

WATER FOR LIFE

Safe, dependable, and affordable water now and into the future



Board of Water Supply
City and County of Honolulu

Stakeholder Advisory Group

**Board of Water Supply
City & County of Honolulu**

Thursday, January 16, 2020

WATER FOR LIFE

Safe, dependable, and affordable water now and into the future



Board of Water Supply
City and County of Honolulu

Dave Ebersold

Facilitator

WELCOME

WATER FOR LIFE

Safe, dependable, and affordable water now and into the future



Board of Water Supply
City and County of Honolulu

Public Comments on Agenda Items

Meeting Objectives

- Receive updates regarding the BWS
- Accept notes from meetings 31 and 32
- Hear about lessons learned in Puerto Rico following Hurricanes Irma and Maria
- Develop recommendation for WSFC and draft adoption schedule
- Find out what is being done about coastal erosion in Waikiki

WATER FOR LIFE

Safe, dependable, and affordable water now and into the future



Board of Water Supply
City and County of Honolulu

Ernest Lau

BWS Water Quality Resources Manager

BWS UPDATES

WATER FOR LIFE

Safe, dependable, and affordable water now and into the future



Board of Water Supply
City and County of Honolulu

Mahalo!

Questions & Answers





Action

Review and accept notes from

- Stakeholder Advisory Group Meeting #31 held on Thursday, July 25, 2019
- Stakeholder Advisory Group Meeting #32 held on Thursday, October 24, 2019



Dolan Eversole

Coastal Process Specialist, University of Hawaii SEA Grant Program

COASTAL EROSION OF WAIKIKI BEACH

Waikiki Beach – 2020 Projects Update

Dolan Eversole-

University of Hawai'i Sea Grant Program

Waikīkī Beach Special Improvement District Association

Board of Water Supply- Stakeholder Advisory Group 1/16/20



Waikīkī Beach Special Improvement District Association (WBSIDA)



WAIKIKI BEACH SPECIAL IMPROVEMENT DISTRICT ASSOCIATION

- Public-Private Partnership (P³)
- Cost share with State on beach improvements
- Develop/facilitate Waikīkī beach improvements



WBSIDA
Waikiki Beach
SPECIAL IMPROVEMENT
DISTRICT ASSOCIATION



WAIKĪKĪ
IMPROVEMENT
ASSOCIATION





Infrastructure damage



Inundation



Beach Loss

Waikīkī Beach Management Plan

Forward looking plan for the beach and nearshore



Comprehensive “vision” for Waikīkī Beach under future scenarios and priorities.

- Stakeholder-driven management and improvements plan.
- Potential cost vs benefit economic assessment of various alternatives.
- Community/stakeholder and visitor surveys of beach experience.



Waikīkī Beach Economic Valuation Study (2018)

- Update to 2008 *Hospitality Advisors* report.
- Partnership with the University of Hawai‘i Dept. of Economics and UH Sea Grant.
- **Economic value estimated at \$2 Billion/year.**



University of Hawai‘i Sea Grant College Program

Economic Impact Analysis of the Potential Erosion of Waikīkī Beach A 2016 Update

Nori Tani
Department of Economics, University of Hawai‘i at Mānoa and
University of Hawai‘i Economic Research Organization (UHERO), nori@hawaii.edu
Marcus Peng
Department of Economics, University of Hawai‘i at Mānoa, marcuspe@hawaii.edu
Dolan Eversole
University of Hawai‘i Sea Grant College Program, eversole@hawaii.edu



Final Draft
April 5, 2018

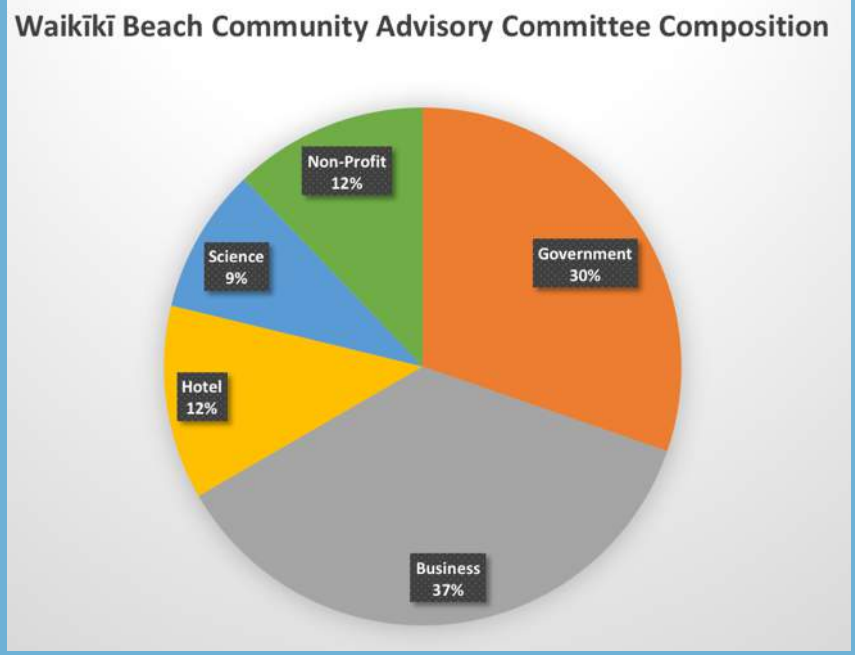
Waikīkī Beach Perceptions Surveys

1. Visitor intercept surveys starting in September.
2. Project is part of the Waikīkī Beach Management Plan.
3. Goal is to assess visitor perceptions of beach quality and value associated with infrastructure and environmental quality.



Waikiki Beach Community Advisory Committee

33 Member Committee



Projects

- ENVISION WAIKIKI BEACH
- WAIKIKI BEACH COMMUNITY ADVISORY COMMITTEE
- ROYAL HAWAIIAN GROIN
- WAIKIKI BEACH ECONOMIC STUDY
- KING TIDES IN HAWAII

Waikiki Beach Community Advisory Committee

- [Download Committee Summary](#)
- [COMMITTEE MEETING #1 SUMMARY](#)
- [DOWNLOAD 11/7/2017 PRESENTATION](#)

The Waikiki Beach Community Advisory Committee will help to address the complex issues associated with beach sustainability by building consensus and identifying and resolving conflicts relating to Waikiki Beach management. The committee will provide important guidance for planning and prioritizing future beach management projects at Waikiki.

Waikiki Beach Advisory Committee Goals

- ADVISE THE WBSIDA, THE DLNR AND UH SEA GRANT ON THE DEVELOPMENT AND IMPLEMENTATION OF A WAIKIKI BEACH MANAGEMENT PLAN.
- ENSURE THAT FUTURE BEACH MANAGEMENT PROJECTS ADDRESS THE ISSUES AND CONCERNS OF THE WAIKIKI COMMUNITY AND LOCAL STAKEHOLDERS.
- ADVISE THE STATE, COUNTY AND PRIVATE STAKEHOLDERS ON SPECIFIC BEACH MANAGEMENT PROJECTS IN WAIKIKI.
- PROVIDE COMMUNITY COORDINATION, EDUCATION, AND OUTREACH EFFORTS ABOUT BEACH MANAGEMENT ISSUES AND PROJECTS IN WAIKIKI.

Waikiki Beach Community Meetings

February 2018

SU	MO	TU	WE	TH	FR	SA
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			

WAIKIKI BEACH COMMUNITY ADVISORY COMMITTEE COMPOSITION



- Business (37%)
- Government (30%)
- Non-Profit (12%)
- Hotel (12%)
- Science (10%)

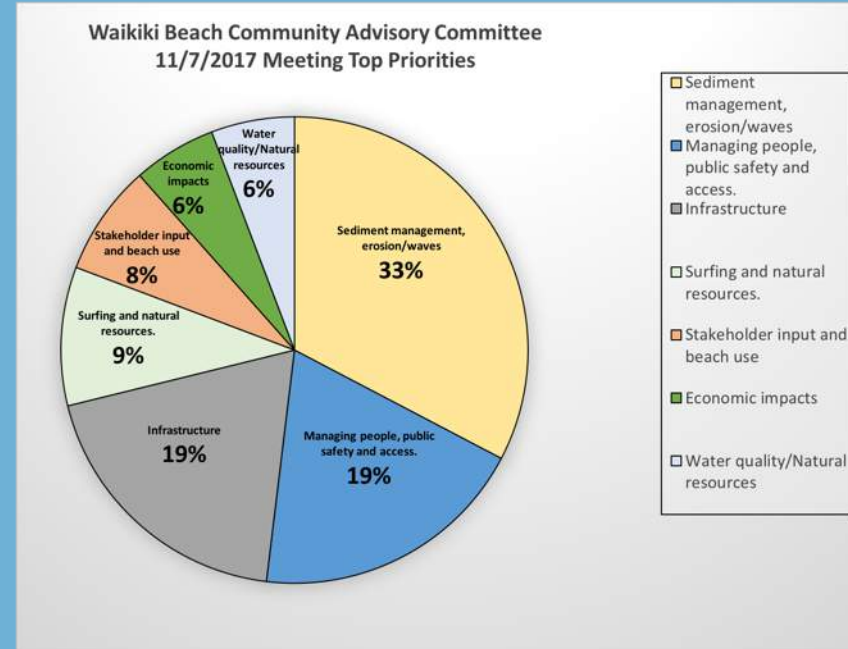


First meeting November 7, 2017

Waikāikī Beach Advisory Committee

Goals:

- Advise the WBSIDA, the DLNR and UH Sea Grant on the development and implementation of a Waikāikī Beach Management Plan.
- Ensure that future beach management projects address the issues and concerns of the Waikāikī community and local stakeholders.
- Provide community coordination, education, and outreach efforts about beach management issues and projects in Waikāikī.
- Provide diverse perspectives and guidance for future beach management and planning activities in Waikāikī.



71% Identified erosion, infrastructure or public safety as the top priority.

Waikīkī Beach Community Advisory Committee

PRIORITY AREAS

- The Royal Hawaiian Cell ranked the #1 priority.

PRIORITY ASSET

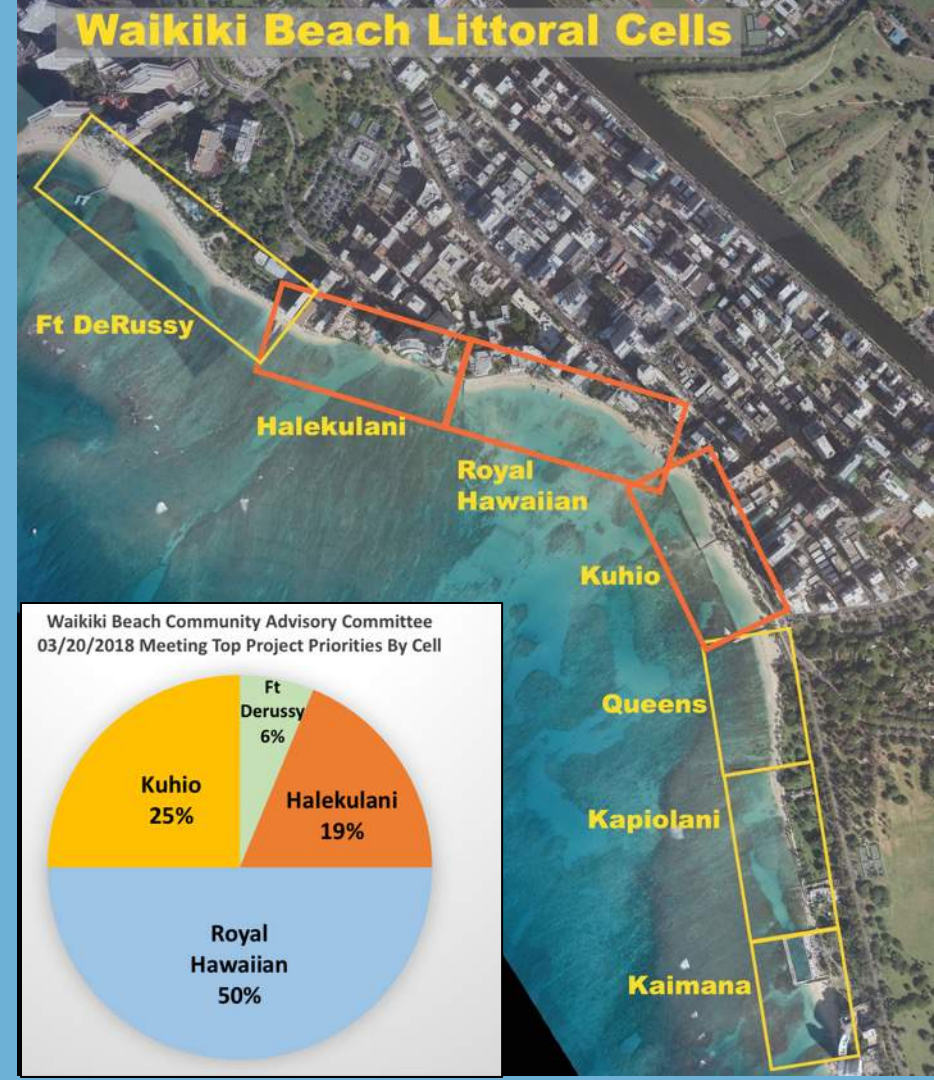
- The top asset identified for Waikīkī included the general economic/social value of the beach.

