162. *Id.*

163. *Id.* (citing *Petroleum & Other Liquids*, U.S. ENERGY INFO. ADMIN., https://www.eia.gov/petroleum/gasdiesel/ [https://perma.cc/5UPZ-3WNC] (last visited Sept. 20, 2018)).

164. TEX. GEN. LAND OFF. CMTY. DEV. & REVITALIZATION PROGRAM, STATE OF TEXAS PLAN FOR DISASTER RECOVERY: HURRICANE HARVEY 3 (2018).

165. Greg Abbott, *Governor Abbott Signs Proclamation Creating Governor's Commission to Rebuild Texas*, OFF. TEX. GOVERNOR (Sept. 7, 2017) https://gov.texas.gov/news/post/governor-abbott-signs-proclamation-creating-governors-commission-to-rebuild [https://perma.cc/8DD4-XS3E]; REBUILD TEX., REQUEST FOR FEDERAL ASSISTANCE CRITICAL INFRASTRUCTURE PROJECTS (Oct. 31, 2017).

tance and a further $597 million for public assistance.[166] FEMA provided $333 million for individual assistance, including temporary housing, home repairs, and rental assistance.[167] FEMA approved a further $146 million for grants related to personal property and help with medical, legal, and other disaster-related expenses.[168] NFIP claimants received $347 million.[169] The Small Business Administration approved more than $265 million in low-interest loans to homeowners, renters, and business owners.[170] FEMA also provided the State of Texas with $181 million for state and local government costs of debris removal and emergency response and provided $516 million to thirty federal agencies authorized to assist with response and recovery operations.[171] The first temporary housing unit for Hurricane Harvey arrived on October 7, 2018, six weeks after the President's disaster declaration.[172]

Within ten weeks of Hurricane Harvey, Chancellor Sharp and his team compiled a comprehensive flood infrastructure mitigation plan that requested $61 billion of federal aid to address related damages and needs.[173] In his letter to Governor Abbott, prefacing the Rebuild Texas Plan, Chancellor Sharp stated that the plan was not "complete or exhaustive" but merely represented "a broad range of the types of improvements necessary" to future-proof the state's coastal areas.[174] The plan included projects ranging from large land purchases and major reservoir projects to bridge replacements and channel improvements.[175]

On February 9, 2018, Congresses enacted the Bipartisan Budget Act of 2018 ("HR 1892"), which provided $89.3 billion in funding for mitigation efforts, and Congress appropriated a total of $136 billion related to all 2017 major disasters.[176] While HR 1892 did not provide

166. FEMA, *More Than $1 Billion in Federal Funds Approved for Texas Survivors*, (Sept. 18, 2017), https://www.fema.gov/news-release/2017/09/18/more-1-billion-federal-funds-approved-texas-survivors [https://perma.cc/89NB-EUDN].

167. *Id.*

168. *Id.*

169. *Id.*

170. *Id.*

171. *Id.*

172. TEX. GEN. LAND OFF., HURRICANE HARVEY: TEXAS AT RISK 6 (Sept. 2018).

173. REBUILD TEX., REQUEST FOR FEDERAL ASSISTANCE CRITICAL INFRASTRUCTURE PROJECTS (Oct. 31, 2017).

174. Letter from John Sharp, Comm'r, Governor's Comm'n to Rebuild Texas, to Greg Abbott, Governor of Texas (Oct. 31, 2017) (on file in Rebuild Texas: Request for Federal Assistance Critical Infrastructure Projects, Governor's Commission to Rebuild Texas, https://www.documentcloud.org/documents/4164748-Rebuild-Texas-REQUEST-FOR-FEDERAL-ASSISTANCE.html [https://perma.cc/DU72-BPTQ]).

175. REBUILD TEX., REQUEST FOR FEDERAL ASSISTANCE CRITICAL INFRASTRUCTURE PROJECTS (Oct. 31, 2017) https://www.documentcloud.org/documents/4164748-Rebuild-Texas-REQUEST-FOR-FEDERAL-ASSISTANCE.html [https://perma.cc/6YLA-K6W6].

176. *See* Bipartisan Budget Act of 2018, Pub. L. No. 115-123 (2018); *see also* PAINTER, *supra* note 3, at 5–15; *see also* THAD COCHRAN, SUPPLEMENTAL APPROPRI-

funding to address all of the requests made in the Rebuild Texas Plan, it did provide significant assistance opportunities.[177] Texas and other states are creating plans and completing applications to take advantage of those opportunities, and thereby improving long-term disaster response and resiliency.[178]

B. *Meeting Needs: The Texas General Land Office and Disaster Recovery*

One of the first acts passed by the Republic of Texas in 1836 established its General Land Office ("GLO") to determine land ownership after the Republic gained independence from Mexico.[179] The GLO's website states that it is the oldest state agency in Texas and that the office of Texas Land Commissioner predates the Office of Governor.[180] The Texas Constitution of 1876 established a Permanent School Fund using half of Texas's remaining lands with GLO acting as administrator, which expanded GLO's role into land management.[181] In 2011, GLO gained a new role administering the State of Texas Community Development Block Grant Disaster Recovery ("CDBG-DR") Program.[182]

