DEPARTMENT OF HOUSING

CDBG-DR PROGRAM GUIDELINES

PUERTO RICO GEOSPATIAL FRAMEWORK PROGRAM

(GeoFrame Program)

June 28, 2021
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PUERTO RICO DEPARTMENT OF HOUSING
CDBG-DR PROGRAM GUIDELINES
PUERTO RICO GEOSPATIAL FRAMEWORK PROGRAM
(GeoFrame Program)
VERSION CONTROL

VERSION NUMBER	DATE REVISED	DESCRIPTION OF REVISIONS
1	**September 30, 2020**	**Original Version.**
2	**June 28, 2021**	**Edits were made throughout the document. Revisions to Sections 10, 11, 16 and 17. All edits are marked in gray.**

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1 Program Summary

Agency Name: Department of Housing, Government of Puerto Rico (**PRDOH**)

Program: The Puerto Rico Geospatial Framework (**GeoFrame**) Program under the Community Development Block Grant – Disaster Recovery (**CDBG-DR**) will address the damage in the Disaster Impacted Areas (**DIA**) of federally declared disasters: Puerto Rico Hurricane Irma (FEMA-4336-PR) and Puerto Rico Hurricane María (FEMA-4339-PR), under Title IV of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (**Stafford Act**), 42 U.S.C. § 5121.

Program Allocation: $50,000,000

Announcement Type: Guidelines for the GeoFrame Program, funded through the CDBG-DR Program from the United States Department of Housing and Urban Development (**HUD**) allocation under Public Law 115-56.

Program effective date: September 29, 2020

Program Abstract: Pursuant to the declared disasters FEMA-4336-PR and FEMA-4339-PR, and subsequent allocation of CDBG-DR funds under the Stafford Act, PRDOH announces these general program guidelines for activities sanctioned by the GeoFrame Program.

The GeoFrame Program responds to existing land use, land administration, and spatial data constraints in the Commonwealth of Puerto Rico. Through the GeoFrame Program Components and Outcomes, PRDOH will support Puerto Rico's growth towards a Spatially Enabled Society (**SES**) by producing a foundation of high-quality, geo-referenced data and building an infrastructure of people, policies, software, hardware, and systems, for citizens to access and use spatial data to enable evidence-based decision-making. The GeoFrame Program will result in five (5) outcomes:

Outcome A. Puerto Rico's Spatial Data Infrastructure Strategic Plan
Outcome B. GeoFrame Database 1.0 [INTERIM]
Outcome C. GeoFrame Database 2.0 [FINAL]
Outcome D. Web-based Geoportal
Outcome E. Spatial Data Infrastructure Management Tools

The GeoFrame Program will support the detection and prevention of fraud, waste, abuse and mismanagement in CDBG-DR and Community Development Block Grant – Mitigation (**CDBG-MIT**) programs by prioritizing the development of an interim database that identifies parcels, physical addresses, legal and tenure status. Upon development, this Interim Database will be accessible to PRDOH to support CDBG-DR programs not limited to: R3, Title Clearance, Re-Grow PR, and the Economic Development Investment Portfolio. The GeoFrame Program utilizes an advisory team, which include State Agencies, and a vendor team staffed by procured firms. Central to the administration and implementation of this Program is extensive outreach and engagement through structured informational sessions and data sharing.

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2 Definitions and Acronyms

- **GeoFrame Comprehensive Database** – Tool developed to store all geospatial data and cadastral information relevant to Puerto Rico. This encompasses all information collected, merged, and produced within the GeoFrame Program as well as all projected data needs beyond the program scope, identified within the Puerto Rico Spatial Data Infrastructure (**SDI**) Strategic Plan.

- **GeoFrame Interim Database** – Tool developed by the Program to support the Fit-For-Purpose (**FFP**) land administration modifications and emergency response and disaster recovery operations. This tool will include, at a minimum, data related to physical addresses, parcels, and tenure status, as well as additional data that may be produced in a timely and economical manner.

- **Boundary Marking** – The legal action of determining the boundaries of a property; this can be under voluntary jurisdiction to carry out the legal measurement to determine the boundaries of an estate or property, or under non-voluntary jurisdiction where there is a dispute between adjacent properties.[1]

- **Cadaster** – An inventory that contains a graphic, alphanumeric, and statistical description of property within a territory; it operates in the public interest and serves legal, economic, fiscal, and administrative purposes, and all those who determine the laws and regulations of a country.[2]

- **Change Detection** – A process that measures how the attributes of an area have changed between two (2) or more time periods. Change detection often involves comparing aerial photographs or satellite imagery of the area taken at different times.

- **Data Management** – A complex and broad domain covering data storage, index and query, data processing, and analysis.

- **Data Regeneration** – A condition of data replication, where data does not exist or is not stored, but may be produced or reproduced from a set of descriptive specifications.

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[1] Fao.org. 2020. *B | Guide For Monitoring And Evaluating Land Administration Programs | Food And Agriculture Organization Of The United Nations*. [online] Available at: http://www.fao.org/in-action/herramienta-administracion-tierras/glossary/b/en/ [Accessed 5 August 2020].

[2] Id., http://www.fao.org/in-action/herramienta-administracion-tierras/glossary/c/en/.

- **Data Security** – Controls related to permissions of access, use and visibility of spatial information and metadata, contingent upon legal rights, restrictions, and responsibilities of interested parties and the confidentiality of geographic areas or communities of interest.
- **Data Standards** – Technical specifications for activities related to the lifecycle of geospatial information and specify the content and structure of data, thereby improving efficiency, replicability, reproduction and compatibility between computer systems and software.[3]
- **Data Storage** – The information technology (**IT**) infrastructure, organization methods of large vector data, and file storage that serves as a basis for data query, analysis, and application.
- **Fédération Internationale des Géomètres** (**FIG)** – Refers to the International Federation of Surveyors. FIG is the premier international organization representing the interests of surveyors worldwide. It is a federation of the national member associations and covers the whole range of professional fields within the global surveying, geomatics, geodesy and geo-information community.[4]
- **Four-dimensional (4D) GIS** – A monitoring tool that integrates 2D, 3D, and time to simulate and communicate changes or predictions of events across time.
- **Geographic Information System (GIS)** – An organized, spatially referenced information tool. It incorporates a set of techniques and methods relating to data acquisition, such as: a) obtaining and coding; b) organization: data processing and database; and c) analysis: rationale and models (Placeholder).[5]
- **Global Geodetic Observing System (GGOS)** – Provides observations and the global geodetic frame of reference needed to measure, monitor, map, and interpret changes in the Earth's shape, rotation, and mass distribution.[6]
- **Global Navigation Satellite System (GNSS)** – Refers to a constellation of satellites providing signals from space that transmit positioning and timing data to GNSS receivers. The receivers then use this data to determine location. GNSS provides

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[3] Nrcan.gc.ca. 2020. *Geospatial Standards and Operational Policies | Natural Resources Canada*. [online] Available at: https://www.nrcan.gc.ca/earth-sciences/geomatics/canadas-spatial-data-infrastructure/8902 [Accessed 5 August 2020].

[4] Fig.net. 2020. *About FIG*. [online] Available at: https://www.fig.net/about/index.asp [Accessed 5 August 2020].

[5] Fao.org. 2020. *G | Guide For Monitoring And Evaluating Land Administration Programs | Food And Agriculture Organization Of The United Nations*. [online] Available at: http://www.fao.org/in-action/herramienta-administracion-tierras/glossary/g/en/ [Accessed 5 August 2020].

[6] Ggos.org. 2020. *GGOS - Global Geodetic Observing System - Home*. [online] Available at: GGOS - Global Geodetic Observing System [Accessed 5 August 2020].

global coverage. Examples of GNSS include Europe's Galileo, the USA's NAVSTAR Global Positioning System (**GPS**), Russia's Global'naya Navigatsionnaya Sputnikovaya Sistema (**GLONASS**) and China's BeiDou Navigation Satellite System.[7]

- **High-Density Structures** – Buildings or structures existing on a single parcel, but with sub-divisions of unit ownership not visible or assigned to the parcel upon which the building is located.
- **Interoperability** – The common ingredient in fulfilling fundamental SDI capabilities is interoperability. Interoperability facilitates information sharing and allows users to find information, services, and applications when needed, independent of physical location. It allows users to understand and employ the discovered information and tools, regardless of platform (local or remote). Through interoperability, users can also evolve a processing environment without being constrained to a single vendor's offerings.[8]
- **The International Organization for Standardization (ISO)** – an international standard-setting organization composed of representatives from various national standards bodies. Through its members, it brings together experts to share knowledge and develop voluntary, consensus-based, market relevant, International Standards that support innovation and provide solutions to global challenges.[9]
- **Land Administration** – The term was established by the United Nations Economic Commission for Europe (**UNECE**) in its Land Administration Guidelines adopted in 1996.[10] In these guidelines the UNECE defines land administration as "the processes of determining, recording and disseminating information about ownership, value and use of land and its associated resources. These processes include the determination (sometimes called 'adjudication') of land rights and other

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[7] Gsa.europa.eu. 2020. *What Is GNSS?*. [online] Available at: https://www.gsa.europa.eu/european-gnss/what-gnss [Accessed 5 August 2020].

[8] United Nations Economic and Social Council, "Spatial Data Infrastructure (SDI) Manual for the Americas," Tenth United Nations Regional Cartographic Conference for the Americas, New York, 19-23, August 2013. [Accessed on: 07/02/2020. https://unstats.un.org/unsd/geoinfo/RCC/docs/rcca10/E_Conf_103_14_PCIDEA_SDI%20Manual_ING_Final.pdf#:~:text=Infrastructure%20%28SDI%29%20Manual%20for%20the%20Americas%20and%20to,Americas.%201.1%20Background%201.1.1%20Project%20Sponsors%20%E2%80%93%20PC-IDEA]

[9] ISO. 2020. *About Us*. [online] Available at: https://www.iso.org/about-us.html [Accessed 5 August 2020].

[10] Land Administration Guidelines with Special Reference to Countries in Transition, United Nations Economic Commission for Europe, 1996, p. 108.

attributes, surveying and describing these, their detailed documentation, and the provision of relevant information for supporting land markets".[11]

- **Land Administration System (LAS)** – The state system, based within a legal framework, which administers property rights policies and information management through its various institutions. It establishes the administrative and legal procedures for land transfer, the physical attributes of territory, uses, land valuation, and tax burdens, which provide security and legal certainty about ownership.[12]

- **Land Governance** – Land governance concerns the rules, processes, and structures through which decisions are made about access to land and its use, the way those decisions are implemented and enforced, and how competing interests in land are managed. Land governance encompasses statutory, customary, religious, and informal institutions. It includes state structures such as land agencies, courts, and ministries and municipalities responsible for land, as well as informal land developers and traditional bodies.[13]

- **Land Ownership** – Property or arrangements under which the rights to use land are exercised. The circumstances vary greatly from country to country, and range from land occupied by the owner, to communal or state ownership. There are different land ownership systems which allow individuals to use a property for various purposes. Some of the more usual land ownership systems in Latin America are private ownership, leasing with option to purchase, share tenancy and collective titling of land.[14]

- **Land Register** – The land register is where land in a territorial locality is recorded by the registrar, stating their owners, and where changes and limits of the rights conferred by the said properties are entered. As regards land properties, the land register is a record of the status of the commercial rights to a property, generally organized and updated chronologically. According to the conservation regimen for land properties or land property book, the land register follows its own rules regarding form and authentication.[15]

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[11] Fao.org. 2020. *G | Guide For Monitoring And Evaluating Land Administration Programs | Food And Agriculture Organization Of The United Nations*. [online] Available at: http://www.fao.org/in-action/herramienta-administracion-tierras/glossary/g/en/ [Accessed 5 August 2020].

[12] Id., http://www.fao.org/land-water/land/land-governance/en/.

[13] Id., http://www.fao.org/land-water/land/land-governance/en/.

[14] Fao.org. 2020. *G | Guide For Monitoring And Evaluating Land Administration Programs | Food And Agriculture Organization Of The United Nations*. [online] Available at: <http://www.fao.org/in-action/herramienta-administracion-tierras/glossary/g/en/> [Accessed 5 August 2020].

[15] Id., http://www.fao.org/in-action/herramienta-administracion-tierras/glossary/l/en/.

- **Land Tenure** - Land tenure is the relationship, whether legally or customarily defined, among people, as individuals or groups, with respect to land. (For convenience, "land" is used here to include other natural resources such as water and trees.) Land tenure is an institution, i.e., rules invented by societies to regulate behavior. Rules of tenure define how property rights to land are to be allocated within societies. They define how access is granted to rights to use, control, and transfer land, as well as associated responsibilities and restraints. In simple terms, land tenure systems determine who can use what resources for how long, and under what conditions.[16]

- **Land Use** – Term used to describe the human use of land. It represents the economic and cultural activities (e.g., agricultural, residential, industrial, mining, and recreational uses) that are practiced at a given place.

- **Metadata** – A set of data that describes and gives information about other data.

