



Building Climate Resilience in the Real Estate Sector – a Post Sandy Perspective

John A. Miller, P.E., CFM, CSM, Legislative Committee Chair



Topics

- Hurricane Sandy devastation of homes
- The Federal Flood Risk Management Standard
- HUD's Guidance for CDBG-DR with higher standards
- Reform and reauthorization of the National Flood Insurance Program
- Municipal bonds and the influence of climate change
- Local government's role in planning, adoption of higher standards and implementation of risk reduction



Leonardo, NJ



Mantoloking, NJ



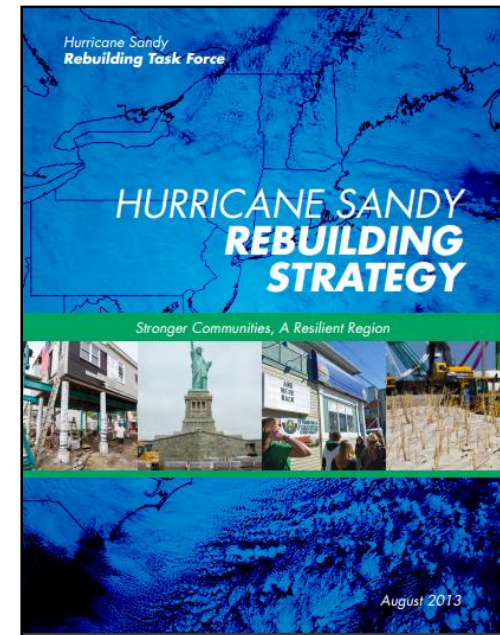
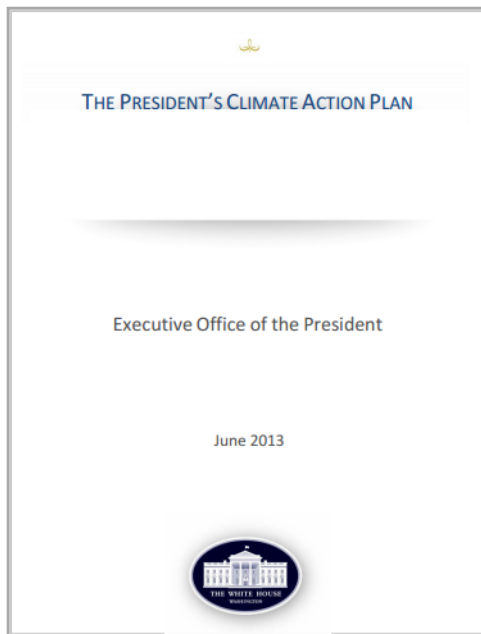
Ortley Beach, NJ



Holgate, Long Beach Island, NJ

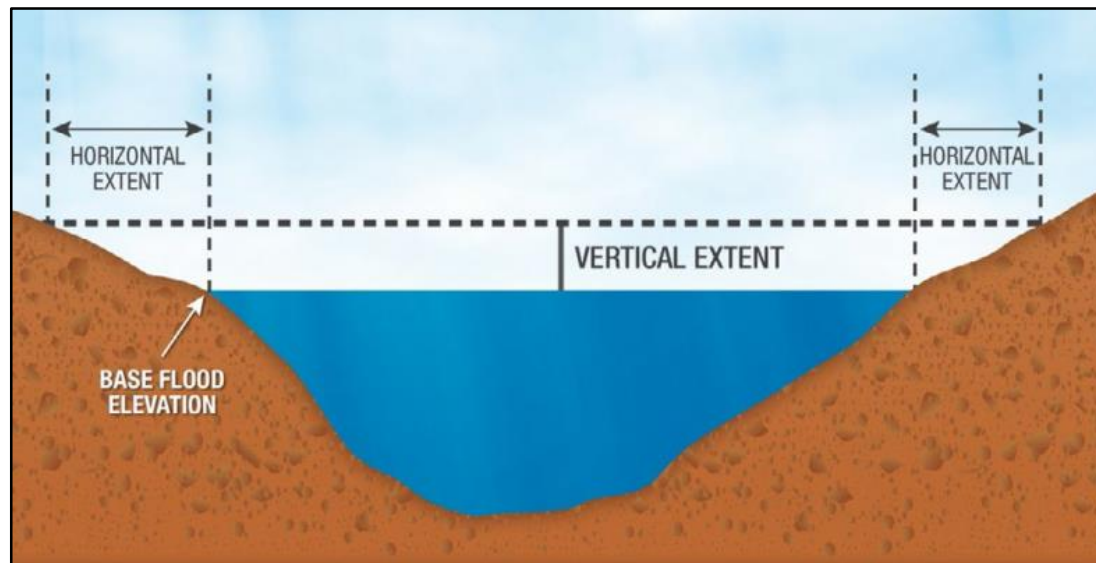
Calls for Higher Standards

- President Obama's Climate Action Plan (2013);
- Hurricane Sandy Rebuilding Task Force (2013);
- President Obama's State, Local and Tribal Leaders Task Force on Climate Preparedness and Resilience (2014).