As a response to Hurricane Harvey and other storms, Congress allocated $90 billion in Federal Community Development Block CDBG-DR. On July 25, 2018, GLO finalized its first State Action Plan, requesting a $57.8 million share of that funding.[183] This relatively small share of funding was all that HUD provided on December 27, 2017.[184] Later, HUD announced Texas would receive $5 billion in

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ATIONS FOR DISASTER RELIEF AND RECOVERY 1 (2018), https://www.appropriations.senate.gov/imo/media/doc/020718-SUPPLEMENTAL-SUMMARY.pdf [https://perma.cc/Y58B-QTKD].

177. *See* Bipartisan Budget Act of 2018, Pub. L. No. 115-123 (2018).

178. *See generally* REBUILD TEX., *supra* note 175; *see generally* FLA. DEP'T OF ECON. OPPORTUNITY, STATE OF FLORIDA ACTION PLAN FOR DISASTER RECOVERY (Apr. 20, 2018), http://www.floridajobs.org/docs/default-source/community-development-files/2018-state-of-florida-cdbg-dr-action-plan-draft.pdf [https://perma.cc/2JQV-NJUQ].

179. ANDREA GURASICH MORGAN, LAND: A HISTORY OF THE TEXAS GENERAL LAND OFFICE xi, (Charles Worth Ward ed., 1992); *The Texas General Land Office is the Oldest State Agency in Texas, Established by the Constitution of the Republic of Texas,* TEX. GEN. LAND OFF., http://www.glo.texas.gov/the-glo/about/overview/index.html [https://perma.cc/G3XW-WDR6] (last visited Oct. 8, 2018).

180. *The Texas General Land Office is the oldest state agency in Texas, established by the Constitution of the Republic of Texas*, TEX. GEN. LAND OFF., http://www.glo.texas.gov/the-glo/about/overview/index.html [https://perma.cc/HH9P-DBSU] (last visited Oct. 8, 2018).

181. *Id.*

182. *Community Development & Revitalization*, *supra* note 92.

183. TEX. GEN. LAND OFF. CMTY. DEV. & REVITALIZATION PROGRAM, STATE OF TEXAS PLAN FOR DISASTER RECOVERY: HURRICANE HARVEY AMENDMENT NO. 1 5 (2018), http://texasrebuilds.org/Documents/actionplan57.8millionamendment1.pdf [https://perma.cc/67HJ-KWPS].

184. *Id.*

CDBG-DR (June 25, 2018) and an additional $625 million (September 14, 2018) in CDBG-DR allocations.[185] CDBG-DR funds have great utility because they may be used as a match for other federal programs like FEMA or the Corps projects.[186]

All of the CDBG-DR funds provided to Texas came with a significant number of conditions.[187] HUD required 70% of the funds must be spent on low- to moderate-income ("LMI") projects.[188] Texas and its subdivisions have only two years to begin spending the CDBG-DR funds; the entire allocation must be spent within six years of HUD's execution of the initial grant agreement.[189] Any new housing receiving CDBG-DR funds must meet HUD's Green Building Standard, and all new structures receiving CDBG-DR assistance must be elevated to two feet over base flood elevation.[190] Certain properties cannot receive CDBG-DR assistance, including private utilities, second homes, and homes with homeowners without flood insurance who earn over 120% of area median income.[191]

GLO's State Action Plan provided a three-way division of the non-administrative funds from the July 25 allocation of $5.024 billion in CDBG-DR funds the office received from HUD. The division had $1.156 billion going to Harris County's plan, $1.156 billion going to the City of Houston, and $2.51 billion staying with GLO for distribution to the rest of the state.[192] Based on GLO's analysis, unmet housing needs totaled nearly $12 billion, while unmet infrastructure and economic development needs total approximately $63 billion and $23 billion, respectively.[193] The combined plans proposed to dedicate $3.6 billion to various LMI housing programs that will build new housing,

185. Allocations, Common Application, Waivers, and Alternative Requirements for Community Development Block Grant Disaster Recovery Grantees, 83 Fed. Reg. 157, 40314, 40315–40316 (proposed Aug. 14, 2018).

186. TEX. DIV. OF EMERGENCY MGMT., *supra* note 159.

187. *See* Allocations, Common Application, Waivers, and Alternative Requirements for Community Development Block Grant Disaster Recovery Grantees; State of Texas Allocation, 82 Fed. Reg. 247, 61320 (proposed Dec. 17, 2017).

188. *See id.* (referring to TEX. GEN. LAND OFF. CMTY. DEV. & REVITALIZATION PROGRAM., STATE OF TEXAS PLAN FOR DISASTER RECOVERY: HURRICANE HARVEY AMENDMENT NO. 1 2 (2018)).