PRIORITY PROBLEM

- The top problem varied greatly by cell but included erosion/wave run-up and structural damage.

PRIORITY SOLUTION

- The top solution varied by cell but included beach maintenance using local sand sources.



Waikīkī Beach 2019-20 CIP Funding

\$10 Million State Appropriation

- \$10 million earmarked for Waikīkī Beach projects.
- \$3 million identified as match from the WBSIDA.



Waikīkī Beach Management Projects

2012 Waikīkī Beach Maintenance



WBSIDA
Waikīkī Beach
SPECIAL IMPROVEMENT
DISTRICT ASSOCIATION



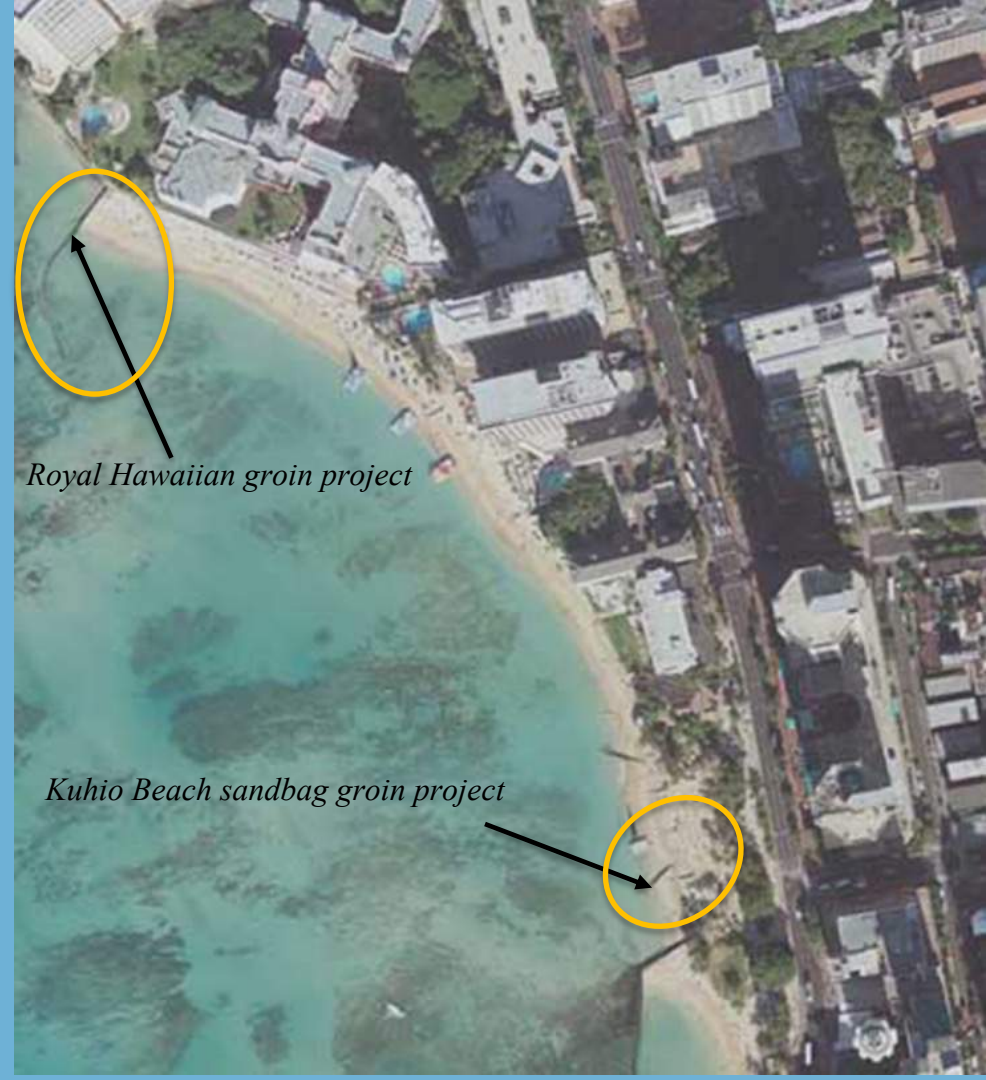
WAIKĪKĪ
IMPROVEMENT
ASSOCIATION



Waikīkī Beach Improvements Approved Projects (2019)

1. **Royal Hawaiian Groin Project**
(\$2.5 million- Estimated Spring, 2020)
2. **Kuhio Beach sandbag groin project**
(\$635,000- Completed November, 2019)

**THESE WILL BE THE FIRST
CONSTRUCTION PROJECTS IN
WAIKIKI IN 50 YEARS.**



Royal Hawaiian groin project

Kuhio Beach sandbag groin project



Kuhio Beach Stub Groin Project Areas



Kuhio Beach Sand bag Groin and Fill Area

Kuhio Beach Sand Borrow Area

NOTES:
1. AERIAL PHOTO L... 16, 2013

Royal Hawaiian Groin Project



Royal Hawaiian Groin Four Design Options Considered

- 160 FT LONG T-HEAD
- SLOPING RUBBLE MOUND DESIGN
- ENCAPSULATE EXISTING VERTICAL GROIN



Figure 2-1 Plan view of proposed 180-foot long groin



Figure 2-3 Plan view of 280-foot long groin



Figure 2-4 Adaptive Reuse groin plan view



Figure 2-6 Concrete wall groin plan view

Royal Hawaiian Groin

- Replacement for the Royal Hawaiian groin
- **\$2.5 million** estimated total construction cost
- WBSIDA 50% public/private cost share with state.
- **Estimated start date Spring 2020.**



2012 Beach Maintenance

- State DLNR Project
- 25,000 cy of sand
- 1700 linear feet
- Added ~30 feet of width
- \$2.7 million cost
- \$500,000 private match
- 10 year expected lifespan



Waikīkī Beach Master Plan

Ho'omau O Waikīkī Kahakai - “Waikīkī Perpetuates itself”

Phased Scope of Work:

1. *Feasibility Study* providing detailed assessment of a variety of alternatives for beach improvements and maintenance.
2. *Environmental Impact Statement (EIS)* detailing potential impacts from preferred and alternative beach maintenance activities and coastal engineering improvements.
3. *Permitting and design* for maintenance activities and beach improvement projects for implementation in the next 3-4 years through the results of the Feasibility Study and EIS.

Waikīkī Beach Priority Areas

1. Ft DeRussy Sand Back-passing
2. Halekulani Beach Stabilization
3. Waikīkī Beach Maintenance (Royal Hawaiian)
4. Kuhio Beach Swim Basin Improvements

Outreach and Stakeholder Engagement:

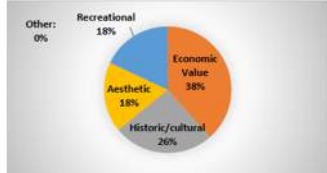
- Priority areas developed through stakeholder and community advisory committee input.
- Conceptual designs are evaluated through an ongoing DLNR Technical Feasibility Study for Waikīkī Beach.
- The WBSIDA is hosting the Waikīkī Beach Community Advisory Committee to evaluate various alternatives.

Waikīkī Beach Engineering Design Criteria

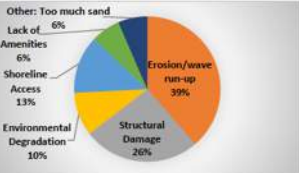


ROYAL HAWAIIAN BEACH, WAIKIKI

ASSETS & VALUES



ISSUES & PROBLEMS



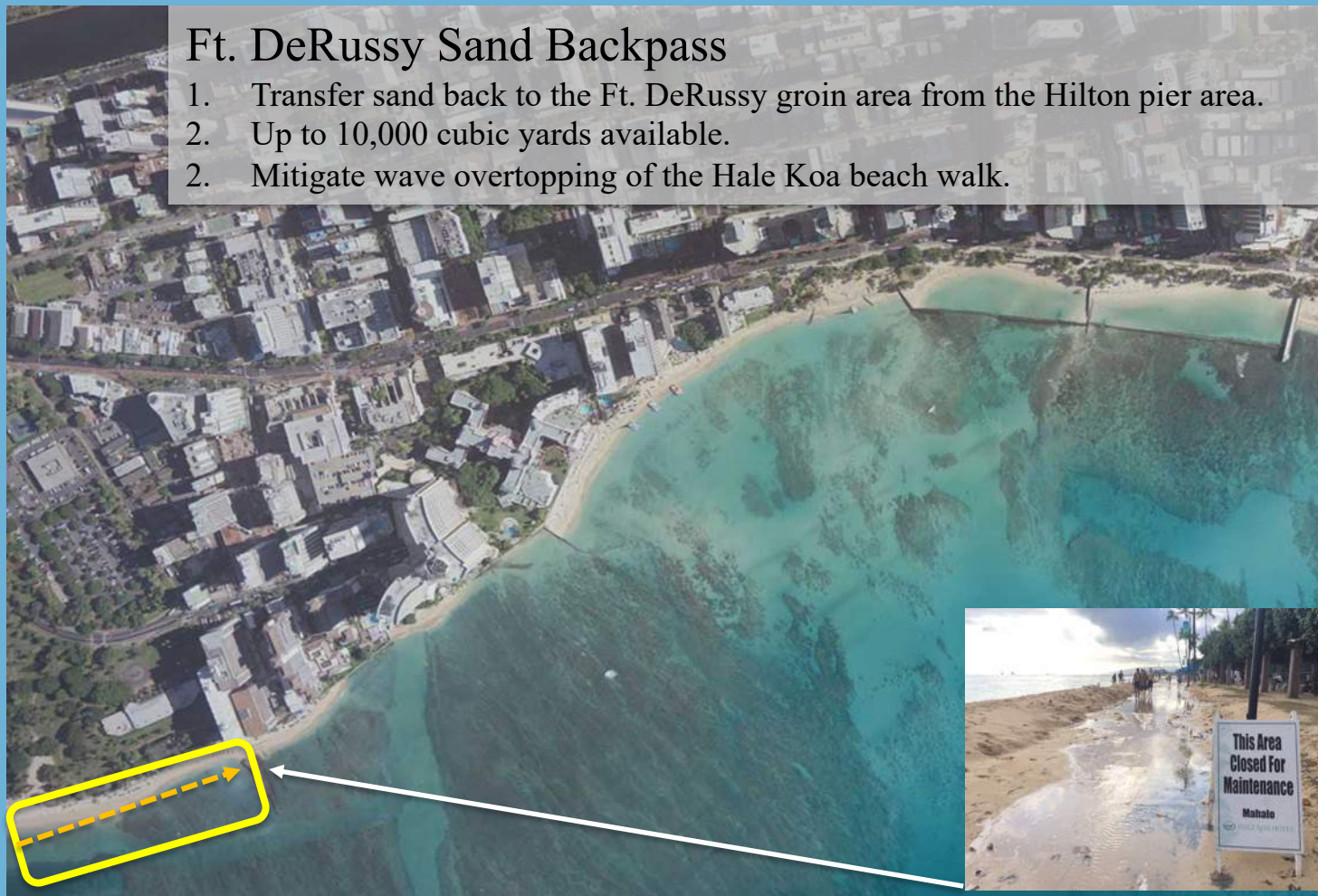
ROYAL HAWAIIAN BEACH SOLUTIONS



Waikīkī Beach Priority Project Areas

Ft. DeRussy Sand Backpass

1. Transfer sand back to the Ft. DeRussy groin area from the Hilton pier area.
2. Up to 10,000 cubic yards available.
2. Mitigate wave overtopping of the Hale Koa beach walk.



