US Flood Insurance:
NFIP Risk Rating Redesign

Mitchell Waldner, FCAS
Federal Emergency Management Agency (FEMA)
Federal Insurance and Mitigation Administration (FIMA)

CAS Seminar on Reinsurance June 5, 2017

Today's Discussion

- Current State
- Risk Rating Redesign
- Integration with Private Sector
  - Flood Insurance Challenges
  - Flood Modeling

Risk Rating Background

- Current rating system jointly developed by NFIP and private insurance industry
  - Current system was developed in the 1960's and 1970's
  - Based on best practices of fire and home insurance sector

- NFIP has not stayed current with industry
  - NFIP risk rating approach has changed over time but without real regard for industry
  - Need to develop an approach that can be continuously upgraded and stay current

- A customer-experience assessment identified the following gaps:
  - Policyholders lack understanding of their flood risk
  - Inconsistency in program value proposition

Risk Rating Redesign Methodology Goals

FEMA

Accuracy	Improve accuracy of the NFIP's risk classification system and Risk Rating model to inform policy, pricing decisions, data collection, and cost
Agility	Increase agility by adapting to new methods and data that is current with industry standard, with a focus on continuous improvement
Cost-effective Methodology	Increase cost-effectiveness by using purposeful, value-driven approach to collecting, analyzing and communicating flood risk
Customer Orientation	Improve customer experience by improving policyholder understanding of their risk and the delivery of the pricing to the policyholders
Improved Floodplain Management	Support sound floodplain management by more clearly communicating risk at both the community and individual level

Updating the Risk Rating approach is a step towards improved customer experience

FEMA

Experiment and innovate to continuously improve our understanding of risk

Examples of individualized risk in car insurance

PROGRESSIVE

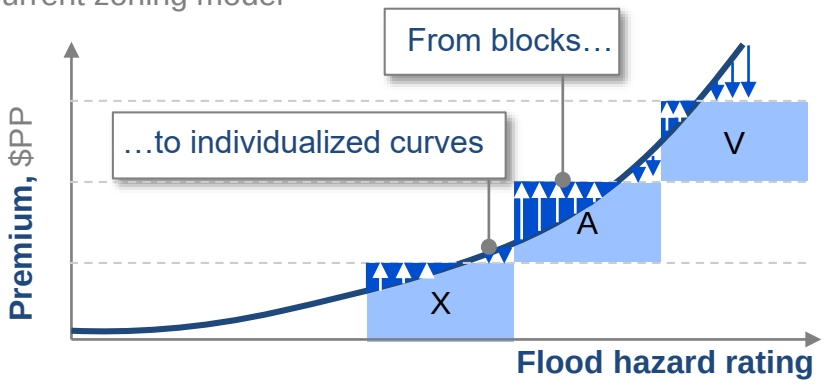
Incorporates behavioral changes in individual risk assessments, and adjusts premiums accordingly

GMAC Insurance

What this could look like for the NFIP

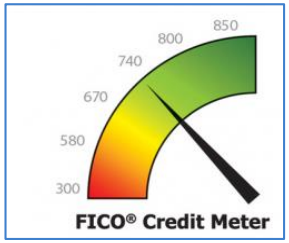
Structure-specific flood risk assessment