189. Allocations, Common Application, Waivers, and Alternative Requirements for Community Development Block Grant Disaster Recovery Grantees, 82 Fed. Reg. 247 61320, 61322 (proposed Sept. 18, 2018).

190. *See* Allocations, Common Application, Waivers, and Alternative Requirements for Community Development Block Grant Disaster Recovery Grantees; State of Texas Allocation, 82 Fed. Reg 247, 61320 (proposed Dec. 17, 2017) (referencing TEX. GEN. LAND OFF. CMTY. DEV. & REVITALIZATION PROGRAM., STATE OF TEXAS PLAN FOR DISASTER RECOVERY: HURRICANE HARVEY AMENDMENT NO. 2 21–22 (2017)).

191. TEX. GEN. LAND OFF. CMTY. DEV. & REVITALIZATION PROGRAM., STATE OF TEXAS PLAN FOR DISASTER RECOVERY: STATE OF TEXAS PLAN FOR DISASTER RECOVERY: HURRICANE HARVEY – ROUND 1 48 (2018).

192. *Id.* at 9.

193. *Id.* at 8.

repair existing housing, and provide housing opportunities for people making below 120% of the median wage.[194] The amended plan allocated approximately $852 million for infrastructure and economic revitalization—the City of Houston made no provision for infrastructure in this version of the plan.[195]

C. *Hazardous Work: The Texas Division of Emergency Management*

The State of Texas and its subdivisions provided much less disaster assistance than the federal government until the Federal Disaster Relief Act of 1950 required states to request assistance.[196] The Texas Legislature, when it next convened, voted unanimously for the 1951 Civil Protection Act.[197] The state act provided compliance with the Federal Disaster Relief Act of 1950 and tracked many of the federal act's basic provisions.[198]

The 1951 Civil Protection Act made the governor head of the Texas Disaster Relief Council, which included various state department directors.[199] The act also called for the creation of the Office of Defense and Disaster Relief.[200] The Texas Legislature saw the primary purpose of the 1951 Civil Protection Act as preparation for a response to nuclear war. Over the next three decades, the Texas Legislature spent several sessions renaming and reorganizing the Office of Defense and Disaster Relief before settling in 1981 on the current name and organization: the Texas Division of Emergency Management ("TDEM").[201]

The Office of Defense and Disaster Relief was first called into action after floods along the Rio Grande Valley in 1954 and then again after Hurricane Carla in 1961.[202] In 1963, the Texas Legislature moved the Office of Defense and Disaster Relief, making it a division of the Texas Department of Public Safety.[203] A year after the Stafford Act,

194. TEX. GEN. LAND OFF., *supra* note 161, at 132.

195. *Id.* at 18.

196. James A. Marten, *Emergency Management*, HANDBOOK TEXAS (June 12, 2010), https://tshaonline.org/handbook/online/articles/mze01 [https://perma.cc/485N-6R7C]; Moss, *supra* note 12, at 315; *see* Disaster Relief Act of 1950, *supra* note 40, at Sec. 2(a).

197. Marten, *supra* note 196.

198. The Texas Civil Protection Act's contents and timing are indicative of a state response to federal mandates.

199. Marten, *supra* note 196.

200. Texas State Library and Archives Commission, *Texas Department of Public Safety: Agency History*, TEXAS DIGITAL ARCHIVE, https://tsl.access.preservica.com/tda/texas-state-agencies/dps/agency-history [https://perma.cc/TP63-7Q6B] (last visited Oct. 19, 2018).

201. Marten, *supra* note 196.

202. *Id.*

203. *See* Laurie E. Jasinski, *Texas Department of Public Safety*, HANDBOOK TEXAS, https://tshaonline.org/handbook/online/articles/mctrp [https://perma.cc/MJ4Q-9WX2] (last visited Sept. 18, 2018) (documenting the Department of Public Safety's creation in 1935 and its original divisions, including the Texas Highway Patrol, Texas Rangers,

the Texas Legislature passed the Texas Disaster Act of 1975, which created what is now Chapter 418 of the Texas Government Code.[204]

In 2004, TDEM created its first State of Texas Hazard Mitigation Plan (Texas Mitigation Plan) to comply with Congress's 2000 DMA.[205] In 2013, two years after setting the U.S. record for major disaster declarations in a single year, Texas released its fourth and latest update to the Texas Mitigation Plan.[206] The 2013 Texas Mitigation Planning Team consisted not only of representatives from relevant state departments but representatives from the state's major university systems.[207] Many local government representatives participated through the Emergency Management Association of Texas and produced county or regional mitigation plans.[208] A number of federal agencies were also involved with the Texas Mitigation Plan and provided grants as part of the process.[209]

After Hurricane Harvey, FEMA provided more than $1 billion to the State of Texas through the Hazard Mitigation Grant Program ("HMGP").[210] Despite state coordination efforts, less than half of Texas counties were eligible to receive HMGP funds because they failed to submit or renew their hazard mitigation plans, a requirement for such grants.[211] Due in part to Texas's low participation rate, Texas cannot produce an Enhanced Hazard Mitigation Plan, reducing the state's eligibility for HMGP funding by 5%.[212]

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and Bureaus of Communications, Intelligence, Education, and Identification and Records).