- **Non-Governmental Organization (NGO)** – is any non-profit, voluntary citizens' group which is organized on a local, national, or international level. Task-oriented and driven by people with a common interest, non-governmental organizations (**NGOs**) perform a variety of services and humanitarian functions, bring citizens' concerns to Governments, monitor policies, and encourage political participation at the community level.[17]

- **National Spatial Data Infrastructure (NSDI)** – enhances the accessibility, communication, and use of geospatial data to support a wide variety of decisions at all levels of society. The goals of the NSDI are to reduce redundancy in geospatial data creation and maintenance, reduce the costs of geospatial data creation and maintenance, improve access to geospatial data, and improve the accuracy of geospatial data used by the broader community.[18]

- **Ownership** – The Civil Codes of Latin American countries define ownership in absolute terms as "the right to enjoy and have access to something with no limitations other than those established by law". Ownership is recognized as a basic right, but it has been established that its social function will determine its content, according to the law. Along with the freedom of the holder, the limits of the exercise of rights must therefore also be stated in law, considering criteria separate from the particular benefit itself.[19] Puerto Rico law defines and

[16] Fao.org. 2020. *3. WHAT IS LAND TENURE*. [online] Available at: http://www.fao.org/3/y4307e/y4307e05.htm [Accessed 5 August 2020].
[17] https://www.un.org/en/department-global-communications/outreach
[18] 2001. *National Spatial Data Infrastructure Partnership Programs*. Washington, D.C.: National Academy.
[19] Fao.org. 2020. *G | Guide For Monitoring And Evaluating Land Administration Programs | Food And Agriculture Organization Of The United Nations*. [online] Available at: http://www.fao.org/in-action/herramienta-administracion-tierras/glossary/g/en/ [Accessed 5 August 2020].

distinguishes natural and civil possession. "Natural possession is the holding of a thing or the enjoyment of a right by a person. Civil possession is the same holding or enjoyment, joined to the intent of holding the thing or right as one's own." Puerto Rico Civil Code, Article 704, Law No. 55 of June 1, 2020.

- **Parcel** – The technical unit in a cadaster consisting of a defined area of land delimited by a line or boundary which begins and returns to the same point or is identifiable and recognized by its ownership and property.[20]
- **Public Good** – A good that is non-excludable and non-rivalrous. This concept relates to goods (and services) whose benefits cannot be withdrawn for non-payment, and the benefits that may be consumed by one person without reducing the amount of the product available to others.[21]
- **Spatial Data Infrastructure (SDI)** – is a framework of technology, policies, and institutional arrangements that together facilitate the creation, exchange, and use of geospatial data and related information resources.
- **Spatially Enabled Society (SES)** - An SES requires the integration and adoption of six (6) fundamental elements.[22]

  1. **Legal framework** – to provide a stable basis for the acquisition, management, and distribution of spatial data and information;
  2. **Common data integration concept** – to facilitate existing spatial data -from the government as well as other sources -respect a common standard in order to ensure interoperability and linkage of data for the benefit of all;
  3. **Positioning infrastructure** – to provide a common geodetic reference framework in order to enable the integration of spatial data and information;
  4. **Spatial data infrastructure** – to provide the physical and technical infrastructure for spatial data and information to be shared and distributed;
  5. **Landownership information** – to provide the updated and correct documentation on the ownership and tenure of the land, fisheries, and forests, without which spatial planning, monitoring, and sound land development and management cannot take place;
  6. **Data and information concepts** – to respect and accommodate the different developments in the acquisition and use of spatial data and information.

- **Three-dimensional (3D) Geospatial Information** – 3D GIS provides enhanced depth into data collection and analysis by incorporating a z-value into mapping.

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[20] Id., http://www.fao.org/in-action/herramienta-administracion-tierras/glossary/p/en/.
[21] Johnson, Paul M., 2005. *Public Goods: A Glossary Of Political Economy Terms*. [online] Webhome.auburn.edu. Available at: http://webhome.auburn.edu/~johnspm/gloss/public_goods.phtml [Accessed 5 August 2020].
[22] Enemark, Stig & Rajabifard, Abbas. "Spatially Enabled society." Geoforum Perspektiv. 10, 2012.

This commonly appears as elevation data, but users have many options for adding other layers of information.

- **Title Deed** - The deed to a property comprises documents that prove ownership of land. As the parcel is transferred to other persons, the transfer document confers the title on the subsequent owner. In Latin America, deeds are usually assigned by the State for social purposes, through mass processes or on request to regularize land ownership, or through recognition of ancestral rights of indigenous communities.[23] In Puerto Rico, for registration purposes, the title will be understood as the content of the public document on which the right of the person in whose favor the registration will be made is based. The document will attest just by itself or with other complementary documents or by complying with the formalities required by law. 30 L.P.R.A. § 6011.

- **Users, External** – On-demand users, beneficiaries of land administration services, or specialist users who may perform actions in the cadaster or use geospatial data affiliated with the SDI. These may be notaries, financial consultants, surveyors, first responders, citizens, etc.[24]

- **Users, Internal** – Civil servants and technical staff in the same or different institutions involved in the provision of input or products in the various processes conducted by Land Administration Programs (**LAPs**).[25]

- **Zoning** - Zoning regulates the types of activities that can be accommodated on a given piece of land, as well as the amount of space devoted to those activities, and the ways that buildings may be situated and shaped.[26]

3 Program Introduction

The goal of the Puerto Rico Geospatial Framework (**GeoFrame**) Program is to increase access and transparency of land use and cadastral data in Puerto Rico. The Program aims to support the ability of citizens, non-governmental entities, and governmental agencies to understand the spatial component of land administration and the place-based nature of property and governance of land and water.

The GeoFrame Program will work closely with Program partners and stakeholders to aggregate existing information and data related to parcels, structures, use, occupancy, ownership, land rights and restrictions, registration, and development. It will consolidate

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[23] Fao.org. 2020. *G | Guide For Monitoring And Evaluating Land Administration Programs | Food And Agriculture Organization Of The United Nations*. [online] Available at: http://www.fao.org/in-action/herramienta-administracion-tierras/glossary/g/en/ [Accessed 5 August 2020].
[24] Id., http://www.fao.org/in-action/herramienta-administracion-tierras/glossary/e/en/.
[25] Id., http://www.fao.org/in-action/herramienta-administracion-tierras/glossary/i/en/.
[26] Barnet, J. (2004). *Codifying New Urbanism: How to Reform Municipal Land Development Regulations*, Chicago, IL.

this data into a centralized location. The Program will then produce additional data necessary to form a standardized, comprehensive database and mapping system, according to the needs of the Program partners and stakeholders. This mapping system and its supporting data will be made accessible to multiple user types including citizens, non-governmental entities, and governmental agencies. Different users will have different viewing and editing permissions, depending on the type of access required.

Processes, protocols, and other tools necessary to maintain the relevancy and accuracy of the data and mapping system will be defined and published. Permissions for this system will be standardized, allowing different users to access this centralized repository to resolve recurring issues or discover new solutions to land management. The following outcomes are expected:

Outcome A – Puerto Rico's Spatial Data Infrastructure Strategic Plan
Outcome B – GeoFrame Database 1.0 [INTERIM]
Outcome C – GeoFrame Database 2.0 [FINAL]
Outcome D – Web-based Geoportal
Outcome E – Geospatial Management Tools

4 Program Background

4.1 Event

In September 2017, Hurricanes Irma and María cut across Puerto Rico's three (3) inhabited islands, crippling the power grid and communication systems, flooding coastal and alluvial plains, and causing significant landslides and wind damage. All seventy-eight (78) municipalities were subsequently declared disaster impacted areas under Puerto Rico Hurricane Irma DR-4336 and Puerto Rico Hurricane María DR-4339.

The Emergency Operations Center (**COE,** by its Spanish acronym) was activated to coordinate disaster response activities. However, with communication systems crippled by the hurricanes, and no pre-existing centralized geospatial database, numerous response teams began operating independently, building redundant Geographic Information Systems (**GIS**), often printing maps to distribute to field personnel without internet access. A holistic, secure, interoperable, spatial data infrastructure, projecting accurate baseline information, through which emergency response teams could coordinate, did not exist.

4.2 Spatial Data Infrastructure

The environment at the COE illustrates how the production of new sets of data without data standards—independent of other systems—by a community of GIS users, can inhibit data exchange and impede the collective analysis of new data. It is a reminder that the Spatial Data Infrastructure (**SDI**) in Puerto Rico remains incomplete, which contributes to difficulties in disaster and emergency response, and translates to challenges with land

administration, permitting, planning, and property registration. These challenges, in turn, contribute to the increasing vulnerability of Puerto Rican residents to disruptive events such as earthquakes and hurricanes.

Spatial Data Infrastructure (**SDI**), a term coined in 1993 by the U.S. National Research Council, can be defined as the technology, policies, standards, human and administrative resources necessary to secure, discover, visualize, evaluate, access, and share geospatial data, and to adapt this public good to societal needs and Island interests. In Puerto Rico, GeoFrame will build this SDI to encompass databases that include parcels, structures, roads, topography, and others; public and private entities who collect and use geospatial data; the hardware and software necessary to store and use geospatial data; data collection and sharing agreements between entities and citizens; policies that protect people and their land; and quality standards for the data itself.

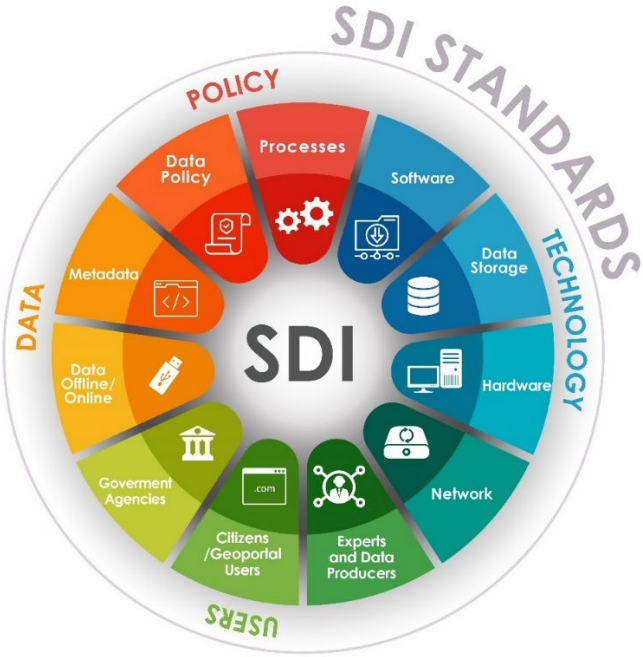

Figure 1

By investing in this SDI framework, a government ensures the existence of data standards for any future production, analysis, storage, exchange, and regeneration of information within a community of users. Such standards and coordinating methods inherently benefit and enable the larger administrative functions of land governance and society at large. This 'society' may include first responders, government agencies, non-governmental actors, civilian contributors and users such as architects and engineers, teachers, doctors, schoolchildren, homeowners, renters, and those of insecure housing

tenure. All people stand to benefit from the accurate, centralized spatial representation of land information.

4.3 Land Administration and Cadaster

A centralized SDI is constructive to users only when it coincides with an organized and efficient Land Administration System (**LAS**). The LAS serves as the mechanism, or framework, through which land policies are implemented.[27] This framework clarifies procedures for land transfer, the physical attributes of property, land uses, land valuation, and tax burdens.

In recent years, many countries and states have made their administration systems publicly accessible using centralized, digital cadasters.[28] A cadaster is a parcel-based, geo-referenced land information system that shows details of parcel boundaries, ownership, and value of real property, and is widely utilized for taxation and other land administration purposes. This land administration tool, at minimum, includes a geometric description of land units, incorporates records describing related rights, restrictions, and responsibilities, and often details building features and parcel improvements.[29]

Cadasters have recently taken the form of a web-based, mapping portal and illustrate multiple layers of geospatial information, including but not limited to real-time incorporation of property transfer, housing units within high-density parcels, topographic objects, administrative areas (e.g., zoning), and legal and political provisions. The use of this type of web-based mapping portal to access a centralized digital cadaster provides greater transparency to the Land Administration System and SDI.

Cadasters have historically been used in land administration systems for the purpose of reducing land disputes, protecting state lands, improving urban planning, and infrastructure development.[30] Therefore, these "bookkeeping" systems for land administration are central to land governance. The cadaster's prevalence and familiarity have made this tool the ideal foundational component to constructing larger SDIs.

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[27] Stig Enemark, Land Administration Systems – managing rights, restrictions and responsibilities in land (2009), Fig.net. 2009. [online] Available at: https://www.fig.net/organisation/council/council_2007-2010/council_members/enemark_papers/2009/hyderabad_enemark_paper_feb_2009.pdf [Accessed 5 August 2020].

[28] Puerto Rico does maintain a digital cadaster through the Municipal Revenue Collections Center (CRIM). This cadaster, however, is limited by insufficient geospatial data, stemming from a lack of integration with the Puerto Rico Department of Justice land registry and updated ownership and boundary information, among others.

[29] The International Federation of Surveyors, https://www.fig.net/resources/publications/figpub/pub11/figpub11.asp

[30] Fao.org. 2020. *The Concept Of Land Administration | Guide For Monitoring And Evaluating Land Administration Programs | Food And Agriculture Organization Of The United Nations*. [online] Available at: http://www.fao.org/in-action/herramienta-administracion-tierras/introduction/concept-land-administration/en/ [Accessed 5 August 2020].

4.4 Geospatial Information

Geospatial information, or data that references a location on Earth, contained within the cadaster, is also invaluable to emergency responders and government entities before, during, and after disasters, regardless of scale. It is this baseline information, including physical addresses that correspond to parcels and structures, and the location of roads that serves as a tool for change detection[31], and to guide decisions in response operations.

Constructing baseline geospatial data is imperative for ensuring the success of disaster recovery and hazard mitigation programs created to respond to disasters and cater to those within areas of exposed risk and high vulnerability. Without an easily accessible road, property, and structure information or data for land tenure, titles, physical addresses, and vulnerable people, these programs are unable to provide necessary, accurate support. Additionally, without users producing, exchanging, and collectively interpreting this baseline geospatial data, within an SDI framework, institutional and societal knowledge of human-to-land relationships inevitably become outdated.

4.5 Information Challenges in Puerto Rico

Puerto Rico does not maintain a comprehensive SDI, and its existing cadaster is limited by inaccurate and inaccessible information. This posed a challenge to disaster responders seeking to understand how Hurricanes Irma and María affected hazard-prone geographies and communities. Without it, disaster responders were navigating existing but unmapped roadways, finding residents isolated by landslides and flooded waterways, and locating residences without physical addresses, informally constructed, unregistered, and unknown outside the immediate community.