Waikīkī Beach Priority Project Areas



CONCEPT IDEAS FOR DISCUSSION ONLY

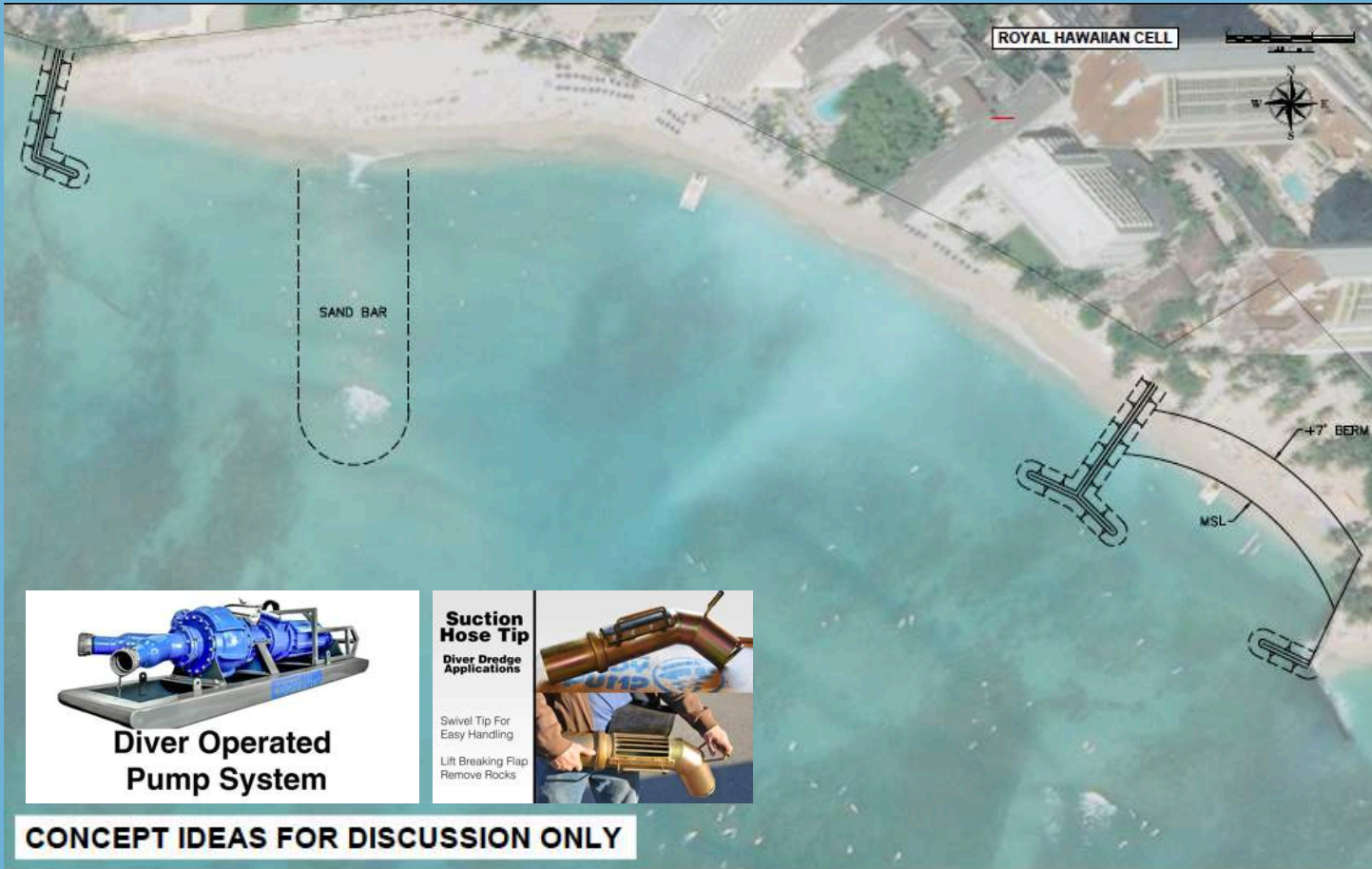
Waikīkī Beach Priority Project Areas

Waikīkī Beach Maintenance

1. Maintain existing beach uses.
2. Utilize offshore sand for maintenance.
3. Develop small-scale pumping system.



Royal Hawaiian Cell



**Diver Operated
Pump System**

**Suction
Hose Tip**
Diver Dredge
Applications

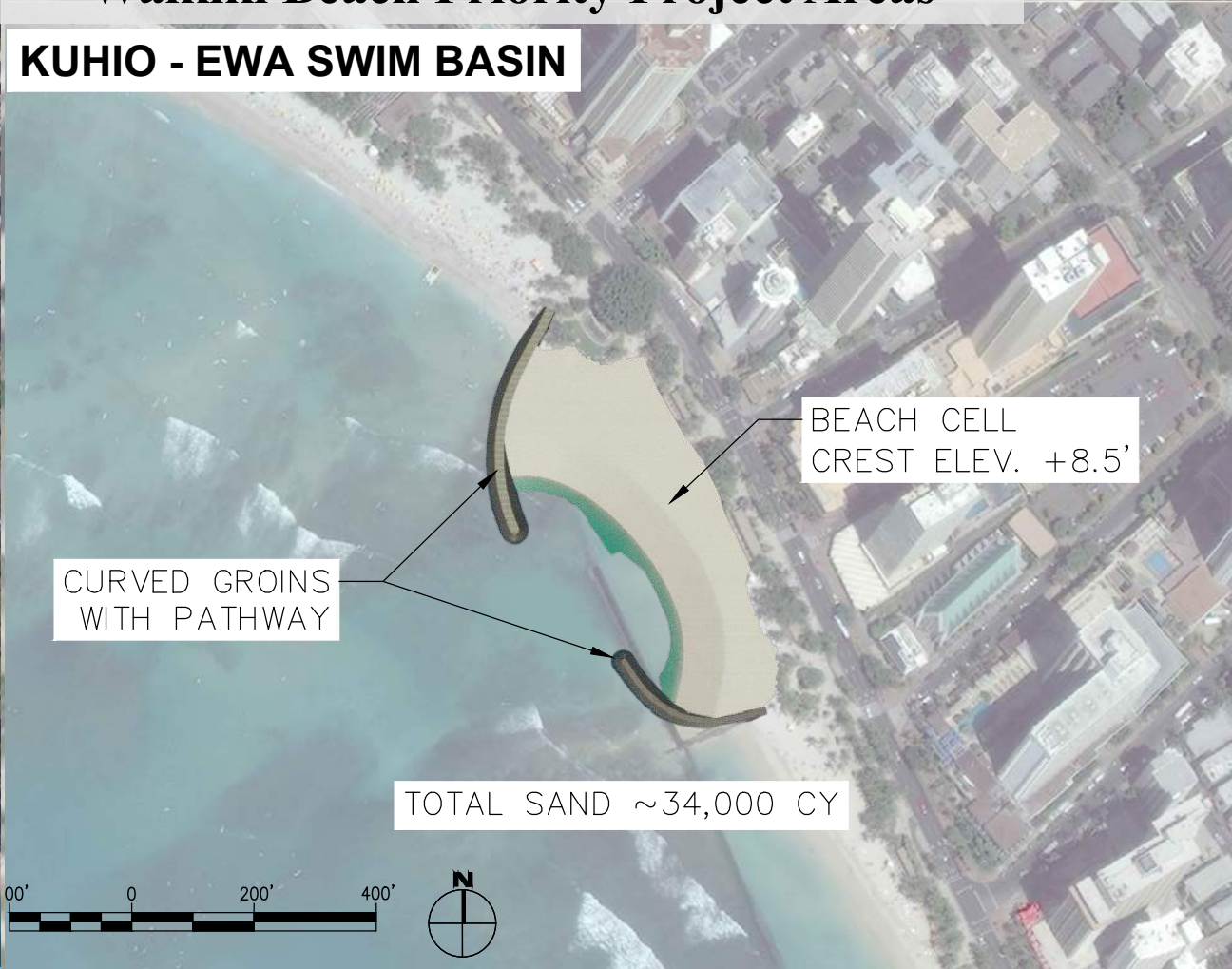
Swivel Tip For
Easy Handling
Lift Breaking Flap
Remove Rocks



CONCEPT IDEAS FOR DISCUSSION ONLY

Waikīkī Beach Priority Project Areas

KUHIO - EWA SWIM BASIN



A wide-angle photograph of a tropical beach. The foreground is dominated by clear, turquoise water. A dark, low wall or breakwater runs along the left side of the beach. The sandy beach is populated with people, some sitting on towels and others wading in the shallow water. In the background, a city skyline is visible, featuring several tall, modern buildings. The sky is a deep blue with scattered white clouds. The word "Mahalo" is overlaid in the center of the image in a large, black, serif font.

Mahalo

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Board of Water Supply
City and County of Honolulu

David Ebersold

Facilitator

WATER SYSTEM FACILITIES CHARGE

Water System Facilities Charges

Summary of Changes

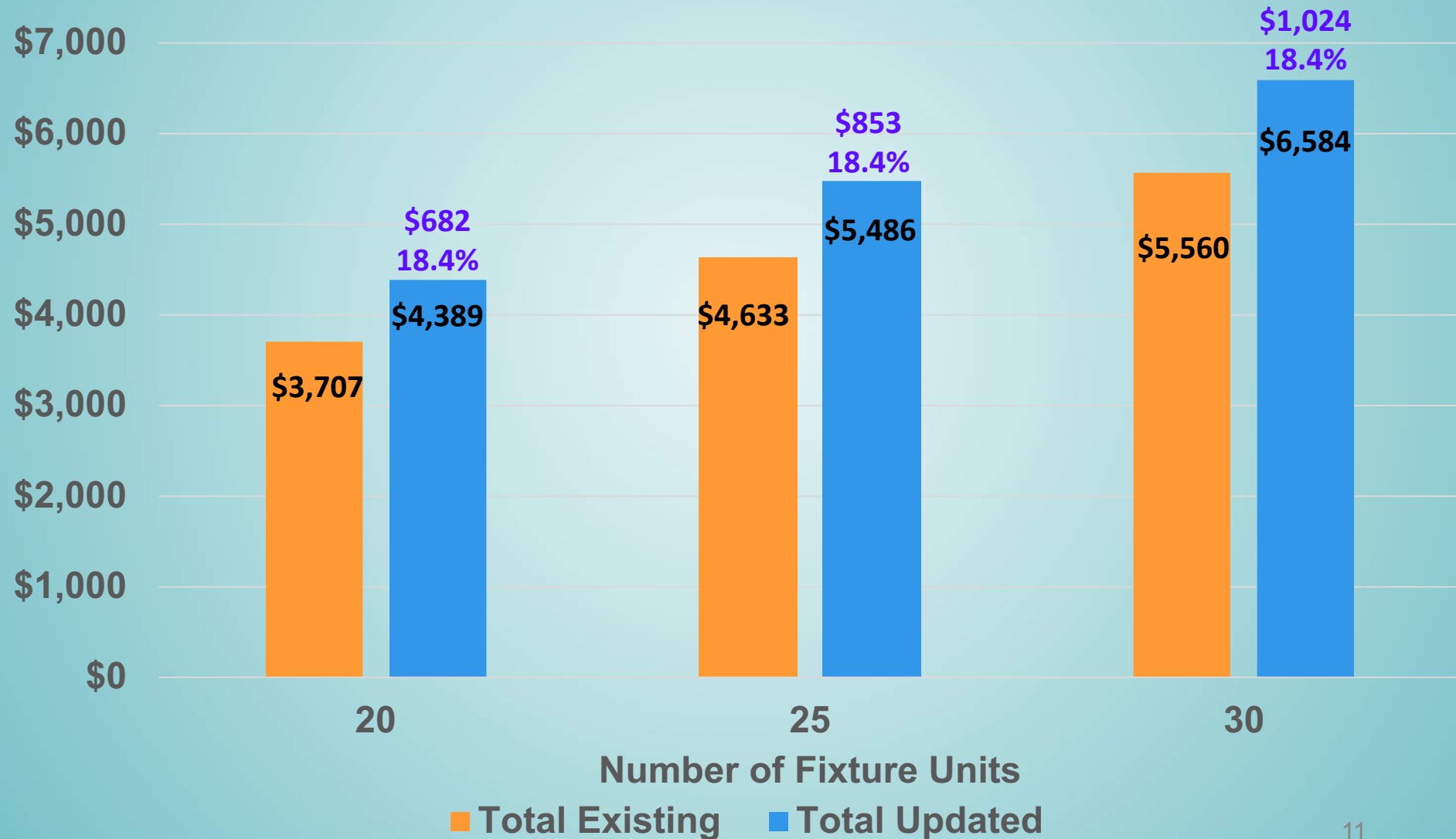
- Analyses completed for all customer classes

Customer Type	Change
Single-family	+ 18.4%
Multi-unit low rise	+ 6.5%
Multi-unit high rise	+ 7.8%
Non-residential <50 fxtu	- 40%
Non-residential >50 fxtu	Increases as number of fxtu increases
Agricultural	Large increases reflecting actual agricultural usage. Evaluate options to mitigate impacts.