204. TEX. GOV'T CODE § 418.001 (2017).

205. TEXAS DEPARTMENT OF PUBLIC SAFETY, STATE OF TEXAS HAZARD MITIGATION PLAN (2013 update).

206. *Id.*

207. *Id.* at 3.

208. *Id.* at 2–4.

209. *Id.* at 15.

210. *2018 Natural Hazard Risk Assessments and Mitigation Planning*, COMMUNITY HAZARD ASSESSMENT & MITIGATION PLANNING SERV., http://www.champ-services.us/ [https://perma.cc/3DLG-XDZ4] (last visited Sept. 19, 2018); *see Hazard Mitigation Grant Program*, TEX. DEP'T PUB. SAFETY (Aug. 20, 2015), https://www.dps.texas.gov/dem/Mitigation/hmgp_fact_sheet.pdf [https://perma.cc/Y83A-YTDD] (stating the requirements for FEMA hazard mitigation grants).

211. COMMUNITY HAZARD ASSESSMENT & MITIGATION PLANNING SERV., *supra* note 210. *See Emergency Preparedness: Assisting Regions and Their Communities with All-hazards Planning, Mitigation, Response, and Recovery Efforts*, TEX. ASS'N REG. COUNCILS, https://txregionalcouncil.org/regional-programs/emergency-preparedness/ [https://perma.cc/L7XD-8SQZ] (last visited Dec. 29, 2018) (discussing the role of regional policy councils in various functions related to hazard mitigation and response).

212. *Hazard Mitigation Plan Status*, FEMA, https://www.fema.gov/hazard-mitigation-plan-status [https://perma.cc/SN2Q-UEFF] (last visited Dec. 29, 2018); *see* 44 CFR 201.5 (2018) (providing relevant regulatory guidance).

D. *From Droughts to Floods: The Texas Water Development Board*

The predecessor to the Texas Water Development Board ("TWBD"), the Texas Board of Water Engineers, was created by the Texas Legislature in 1913 after droughts in 1909 and 1910.[213] The Board of Water Engineers was intended to plan, fund, and build water-related infrastructure as well as administer and adjudicate water rights under a new appropriation system.[214] The Texas Supreme Court declared the Board of Water Engineers and accompanying legislation unconstitutional in 1921 after it was sued for its adjudicative role.[215] The worst droughts in Texas history during the 1940s and 1950s led the Texas Legislature to try again by creating TWBD in 1957 to administer the Texas Water Development Fund and to coordinate state water planning efforts.[216]

Subsequently, TWDB went through several reorganizations but remained focused on loaning and occasionally granting funds to local government entities for water-related infrastructure and creating state water plans.[217] After droughts in the 1990s, the Texas Legislature passed Senate Bill 1 in 1997, which strengthened TWDB's planning responsibilities and required a state water plan based on regional plans developed by groups of local water rightsholders.[218] This bottom-up approach helped identify, prioritize, and build water supply projects, municipal supply projects in particular, in subsequent state water plans.[219]

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213. 55 Leg. R.S., H.J.R. 3; 1957 Tex. Gen. Laws; Irrigation Act of 1913, 1636–1638 33 Leg. R.S., ch. 171, 1913 Tex. Gen. Laws, 358-79; *Texas Water Development Board*, TEX. STATE LIBRARY & ARCHIVES COMM'N, https://legacy.lib.utexas.edu/taro/tslac/20175/tsl-20175.html [https://perma.cc/4V97-5FLY] (last visited Sept. 20, 2018); *About the Texas Water Development Board*, TEX. WATER DEV. BOARD, http://www.twdb.texas.gov/about/index.asp [https://perma.cc/QRT7-MJHK] (last visited Sept. 20, 2018).

214. TEX. STATE LIBRARY & ARCHIVES COMM'N, *supra* note 213; *see* Augustus L. Campbell, Comment, *Texas Watermasters: A Legal History and Analysis of Surface Water Rights Enforcement*, 7 TEX. TECH ADMIN. L.J. 143, 144, 146–57 (2006) (providing a brief history of the Texas water rights system).

215. Bd. of Water Eng'rs v. McKnight, 111 Tex. 82, 97, 229 S.W. 301, 307 (1921) (holding that the board's adjudication functions violated the separation of powers provided in the Texas Constitutions).

216. Glenn Hegar, *Funding the State Water Plan Through the SWIFT Program*, TEX. COMPTROLLER PUB. ACCOUNTS, Special Report at 1 https://comptroller.texas.gov/economy/docs/96-1790.pdf [https://perma.cc/3C98-5BAN] [hereinafter *SWIFT Report*]; TEX. STATE LIBRARY & ARCHIVES COMM'N, *supra* note 213.