The inaccuracy or non-existence of location information in the post Hurricane Irma and María environment remains the result of the Island's land administration policies pre-dating modern land administration systems. According to Puerto Rico's Civil Code, a property owner is not required to have any formal title or deed to be considered the owner of that property.[32] As a general rule, Puerto Rico's Property Registry is only declarative in nature. Therefore, a property may change ownership without any change

[31] Change detection is a remote sensing process that measures how the attributes of an area have changed between two or more time periods. Support.esri.com. 2020. *Change Detection | Definition - Esri Support GIS Dictionary*. [online] Available at: https://support.esri.com/en/other-resources/gis-dictionary/term/55a5d9c1-1138-4da5-8152-5060b176b133 [Accessed 5 August 2020].

[32] Civil Code of Puerto Rico, Article 704,Law 55-2020.– Natural possession and civil possession defined. Natural possession is the holding of a thing or the enjoyment of a right by a person. Civil possession is the same holding or enjoyment joined to the intent of holding the thing as right as one's own.

to the cadaster.[33] This scenario perpetuates the incidences of informal tenure, a known precursor to informal construction.

An estimated fifty-five percent (55%) of housing in Puerto Rico is informally constructed and therefore unregistered in either the Island's existing digital cadaster,[34] which is operated by the Municipal Revenue Collections Center (**CRIM,** by its Spanish acronym), or the Puerto Rico Property Registry, operated by the Department of Justice. Title issues, the incidence of informal housing, and a lack of centralized recordkeeping and data storage impacts the ability of homeowners to access long-term recovery funds, loans, and meaningfully participate in post-disaster economic growth.[35] It also curtails Puerto Rico's ability to mitigate fraud, waste, abuse and mismanagement of CDBG-DR funds, and to regulate and enforce safe reconstruction and mitigation activities through any new land use policies, building codes, and construction permits.

What is at stake?

Surveying and Documenting Land Rights Post-María

Baseline geospatial information helps mitigate several disaster-related threats to individuals' land rights:

1. ***Displacement*** – risk of land theft, coercion to sell below market value, and issues reclaiming undocumented property rights.
2. ***Material threat*** – risk of property destruction, loss of official records, and damage to property boundary marks.
3. ***Administrative threat*** – risk of changes to land administration processes, planning rule changes and inadequate compensation for property.

The separation of cadaster from the property registry in Puerto Rico further illustrates a historically and legislatively fractured LAS. Numerous government and non-governmental agencies in Puerto Rico have developed isolated SDIs specific to individual organizational needs and budget allowances, but these exist without state-wide data production standards and protocols. This sustained information disparity in Puerto Rico is the result of a legacy of conflicting agency priorities, independent databases and workflows, and budgetary constraints. Such incompatibility between land administration agencies further illustrates a LAD that does not ensure the success of recovery activities following Hurricanes Irma and María.

4.6 Information Need in Puerto Rico

The need for information in Puerto Rico is defined by gaps in understanding the spatial or place-based context to inform decision-making and local policy. Not only is more high-

[33] Rivera v. Rivera *et al.*, 30 DPR 851 (1922).

[34] Nick Brown. 2018. *Special Report: In Puerto Rico, A Housing Crisis U.S. Storm Aid Won't Solve*. [online] Available at: https://www.reuters.com/article/us-usa-puertorico-housing-specialreport/special-report-in-puerto-rico-a-housing-crisis-u-s-storm-aid-wont-solve-idUSKBN1FQ211 [Accessed 5 August 2020].

[35] Panfil , Yuliya, and Chris Mellon. "Puerto Rico's Reconstruction Will Be Costly. Documenting Residents' Property Doesn't Have to Be." *Miami Herald*, Miami Herald, 25 Jan. 2019, www.miamiherald.com/opinion/op-ed/article225096310.html

quality geospatial data required, but a system must make this data centralized, compatible, understandable, and easily accessible to decision-makers at every scale, from citizen to government. Most importantly, these users must possess the tools and knowledge to use this high-functioning SDI to make well-informed decisions.

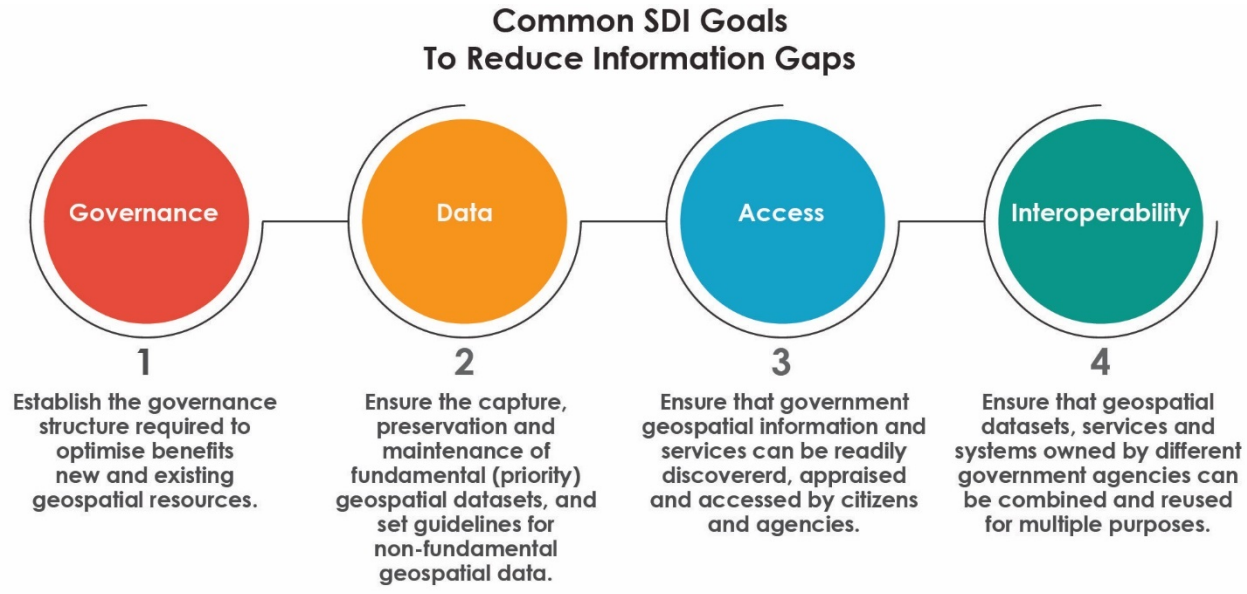

Figure 2

The GeoFrame Program aims to promote this concept, wherein Puerto Rico becomes a Spatially Enabled Society (**SES**), one whose citizens, governmental and non-governmental entities make decisions informed by geospatial data. These decisions may range from a family purchasing a house outside a known floodplain; an NGO identifying education development opportunities specific to economically underserved communities; a government agency prioritizing building inspection assistance where informal construction persists or a farmer choosing to cultivate specific land units based on geological or environmental information. A spatially enabled society is one that makes use of, and benefits from, the availability of spatial data, information, and services to organize their land and water-related activities[36].

Information on the rights, restrictions, and responsibilities assigned to land and water units is critical to enabling informed decision-making. Such data and information must be

[36] Williamson, Ian & Rajabifard, Abbas & Wallace, J. & Bennett, Rohan. (2011). Spatially enabled society. In: FIG working week 2011 : bridging the gap between cultures : technical programme and proceedings, Marrakech, Morocco, 18-22 May 2011. 11 p. https://www.fig.net/resources/proceedings/fig_proceedings/fig2011/papers/ts02b/ts02b_williamson_rajabifard_et_al_5385.pdf

available in a free, efficient, and comprehensive platform, and organized to encourage data integration, sharing, and further analysis. With tools to manage metadata, build a complete Island cadaster, and other foundational work, a spatially enabled Puerto Rico can emerge.[37]

5 GeoFrame Vision

5.1 Near-Term: Fit-For-Purpose LAS

In maneuvering recovery challenges, Puerto Rico must also prepare for future climate and human crises, predictable stressors to systems previously affected by outdated information in the wakes of Hurricanes Irma and María. Acknowledging this immeasurable risk requires a provisional, near-term, Fit-For-Purpose (**FFP**) solution. FFP is a LAS solution derived from prioritizing the needs of specific people, place, time, and budget to manage the most pressing land issues. This leaves the deployment of expensive technical solutions and high-accuracy surveys for a later developmental stage.

This FFP solution, identified by the International Federation of Surveyors (**FIG**, for its French acronym) and the World Bank in 2014, is molded to a country's unique set of land administration needs, with the goal of deploying a spatial, legal, and institutional framework to enable the rapid, interactive, adaptation of affordable and appropriate technologies and procedures to produce a "Minimal Viable Product" (**MVP**). This product, or interim solution, does not prioritize expensive surveying; instead, it relies heavily on participation, identifying tenure before boundaries. This approach lends itself to the expedient and flexible production of a system that can be deployed sooner and incrementally upgraded to meet long-term needs.

Developing this system includes the following key principles:[38]

- Use aerial imageries rather than field surveys;
- Aim for a level of accuracy appropriate for the context. For example, starting with general property boundaries to help demarcate or tag parcels with title issues rather than immediately engaging in expensive and time-consuming surveys of all properties; and
- Build-in opportunities for updating, upgrading, and improvement.

[37] Id..

[38] Gim-international.com. 2014. *Fit-For-Purpose Land Administration*. [online] Available at: https://www.gim-international.com/content/article/fit-for-purpose-land-administration-2 [Accessed 5 August 2020].

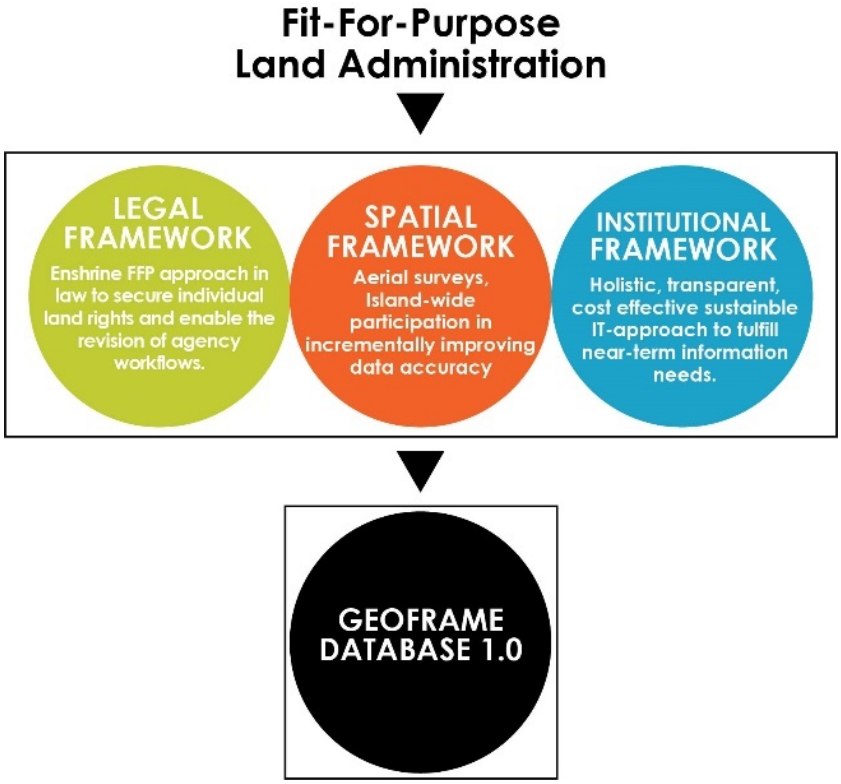

Figure 3

In Puerto Rico, the FFP approach will be used to provide a provisional solution to data concerns related to emergency response, disaster recovery, and prevention of fraud, waste, abuse, and mismanagement in federal programs. This fit-for-purpose, foundational solution—complemented by GeoFrame's Interim Database (GeoFrame 1.0)—can then be scaled-up over time to provide higher-density data necessary for more sophisticated analysis and to sustain recovery and land administration needs over the long term.

5.2 Long-Term: Spatially Enabling Puerto Rico

The FFP land administration system serves preliminary, post-disaster needs and will initiate reforms to land administrative workflows, establish data standards, and assemble components of a future Spatial Data Infrastructure. This SDI will improve the exchange of land information between local, state, and international organizations.

As the program progresses, the Interim FFP Database will be molded into a comprehensive GIS Database and Cadaster, and entities involved in the Puerto Rico LAS will be engaged to contribute to this long-term SDI goal. This Final GIS Database and Cadaster will store information such as, but not limited to, title, owner, occupancy, use and registry of parcels and structures, roads, hazards, geophysical risk, and critical structures. It will also necessitate the production of high-quality surveys that can be used

in the confirmation of legal status, ownership, and physical address, as well as assist the property formalization process. Constructing one holistic data infrastructure will in turn engender an SES. [39]

Spatial enablement, or the ability to add a location to all existing data, will reveal the human-to-land relationships that have persisted in Puerto Rico for decades, formally and informally. Identifying these human-to-land relationships and adding a location to new and existing data will begin to unlock a wealth of knowledge about the Island's land and water. With such knowledge, Puerto Rico can adapt to enduring complexities of tenure, monitor, plan and manage resources, and identify present and future hazards to its communities. This state of geospatially informed decision-making is foundational to sustainable development and the underlying principle of "spatial enablement."

Figure 4, below, illustrates the integrated components of an SES. A foundational cadaster is built upon with additional spatial data, such as location of roads, utilities, schools, hospitals, emergency management facilities, environmental features, hazards, and demographic information. In turn, the addition of technology, policies, and standards, human and administrative resources will complete the SDI. Integrating SDI components provides an accessible and understandable system to encourage and facilitate data-driven, decision making at every scale, from citizen to government. An SES can support sustainable development through focused environmental programs, informed social initiatives, and targeted economic strategies.