Federal Flood Risk Management Standard (EO 13690)

- *Utilizing best-available, actionable data and methods that integrate current and future changes in flooding based on science,*
- *Two or three feet of elevation, depending on the criticality of the building, above the 100-year, or 1%-annual-chance, flood elevation, or*
- *500-year, or 0.2%-annual-chance, flood elevation.*



2017 Hurricane Season

Hurricanes Harvey, Irma and Maria



A photograph of a white house with a window and a porch, partially submerged in brown floodwater. The water is high enough to reach the porch level.

Trump Applies Obama-Era Flood Aid Rules He Axed Six Months Ago

By **Christopher Flavelle**

February 7, 2018, 12:08 PM EST

From **Climate Changed**

The Trump administration's stance on climate change became a little less clear this week.

Six months ago, President [Donald Trump](#) revoked an Obama-era rule requiring federally funded projects to account for the increased flood risk associated with global warming. Critics charged that Trump's decision would allow the construction of buildings, roads and other projects that could soon be underwater.

On Tuesday, the U.S. Department of Housing and Urban Development told states how to spend the \$7.4 billion in disaster-recovery money Congress approved after Hurricane Harvey. Tucked into the document's 101 pages was the requirement that any new structures in a floodplain be built well above projected flood levels -- virtually the same requirements as those that Trump revoked last August.

REFORM AND REAUTHORIZATION



<http://www.texasinsuranceplace.com>



N.Y. / REGION

Jersey Shore Towns Scramble for Revenue as Sandy Aid Dries Up

By NICK CORASANTTI JULY 30, 2017

TOMS RIVER, N.J. — The streets of Ortley Beach here were once considered ground zero for the destruction from Hurricane Sandy in 2012, with houses and debris strewn about for months. Today, vacant lots still dot the blocks, but they are outnumbered by new homes and a beach as crowded as ever.

Though many of the visible wounds from Sandy's assault have healed, nearly five years later the storm is still exacting a less visible though no less brutal blow, not just to this town but also to many communities up and down the Jersey Shore.

When the storm wiped out buildings, it wiped out badly needed tax revenue. Now, with federal aid drying up, towns are confronting the financial pain.

In Ocean County, home to many of those hardest hit by the storm, towns were a total of \$7.8 billion short of their prestorm tax base at the beginning of this year, or about 8 percent of their prestorm totals, a review by The New York Times of the most recent property tax data available from New Jersey found. Twenty-four of the county's 33 towns were faced with smaller tax bases than they had before the storm. Slow rebuilding, abandoned lots, fleeing families and businesses, and property reassessments were cited as causes for the smaller tax base.

For three years after the storm, the towns had been propped up by hundreds of millions of dollars in federal aid distributed by the state, including more than \$132 million through a grant program that was intended to help towns burdened with much less tax revenue provide essential services, such as police and fire protection and trash pickup. Last year, the grants were distributed for half the year.

Credit Downgrade Threat as a Non-Regulatory Driver for Flood Risk Mitigation and Sea Level Rise Adaptation

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28 November 2017

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Environmental risks

Evaluating the impact of climate change on US state and local issuers

In coming years, climate change is forecast to result in a higher frequency and severity of extreme weather events, in turn heightening US exposure and vulnerability to economic loss across industries and geographic regions. This piece discusses how we assess the credit impact of these risks on **US state and local issuers**.

» **Global climate change is forecast to increase the US' exposure and vulnerability to a range of factors such as severe heat, changes in precipitation patterns and rising sea levels.** These changes are projected to drive an increased frequency of extreme weather occurrences, or climate shocks, including heat waves, droughts, **nuisance flooding**, wildfire and **more damaging coastal storm surges**. If federal, state and local governments do not adapt, these risks are forecast to become more frequent and severe over time.

See details for your state:



CLIMATE CHANGE

How Prepared is New Jersey?