217. TEX. STATE LIBRARY & ARCHIVES COMM'N, *supra* note 213.

218. *Water for Texas: 2017 State Water Plan*, TEX. WATER DEV. BD. at 23, http://www.twdb.texas.gov/waterplanning/swp/2017/chapters/00-SWP17-EXEC-SUMMARY.pdf?d=23701.00000000093 [https://perma.cc/L8WL-KTBF]; *SWIFT Report*, *supra* note 216, at 2.

219. *See* TEX. WATER DEV. BD., *supra* note 218, at 10, Fig. ES9 (discussing and depicting fulfillment of municipal water demand); *SWIFT Report*, *supra* note 216, at 6 (discussing prioritization and SWIFT funding in 2015).

Droughts in 2010 and 2011 spurred the Texas Legislature in 2013 to address the biggest remaining impediment to the State Water Plan's implementation: funding.[220] A slate of bills from the Texas Legislature created the State Water Infrastructure Fund of Texas ("SWIFT") with credit facilities and $2 billion from the Economic Stabilization Fund ("ESF"), which is projected to provide 1.5 million acre-feet of water from $27 billion in funding for regional water supply projects over fifty years.[221] Texas voters approved the creation of SWIFT and the $2 billion in funding from the ESF (Proposition 6) by almost 75%.[222]

In 1999, the Texas Legislature required cities and counties to meet NFIP requirements by adopting the necessary ordinances and orders.[223] In 2001, Texas had more flood-prone land and more annual flood-related deaths than any other state in the nation.[224] In 2007, the Legislature made TWDB the NFIP State Coordinating Agency, expanding TWDB's duties to include the following: administering grants, floodplain mapping and regulation, compliance assistance, and technical assistance related to NFIP.[225] While FEMA is responsible for developing Flood Insurance Rate Maps, it relies on data and administration from TWDB and cooperating technical partners ("CTPs").[226] In 2018, Texas had 1,252 NFIP-participating communities, but only 20% had updated flood maps and approximately 0.05% (62 communities) qualified for the Community Rating System ("CRS"), which provides residents with up to a 45% discount on flood insurance rates.[227]

In September 2018, TWDB released a draft state-wide flood assessment ("TWDB Draft").[228] The TWDB Draft cited several documents to explain flood risk and singled out TDEM's Texas Mitigation Plan in

220. *SWIFT Report*, *supra* note 216, at 2. The TWDB also went through a reorganization at the Board level, swapping a six-person volunteer board, for a three-person professional board. *Id.* at 3.

221. *Id.* at 2–3.

222. *Id.* at 3.

223. TEX. WATER CODE ANN. § 16.3145 (2017); Lake et al., *State Flood Assessment*, (Sept.17, 2018) at 23 [hereinafter TWDB Draft] (forthcoming).

224. *What You Need to Know About Floodplain Management*, CITY NEW BRAUNFELS, https://www.nbtexas.org/1156/Floodplain-Management [https://perma.cc/598N-M9PK] (last visited Dec. 29, 2018) (citing S. Interim Comm. on Natural Resources, 87th Legislature, Natural Disasters, at 6 (Tex. 2002), https://senate.texas.gov/cmtes/77/c580/c580_NATRES.pdf [https://perma.cc/7BSK-P9A7]).

225. *Flood Mitigation Planning*, TEX. WATER DEV. BD., http://www.twdb.texas.gov/flood/index.asp [https://perma.cc/FWV5-UUQM] (last visited Dec. 29, 2018); *see Texas Quick Guide: Floodplain Management in Texas*, TEX. WATER DEV. BD. (2015), https://www.twdb.texas.gov/flood/resources/doc/Texas_Quick_Guide.pdf [https://perma.cc/2A9V-KQJP] (providing regulatory guidance); *Flood Mitigation Assistance Grant Program*, TEX. WATER DEV. BD. (Apr. 2018), http://www.twdb.texas.gov/publications/shells/Floodmitigationassistance.pdf?d=2630698.500000057 [https://perma.cc/V9EG-P8BQ].

226. TWDB Draft, *supra* note 223, at 18–19.

227. *Id.* at 18, 23.