Fostering an SES is a long-term effort that will require extensive coordination between local agencies, central government, and municipalities to build an FFP system into a robust SDI. These users will be responsible for merging and producing necessary geospatial data, standards, and protocols that will help the Island target long-term recovery needs. Program efforts will guide policies addressing the incidence of informal, unregistered housing while enhancing the safety of the Islands' residents. The GeoFrame Program will reference international land administration, management, and governance

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[39] A society can only make informed land and water governance decisions by fulfilling six (6) fundamental requirements:

1. A **legal framework** to provide the institutional structure for data sharing, discovery, and access;
2. A sound **data integration concept** to ensure multi-sourced data integration and interoperability;
3. A **positioning infrastructure**(e.g. geodetic network)to enable and benefit from precise positioning possibilities;
4. A **spatial data infrastructure** to facilitate data sharing, to reduce duplication and to link data producers, providers and value adders to data users based on a common goal of data sharing;
5. **Land ownership information**, as the dominant issue in the interactions between government, businesses and citizens relating to land and water resources; and
6. Data and information to respect certain basic principles and to increase the **availability and interoperability of free to re-use spatial data** from different actors and sectors.

Williamson, Ian & Rajabifard, Abbas & Wallace, J. & Bennett, Rohan. (2011). Spatially enabled society. In: FIG working week 2011: bridging the gap between cultures: technical programme and proceedings, Marrakech, Morocco, 18-22 May 2011. 11 p.

case studies, National Spatial Data Infrastructure (**NSDI**) strategic plans, with the goal of propelling Puerto Rico's SDI into a projected, sustainable future.

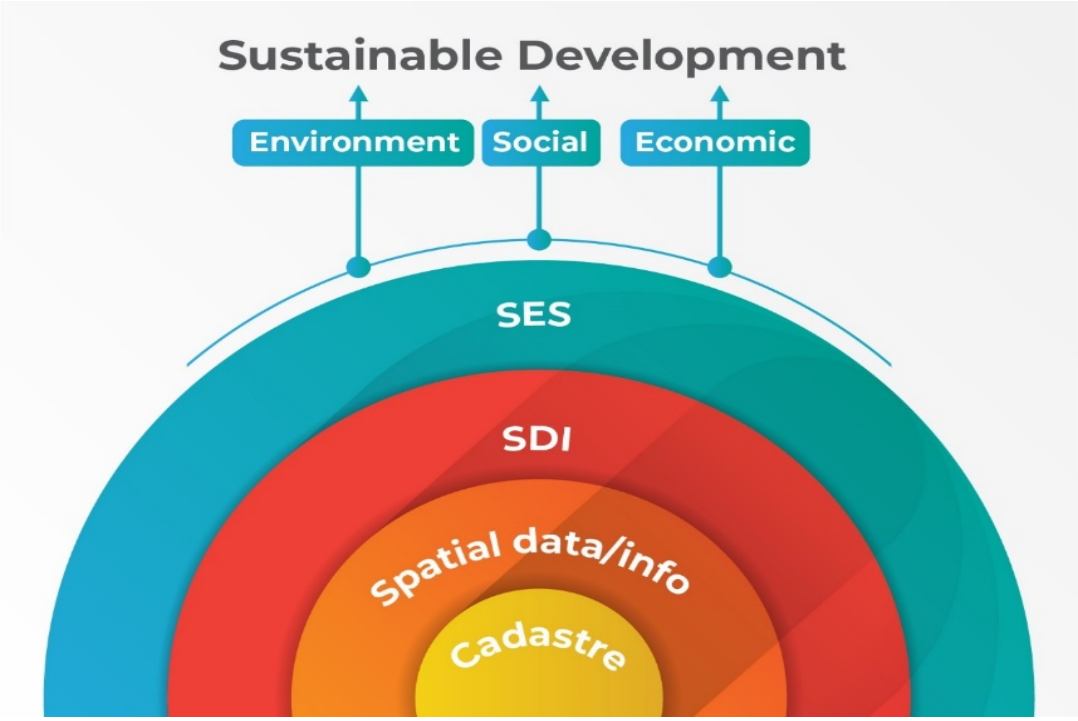


Figure 4

6 National Objective

Funds being used for planning activities related to the development of geospatial infrastructure are part of the twenty percent (20%) planning and administrative cap of CDBG-DR funds. Funds expended for planning are considered to address national objectives requirements. Federal Register Vol. 83, No. 28 (February 9, 2018), 83 FR 5844 and 24 C.F.R. § 570.208(d)(4).

7 Program Description

The GeoFrame Program, funded by the CDBG–DR Program and administered by PRDOH, responds to data and hazard mitigation needs of Puerto Rico's citizens, government, non-government organizations, and businesses in the Disaster Impacted Areas (DIA) of Hurricanes Irma and María. The goal of the GeoFrame Program is to consolidate all existing Island geospatial data, user and producer needs into a single, standardized system—involving a centralized and open GIS database—resilient to crisis scenarios or fiscal hardship, and permitting efficient, unhindered collaboration and data access to municipalities, state agencies, and public entities during and after local and whole-island emergencies.

Centralizing datasets like parcel registry, occupancy, geophysical risk, physical addresses, land use, critical structures (hospitals, schools, emergency shelters) within a singular and uniform system, compliant with data management best practices (e.g. Open Data Charter[40]; ISO 27701[41]), ensures the capacity to recognize a spectrum of land tenure (undocumented ownership), and improve municipal and state knowledge of communities, their relationship to the land, and accurately indicate private and public stakeholders in future policy decisions.

The GeoFrame Program will use the "building blocks" of existing State laws, programs, and datasets, and recommend FFP solutions that will support and maintain the GeoFrame Program into the future. This program will produce five (5) strategic, societally beneficial outcomes in DIAs of federally declared disasters FEMA-4336-DR and FEMA-4339-DR:

- Outcome A – Puerto Rico's Spatial Data Infrastructure Strategic Plan
- Outcome B – GeoFrame Database 1.0 [INTERIM]
- Outcome C – GeoFrame Database 2.0 [FINAL]
- Outcome D – Web-based Geoportal
- Outcome E – Spatial Data Infrastructure Management Tools

7.1 Program Method

The GeoFrame Program will develop iteratively, in three (3) phases, increasing the scale of operations and outputs as information is gathered and analyzed. This increases the opportunity for stakeholder collaboration, builds administrative capacity, and benefits the final scope of a spatial data infrastructure and thoughtful GIS product.

The Program Timeline indicates activities necessary to achieve program outcomes. GeoFrame Activities are designed method components that will occur repeatedly over the Program's timeline (Section 6.2 Program Timeline) to produce required sequential, outcomes (Section 6.3 Program Outcomes).

Activities will be implemented using subrecipient partnerships, data sharing agreements, and vendors. Working relationships with PRDOH will permit the compensation for program-allocated staff time and equipment, contributed by affiliate agencies (Section 6.5 GeoFrame Partners) in the conceptual development of future GeoFrame outcomes. While Activities are required, PRDOH recognizes that the GeoFrame Program is large and complex and requires additional activities—advised by a procured vendor (Section 6.6

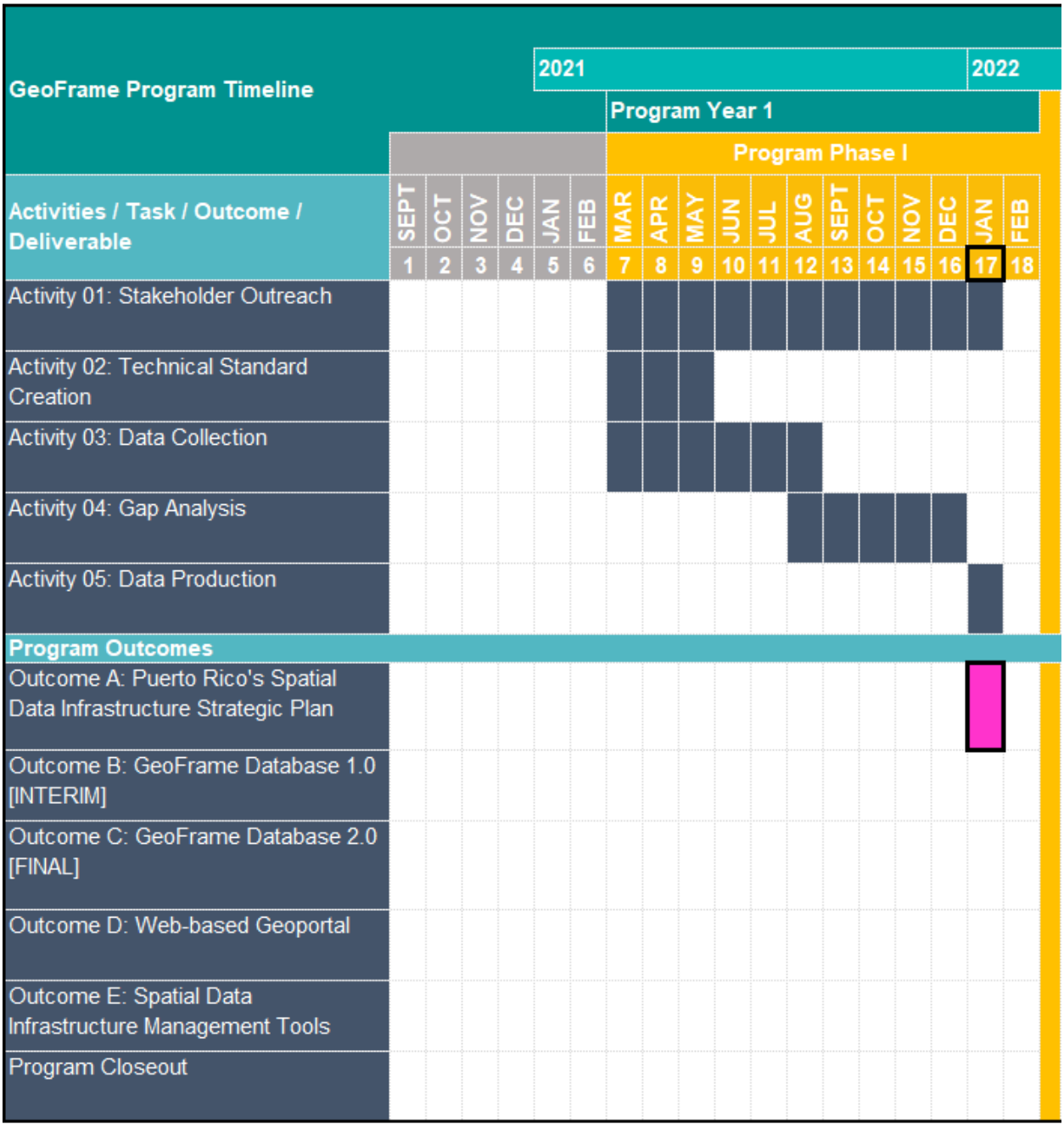
[40] Open data is digital data that is made available with the technical and legal characteristics necessary for it to be freely used, reused, and redistributed by anyone, anytime, anywhere. International Open Data Charter. 2015. *Principles - International Open Data Charter*. [online] Available at: https://opendatacharter.net/principles/ [Accessed August 5, 2020].

[41] ISO. 2019. *ISO/IEC 27701:2019*. [online] Available at: https://www.iso.org/standard/71670.html [Accessed August 5, 2020].

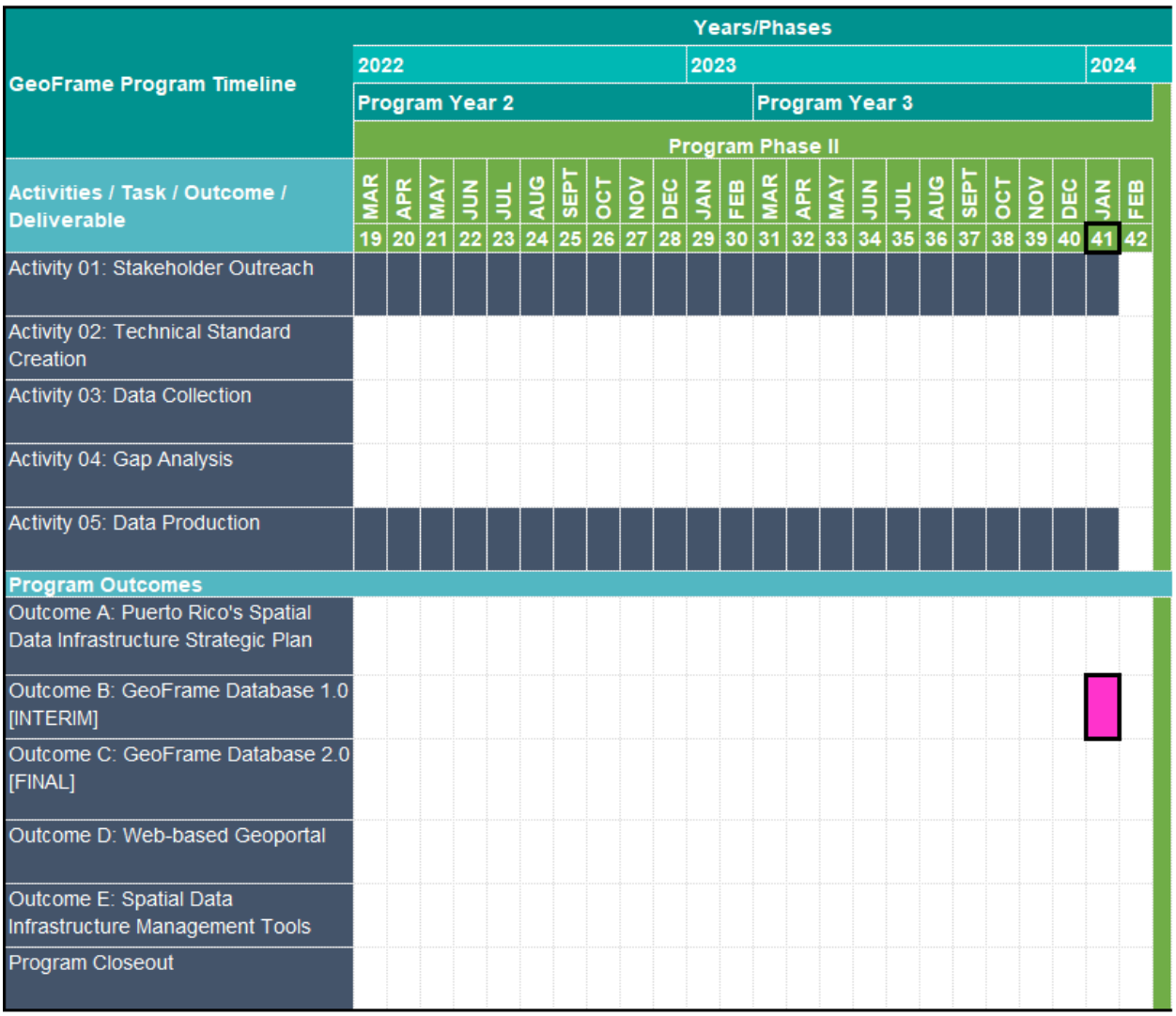
Program Vendor) specializing in geospatial infrastructure construction—not individually defined in these Program Guidelines to achieve the program's vision.