Current zoning model



Communicate flood risk through a simple, integrated flood score

Examples of rating scales



Rotten Tomatoes

What this could look like for the NFIP

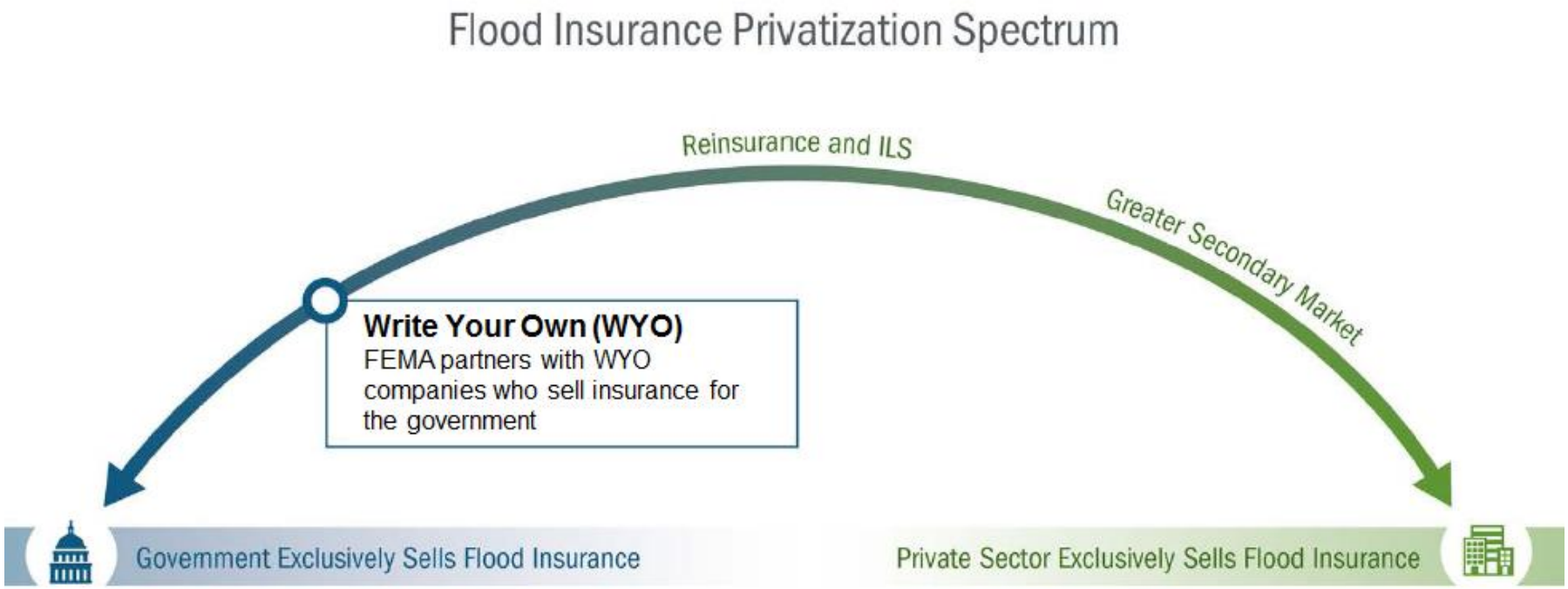
Flood score that reflects individual property risk

SOURCE: Company websites; TMAC 2015 Interim Annual Report; FEMA's National Flood Hazard maps