D+



Extreme Heat

C



Inland Flooding

C

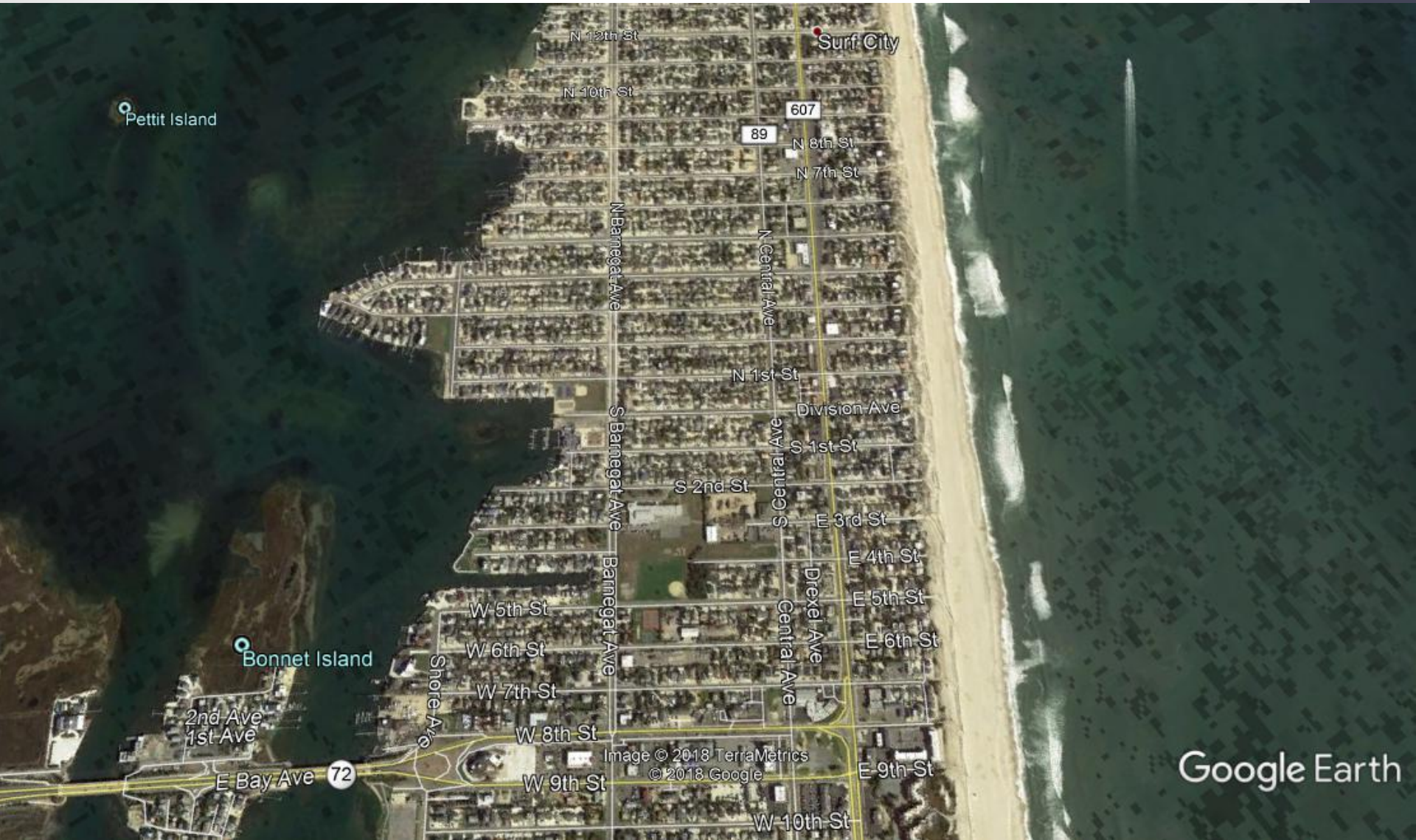


Coastal Flooding

D-

Source: States at Risk: A collaboration between Climate Central and ICF International

CLIMATE  CENTRAL



Pettit Island

Surf City

Bonnet Island

Google Earth

Sorted by Number of Total Paid Out Since 1978



	Number Policies	Total Coverage	Total Premium	Total Claims Since 1978	Total Paid Since 1978
Total Nationwide	4,868,776	\$1,191,857,953,800	\$3,361,121,798	2,128,617	\$52,659,964,806
Total State of NJ	223,752	\$54,734,750,300	\$217,620,107	190,100	\$5,841,585,879
Percent NJ is of Nation	4.59%	4.55%	6.47%	8.93%	11.09%