fxtu: fixture unit

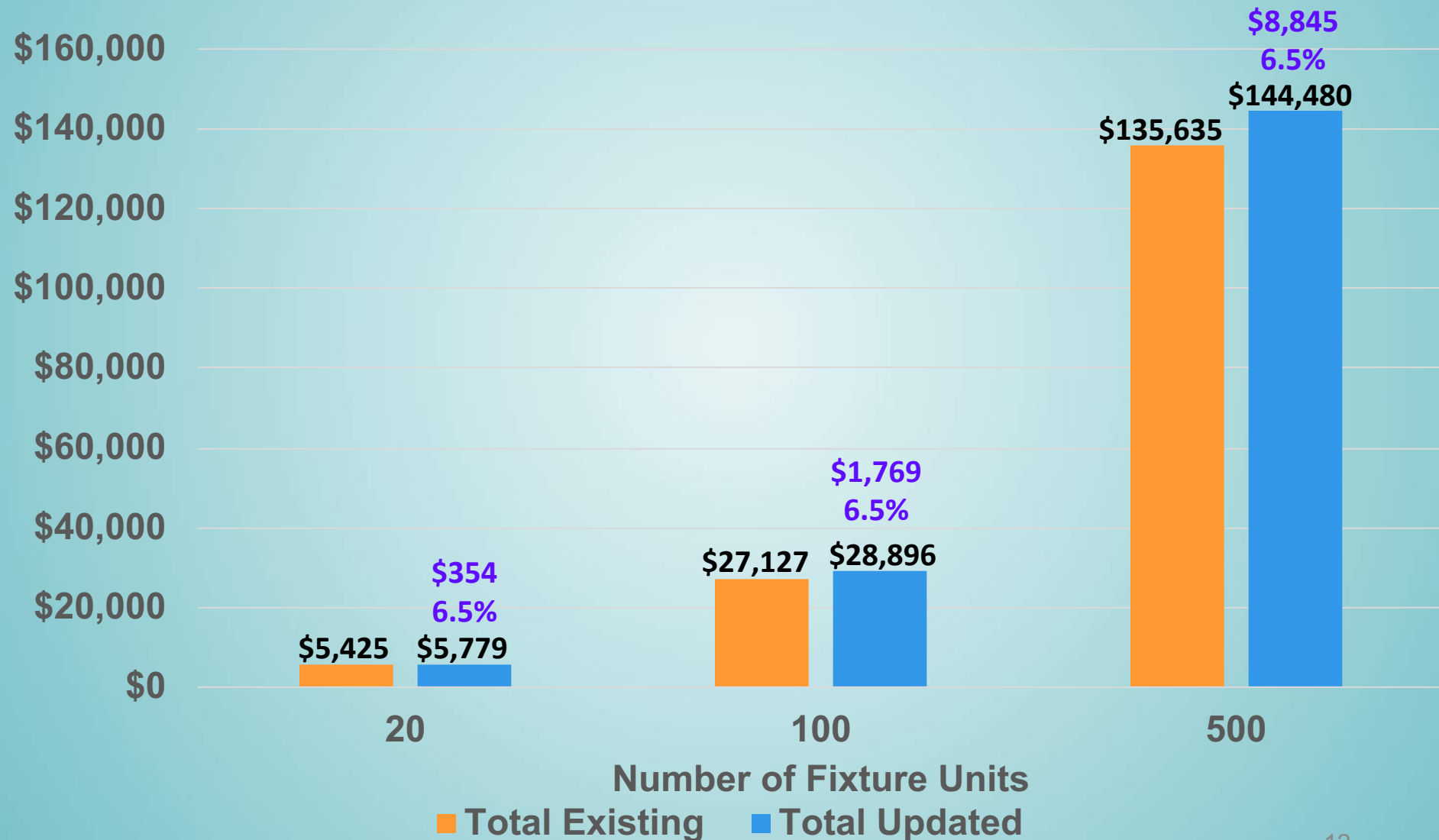
WSFC charge comparison

Single family

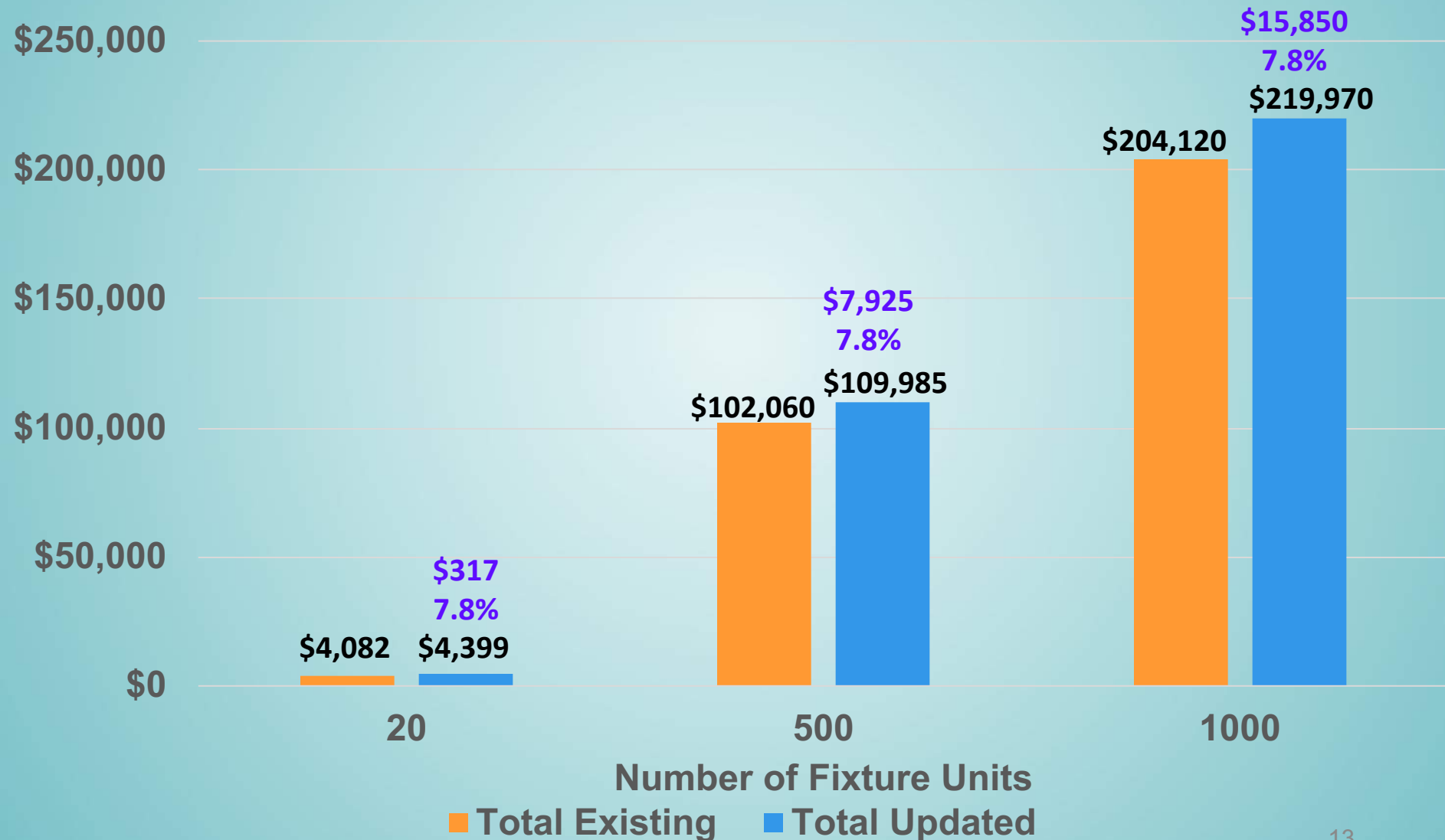


WSFC charge comparison

Multi-unit low rise (up to 3 living stories)



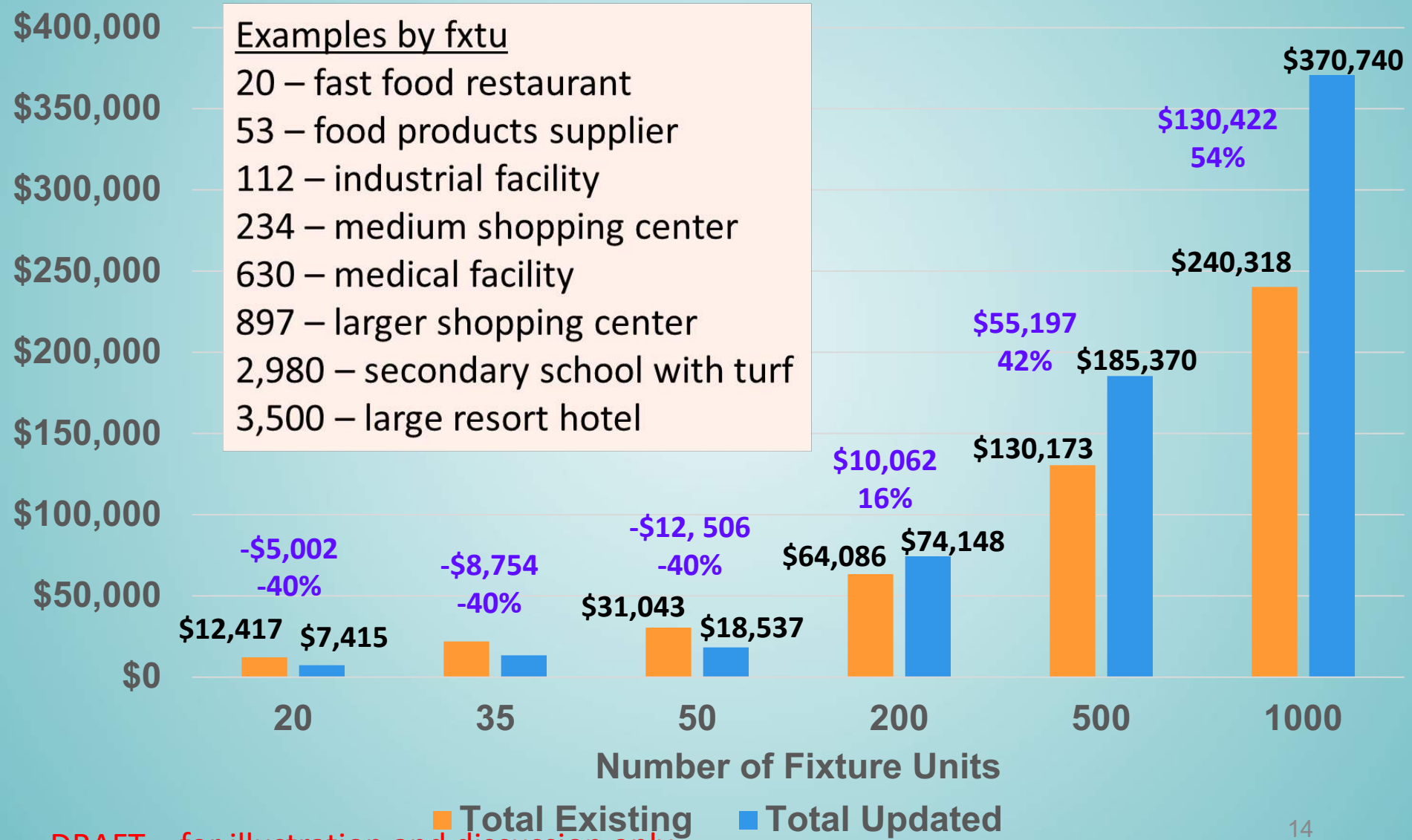
WSFC charge comparison, Multi-unit high rise (more than 3 living stories)



WSFC charge comparison

Non-residential

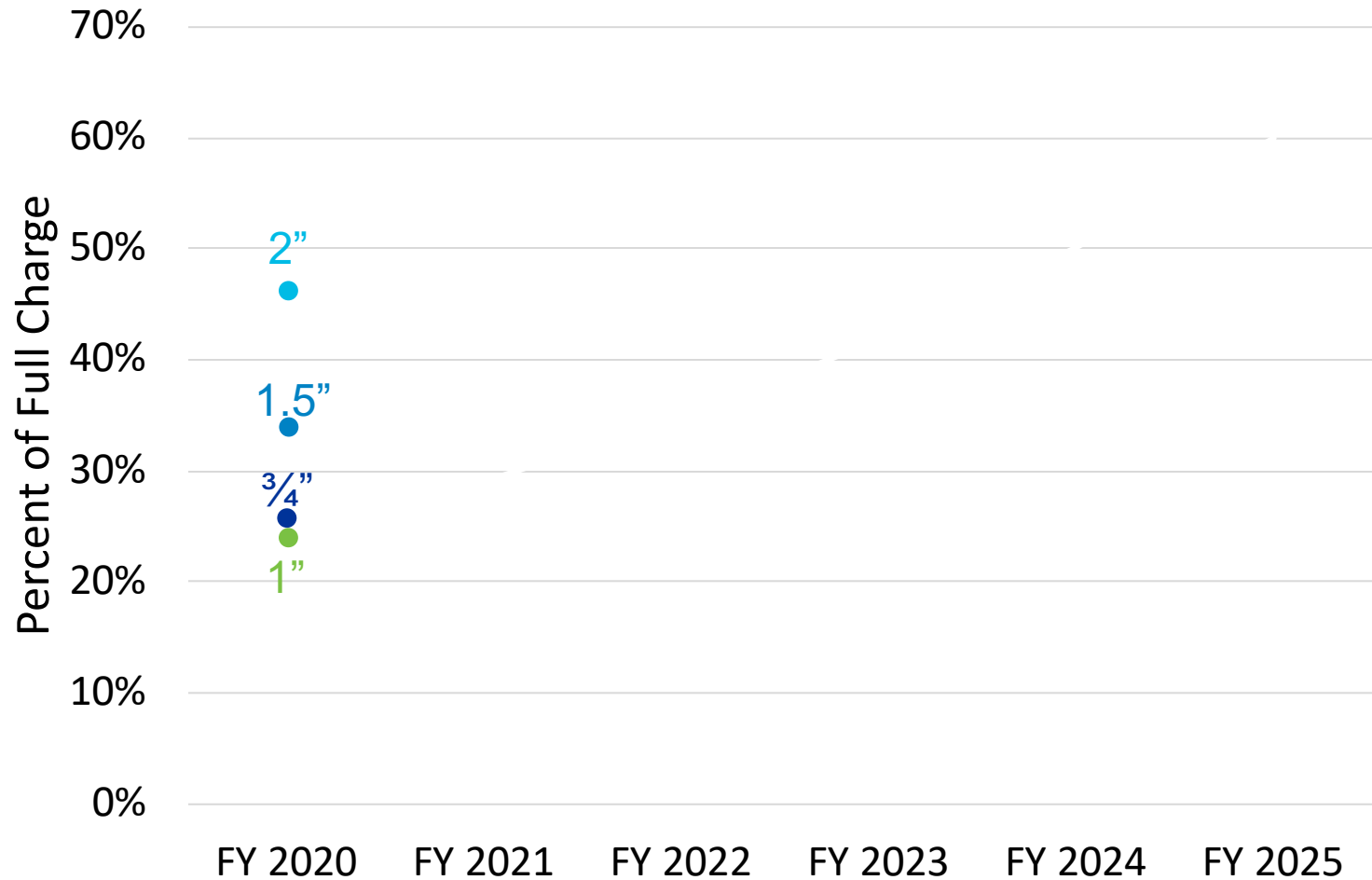
Examples by fxtu
 20 – fast food restaurant
 53 – food products supplier
 112 – industrial facility
 234 – medium shopping center
 630 – medical facility
 897 – larger shopping center
 2,980 – secondary school with turf
 3,500 – large resort hotel