7.2 Program Timeline

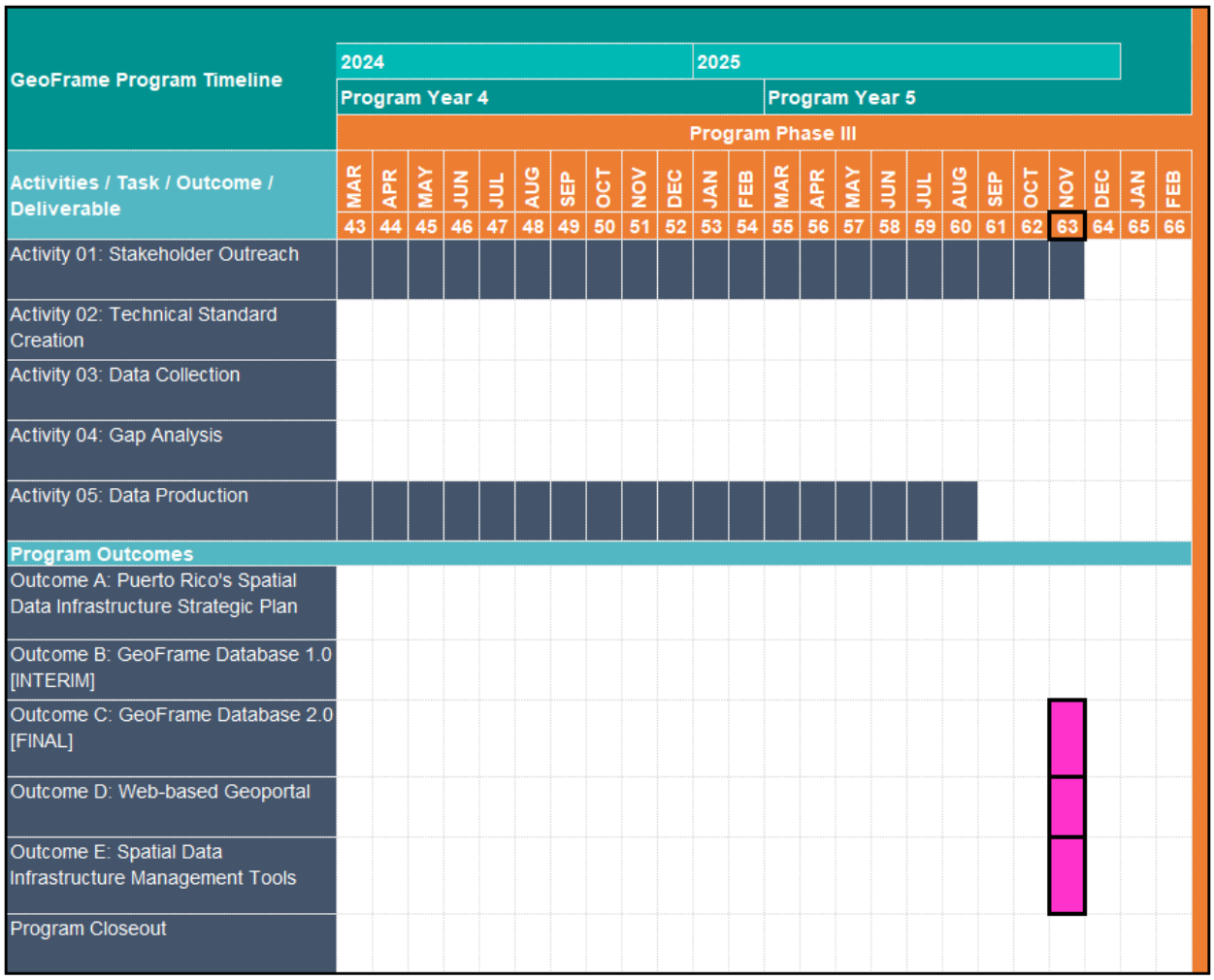
7.2.1 PHASE 1 - 0 -18 months



7.2.2 PHASE 2 - 19 - 42 months



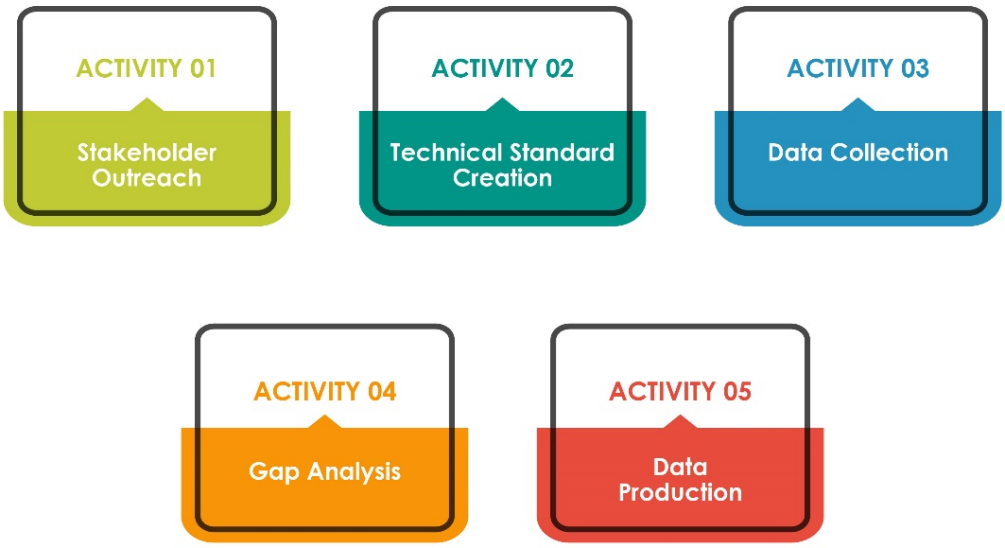
7.2.3 PHASE 3 - 43 -66 months



As the GeoFrame Program increases capacity and implements the Puerto Rico SDI Strategic Plan (Outcome A), program outcomes will begin to be produced. Outcomes will advance through the execution of activities, overlapping in duration and sequencing. These Activities will serve short-to-medium and long-term Island needs and address public geospatial knowledge disparities, data production standards, public policy adjustments, spatial systems engineering, workflow efficiencies, and data security. A final, web-based geoportal (map) will incrementally develop over the GeoFrame Program performance period, as higher-quality information becomes available, through each development phase.

7.3 Program Activities

The GeoFrame Program will be implemented using the following **five (5)** activities:



7.3.1 Activity 01 – Stakeholder Outreach

Stakeholder and citizen engagement are a critical component to the successful execution of the GeoFrame Program. Multiple governmental and non-governmental entities, as well as citizens will be impacted and asked to contribute to the development and execution of all defined outcomes. Contributions will be solicited in the form of end-user needs and requirements, including but not limited to: data needs, visualization needs, technology gaps, and equipment to access the envisioned geospatial infrastructure.

7.3.2 Activity 02 – Technical Standard Creation

This component will result in data and attributes necessary for a comprehensive GIS database, and the quality targets for data production. These standards depend on extensive stakeholder engagement through agency outreach, to ensure that the requirements and needs of all end-users are taken into consideration in the design of the Database and accompanying tools and systems. Many or all components of this task will require the GeoFrame Program to collaborate closely with Program Partners, multiple State Agencies, Municipalities, and other public entities to ensure that the data and database will meet their needs and the needs of the GeoFrame Program.

7.3.3 Activity 03 – Data Collection

The Data Collection Activity will result in a comprehensive aggregation of relevant, existing geospatial data for Puerto Rico, including but not limited to parcel, structure, address, use, occupancy, roads, ownership, and others. This will create visibility on which land information is available or nonexistent. Many or all components of this task will require close collaboration between Program Administering Entities, State Agencies, Municipalities, and other public entities to collect and consolidate existing data into a single location for analysis.

7.3.4 Activity 04 – Gap Analysis

The Gap Analysis Activity of the GeoFrame Program seeks to identify and understand the aggregated, existing need for cadastral and spatial data, and to single out those attributes or datasets that are missing or unusable due to age, quality, accuracy, or other concerns. Additionally, it will identify which technologies must be incorporated/updated to maintain a modern geospatial data infrastructure.

7.3.5 Activity 05 – Data Production

During the Data Production Activity, the GeoFrame Program will collaborate with existing and pending data production efforts to "fill the gaps" identified in the gap analysis. This will include the production of data, including but not limited to detailed property analysis of title, owner, registry, structure, occupancy, use and boundaries, road extent interconnection and attributes, hazards, geophysical risk, physical addresses, land use, critical structures (hospitals, schools, emergency shelters) and others as identified. This component will also necessitate detailed property surveys for those properties that are lacking, as well as specific attributes related to the physical structures on the properties. This activity will also require merging and creating new datasets to meet the database and data quality standards described in Activities one (1) and two (2) and creating spatial files for all data. This may involve converting existing datasets or spreadsheets into spatial layers, editing existing spatial datasets, or creating new or denser spatial layers based on new data collected or produced.

All these activities require collaboration with other governmental entities, including Municipalities and Agencies, as well as property owners, universities, and/or other stakeholders. All data, information, and tools will be the property of PRDOH and at PRDOH's discretion, it may be shared with other relevant entities and/or agencies via the PRDOH Geoportal or another platform. The GeoFrame Program intends to develop a shared system of data use and governance that is inclusive of best practices within an existing or proposed legal framework. Through the Program, PRDOH will work with stakeholders to identify an entity to perform long term operations and maintenance of the SDI.

7.4 Program Outcomes

The GeoFrame Program will result in **five (5) outcomes**:

Outcome A. Puerto Rico's Spatial Data Infrastructure Strategic Plan	
Spatial Data Infrastructure SDI	Outcome B. GeoFrame Database 1.0 [INTERIM]
	Outcome C. GeoFrame Database 2.0 [FINAL]
	Outcome D. Web-based Geoportal
	Outcome E. Spatial Data Infrastructure Management Tools

7.4.1 Outcome A: Puerto Rico's Spatial Data Infrastructure Strategic Plan

A near-term planning effort will result in Puerto Rico's Spatial Data Infrastructure Strategic Plan. The Plan will help define the technology, policies, standards, human and administrative resources necessary to secure, discover, visualize, evaluate, and access geospatial data, and adapt this Framework to societal needs and Island interests. The SDI Strategic Plan will describe an approach to near-to-long term initiatives, programs, and products, and will guide the sustainable and iterative development of Puerto Rico's SDI, forecasting societal and governance needs through 2040. This comprehensive strategic plan will be designed to manage and monitor SDI architecture and construction, in tandem with policy reform, within and beyond the scope of the GeoFrame Program. An SDI Strategic Plan will include a change in management and cost recovery plan to ensure fiscal sustainability, protocols, and standards to update spatial data and incorporate emerging tenure information, and a Business Continuity Plan (BCP) to ensure data security in crisis scenarios. It will also determine the entity to manage the SDI.

Programs like GeoFrame have been known to take more than **three (3) years** to develop and implement (e.g., Vermont's Statewide Property Parcel Mapping Project, Massachusetts' NextGen 911 program, and Motor City Mapping in Michigan). Therefore, the critical goal of a comprehensive GIS database and cadaster will be achieved in **two (2) outcomes**: GeoFrame Database 1.0 [Interim] (Outcome B) and GeoFrame Database 2.0 [Final] (Outcome C).

An interim GeoFrame Database 1.0 will quickly assemble critical data and information, necessary for effective emergency response into an accessible location. The

composition of the interim database will include, at a minimum, data related to physical addresses, parcels, and tenure status, as well as additional data that may be produced in a timely and economical manner. Given that the goal of the Interim Database is to enhance emergency response operations, this database must be deployed immediately. The system architecture of the Interim GIS Databases will be structured to interface with an FFP LAS and enable further iterative scaling and development. These future iterations will culminate as a final GeoFrame Database 2.0, containing Puerto Rico's cadaster.

7.4.2 **Outcome B: GeoFrame Database 1.0 [INTERIM]**

Minimum Viable Product (MVP) available for use by emergency response personnel within twelve to eighteen (12-18) months of GeoFrame Program Launch. It will serve Puerto Rico in the near to immediate term and may include existing datasets related to physical addresses, provisional identification of tenure, and informal boundaries, and tagging properties for legal resolution.