All data as of February 19, 2016

	Jurisdiction	Number Policies	Total Coverage	Total Premium	Total Claims Since 1978	Total Paid Since 1978
S	1. Louisiana	428,514	\$105,898,612,300	\$331,346,290	418,376	\$16,812,032,565
S	2. Texas	565,080	\$150,631,298,800	\$336,654,618	261,483	\$6,196,257,932
S	3. New Jersey	223,752	\$54,734,750,300	\$217,620,107	190,100	\$5,841,585,879
S	4. New York	181,411	\$48,550,328,500	\$194,277,816	165,106	\$5,257,705,730
S	5. Florida	1,701,760	\$409,772,147,900	\$895,571,925	247,082	\$3,891,305,457
S	6. Mississippi	62,812	\$14,876,928,900	\$39,411,151	60,189	\$3,006,058,210
C	1. OCEAN COUNTY	49,129	\$12,717,743,100	\$47,827,626	52,364	\$2,488,856,098
S	7. Pennsylvania	61,878	\$12,456,755,100	\$65,048,518	69,094	\$1,165,635,809
S	8. Alabama	52,814	\$11,886,073,500	\$33,938,131	39,665	\$1,021,164,094
S	9. North Carolina	125,054	\$30,622,976,600	\$98,710,467	76,619	\$1,013,483,146
C	2. MONMOUTH COUNTY	21,583	\$5,722,317,700	\$18,691,029	19,545	\$897,484,488
S	10. Missouri	21,761	\$4,048,493,800	\$20,517,284	45,897	\$721,189,585
S	11. Virginia	102,114	\$25,918,811,200	\$73,769,079	44,661	\$637,421,708
S	12. South Carolina	193,160	\$49,229,391,500	\$125,840,525	33,858	\$581,435,636
M	1. TOMS RIVER TOWNSHIP	8,499	\$2,044,402,000	\$7,778,315	9,301	\$575,363,343
S	13. California	295,423	\$82,848,658,500	\$210,069,265	45,820	\$519,171,530
S	14. Illinois	42,821	\$8,181,275,800	\$40,999,164	48,815	\$508,754,924
S	15. Connecticut	39,013	\$9,791,577,900	\$50,309,387	27,325	\$496,673,853
C	3. ATLANTIC COUNTY	29,564	\$6,498,311,000	\$24,959,229	20,637	\$462,702,831
C	4. CAPE MAY COUNTY	52,054	\$11,947,464,800	\$36,648,318	28,233	\$399,578,412
S	16. Massachusetts	62,389	\$15,554,337,300	\$72,447,253	31,732	\$358,272,591



Ship Bottom, New Jersey, with three feet of sea level rise. This view shows the critical facilities (schools, fire stations, and police stations) and evacuation routes that will be inundated under this scenario.



Office for Coastal Management
DIGITALCOAST



Resilient Building Design Guidelines



October 19th 2015

Statewide Higher Standards – Freeboard (2015)

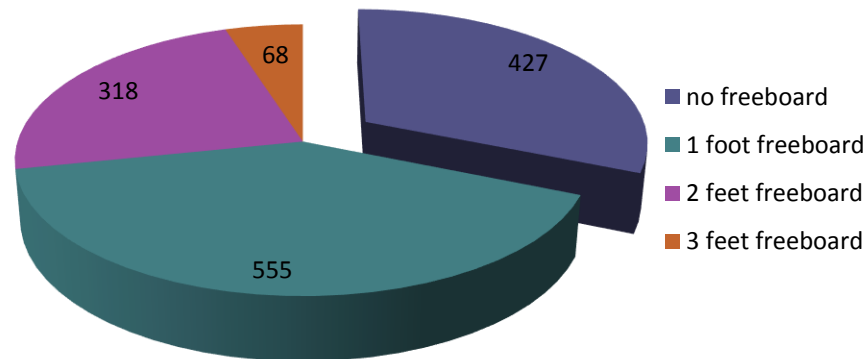
States with statewide freeboard	min levels	2012 Census pop
Arizona	1 ft	6,556,236
Colorado	1 ft, residential; 2 ft critical facilities	5,191,709
District of Col	1 ½ ft	635,040
Georgia**	1 or 3 ft	9,919,000
Illinois*	1 ft - (near universal/ 1 ft State Model Ordinance)	12,873,763
Iowa	1 ft	3,075,935
Indiana	2 ft	6,537,632
Kansas	1 ft	2,885,966
Maryland	1 ft, and 2 ft State Model Ordinance	5,891,819
Maine	1 ft	1,328,592
Michigan	1 ft	9,884,781
Minnesota	1 - 1 ½ ft	5,380,615
Montana	2 ft	1,005,163
North Dakota	1 ft	701,705
Nebraska	1 ft	1,855,487
New Jersey	1 ft, 2 ft "essential" /critical facilities	8,876,000
New York	2 ft	19,607,140
Oregon*	1 ft all comms have, 1 ft State Model Ord	3,898,684
Pennsylvania	1 ½ ft	12,770,043
Puerto Rico	1 ft res; 3 ft embankments	3,642,281
Rhode Island	1 ft (in coastal A and V Zones)	1,052,637
Wisconsin	2 ft	5,724,888
Total States w freeboard	22	129,295,116
Percent U.S. population - states with elevated freeboard 41.28%		