NFIP Moonshots

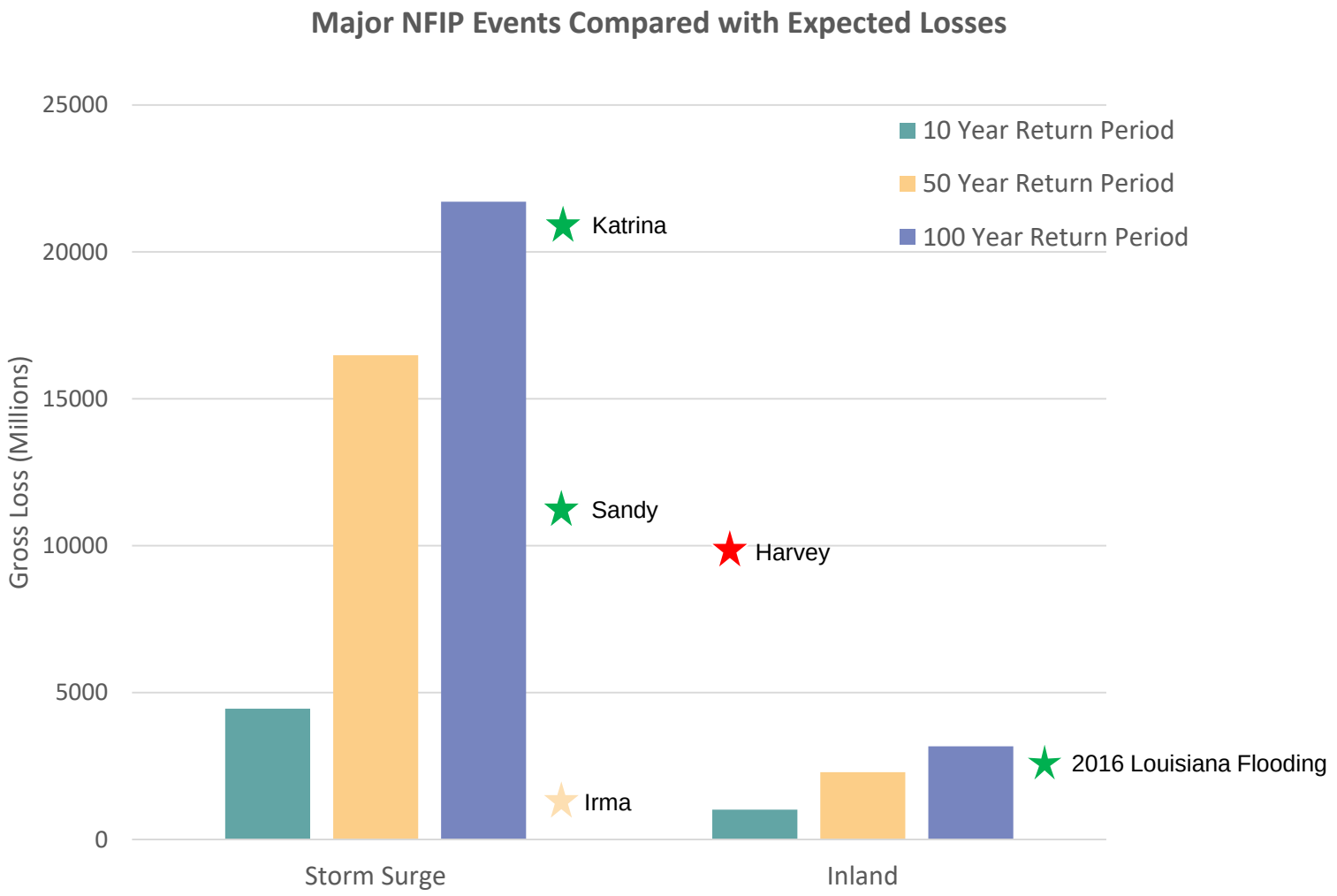
FEMA

Integration with Private Sector



Public Sector → Distribution → Risk Transfer → PPP → Choice