228. *Id.* at 1.

particular.[229] Texas's flood risk maps, even the updated ones, are outdated—over 55% of the homes that were flooded during Hurricane Harvey were located outside the floodplain.[230] The majority of those homes were in CRS communities or communities with updated flood maps.[231]

On September 27, 2018, the National Oceanic and Atmospheric Agency ("NOAA") released an updated precipitation model for Texas called Atlas 14, Volume 11 ("Atlas 14").[232] Atlas 14's data showed a substantial increase in the probability of extreme storm events.[233] Likewise, the new data and mapping shows that a "100-year" storm event is up by five inches in a twenty-four-hour period (i.e., from thirteen inches to eighteen inches) in some parts of Harris County.[234] Atlas 14 supersedes old flood data from the 1960s and 1970s and requires changes to FEMA's floodplain maps across Texas.[235] New maps will lead to changes in flood risks and the understanding of impacts, which now appear to be substantially greater and especially near urban centers.[236]

IV. THINKING OUTSIDE THE FRAMEWORK: IDEAS ON HOW TO IMPROVE DISASTER MITIGATION IN TEXAS

A recent report by the GLO, *Hurricane Harvey: Texas at Risk* ("GLO Report"), noted the complication and dependence associated with the federal disaster recovery framework and associated funding.[237] The GLO Report also indicated that Congressional action related to disaster recovery appears difficult.[238] Texas, through its Legislature and agencies, can be much better prepared for disaster by working with federal and local government agencies before the next storm.

229. *Id.* at 10.

230. NATSIOS, *supra* note 79, at 23.

231. NATSIOS, *supra* note 79, at 33. *See also* TWDB Draft, *supra* note 223, at 20.

232. *NOAA Texas Rainfall Frequency Values*, NAT'L OCEANIC & ATMOSPHERIC ADMIN. (Sept. 27, 2018), https://www.noaa.gov/media-release/noaa-updates-texas-rainfall-frequency-values [https://perma.cc/5XY7-K8MM] [hereinafter *NOAA Updates*].

233. *Id.*

234. TWDB Draft, *supra* note 223, at 7.

235. *Id. See* Carolyn LaFleur, *NOAA ATLAS 14: Updated Rainfall Fata Underscore Challenges of Managing Flood Risk*, (June 2018), https://www.harcresearch.org/feature/NOAA_Atlas_14_Updated_Rainfall_Data_Underscore_Challenges_of_Managing [https://perma.cc/6VS7-NQSX].

236. TWDB Draft, *supra* note 223, at 12–13.

237. NATSIOS, *supra* note 79, at 14.

238. *Id.*

A. *How the State Should Mitigate: Improving Texas Hazard Mitigation Planning*

Despite leading the nation in natural disaster declarations and in planning efforts for water and transportation, when it comes to hazard mitigation planning, Texas lags behind other states such as Florida.[239] The GLO Report sensibly recommended that the TWDB should take the lead in flood control mitigation planning and projects.[240] However, including flood control in the Texas Hazard Mitigation Plan, as mentioned in the TWDB Draft Report, would help all Texans by improving response and resiliency for all types of natural disasters and other emergencies.[241] This approach would also help increase Texas's share of federal assistance and reduce the state's complexity in dealing with both federal and local actors, assuming Texas can obtain an Enhanced Hazard Mitigation Plain rating.[242]

The TWDB Draft reviewed Florida's planning approach and its Enhanced Hazard Mitigation Plan.[243] Florida's 2018 mitigation plan relied on a comprehensive hazard mitigation strategy committed to integrating mitigation practices throughout the state.[244] Because of Florida's approach and record, FEMA delegates approval authority to Florida for its local hazard mitigation plans.[245] Florida's plan also increases reliance on its Regional Planning Councils ("RPCs") to work with the state and local governments to develop hazard mitigation planning and analysis and to coordinate emergency response for every county in the state.[246]

Like Florida, the State of Texas also works through its RPCs to provide funding and assistance to local governments to produce local Hazard Mitigation Plans.[247] Directly tasking RPCs with improving city and county participation and plan completion would likely be much easier, cheaper, and more immediate than using TWDB's planning structures or creating new ones. Texas could require RPCs to create local hazard-mitigation councils—mirroring RPCs' transportation policy councils—with technical advisory committees that combine local government staff experts with representatives from business and citizen groups.

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239. *See id.* at 25.

240. NATSIOS, *supra* note 79, at 25.

241. *See generally* TWDB Draft, *supra* note 223, at 58.

242. *See Enhanced State Hazard Mitigation Plan,* FLA. DIVISION EMERGENCY MGMT. (2018), https://www.floridadisaster.org/globalassets/dem/mitigation/mitigatefl—shmp/shmp-2018-full_final_approved.6.11.2018.pdf [https://perma.cc/SE75-8KNJ] [hereinafter 2018 Florida Plan].

243. TWDB Draft, *supra* note 223, at 29.

244. 2018 Florida Plan, *supra* note 242, at 5.

245. TWDB Draft, *supra* note 223, at 29.

246. 2018 Florida Plan, *supra* note 242, at 64–67.

247. *State of Texas Hazard Mitigation Plan*, TEX. DEP'T PUB. SAFETY, 260 https://www.dps.texas.gov/dem/documents/txHazMitPlan.pdf [https://perma.cc/EE2X-6L3A] (last visited Oct. 19, 2018).