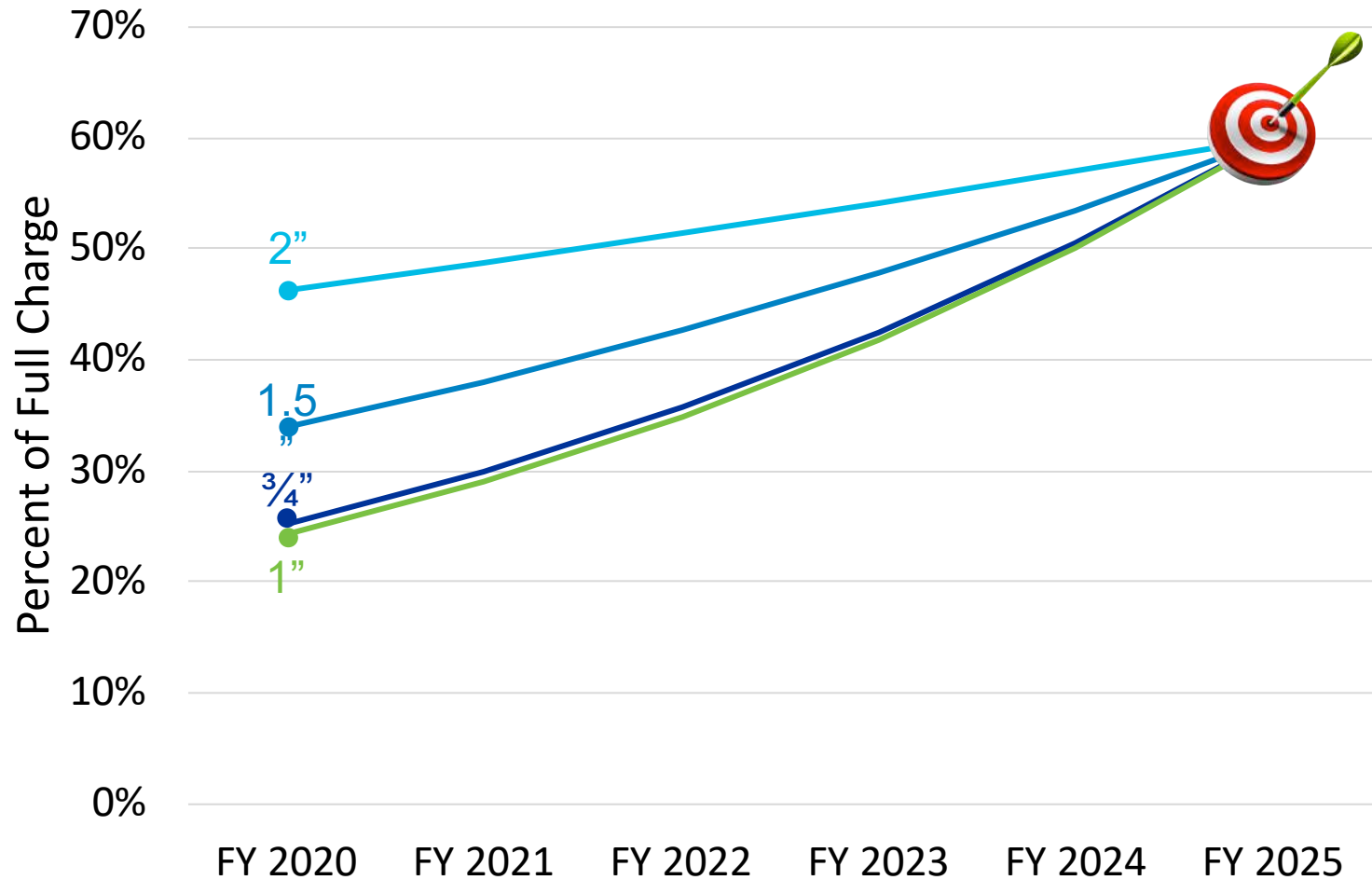
A Fresh Look at Concepts for Ag WSFC

1. Correct current imbalance in % recovery differences by meter size
2. Phase in changes over multiple years to minimize impacts to new Ag customers
3. Agricultural water use plan requirement for new ag customers
4. Partner with agricultural organizations to encourage water conservation for all BWS ag customers
5. Pursue/utilize supplemental funding from legislature for new wells to offset revenue impacts
6. Reevaluate program effectiveness in 5 years

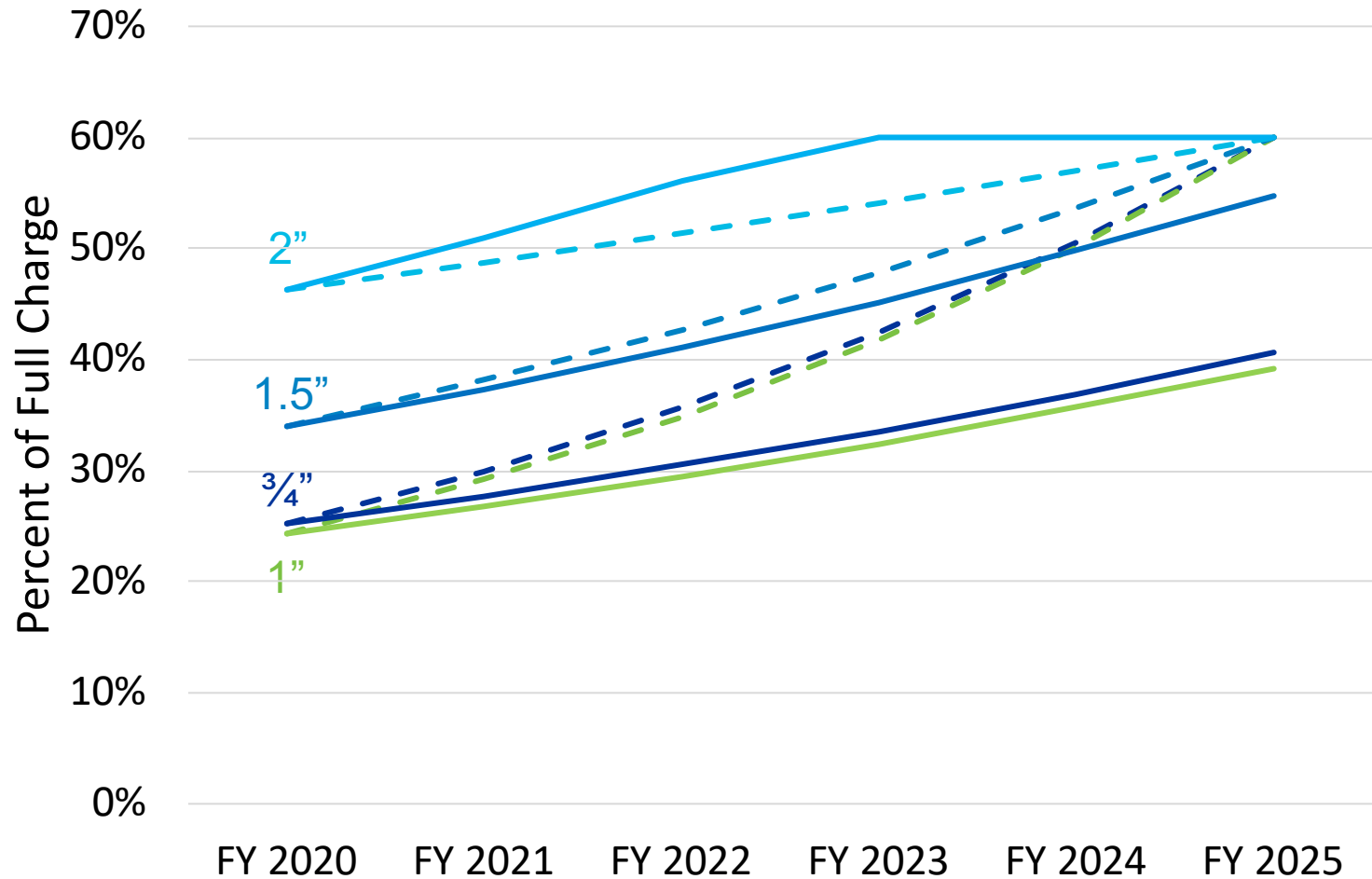
1. Establish Uniform Cost Recovery



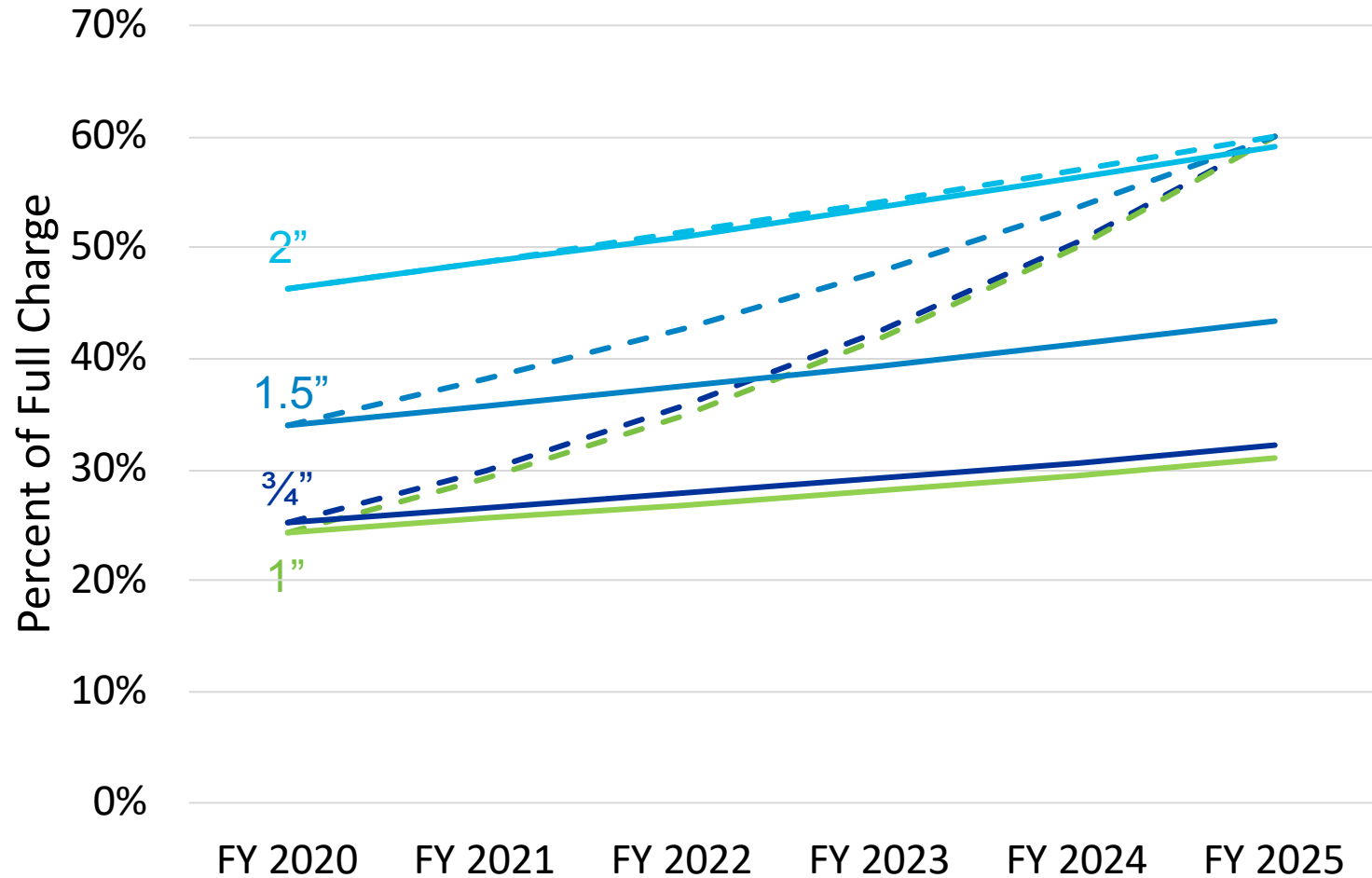
1. Establish Uniform Cost Recovery



2. Phase in Over Multiple Years to Minimize Impacts – 10% Annual



2. Phase in Over Multiple Years to Minimize Impacts – 5% Annual



2. Phase in Over Multiple Years to Minimize Impacts - 10% Annual

Meter Size	Current	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
3/4"	\$6,671	\$7,339	\$8,072	\$8,880	\$9,768	\$10,744
1"	\$10,934	\$12,027	\$13,230	\$14,553	\$16,008	\$17,609
1.5"	\$29,651	\$32,616	\$35,877	\$39,465	\$43,412	\$47,753
2"	\$64,866	\$71,352	\$78,487	\$84,073	\$84,073	\$84,073