NFIP's 2017 Reinsurance Program



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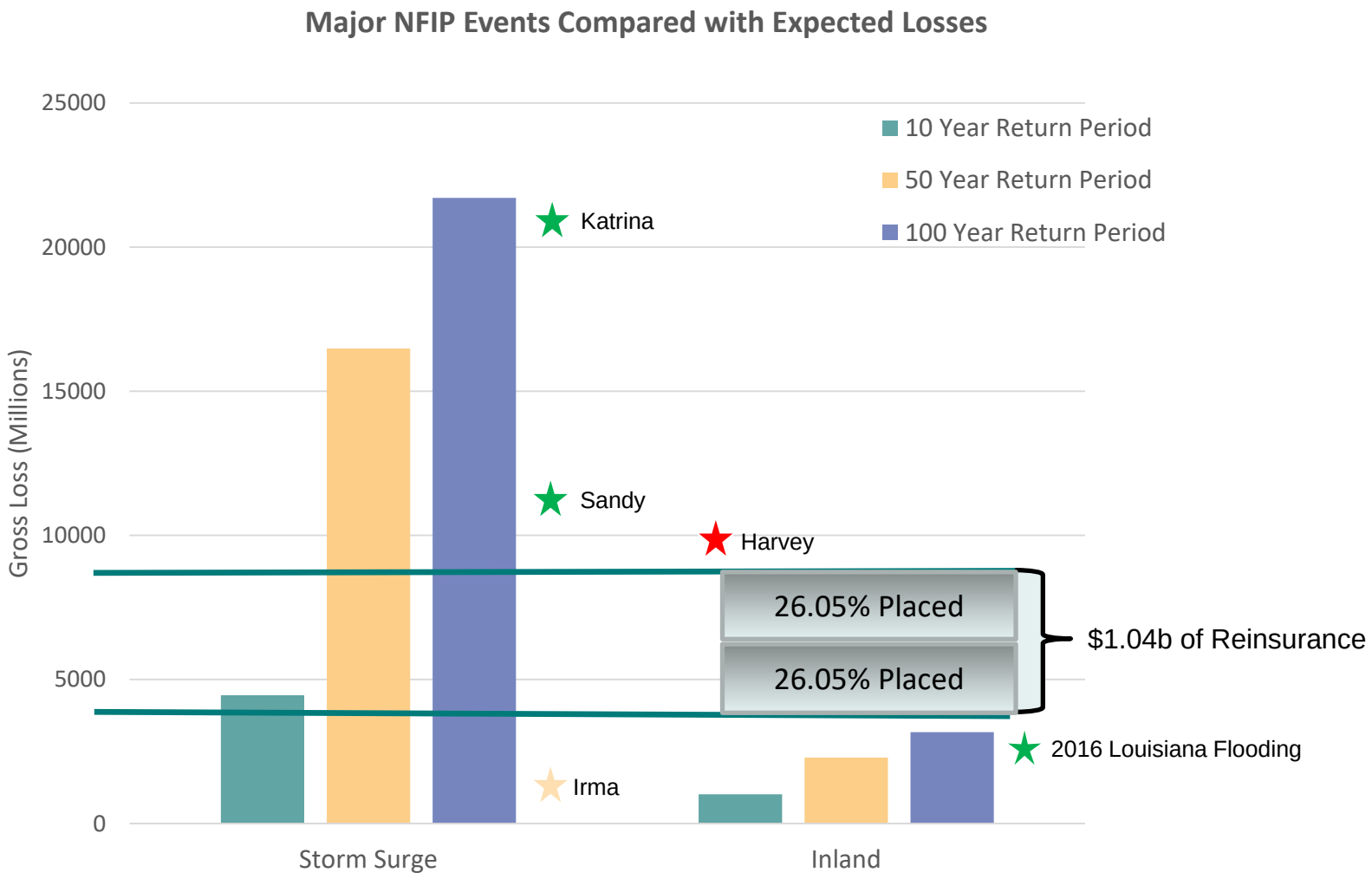
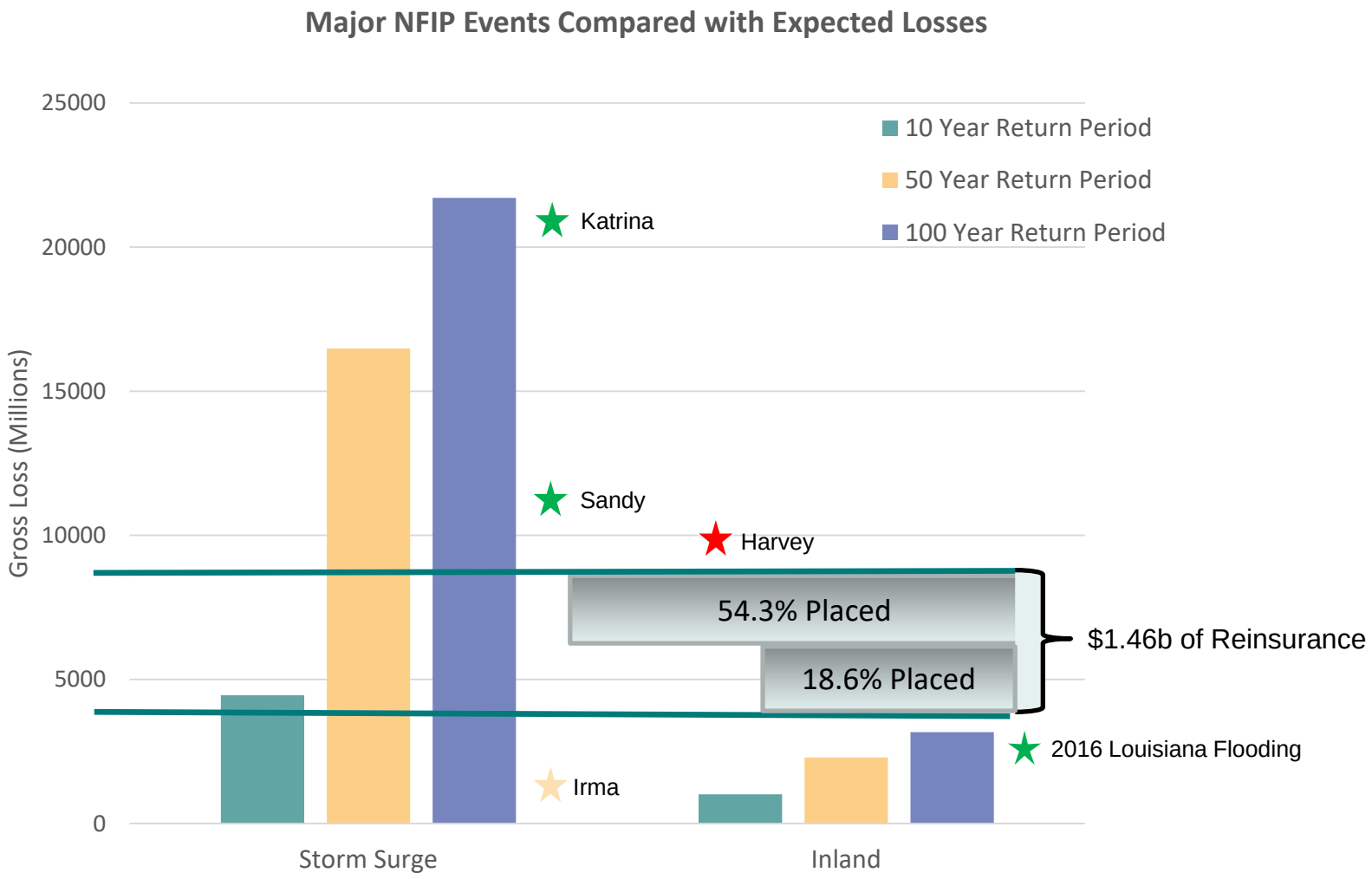