7.4.3 **Outcome C: GeoFrame Database 2.0 [FINAL]**

A Comprehensive solution to encompass, at a minimum, all structures, parcels, parcel registration status, property boundaries, certified parcel surveys, roads, physical addresses, land use, special populations, title issues, and hazard risks in Puerto Rico. Best practices and standards may be viewed in the National, and International Resources section of these guidelines.

7.4.4 **Outcome D: Web-based Geoportal**

The GeoFrame Program will develop a dynamic geoportal powered by the Comprehensive GIS Database and Cadaster. This mapping portal will make land use and cadastral data viewable and accessible to state agencies, emergency responders, municipalities, and the public, as appropriate to protect the privacy and ensure security. Two (2) strong product examples are the Digital Map of Mexico (http://gaia.inegi.org.mx/), produced by the National Institute of Statistics and Geography (**INEGI**) and the City of New Orleans Property Viewer (property.nola.gov). As in these examples, Puerto Rico's geoportal will illustrate multiple layers of geospatial information, including but not limited to, property ownership rights, parcel dimensions and boundaries, built objects, topographic objects, land values, administrative areas (e.g., zoning), and legal and political provisions.

A component of this geoportal will involve map analysis of layers to enable data-driven decision-making related to specific recovery concerns such as title issues and hazard areas, among others. Importantly, the geoportal and maps will also support CDBG-DR implementation and improve emergency response during and after a disaster by

providing location and address information for formally and informally constructed homes.

7.4.5 Outcome E: Spatial Data Infrastructure Management Tools

Puerto Rico's SDI will be maintained by a portfolio of technology, policies, procedures, and standards. SDI Management Tools must institutionalize agile development to incorporate new and emerging technologies, user needs, policy adjustments, and data standards necessary to secure, discover, visualize, evaluate, and access geospatial data concurrent with societal needs and Island interests in 2040.

Upon adoption, these tools will reinforce the system's efficiency, interoperability, implementation, and refinement. A portfolio of tools will specify best practices to assist system maintenance, input, use, security, and future data regeneration. An educational curriculum will interpret and teach technologies, policies, and best practices to sustain system comprehension and usefulness within a spatially enabled community. Management tools are inter-dependent to embed accountability and quality assurance within a system that educates and enables users as stewards of their geospatial data.

Management Tool 01 — Consolidated Standards for Geospatial Data and Database

The Standards for Geospatial Data and Database developed in Activity Two (2) will be formalized and expanded to include maintenance and update methodologies. These standards will guide the iterative scaling of the database as it moves from Interim to Comprehensive, the frequency with which data is updated, minimum quality standards, and all metadata requirements.

Management Tool 02 — Regulatory Analysis and Legal Framework for SDI

The GeoFrame Program will use the building blocks of existing State laws, programs, and datasets to understand potential legal, regulatory, or policy-based solutions that will support and maintain the GeoFrame Program into the future. Analysis will include a detailed description of roles, responsibilities and authority of relevant existing governmental and nongovernmental entities, analysis of existing laws, regulations and policies that impact the outcomes or goals of this Program, and a map of existing workflows and processes related to existing geospatial or cadastral datasets. The Program will also provide a recommended legal and regulatory framework for the SDI, taking into account PRDOH and stakeholder needs over the short, medium, and long term.

Management Tool 03 — Data Management Protocols

Data Management Protocols include the policies and procedures for data and metadata production and management. In particular, GeoFrame will work with

Municipalities and State Government Agencies to recommend and establish, at a minimum, agreed-upon systems and protocols necessary to maintain and update the interactive mapping portal, designate physical address, input new or updated datasets and attributes into the cadaster, incorporate combined or subdivided parcel data, and update risk-hazard and vulnerabilities as new information becomes available.

Management Tool 04 — System (SDI) Management Protocols

System Management Protocols include the policies and procedures for SDI governance and workflows. Policies and procedures for the SDI will include the aggregation, compilation and organization of all systems, standards, policies, processes, and protocols related to geospatial and cadastral data or technologies in Puerto Rico. It will be structured to enable ease of adoption by governmental and/or non-governmental entities, streamline planning and permitting processes, update land use and land use designations, and will include methods for the SDI to adapt to changing societal needs and technologies.

Management Tool 05 — Portfolio of Technologies

The GeoFrame Program will produce a suite of technologies designed to encourage data integration, facilitate analysis, expedite modeling and enrich visualizations. This portfolio will power an innovative solution to inherited issues pertaining, but not limited to, land and title recordation, physical address, permit auditing, property insurance, data capture, and undocumented tenure.

Management Tool 06 — Portfolio of Outreach, Training and Education

A portfolio of outreach, training and education will include all material used to engage with citizens and stakeholders during the Program. It will also include additional materials developed to provide ongoing or long-term support or education related to creation and use of geospatial data in Puerto Rico.

7.5 Program Partners

The program management structure for GeoFrame Program is defined by its program partner team, composed of governmental and non-governmental entities. Program partners will represent the functional areas of planning, technology, permitting, natural resources management property registration, utilities, physical addresses, Municipalities, transportation, taxation, demography, economic development, and mapping.

Dependent upon each Agency's scope of work, a Subrecipient or Interagency Agreement may be used to elaborate on working relationships with PRDOH, enabling the compensation for program-allocated staff time and equipment. Additional types of legal instruments may be used to address other program-related needs, for example, Data Sharing Agreements. PRDOH will ultimately identify an appropriate entity to inherit the

responsibility of maintaining the standards and integrity of the proposed spatial data infrastructure and all routine upgrades (See GeoFrame Coordinating Agency Section).

Entity/Program Partner	Legal Relationship to GeoFrame Program	Role in Program
PRDOH	Grantee	Program Administrators
Governmental and Non-Governmental entities, including but not limited to Puerto Rico Planning Board (PRPB)	Subrecipient or Interagency Agreements	Support PRDOH and Vendor Team in executing outcomes. Support PRDOH in QA/QC of deliverable.
Governmental and Non-Governmental entities	Data Sharing Agreements	Provide information regarding data needs. Provide data to GeoFrame Program.

7.6 Program Vendor

A Request for Proposals (**RFP**) will be issued by PRDOH to procure a GIS vendor to act as program manager. This GIS vendor will be responsible for providing additional geospatial infrastructure design expertise and guiding any future program approach, data collection and production standards, including the consolidation of data, building databases, and analyzing results. The vendor will also perform all necessary data collection and production activities as well as shape file geodatabase creation.

7.7 GeoFrame Coordinating Agency

Outcomes produced by the GeoFrame Program, partners and vendor will collectively formulate an SDI. The maintenance and management of the SDI's components, beyond the scope and schedule of the GeoFrame Program, will require a dedicated coordinating agency. This agency will only be identified, either by selection or legal creation, following an extensive stakeholder engagement process, and will be responsible for:

- Managing the implementation, monitoring, and updating of Puerto Rico's Spatial Data Infrastructure Strategic Plan;
- Operating and maintaining the cadastral database and Land Administration System;
- Coordinating with CRIM, PRPB, and Municipalities to continually implement any revised protocols ensuring the provisioning of updated parcel boundaries into GeoFrame2.0 as lots are combined and divided;

- Coordinating with PRPB, Department of Justice of Puerto Rico (**DOJ**) and Municipalities to implement revised protocols providing updated land use information into the database as users apply for and receive zoning waivers and occupancy information,
- Coordinating with OGPe, PRPB, and Municipalities to implement revised protocols providing updated structure and permit information into a database as users apply for and receive building permits;
- Coordinating with LUMA and PRASA to implement protocols that regularly provide information related to new, active, and inactive utility connections;
- Coordinating with United States Postal Service and other stakeholders impacted by physical address determinations and assignations;
- Regular reconciliation of the 911 address database with a comprehensive database;
- Regular coordination with users and agencies to maintain functional, time-efficient workflows and enforce quality standards defined in Activity 2;
- Regularly provide QA/QC of data and information and new data inputs within the final database;
- Regularly schedule collection of base map layers through aerial LiDAR collection
- Maintenance of geospatial layers of information, and regular testing and adjusting of Geoportal;
- Implementing any Cost Recovery Plan, rendering GeoFrame 2.0 financially sustainable;
- Implementing any Change Management Plan;
- Implementing any Business Continuity Plan; and
- Implementing future training and capacity building activities as defined in CDBG-MIT.

Information further establishing this agency, its selection or creation, and its responsibilities will be released at a later date, as determined by program partners and program manager.

7.8 National and International Resources

Other US States and international governments have pushed to upgrade outdated land governance and administration systems, some with laudable success, if not innovation, others with difficulty and even failure.

Over the past twenty (20) years, cadastral and spatial database integration initiatives have unfolded throughout the GIS world community, in efforts not dissimilar to the proposed GeoFrame Program. These activities have been guided by FIG Cadaster 2014, United Nations Habitat's Continuum of Land Rights, and the International Organization for Standardization's ISO 19152. The Land Administration Domain Model (**LADM**) published

as ISO 19152 in 2012, guides governments and communities as they organize rights, responsibilities, and restrictions affecting people, land, and water.

The Social Tenure Domain Model (**STDM**) compliments the ISO 19152 by capturing information on the human-to-land relationship in communities falling outside formal tenure cadastral systems, applicable to the massive scale of unregistered land-owner rights in Puerto Rico. Such standards are notable for their adaptability to national and local contexts, driving adoption across all stages of national development and modes of human settlement.

Much can be gathered from previous and ongoing attempts to develop centralized spatial data infrastructures, databases, mapping products, and other land administration systems. Case studies illustrating field advancements, the implementation of emerging technology, and international agreements on sustainable development and land tenure, will be highly scrutinized and adapted to fit the GeoFrame Program and Puerto Rico during the Program performance period. Resources that have defined these GeoFrame Program Guidelines, and will continue to define GeoFrame products hereafter, are listed below.

GeoFrame Resources	Description
The International Federation of Surveyors' (FIG) Cadaster 2014[42]	Landmark vision for the 'future' of land administration, defining cadasters as a complete documentation of public and private rights and restrictions for landowners and land users, embedded in a broader Land Information System, fully coordinated and automated, without separation of land registration and cadastral mapping.
UN-Habitat's Global Land Tool Network: Continuum of Land Rights Approach	The Global Land Tool Network (GLTN) main objective is to contribute to poverty alleviation and the Millennium Development Goals through land reform, improved land management and security of tenure.
The International Organization for Standardization's ISO 19152	Land Administration Domain Model (LADM) published as ISO 19152 in 2012, guides governments and communities as they organize rights, responsibilities, and restrictions affecting people, land and water.

[42] Kaufmann and Steudler, FIG Cadaster 2014 – A Vision for a Future Cadastral System (2014), https://www.fig.net/resources/publications/figpub/cadastre2014/translation/c2014-english.pdf

GeoFrame Resources	Description
The Social Tenure Domain Model (STDM)	Compliments the ISO 19152 by capturing information on the human-to-land relationship in communities falling outside formal tenure cadastral systems, applicable to the massive scale of unregistered land-owner rights in Puerto Rico. Such standards are notable for their adaptability to national and local contexts, driving adoption across all stages of national development and modes of human settlement.
The Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security	Supporting efforts towards the eradication of hunger and poverty, the Guidelines also contribute to achieving sustainable livelihoods, social stability, housing security, rural development, environmental protection, and sustainable social and economic development.
United Nations Human Settlements Program - Fit-For-Purpose Land Administration: Guiding Principles for Country Implementation	Fit-For-Purpose describes the idea that land administration should be designed to meet the needs of people and the environment. It also identifies the way land is occupied and used within a relatively short time and at relatively low costs.
National Spatial Data Infrastructure	The National Spatial Data Infrastructure (NSID), described by Executive Order 12906 (Coordinating Geographic Data Acquisition and Access) was designed to facilitate seamless data development, information sharing, and collaborative decision making across multiple sectors of the US economy.
Spatial Data Infrastructure (SDI) Manual for the Americas	Prepared for the Permanent Committee on Geospatial Data Infrastructure for the Americas (PC-IDEA), the manual establishes best practices for establishing SDIs, to maximize the economic, social and environmental benefits of using spatial information, by exchanging knowledge, experiences and technologies of different countries, based on a common development model.

8 Eligible Use of Funds

The Program will engage in legal agreements with procured vendors and subrecipients to implement program eligible activities as defined by 24 C.F.R. § 570.205.

8.1 Eligible Activities

Certain activities are considered eligible in accordance with CDBG-DR guidelines:

1. Activities necessary to develop a functional plan. These activities could include:
   - Data gathering, studies, analysis, and preparation of plans and the identification of actions that will implement such plans.

2. Activities necessary for the monitoring, evaluation, and oversight of vendor activities and deliverables. These activities could include:
   - Monitoring reports and evaluations;
   - Invoicing and documentation;
   - Coordination, oversight, and management of planning vendors, and
   - QA/QC and review of deliverables
3. Vendor and subrecipient activities necessary to develop an Integrated GIS database.
4. Policy, planning, management, and capacity building activities which will enable the recipient to:
   - Determine their needs;
   - Set long-term goals and short-term objectives;
   - Devise programs and activities to meet these goals;
   - Evaluate the progress of such programs in accomplishing these goals and objectives; and
   - Carry out management, coordination, and monitoring of activities necessary for effective planning implementation.

8.2 Ineligible Activities

Certain activities are considered Not eligible for funding or reimbursement:

- Engineering, architectural, and design costs related to a specific project such as detailed engineering specifications and working drawings;
- Construction or any costs of implementation of projects or plans; and
- Costs not associated with the development of plans or other planning activities, as described in 24 C.F.R. § 570.205.