2. Phase in Over Multiple Years to Minimize Impacts - 5% Annual

Meter Size	Current	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
3/4"	\$6,671	\$7,005	\$7,355	\$7,723	\$8,109	\$8,515
1"	\$10,934	\$11,480	\$12,054	\$12,657	\$13,290	\$13,954
1.5"	\$29,651	\$31,133	\$32,690	\$34,324	\$36,041	\$37,843
2"	\$64,866	\$68,109	\$71,514	\$75,090	\$78,845	\$82,787

DRAFT – for illustration and discussion only ; *current rate has remained the same since 1993

Year Reach Target WFSC (60% of Full Charge)

Meter Size	10% Per year	5% Per year
3/4"	FY 2030	FY 2038
1"	FY 2030	FY 2039
1.5"	FY 2026	FY 2032
2"	FY 2023	FY 2026

Stakeholder Feedback on Fresh Look

- 🔹 October 24, 2019 Stakeholder Advisory Group meeting: the general consensus that a 3% annual increase to recover 60% of WSFC costs was too low.
- 🔹 10% annual increase was more reasonable.
- 🔹 No quorum; and no recommendation requested of the group.
- 🔹 In December 2019 and January 2020 BWS met with stakeholders who could not attend the October meeting and who are directly involved in Ag.

Do you have enough information?

- Is it time for a Stakeholder Advisory Group recommendation for Ag WSFC?

Draft Schedule for Adoption of the WSFC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WSFC Approval												
SAG Recommendation to BWS												
PIG Input												
Submit draft WSFC report to BWS												
BWS Board Updates												
Develop Outreach Plan												
BWS Board Outreach Authorization												
Customer Outreach												
SBRRB Meeting												
BWS Public Hearing/Board Decision												
Submit Post-Hearing Small Business Impact Statement												
Submit final WSFC Report to BWS												
Staff training to implement with customers												
New WSFC Effective												

1/1/2021 ◆

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Mahalo!

Questions & Answers

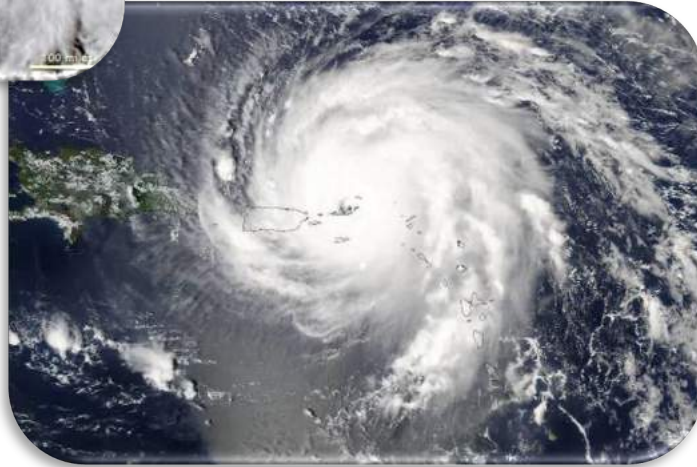




José L. Valenzuela, MSEM, CFM

Senior Director of Mitigation, Tidal Basin Group

LESSONS LEARNED IN PUERTO RICO FOLLOWING HURRICANES IRMA AND MARIA



Lessons Learned in Puerto Rico Following Hurricane Irma & Maria



Honolulu Board of Water Supply
Stakeholder Advisory Group Meeting #33



Puerto Rico

Located 1,000 miles SE of Miami, on the boundary of the Caribbean and North American plates

13,790 km² (5,320 mi²)

- 8,870 km² (3,420 mi²) is land
- 4,921 km² (1,900 mi²) is water

Population in 2016 ~3.4M
According to Census Bureau, in 2015, **46.1 percent** of people were living below the poverty line

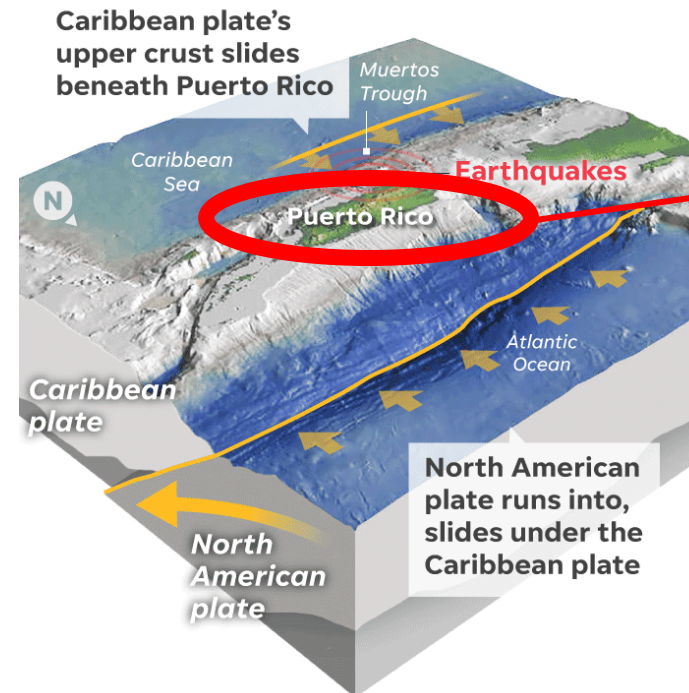
Five islands (three inhabited year-round)

Elevation ranges from sea level to 1,338 meters (4,390 feet)

Subject to hurricanes, earthquakes, tsunamis, landslides, flooding



5,730 mi
Distance from Hawaii to Puerto Rico

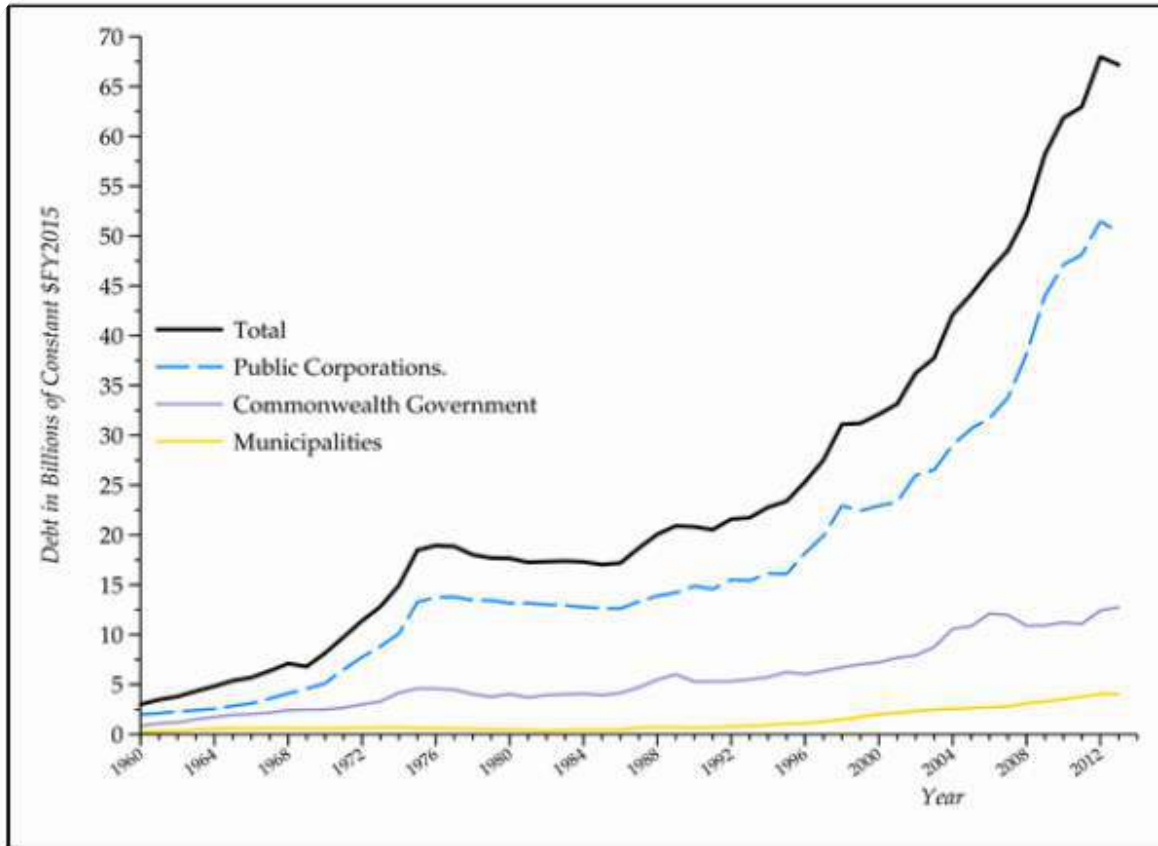


Puerto Rico



Before Maria.....

Figure 4. Gross Public Debt of Puerto Rico in Billions of Constant Dollars, 1960-2014



Source: Statistical Appendix (Apéndice Estadístico), various years; available at http://www.jp.gobierno.pr/Portal_JP/Default.aspx?tabid=184.

Near-continuous recession since 1996

Severe economic crisis since 2014

- More than \$70B in debt
- 45% poverty rate
 - Child poverty rate of 56%
- 11.9% unemployment rate (2016)

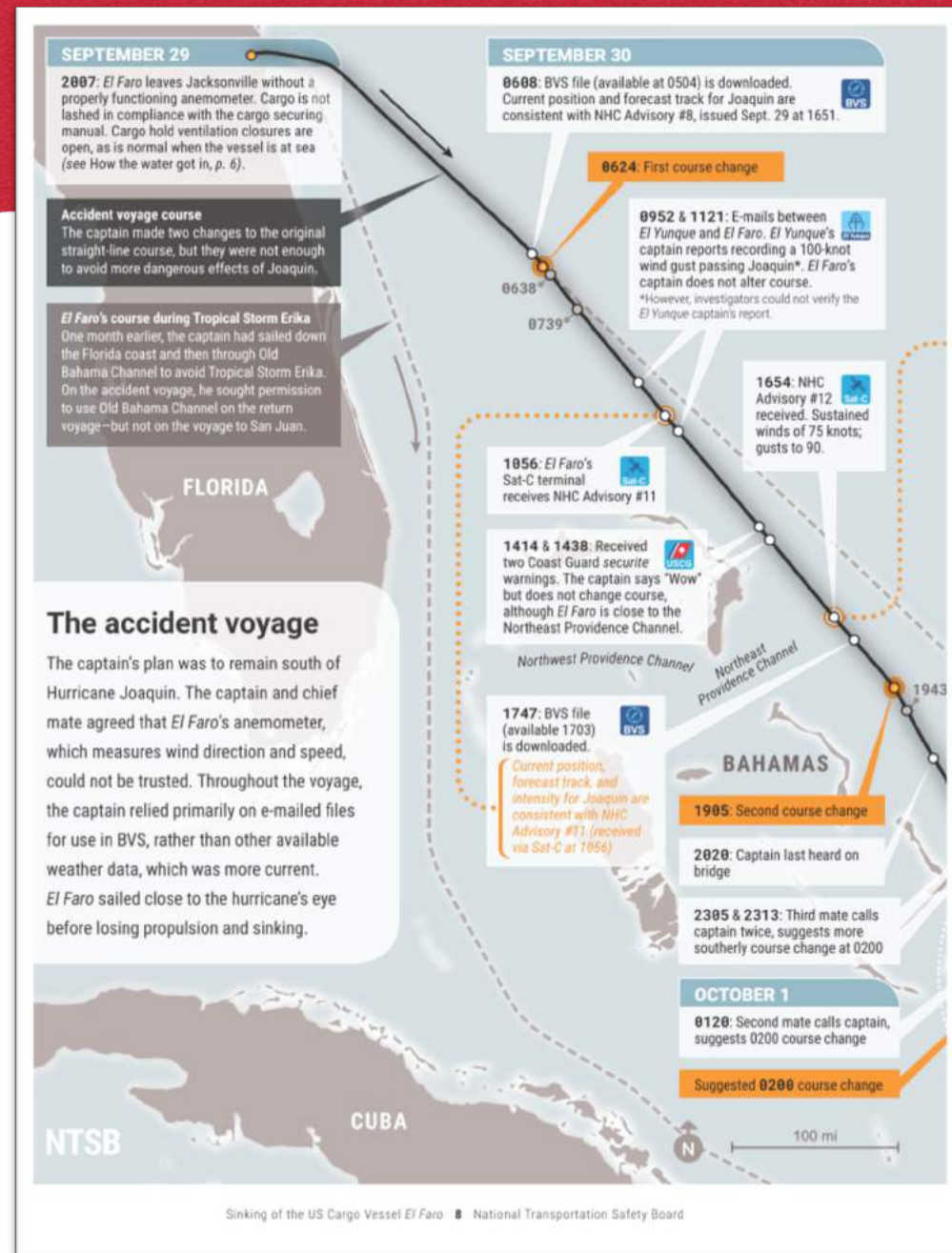
Structural, demographic, health, social and infrastructure stresses as a result

Sinking of US Cargo Vessel SS El Faro, October 1st, 2015, after steaming into the center of Hurricane Joaquin



© Capt. William Hoey
MarineTraffic.com

EL FARO was built in 1975 by PENNSYLVANIA SHIPBUILDING. EL FARO length overall (LOA) is 213.4 m, beam is 28.1 m and maximum draught is 12.8 m. Her container capacity is 1200 TEU. The ship is operated by SEA STAR LINE LLC.