One advantage of the Texas Water Plan is the high level of participation in its bottom-up, regional approach to analyze and prioritize regional strategies and projects. These same advantages are provided by the Texas RPCs for transportation planning that are integrated into the Statewide Transportation Improvement Plan.[248] Hazard mitigation projects are more like transportation projects than water supply projects—Texas voters see the need for these types of infrastructure but are used to paying only water bills. Local governments from across the state would likely participate in hazard mitigation planning if it were funded more like water planning and transportation planning.[249]

B. *Putting Money Where the Mitigation Is: Funding for Mitigation in Texas*

The State of Texas will spend approximately $547 billion on transportation projects, excluding maintenance costs, through 2040.[250] SWIFT will help leverage state funding to generate $27 billion for Texas water projects over fifty years while the 2017 State Water Plan estimates a need for $62.6 billion in projects over roughly the same period.[251] Out of the $6.35 billion that FEMA provided to areas affected by Hurricane Harvey between September 2017 and September 2018, only $43 million was categorized as funding for hazard mitigation.[252] A kind interpretation is that hazard mitigation funding is not well tracked at the state or federal level.[253]

Certainly, the $2.5 billion Harris County Flood Control Bond approved by voters on August 25, 2018, would qualify as hazard mitigation.[254] While this funding is significant, the flood control

248. *TIP vs. STIP: Definitions and Differences*, TEX. DEP'T TRANSP., https://www.txdot.gov/government/programs/stips/info/differences.html [https://perma.cc/UEW9-P4KA] (last visited Oct. 18, 2018).

249. *See 2012 State Water Plan*, *supra* note 114, at 21 (discussing funding available for water planning and water projects); *Transportation Funding in Texas*, TEX. DEP'T TRANSP. (2016–2017) https://ftp.dot.state.tx.us/pub/txdot-info/fin/funding-sources.pdf [https://perma.cc/QL6T-NX83] (describing funding for transportation).

250. Kevin McPherson et al., *Transportation Infrastructure: Keeping Texas Moving,* TEX. COMPTROLLER (May 2018), https://comptroller.texas.gov/economy/fiscal-notes/2018/may/transportation.php [https://perma.cc/7C7M-J332]; *see Transportation Funding in Texas*, supra note 249 (proving an overview of TXDOT spending and funding).

251. *SWIFT Report*, *supra* note 216, at 2, 7.

252. Brasier & Thompson, *supra* note 89, at 15.

253. Anne Stauffer, Justin Theal, & Colin Foard, *Natural Disaster Spending Not Comprehensively Tracked,* PEW (Sept. 20, 2018), https://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2018/09/natural-disaster-mitigation-spending—not-comprehensively-tracked [https://perma.cc/4NNE-ZG6D].

254. *2018 HCFCD Bond Program*, HARRIS COUNTY FLOOD CONTROL DISTRICT, https://www.hcfcd.org/2018-bond-program/ [https://perma.cc/VB7N-M742] (last visited Oct. 19, 2018); *see also* Zach Despart, *Harris County Voters Pass $2.5 Billion Flood Bond*, HOUSTON CHRON., https://www.chron.com/news/houston-texas/houston/article/Harris-County-voters-pass-2-5-billion-flood-bond-13182853.php [https://perma

infrastructure necessary to provide protection to every watershed in Harris County to withstand twelve inches of rain in twenty-four hours would cost an estimated $35 billion. Moreover, providing flood and storm surge risk mitigation across the Houston region would cost an additional $22.97 billion.[255]

The State of Texas can avoid great personal and economic losses by improving hazard mitigation funding.[256] Some funding may come from GOMESA, port tonnage fees, and various federal programs, but these funds will be spent in very specific locations or projects that leave populations, such as those between LMI and cost-benefit ratio, unprotected.[257] The State of Texas may consider setting up credit facilities like SWIFT or funding streams like Proposition 1 for Transportation that benefit hazard mitigation and disaster response.[258]

C. *Requiring Character: The Necessity and Challenge of Fixing Flood Insurance*

The National Flood Insurance Act was passed with the expectation that the federal government would accurately model flood risk and continue to fund flood mitigation infrastructure at 1968 levels.[259] Both expectations have proven to be disastrously wrong. For example, 53% of the approximately 180,000 flood insurance claims filed in Texas after 2008 occurred outside of high-risk flood zones. FEMA estimates that those claims represent $12.7 billion in damages. Despite the hurricanes and floods in 2017 and the stories of people who flooded without coverage, federal flood insurance policies increased only slightly to 5.1 million by July 31, 2018, up from 4.94 million in 2017.[260] Texans obtained approximately 145,000, or over 90%, of those new policies, but millions of Texans still lack flood insurance.[261]

.cc/9DWB-L6H2] (last updated Aug. 26, 2018) (reporting that the bond proposition passed by over 85%).

255. *See Our Plan*, HOUSTON STRONGER (Mar. 16, 2018), http://houstonstronger.net/resources/ [https://perma.cc/BYM8-PND2].