9 Environmental Review

Every project undertaken with Federal funds, and all activities associated with such project, are subject to the provisions of the National Environmental Policy Act of 1969 (**NEPA**), as amended, 42 U.S.C. § 4321 *et seq.*, as well as to HUD's environmental review regulations at 24 C.F.R. Part 58 on Environmental Review Procedures for Entities Assuming HUD Environmental Responsibilities. However, planning activities qualify as an exempt activity because, by their nature, they are highly unlikely to have any direct impact on the environment.

The GeoFrame Program will gather and create land use data, which are exempt activities under 24 C.F.R. § 58.34 (a)(1), (3) and (9), therefore, with the applicable requirements of 24 C.F.R. § 58.6.

10 Duplication of Benefits (DOB)

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended, 42 U.S.C. § 5121 *et seq.*, prohibits any person, business concern, or other entity from receiving Federal funds for any part of such loss as to which it has received financial assistance under any other program, from private insurance, charitable assistance, or any other source. As such, PRDOH must consider disaster recovery aid received by Program Applicants from any other federal, state, local, or other source and determine if any assistance is duplicative. Any assistance determined to be duplicative must be deducted from the Program's calculation of the Applicant's total need prior to awarding assistance.

When possible, PRDOH will electronically verify disaster recovery assistance received through federally and locally maintained datasets, such as Federal Emergency Management Agency (**FEMA**) Individual Assistance (**IA**) and Small Business Administration (**SBA**) disaster home loan datasets.

The duplication of benefits guidance included in Federal Register Vol. 84, No. 119 (June 20, 2019), 84 FR 28836, supersedes the duplication of benefits guidance issued in Federal Register Vol. 76, No. 221 (November16, 2011), 76 FR 71060 for CDBG-DR grants received in response to disasters declared between January 1, 2015 and December 31, 2021. As such, the duplication of benefits policy outlined in these guidelines follows the guidance issued in 84 FR 28836.

11 Procurement

The GeoFrame Program intends to release one RFP for the procurement of a GIS Data Vendor to support the development of GeoFrame Program Components and Outcomes. Other procurements are not disallowed. PRDOH recognizes that procurement processes for the utilization of CDBG-DR funds must be managed in strict accordance with federal guidelines. PRDOH's procurement processes are in full compliance with federal laws, rules, and regulations, including but not limited to, 2 C.F.R. part 200, in particular, 2 C.F.R. § 200.317, the Appropriations Act, the Federal Register Notices, and applicable Federal, State and local laws, rules and regulations.

PRDOH, as grantee of the CDBG-DR funds, has determined that procurement processes and policies of the CDBG-DR programs will be governed by the provisions of federal statute 2 C.F.R. § 200.317. It allows PRDOH to follow its procurement policies and procedures as established in 2 C.F.R. § 200.317 and, in turn, allows subrecipients to be subject to the provisions of 2 C.F.R. § 200.318 to 2 C.F.R. § 200.327.[43]

[43] OA 21-27 - To enable all subrecipient entities of CDBG-DR funds to use the provisions of 2 C.F.R. 200.318 through 2 C.F.R. 200.327 in their procurement processes in relation to CDBG-DR Programs.

Accordingly, PRDOH requires that the subrecipients complies with policies and procedures as required for the responsible expenditure of CDBG-DR funds. Specifically, the subrecipients must maintain records of its acquisition processes that allows PRDOH to effectively carry out monitoring processes when required.

PRDOH and all subrecipients must follow these standards to ensure goods and services are procured efficiently, at a fair price, and in compliance with all applicable Federal and Commonwealth laws and executive orders.

Further guidance on specifics related to procurement will be included in the executed Subrecipient Agreements with program participants.

11.1 Procurement Requirements for Subrecipients – AO 21-27

On April 28, 2021, PRDOH issued the Administrative Order 21-27, which excludes all Subrecipients from compliance with the Regulation No. 9205. Consequently, their procurement processes are subject to the standards set forth in 2 C.F.R. § 200.318 through 2 C.F.R. § 200.327. Lastly, the Administrative Order 21-27 provide that the procurement processes that were published before April 28, 2021 will continue to comply with Regulation No. 9205. Nonetheless, all Subrecipients are required to keep comprehensive records and documentation of their procurement processes to allow PRDOH to effectively carry out monitoring processes when required.

12 Minority and Women Owned Business Enterprises (M/WBE) and Section 3

As a recipient of HUD financial assistance, regulations set forth in 2 C.F.R. § 200.321 require the non-Federal entity – PRDOH, in this case - to take necessary steps to ensure that all Subrecipients, Contractors, subcontractors, and/or developers funded in whole or in part with CDBG-DR financial assistance ensure that, when possible, contracts and other economic opportunities are directed to small and minority firms, women-owned business enterprises (**WBE**s), and labor surplus area firms.

The GeoFrame Program activities will be undertaken using subrecipients and procured vendors. Please reference the M/WBE Policy for additional information.

The M/WBE Policy and all CDBG-DR Program General policies are available in English and Spanish at: https://cdbg-dr.pr.gov/download/politica-mwbe/ and https://cdbg-dr.pr.gov/en/download/mwbe-policy/.

The Section 3 Policy is available in English and Spanish at: https://cdbg-dr.pr.gov/en/download/section-3-policy/ and https://cdbg-dr.pr.gov/download/politica-sobre-seccion-3/.

13 Program Closeout

The Program will be executed in three (3) funding stages:

Stages	Timing from Publication of Program Guidelines	Contingencies
Stage 1	Months 01 - 18	Commence immediately, program activities contingent on Vendor procurement
Stage 2	Months 19 - 42	Timing contingent on distribution of Second Tranche Funding
Stage 3	Months 43 - 66	Timing and activities of Stage 3 contingent on extension of expenditure deadline and additional allocation of funds.

Program closeout timeline: All program activities, including final reporting and closeout, must be concluded no later than the last day of the Program Stage.

Milestone and Deliverables for GIS Planning Activities

	Stage 1	Stage 2	Stage 3
ACTIVITIES			
Activity 1: Stakeholder Engagement	Entire duration	Entire duration	Entire duration
Activity 2: Technical Standard Creation	Complete Within Stage 1	-	-
Activity 3: Collect Data	Complete Within Stage 1	-	-
Activity 4: Gap Analysis	Complete Within Stage 1	-	-
Activity 5: Data Production	-	Initial activities complete within Stage 2	Further activities contemplated during Stage 3

OUTCOMES			
Outcome A: Puerto Rico's Spatial Data Infrastructure Strategic Plan	Complete Within Stage 1	-	-
Outcome B: GeoFrame Database 1.0		Initial database complete within Stage 2	-
Outcome C: GeoFrame Database 2.0			Comprehensive database complete within Stage 3
Outcome D: Web-based Geoportal	-	Begin within Stage 2	Complete within Stage 3
Outcome E: Spatial Data Infrastructure Management Tools	-	Begin within Stage 2	Complete within Stage 3

Upon completion of all planning activities, the GeoFrame Program closeout processes shall commence. This process will include ensuring that all work performed has been accepted by the Grantee, all milestones met, all deliverables completed, and Program activities performed in compliance with Program requirements. Evaluation of the work shall be performed at each milestone, upon submission of each deliverable, and during the final inspection of work performed. PRDOH will perform a complete review of Vendor and Subrecipient files to ensure all necessary documentation is present and that the Program is ready for closeout.

General requirements for closeout are as follows:

- All milestones have been met and deliverables submitted, and each in accordance with all requirements of this Program;
- All eligibility and duplication of benefits documentation are found to be in accordance with all requirements of this Program;
- All Program forms required throughout the entirety of the process have been duly completed and executed by the appropriate parties, which may include Program staff, the vendors, and the subrecipients;
- All funds used for the Program, whether CDBG-DR or received using a subrogation of funds, have been properly accounted for and reconciled with payments made to the vendors, and subrecipients;

- All payments have been issued to the vendors and subrecipients, including applicable retainages; and
- All other requirements are met for closeout as established in the Planning Firm's contract.

Outreach will be made to the subrecipient, vendor, or any other party involved if any additional information is necessary to close-out the project. Once all levels of quality control review have been met, the vendors and subrecipients will receive a GeoFrame Program Final Notice, and their file will be placed in a "closeout complete" status.

14 Personally Identifiable Information (PII)

The GeoFrame Program is intended to collect and produce spatial data related to land use, properties, parcels, structures, addresses, occupancy, legal status of properties, and roads. Data accessibility and transparency is one intended outcome of the Program, however, all Personally Identifiable Information (**PII**) will be stored and protected in accordance with the approved PRDOH PII Policy.

The PII Policy and all CDBG-DR Program policies, are available in English and Spanish on the PRDOH website at https://cdbg-dr.pr.gov/download/politica-sobre-informacion-de-identificacion-personal-confidencialidad-y-no-divulgacion/ and https://cdbg-dr.pr.gov/en/download/personally-identifiable-information-confidentiality-and-nondisclosure-policy/ .

15 Limited English Proficiency

The GeoFrame Program is developed for Puerto Rico using federal funds. Therefore, all program outcomes will be produced in compliance with both federal and Puerto Rico language requirements, serving Spanish and English-speaking users.

The Language Access Plan and all CDBG-DR Program policies, English and Spanish on the PRDOH website at https://cdbg-dr.pr.gov/download/plan-de-acceso-al-idioma/ and https://cdbg-dr.pr.gov/en/download/plan-de-acceso-al-idioma/ .

16 Program-Based Reconsideration and/or Administrative Review

Applicants of the Program may contest any determinations or denials based on Program policy. However, an Applicant may not challenge a federal statutory requirement. Applicants have the right to request a Program-based Reconsideration with the Program or request an Administrative Review directly with PRDOH, as stated below. If the Applicant fails to contest a determination within the time allotted, the inaction will be deemed as an acceptance of the determination.

16.1 Program-Based Reconsideration Request

Applicants who wish to contest a Program determination may file a Program-based Reconsideration Request directly with the Program by submitting a written request via electronic or postal mail within **twenty (20) calendar days** from the date a copy of the notice was filed in the record of the agency. Provided that, if the date on which the copy of the notice is filed in the records of the agency differs from the mailing date (postal or electronic) of said notice, the aforementioned **twenty (20) calendar day-term** shall be calculated from the mailing date (postal or electronic). Notices distributed via electronic communication shall be considered valid. In the event a notification is sent via postal and electronic mail, the notification date will be the one sent beforehand. Program notices will include the electronic and postal information where these will be received, as these may vary.

Applicants who file a Program-based Reconsideration Request are encouraged to provide individual facts or circumstances, as well as supporting document to justify their petition. In the Reconsideration Request process, the Program will only review facts and information already included in an Applicant's file, unless the Applicant submits new documentation. The Program has the discretion to accept or reject new documentation based upon its relevance to the Program-based Reconsideration Request.

The Program will review and address the Reconsideration Request within **fifteen (15) calendar days** of its receipt. Applicants will be notified of the reconsideration determination via a Reconsideration Request Approved or a Reconsideration Request Denied notification.

Filing a Program-based Reconsideration Request does not substitute, negate, or preclude any legal right that an Applicant has to challenge a determination made by the Program. Therefore, Applicants who believe the initial determination of the Program to be erroneous, may submit, at their discretion, either a Program-based Reconsideration Request or a petition for review of the decision made by the Program by filing an Administrative Review Request at PRDOH in accordance with Regulation Number 4953, of August 19, 1993, which regulates the Formal Adjudication Process for PRDOH and its Adjunct Agencies (Regulation 4953)[44].

16.2 Administrative Review Request

If an Applicant disagrees with a Program determination, or with the Reconsideration Request Denial determination, said party may file directly to PRDOH, as grantee, an Administrative Review Request in accordance with the aforementioned Regulation 4953. The Applicant must submit such request, in writing, within **twenty (20) calendar days** from the date a copy of the Program determination or a Reconsideration Request Denial

[44] For more details, you can access Regulation 4953 (in Spanish) at: https://www.vivienda.pr.gov/wp-content/uploads/2015/09/4953-Reglamenta-los-procedimientos-de-adjudicacion-formal..pdf

determination notice was filed in the record of the agency. Provided, that if the date on which the copy of the notice is filed in the records of the agency differs from the mailing date (postal or electronic), the aforementioned **twenty (20) calendar day-term** shall be calculated from the mailing date (postal or electronic). Notices distributed via electronic communication shall be considered valid. In the event a notification is sent via postal and electronic mail, the notification date will be the one sent beforehand. Submit the request via email to: LegalCDBG@vivienda.pr.gov; via postal mail to: CDBG-DR Legal Division, P.O. Box 21365, San Juan, PR 00928-1365; or in person at PRDOH's Headquarters at: CDBG-DR Legal Division, 606 Barbosa Avenue, Juan C. Cordero Davila Building, Río Piedras, P.R. 00918.

If the Applicant disagrees with any **final** written determination on an Administrative Review Request notified by PRDOH after completing the Administrative Adjudicative Procedure, said party may file a Judicial Review petition before the Court of Appeals of Puerto Rico within **thirty (30) calendar days** after a copy of the notice has been filed. See Act No. 201-2003, as amended, known as the Judiciary Act of the Commonwealth of Puerto Rico of 2003, 4 L.P.R.A. § 24 *et seq*., and Section 4.2 of Act 38-2017, as amended, known as the Uniform Administrative Procedures Act of the Government of Puerto Rico, 3 L.P.R.A. § 9672.

17 General Provisions

17.1 Program Guidelines Scope

This document sets fort the policy governing the Program. These program guidelines are intended to aid and provide program activity guidance in Program implementation and closeout and should not be construed as exhaustive instructions. All Program activities must comply with the policies hereby stated. In addition, all program staff must adhere to established program procedures and all federal and state laws and regulations in effect, as applicable, in the execution of program activities.