Incident Period: September 05, 2017 -
September 07, 2017

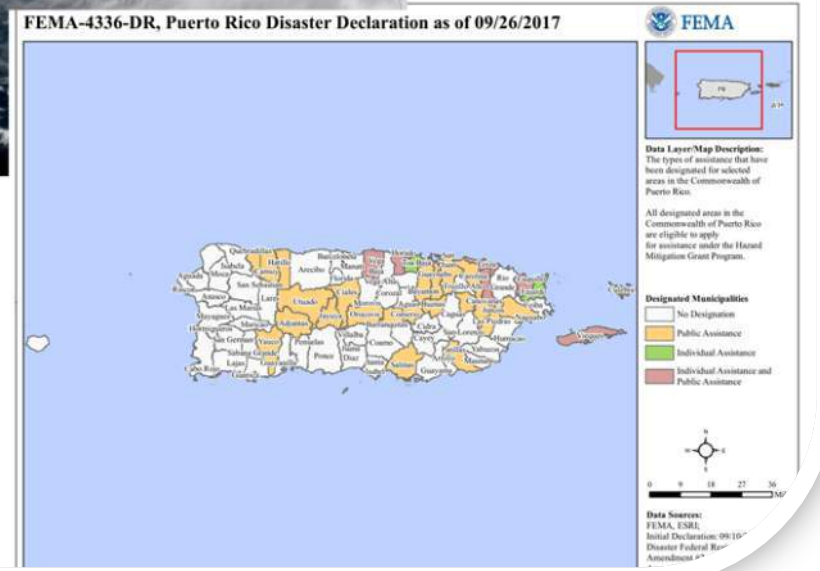
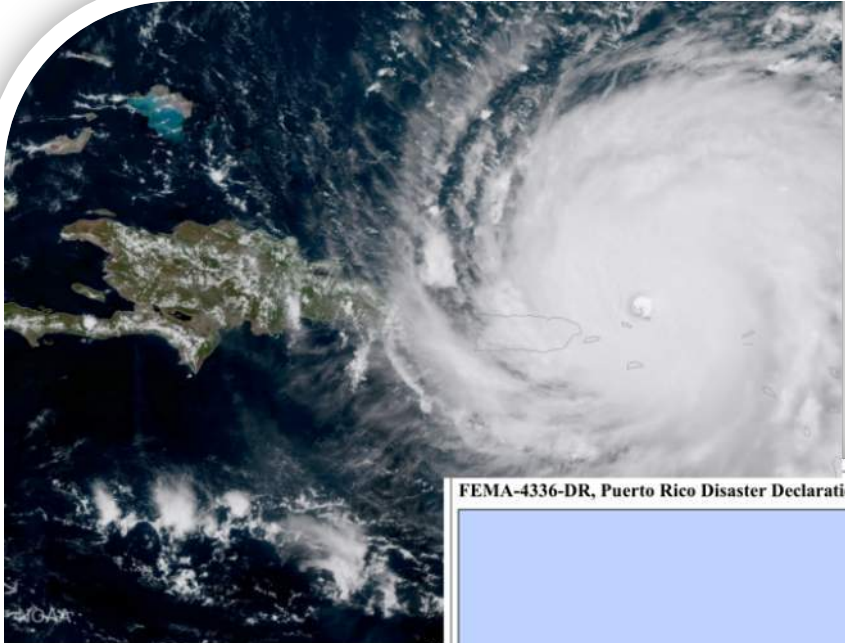
Individual Assistance Applications
Approved: 1,662

Total Individual & Households
Program

Dollars Approved: \$12,443,389.09

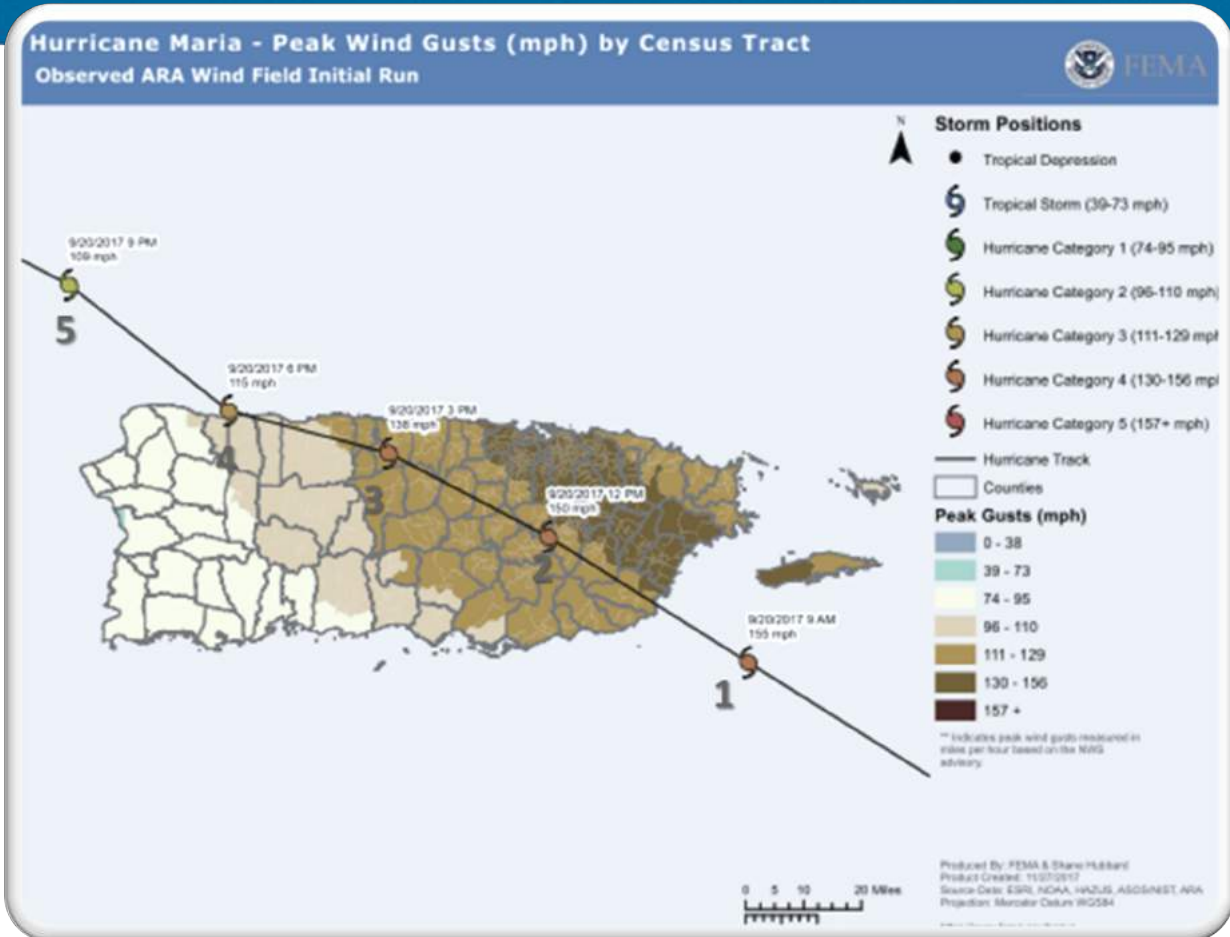
Total Public Assistance Grants

Dollars Obligated: \$10,239,167.90






**TIDAL
BASIN**[®]



FEMA

Individual Assistance
Applications
Approved: 475,281

Total Individual &
Households Program
Dollars Approved:
\$1,336,509,032.07

Total Public Assistance
Grants
Dollars Obligated:
\$6,034,371,275.65

Hurricane Maria

Category 4 at landfall

249 km (155 mph) winds

Storm surge of 3-9 feet

35 miles wide (the width
of the main island)

Hurricane María in Numbers



11,229 people in shelters

Localized flooding up to 38 inches

Estimated 55,000 landslides



64 immediate fatalities

Estimated additional 2,975 fatalities due to cascading storm impacts

Complete destruction of electrical grid

- Largest and longest blackout in history
- Temporary restoration and repairs complete in May 2018