NFIP's 2018 Reinsurance Program



Flood Insurance Challenges

- Primary risk factors are difficult and expensive to collect – e.g. Elevation
- Currently difficult to compete with NFIP rates in many areas
  - Subsidies
  - Lack of graduated rates within flood zones
  - Difficult to meet policy requirements in SFHA
  - Many of these challenges should be mitigated with NFIP's Risk Rating Redesign
- Correlation with wind peril
  - Doubling down? Concurrent causation?
- Difficult to avoid adverse selection and concentration of risk
- Lack of historical industry data
- Flood modeling challenges

Flood Modeling Challenges

- Models don't account for all flooding sources (e.g. Tropical Storm, Hurricane Precipitation, Dam Breach)
- Models use different DTMs
  - Leads to potential high variability in elevation of risks between models
- Models don't account for basements the same way FEMA does
  - Limited coverage - M&E only up to $10k
- Lack of model convergence

EVENT	YEAR	AMOUNT PD ($)	MODELED ($)*	NON-MODELED ($)*	% NON-MODELED
Hurricane Katrina	2005	$16.3	$13.3	$3.0	18%
Hurricane Harvey	2017	$9.0	$1.5	$7.5	83%
Superstorm Sandy	2012	$8.7	$8.0	$0.7	8%
Hurricane Ike	2008	$2.7	$2.3	$0.4	15%
Louisiana Severe Storms and Flooding	2016	$2.5	$2.5	$0.0	0%
Hurricane Ivan	2004	$1.6	$1.2	$0.4	23%
Hurricane Irene	2011	$1.3	$0.5	$0.8	62%
Hurricane Irma	2017	$1.2	$1.0	$0.2	17%
Tropical Storm Allison - 2001	2001	$1.1	$0.0	$1.1	100%
Hurricane Matthew	2016	$0.7	$0.4	$0.3	48%
TOTAL - TOP 10 EVENTS		$45.1	$30.7	$14.4	32%

Source: 2014 AIR Claims analysis capturing NFIP claims from 1977 through 2012 - the proprietary method used to split cause of loss is not available; GC prepared Matthew losses using a proxy method. HARVEY/IRMA estimated using KatRisk.

Closing Remarks

- FIMA is charged to increase the resiliency of the nation, to ensure that Americans are better prepared for and protected against flooding
- Individuals understanding their own risk is important for building resiliency
- Risk Rating Redesign and Reinsurance are critical in building a sound financial framework
- A strong partnership with the private sector is integral to achieving our moonshots and fulfilling our mission

Thank You