However, PRDOH reserves the faculty to authorize, in its sole discretion, the granting of Program benefits to any Applicant, only when exceptional circumstances, not contemplated in these guidelines, justify it. Such faculty will be exercised on a case-by-case basis in compliance with local, state and federal requirements. PRDOH is in no way obligated to grant the Program benefits in said cases.

17.2 Program Guidelines Amendments

PRDOH reserves the right to modify the policies established in these guidelines if the program guidelines, as written, do not reflect the intended policy or cause procedures to be impracticable, among any other circumstances. If an amended version of these guidelines is approved, the amended version fully supersedes all other previous versions and should be used as the basis for the evaluation of all situations encountered in the

implementation and/or continuance of the Program from the date of its issuance, that is, the date that appears on the cover of these guidelines. Each version of the program guidelines will contain a detailed version control log that outlines any substantive amendment, inclusions and/or changes.

17.3 Disaster Impacted Areas

As described in the initial Action Plan, and its amendments, the Government of Puerto Rico will use CDBG-DR funds solely for necessary expenses related to disaster relief, long-term recovery, restoration of housing, infrastructure, and economic revitalization in the impacted and distressed areas in Puerto Rico as identified in disaster declaration numbers DR-4336 and 4339. Through the Federal Register Vol. 83, No. 157 (August 14, 2018), 83 FR 40314, HUD identified that, for Puerto Rico, all components of the Island are considered "most impacted and distressed" areas. Therefore, these guidelines apply to all 78 municipalities of Puerto Rico.

17.4 Extension of Deadlines

The Program could extend deadlines on a case-by-case basis. The Program may decline to extend a deadline if such extension will jeopardize the Program's completion schedule or the schedule of an individual construction project. The aforementioned strictly applies to program deadlines or established program terms. Under no circumstance(s) does the faculty to extend deadlines apply to the established terms of time in these guidelines or any applicable federal or state law or regulation, or to the terms of times established in these guidelines to request a Program-based Reconsideration, administrative review and/or judicial review.

17.5 Established Periods of Time

Unless otherwise specified, all established periods of time addressed in this and all CDBG-DR Program Guidelines will be considered calendar days. On this matter, PRDOH, as grantee, will follow Rule 68.1 of the Rules of Civil Procedure of Puerto Rico, 32 LPRA Ap. V, R. 68.1.

17.6 Written Notifications

All determinations made by the Program will be notified in writing. If an applicant believes that any determination was made without being written, the applicant may request that such decision be made in writing and duly substantiated.

17.7 Conflict of Interest

As stated in the Federal Register Vol. 83, No. 28 (February 9, 2018), 83 FR 5844, Federal regulations require that State grantees, in the direct Grant administration and means of carrying out eligible activities, be responsible with program administrative requirements, including those established in 24 C.F.R. §570.489(h) related to conflicts of interest.

Several federal and state conflict of interest laws can govern CDBG-DR assisted activities. Therefore, PRDOH has enacted the Conflict of Interest and Standards of Conduct Policy (**COI Policy**) in conformity with the following applicable federal and state regulations:

1. HUD conflict of interest regulations, 24 C.F.R. §570.611 and 24 C.F.R. §85.36;
2. The Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, 2 C.F.R. Part 200 at § 200.112 and §200.318 (c)(1);
3. Puerto Rico Department of Housing Organic Act, Act 97 of June 10, 1972, as amended, 3 L.P.R.A. § 441 *et seq.*;
4. The Anti-Corruption Code for the New Puerto Rico, Act No. 2-2018, as amended, 3 L.P.R.A. § 1881 *et seq.*; and
5. The Puerto Rico Government Ethics Act of 2011, Act 1-2012, as amended, 3 L.P.R.A. § 1854 *et seq*.

The COI Policy outlines PRDOH's responsibility, in its role as grantee, to identify, evaluate, disclose, and manage apparent, potential or actual conflicts of interest related to CDBG-DR funded projects, activities and/or operations. Said Policy is intended to serve as guidance for the identification of apparent, potential, or actual conflicts of interest in all CDBG-DR assisted activities and/or operations. In accordance with 24 C.F.R. § 570.489, the COI Policy also includes standards of conduct governing employees engaged in the award or administration of contracts.

As defined in the COI Policy, a conflict of interest is a situation in which any person who is a public servant, employee, agent, consultant, officer, or elected official or appointed official of the PRDOH, or of any designated public agencies, or of subrecipients that are receiving funds under the CDBG-DR Program may obtain a financial or personal interest or benefit that is or could be reasonably incompatible with the public interest, either for themselves, or with those whom they have business, or an organization which employs or is about to employ any of the parties indicated herein, or a member of their family unit during their tenure or for **two (2) years** after.

Such conflicts of interests will not be tolerated by PRDOH. Program officials, their employees, agents and/or designees are subject to state ethic laws and regulations, including, but not limited to Puerto Rico Government Ethics Act of 2011, Act 1-2012, as amended, in regard to their conduct in the administration, granting of awards and program activities.

According to the aforementioned Act, no public servant shall intervene, either directly or indirectly, in any matter in which they have a conflict of interests that may result in their benefit. No public servant shall intervene, directly or indirectly, in any matter in which any member of their family unit, relative, partner or housemate has a conflict of interest that may result in benefit for any of the abovementioned. In the case that any of the abovementioned relationships have ended during the **two (2) years** preceding the

appointment of the public servant, they shall not intervene, either directly or indirectly, in any matter related to them until **two (2) years** have elapsed after their appointment. This prohibition shall remain in effect insofar the beneficial ties with the public servant exist. Once the beneficial ties end, the public servant shall not intervene, either directly or indirectly, in such matter until **two (2) years** have elapsed.

The above conflict of interest statement does not necessarily preclude PRDOH Program officials, their employees, agents and/or designees from receiving assistance from the Program. On a case-by-case basis, PRDOH Program officials, their employees, agents and/or designees may still be eligible to apply and to receive assistance from the Program if the applicant meets all Program eligibility criteria as stated in these guidelines. PRDOH Program officials, their employees, agents and/or designees should disclose their relationship with PRDOH at the time of their application.

The COI Policy and all CDBG-DR Program policies are available in English and Spanish on the PRDOH website at https://www.cdbg-dr.pr.gov/en/resources/policies/ and https://www.cdbg-dr.pr.gov/recursos/politicas/.

17.8 Citizen Participation

Throughout the duration of the grant, all citizen comments on PRDOH's published Action Plan, any substantial amendments to the Action Plan, performance reports and/or other issues related to the general administration of CDBG-DR funds, including all programs funded by this grant, are welcomed.

Citizen comments may be submitted through any of the following means:

- **Via phone:** 1-833-234-CDBG or 1-833-234-2324 (TTY: 787-522-5950)
  Attention hours Monday through Friday from 8:00am-5:00pm
- **Via email at**: infoCDBG@vivienda.pr.gov
- **Online at**: https://www.cdbg-dr.pr.gov/en/contact/ (English)
  https://www.cdbg-dr.pr.gov/contact/ (Spanish)
- **In writing at**: Puerto Rico CDBG-DR Program
  P.O. Box 21365
  San Juan, PR 00928-1365

The Citizen Participation Plan and all CDBG-DR Program policies, are available in English and Spanish on the PRDOH website at https://www.cdbg-dr.pr.gov/en/citizen-participation/ and https://www.cdbg-dr.pr.gov/participacion-ciudadana/. For more information on how to contact PRDOH, please refer to www.cdbg-dr.pr.gov.

17.9 Citizen Complaints

As part of addressing Puerto Rico's long-term recovery needs, citizen complaints on any issues related to the general administration of CDBG-DR funds are welcome throughout the duration of the grant. It is PRDOH's responsibility, as grantee, to ensure that all complaints are dealt with promptly and consistently and at a minimum, to provide a timely, substantive written response to every **written** complaint within **fifteen (15) calendar days**, where practicable, as a CDBG grant recipient. See 24 C.F.R. § 570.486(a)(7).

Citizens who wish to submit formal complaints related to CDBG-DR funded activities may do so through any of the following means:

- **Via email at:** LegalCDBG@vivienda.pr.gov
- **Online at:** https://cdbg-dr.pr.gov/en/complaints/ (English)
  https://cdbg-dr.pr.gov/quejas/ (Spanish)
- **In writing at:** Puerto Rico CDBG-DR Program
  Attn: CDBG-DR Legal Division-Complaints
  P.O. Box 21365
  San Juan, PR 00928-1365

Although formal complaints are required to be submitted in writing, complaints may also be received verbally and by other means necessary, as applicable, when PRDOH determines that the citizen's particular circumstances do not allow the complainant to submit a written complaint. However, in these instances, PRDOH shall convert these complaints into written form. These alternate methods include, but are not limited to:

- Via telephone*: 1-833-234-CDBG or 1-833-234-2324 (TTY: 787-522-5950)
- In-person at*: PRDOH Headquarters Office or Program-Specific Intake Centers

*Attention hours: Monday – Friday from 8:00 a.m. to 5:00 p.m.[45]

The Citizen Complaints Policy and all CDBG-DR Program policies are available in English and Spanish on the PRDOH website at https://www.cdbg-dr.pr.gov/en/resources/policies/general-policies/ and https://www.cdbg-dr.pr.gov/recursos/politicas/politicas-generales/.

17.10 Anti-Fraud, Waste, Abuse or Mismanagement

[45] Hours may vary due to COVID-19. PRDOH recommends calling ahead prior to arrival to corroborate.

PRDOH, as grantee, is committed to the responsible management of CDBG-DR funds by being a good advocate of the resources while maintaining a comprehensive policy for preventing, detecting, reporting, and rectifying fraud, waste, abuse, or mismanagement.

Pursuant to 83 FR 40314, PRDOH implements adequate measures to detect and prevent fraud, waste, abuse, or mismanagement in all programs administered with CDBG-DR funds as well as encourages any individual who is aware or suspects any kind of conduct or activity that may be considered an act of fraud, waste, abuse, or mismanagement, regarding the CDBG-DR Program, to report such acts to the CDBG-DR Internal Audit Office, directly to the Office of Inspector General (**OIG**) at HUD, or any local or federal law enforcement agency.

The Anti-Fraud, Waste, Abuse, or Mismanagement Policy (**AFWAM Policy**) is established to prevent, detect, and report any acts, or suspected acts, of fraud, waste, abuse, or mismanagement of CDBG-DR funds. This Policy applies to any allegations or irregularities, either known or suspected, that could be considered acts of fraud, waste, abuse, or mismanagement, involving any citizen, previous, current or potential applicant, beneficiary, consultant, contractor, employee, partner, provider, subrecipient, supplier, and/or vendor under the CDBG-DR Program.

REPORT FRAUD, WASTE, ABUSE, OR MISMANAGEMENT TO PRDOH CDBG-DR	
CDBG-DR Hotline	787-274-2135 (English/Spanish/TTY)
Postal Mail	Puerto Rico Department of Housing CDBG-DR Internal Audit Office P.O. BOX 21355 San Juan, PR 00928-1355
Email	hotlineCDBG@vivienda.pr.gov
Online	Filling out the **AFWAM Submission Form** available in English and Spanish at www.cdbg-dr.pr.gov or https://cdbg-dr.pr.gov/app/cdbgdrpublic/Fraud
In person	Component 01 — Request a meeting with the Deputy Audit Director of the CDBG-DR Internal Audit Office located at PRDOH's Headquarters at 606 Barbosa Avenue, Building Juan C. Cordero Davila, Río Piedras, PR 00918.

REPORT FRAUD, WASTE, ABUSE, OR MISMANAGEMENT DIRECTLY TO HUD OIG	
HUD OIG Hotline	1-800-347-3735 (Toll-Free) 787-766-5868 (Spanish)
Postal Mail	HUD Office of Inspector General (OIG) Hotline 451 7th Street SW Washington, D.C. 20410
Email	HOTLINE@hudoig.gov

Online	https://www.hudoig.gov/hotline

The AFWAM Policy and all CDBG-DR Program policies are available in English and Spanish on the PRDOH website at https://www.cdbg-dr.pr.gov/en/resources/policies/ and https://www.cdbg-dr.pr.gov/recursos/politicas/.

17.11 Related Laws and Regulations

These guidelines make reference as to how the provisions of certain laws apply to the Program. However, other related laws may exist which are not included in these Guidelines. This does not negate or preclude the Program from applying the provisions of those laws, nor an applicant from receiving services, when applicable. Moreover, PRDOH can enact, or may have enacted, regulations that address how the laws mentioned in these guidelines are managed. If there are any discrepancies between these guidelines and the laws and/or regulations mentioned in them, then the latter will prevail over the guidelines. If at any time the laws and/or the applicable regulations mentioned in these guidelines are amended, the new provisions will apply to the Program without the need to amend these guidelines.

17.12 Cross-Cutting Guidelines

Some federal and local requirements apply to all programs funded by CDBG-DR. These Cross-Cutting Guidelines cover topics such as: financial management; environmental review; labor standards; acquisition; relocation; civil rights; fair housing; among others. The requirements described in the above referenced Cross-Cutting Guidelines, apply to all programs described in PRDOH's CDBG-DR Initial Action Plan and its amendments.

The Cross-Cutting Guidelines and all CDBG-DR Program policies are available in English and Spanish on the PRDOH website at https://cdbg-dr.pr.gov/en/resources/policies/ and https://www.cdbg-dr.pr.gov/recursos/politicas/.

18 Program Oversight

Nothing contained within these guidelines is intended to limit the role of PRDOH, HUD, and/or corresponding authorities from exercising oversight and monitoring activities of the Program.

19 Severability Clause

If any provision of these guidelines, or the application thereof to any person, partnership, or corporation, or circumstance, is deemed invalid, illegal, or incapable of being enforced to any extent by a competent court, the remainder of these guidelines, and the application of such provisions, will not be affected. All valid applications of these guidelines shall be severed from any applications deemed invalid, leaving the valid applications in full force.

END OF GUIDELINES.