Estimated 1,138,843 residential structures damaged or destroyed

- 70,000 Blue Roofs

All major transportation and supply chains damaged or destroyed

Estimated \$139B needed for recovery and reconstruction

Some of the new Data

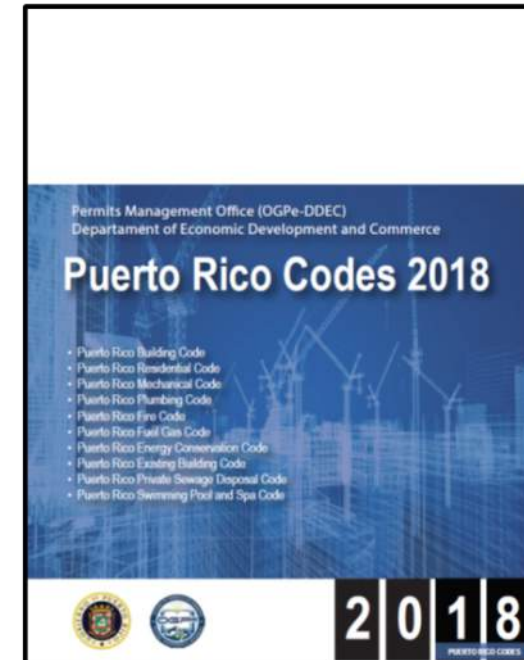
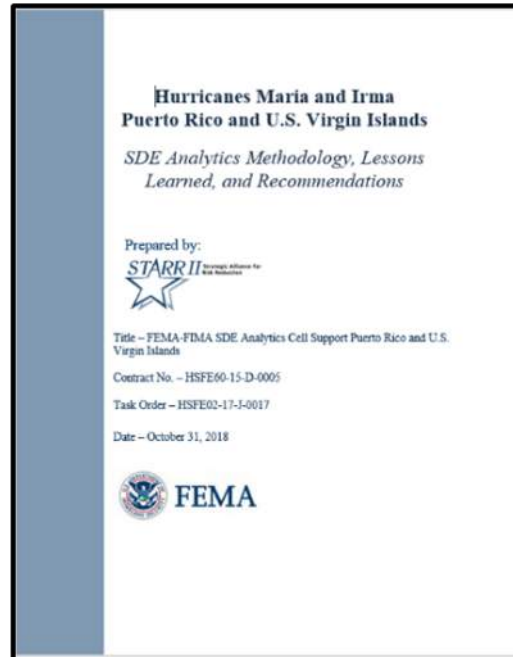
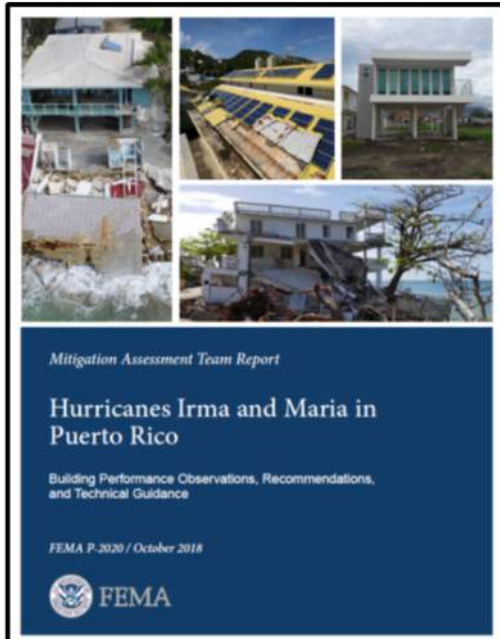
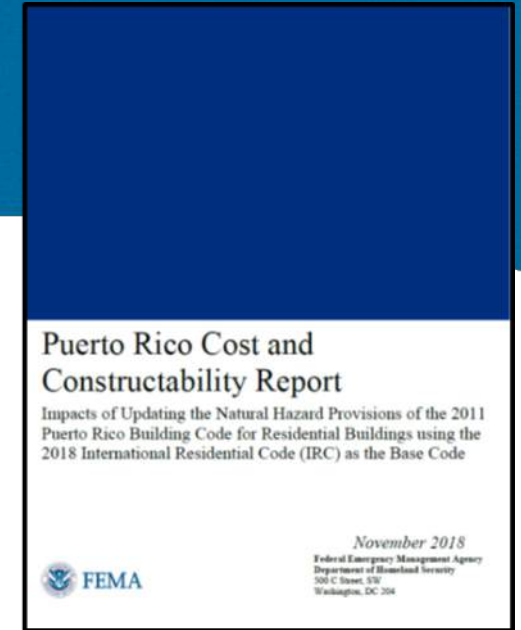
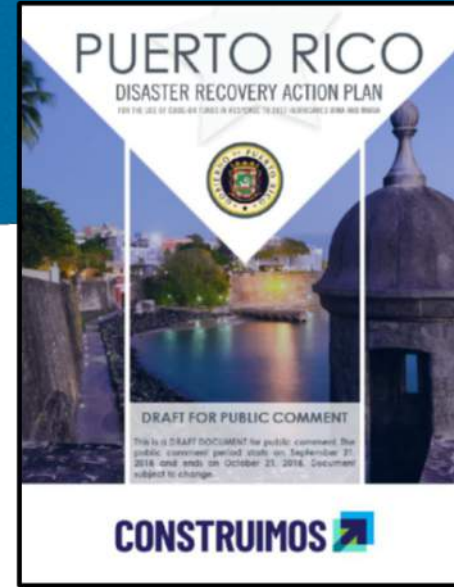
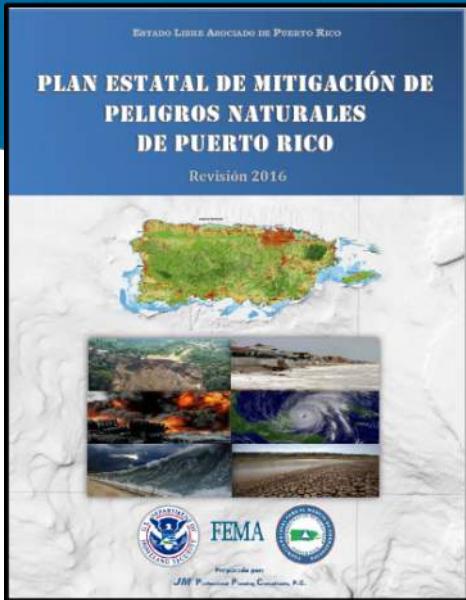
DONE!

- LiDAR 2016- 2017 – Island Wide
- Advisory Base Flood Elevations (ABFEs) Map – 2018
- LiDAR 2018 – Coastal
- LiDAR
- Basic Design Wind Speeds, V, For Risk Category II Buildings And Other Structures (Puerto Rico)2018 – Island Wide
- Updated GIS Database

Undergoing/Planned

- USGS, Landslide Map
- USACE Coastal Erosion Study



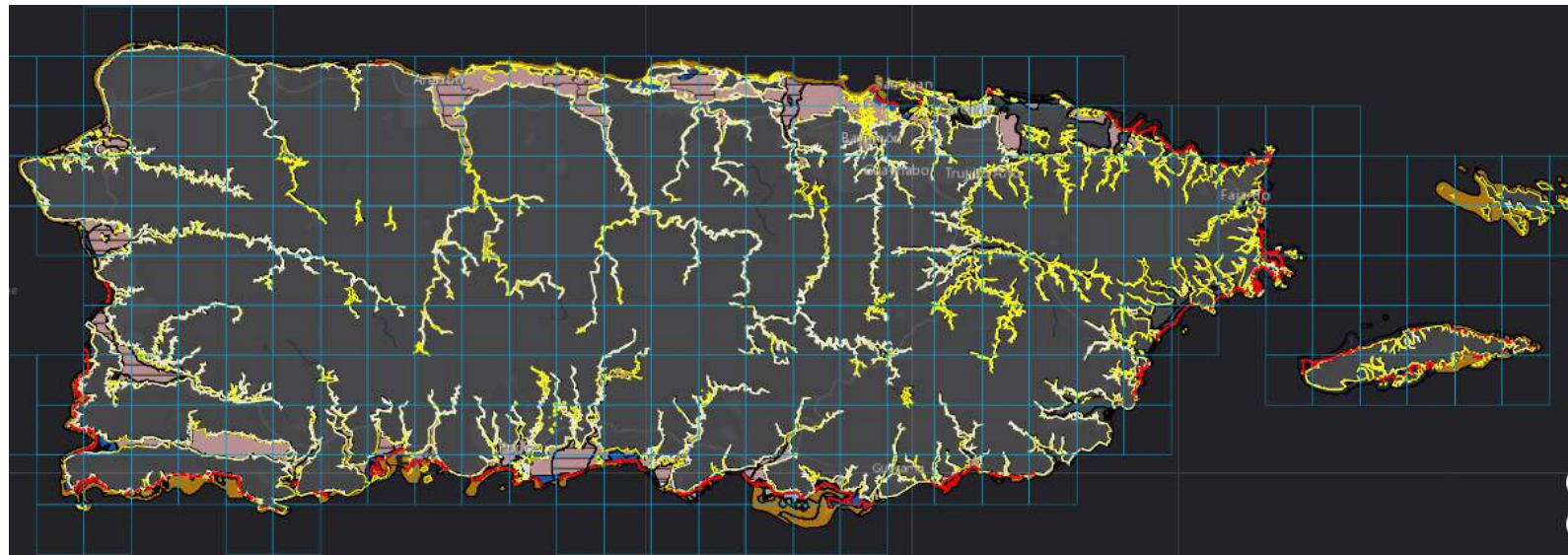


Structures Located in Flood Zones

		ABFE SFHA Zone					Total
		A	AE	AO	Coastal A	VE	
Former Effective Zone	A	12,308	557	9	0	0	12,874
	A99	1,538	0	0	0	0	1,538
	AE	104,656	35,473	18	3,628	0	143,775
	AH	47	0	0	0	0	47
	AO	6,149	0	4,323	0	0	10,472
	VE	3	1	0	0	5,529	5,533
	X or D	68,724	9,176	491	0	183	78,574
Total	193,425	45,207	4,841	3,628	5,712	252,813	

← NEW Additions to Adv SFHA
← TOTAL Structures in SFHA

	Area , Sq Km	%
Puerto Rico	8,939.62	
ABFEs 2%	1,860.51	20.81
ABFEs 1%	1,700.40	19.02



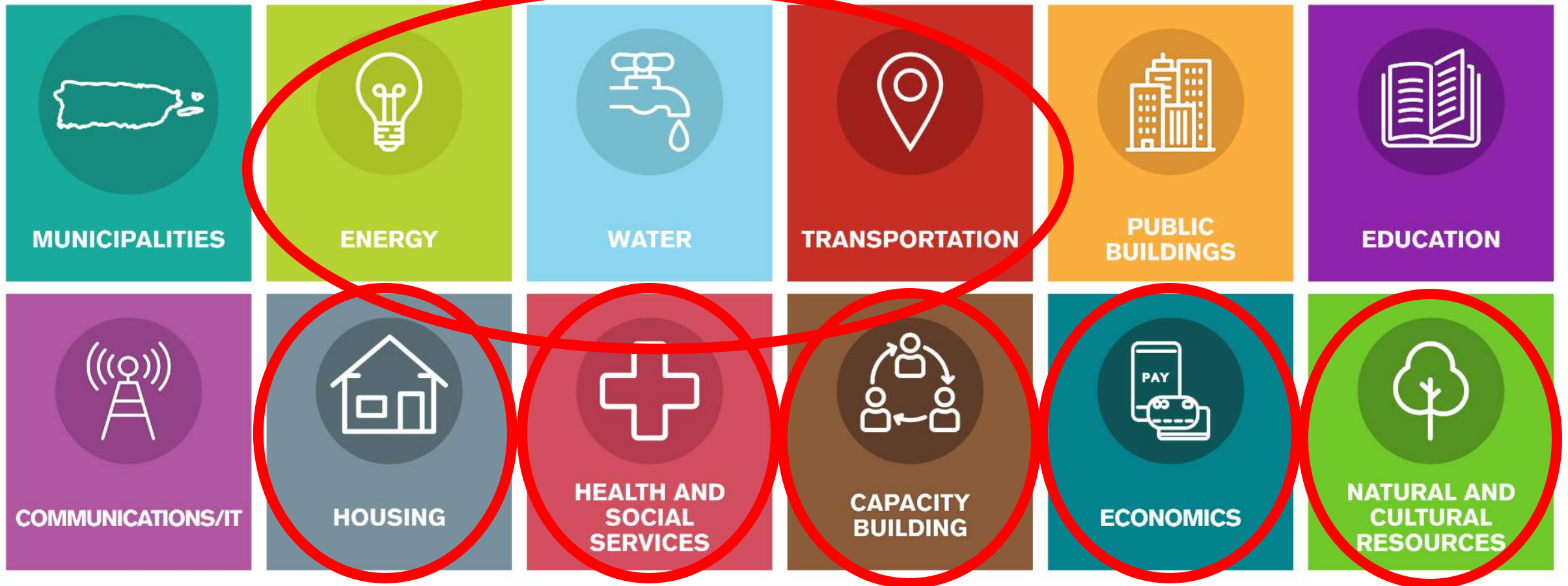
Lessons Learned

COMMUNICATIONS

- Signs
- Language barrier
- Cellphone
- Sat
- Radio (all bands)
- Amateur Radio – KP4
(Puerto Rico)



FEMA Recovery Support Functions



Federal Government Response Agencies



**US Army Corps
of Engineers®**

Executive and Other Branches of Local Government



Certified Fiscal Plan & Budgetary Discipline

New Fiscal Plan for Puerto Rico
**Restoring Growth
and Prosperity**



Financial Oversight &
Management Board
for Puerto Rico



Alignment and
political
commitment

Economic

Economic crisis

Lack of
maintenance to the
infrastructure

Power

Transmission & distribution

6 months ~100,000 without power

1 year to provide power



Lack of:



Enough personal with FEMA program knowledge
(Federal & State)

Policy from FEMA for Mayor Disasters

Response coordination. Overwhelming for State,
Local and FEMA.

Trusted information

Official info vs Crowd Source



Policy

Taxes –
Inventory Tax
2016, 9%

Planning

Permits

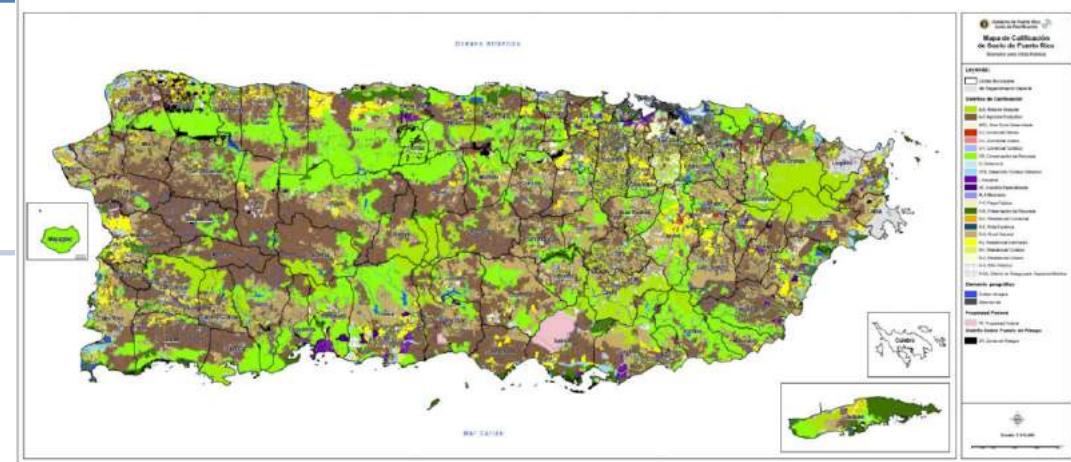
90k Informal housing

Code ICC 2011
upgraded to IBC 2018

Code
Enforcement

11 inspectors for the
entire Island

HGMP Grant
will take it
up to 140



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