Community Higher Standards – Freeboard

(2015)

941 NFIP Community Rating System ("CRS") communities with 87 million U.S. residents (28 percent of U.S. population) that require at least 1 foot of freeboard;

CRS Communities (2015)



> 62 percent of the U.S. population in communities with at least 1 foot or more of higher freeboard requirements above the base flood elevation.

Courtesy of ASFPM, David Conrad

<https://www.floods.org/index.asp?menuID=810&firstlevelmenuID=187&siteID=1>

Credit Rating and Freeboard Higher Standards

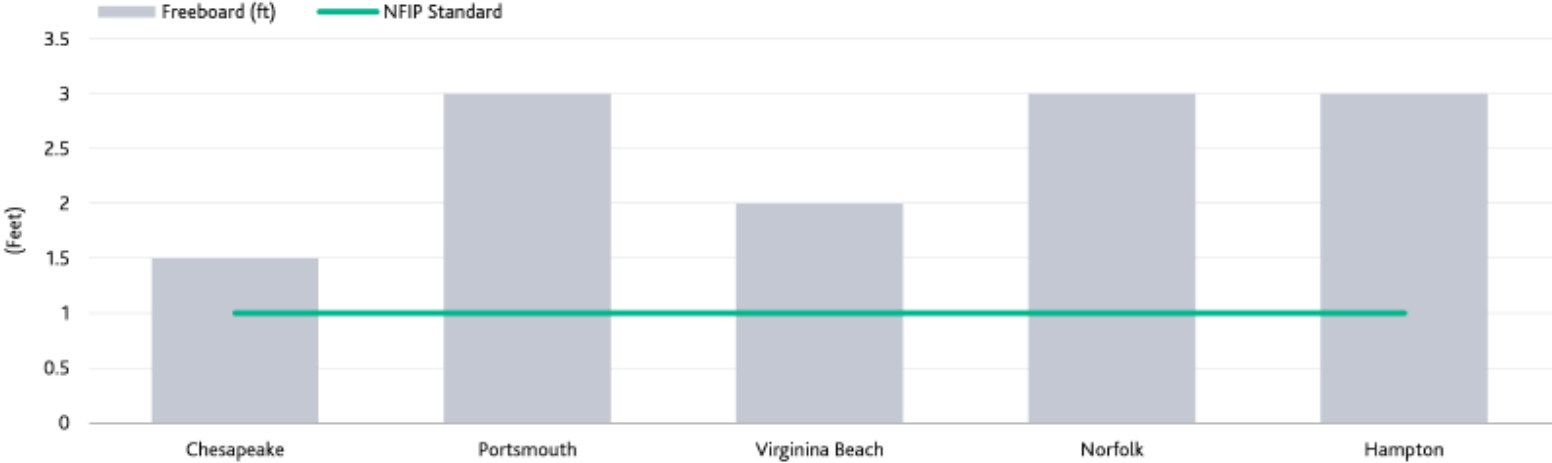


SECTOR IN-DEPTH
18 JUNE 2015

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Local Government Virginia's Hampton Roads Region Responds to Flood Risk

Exhibit 3
Hampton Roads Municipalities Exceed National Flood Insurance Program's (NFIP) Minimum Standard for Distance from Waterline to Base Level of a Property (aka Freeboard)



Sources: Cities of Chesapeake, Portsmouth, Virginia Beach, Norfolk and Hampton



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