256. Brasier & Thompson, *supra* note 89, at 17.

257. *See* Gene Pawlik & Doug Garman, *U.S. Army Corps of Engineers Identifies Long-Term Disaster Recovery Projects and Additional Short-Term Repairs to be Accomplished with 2018 Supplemental Funding*, U.S. ARMY CORPS ENG'RS, (July 5, 2018), https://www.usace.army.mil/Media/News-Releases/News-Release-Article-View/Article/1567778/us-army-corps-of-engineers-identifies-long-term-disaster-recovery-projects-and/ [https://perma.cc/T6HK-2QVG]; *see also HUD Awards $28 Billion in CDBG-DR Funds*, HUD EXCHANGE, (Apr. 11, 2018), https://www.hudexchange.info/news/hud-awards-28-billion-in-cdbg-dr-funds/ [https://perma.cc/6GSA-D3HS].

258. *SWIFT Report*, *supra* note 216, at 4; *Transportation Funding in Texas, supra* note 249, at 3-4.

259. *See* Mendelson, *supra* note 54, at 1520.

260. Ken Sweet & Meghan Hoyer, *Hurricane Florence Likely to Expose Gaps in Flood Insurance*, INS. J. (Sept. 17, 2018), https://www.insurancejournal.com/news/southeast/2018/09/17/501489.htm [https://perma.cc/P8FP-5MUK].

261. *Id.*

NFIP makes government flood insurance widely available, avoidable, and affordable, which incentivizes and subsidizes risky behavior and places the ultimate costs of risky behavior on taxpayers.[262] Other flood insurance models from around world offer solutions to fix NFIP's shortcomings. The German model is private and does not require coverage, but flood insurance is very expensive unless the covered structure is built in a safe location and to high standards.[263] The United Kingdom has the opposite system of the United States—it is private and unavoidable.[264] The UK requires property owners to purchase private insurance, which keeps premiums lower and standards high with little government intervention.[265] The French model appears similar to the British model, but it funds flood insurance and perils risk through a surcharge on most private insurance policies to provide a pool of capital.[266]

The French enacted their successful catastrophe insurance surcharge in 1982, which applies to most insurance policies including those for home, business, car, and other policies.[267] The surcharge funds disaster response and mitigation, meaning that individuals with policies for their property and persons have coverage in the event of a catastrophe.[268] This surcharge model fixes the defects of NFIP because participation is universal, the collected surcharges have exceeded insurance expenses, and the program receives near universal support.[269]

Privatizing residential flood insurance in the United States appears unlikely, so the German and UK flood insurance models have little application in Texas. Events like Hurricane Florence divert national attention away from fixing NFIP.[270] The State of Texas could adopt a Texan approach to the French model by applying a variable surcharge on insurance policies issued in Texas communities.[271] The State could apply higher surcharges on policies at higher-risk addresses unless the policy purchaser can show proof of NFIP flood insurance, in which case the purchaser avoids the surcharge.[272] The collected revenues could support flood mitigation efforts in proactive communities and provide Texas residents without flood insurance with assistance after a disaster .

262. *See* Ivan Maddox, *Flood Insurance Models Around the World*, RISKS HAZARD BLOG (Dec. 3, 2014, 10:20 AM), https://www.intermap.com/risks-of-hazard-blog/flood-insurance-models-around-the-world [https://perma.cc/3NSS-BEYX].
263. *See id.*
264. *Id.*
265. *See id.*
266. *Id.*
267. *See* Moss, *supra* note 12, at 345.
268. *Id.* at 346.
269. *Id.*
270. *See* Sweet & Hoyer, *supra* note 260.
271. Moss, *supra* note 12, at 346.
272. *Id.*

D. *Blocking the Effects of Disaster: Block Grants Can Provide Quicker Responses to Disaster*

Testifying before Congress, Brock Long said, "FEMA should be a block grant agency."[273] GLO endorsed this viewpoint and recommended a FEMA block grant program for temporary housing that would trigger purchase orders through contracts negotiated ahead of storms. The GLO could also provide block grants that allow floodplain managers to buy houses in predetermined areas at pre-flood market rates, plus relocation expenses, which would help flood victims and taxpayers.

V. CONCLUSION: HAZARD A GUESS

Over 215 years of federal policy have created an expectation of paternal care without a firm commitment to provide sturdier communities. The Disaster Mitigation Act of 2000 provides a framework to incentivize responsible state and local action. Texas should improve on the path taken by Florida and other states to become a leader in hazard mitigation. Texas can borrow from effective parts of its transportation and water planning and its funding frameworks to build within FEMA's Hazard Mitigation Plan process. This approach will help attract participation, increase funding, and promote coordination of planning projects across varying levels of government. Hurricane Harvey was an awful event, but if Texas takes the right action now, it can show its citizens and the world that it is sturdier after the storm.

273. GEORGE P. BUSH, TEX. GEN. LAND OFF., HURRICANE HARVEY: TEXAS AT RISK 34 (2018), http://www.glo.texas.gov/recovery/files/texas-at-risk-report.pdf [https://perma.cc/U2DT-U48P].