Hurricane Risk in the Northeast United States

A Real and Present Danger

Northeast Communications Strategy Meeting
Insurance Information Institute
New York, NY

March 19, 2008

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CATASTROPHIC LOSS

What Will 2008 Bring?
Most of US Population & Property Has Major CAT Exposure

Is Anyplace Safe?
2006/07 were welcome respites. 2005 was by far the worst year ever for insured catastrophe losses in the US, but the worst has yet to come.

*Excludes $4B-$6b offshore energy losses from Hurricanes Katrina & Rita.

Note: 2001 figure includes $20.3B for 9/11 losses reported through 12/31/01. Includes only business and personal property claims, business interruption and auto claims. Non-prop/BI losses = $12.2B.

Source: Property Claims Service/ISO; Insurance Information Institute
Inflation-Adjusted U.S. Insured Catastrophe Losses By Cause of Loss, 1987-2006¹

- **Fire**, $6.6, 2.2%
- **Wind/Hail/Flood**, $9.3, 3.1%
- **Earthquakes**, $19.1, 6.4%
- **Winter Storms**, $23.1, 7.8%
- **Tornadoes**, $77.3, 26.0%
- **Utility Disruption**, $0.2, 0.1%
- **Water Damage**, $0.4, 0.1%
- **Civil Disorders**, $1.1, 0.4%
- **All Tropical Cyclones**, $137.7, 46.3%
- **Terrorism**, $22.3, 7.5%

Insured disaster losses totaled $297.3 billion from 1987-2006 (in 2006 dollars). Wildfires accounted for approximately $6.6 billion of these—2.2% of the total.

¹ Catastrophes are all events causing direct insured losses to property of $25 million or more in 2006 dollars. Catastrophe threshold changed from $5 million to $25 million beginning in 1997. Adjusted for inflation by the III.

² Excludes snow.³ Includes hurricanes and tropical storms.⁴ Includes other geologic events such as volcanic eruptions and other earth movement.⁵ Does not include flood damage covered by the federally administered National Flood Insurance Program.⁶ Includes wildland fires.

Source: Insurance Services Office (ISO).
The 2008 Hurricane Season:

Preview to Disaster?
**Outlook for 2008 Hurricane Season: 25% Worse Than Average**

<table>
<thead>
<tr>
<th>Category</th>
<th>Average*</th>
<th>2005</th>
<th>2008F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Named Storms</td>
<td>9.6</td>
<td>28</td>
<td>13</td>
</tr>
<tr>
<td>Named Storm Days</td>
<td>49.1</td>
<td>115.5</td>
<td>60</td>
</tr>
<tr>
<td>Hurricanes</td>
<td>5.9</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>Hurricane Days</td>
<td>24.5</td>
<td>47.5</td>
<td>30</td>
</tr>
<tr>
<td>Intense Hurricanes</td>
<td>2.3</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Intense Hurricane Days</td>
<td>5</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Accumulated Cyclone Energy</td>
<td>96.2</td>
<td>NA</td>
<td>115</td>
</tr>
<tr>
<td>Net Tropical Cyclone Activity</td>
<td>100%</td>
<td>275%</td>
<td>125%</td>
</tr>
</tbody>
</table>

*Average over the period 1950-2000.

Source: Philip Klotzbach and Dr. William Gray, Colorado State University, December 7, 2007.
### Landfall Probabilities for 2008 Hurricane Season: Above Average

<table>
<thead>
<tr>
<th>Area</th>
<th>Average*</th>
<th>2008F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire US East Gulf Coast</td>
<td>52%</td>
<td>60%</td>
</tr>
<tr>
<td>US East Coast Including Florida Peninsula</td>
<td>31%</td>
<td>37%</td>
</tr>
<tr>
<td>Gulf Coast from Florida Panhandle to Brownsville</td>
<td>30%</td>
<td>36%</td>
</tr>
<tr>
<td>Caribbean</td>
<td>NA</td>
<td>Above Average</td>
</tr>
</tbody>
</table>

*Average over the past century.

Source: Philip Klotzbach and Dr. William Gray, Colorado State University, December 7, 2007.
Hurricane Risk in the Northeast

Is it Real?
Nightmare Scenario: Insured Property Losses for NJ/NY CAT 3/4 Storm

Insured Losses: $110B
Economic Losses: $200B+

Total Insured Property Losses = $110B, nearly 3 times that of Hurricane Katrina

Distribution of Insured Property Losses, by State, ($ Billions)

Source: AIR Worldwide
### Number of Hurricanes Directly & Indirectly Affecting the Northeast Since 1900

<table>
<thead>
<tr>
<th>State</th>
<th>Direct</th>
<th>Total, Direct &amp; Indirect</th>
</tr>
</thead>
<tbody>
<tr>
<td>DE</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>NJ</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>NY</td>
<td>9</td>
<td>23</td>
</tr>
<tr>
<td>CT</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>RI</td>
<td>14</td>
<td>33</td>
</tr>
<tr>
<td>MA</td>
<td>6</td>
<td>39</td>
</tr>
<tr>
<td>NH</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>ME</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

Tropical cyclone activity in the Northeast is not all that uncommon.

Source: New Hampshire Office of Emergency Management

NY has been affected by 23 hurricanes since 1900.
“Great New England Hurricane” of 1938 a.k.a. “Long Island Express” caused severe damage through much of the Northeast.

600+ Deaths

$308 million

Storm Season of 1944: A Busy one for the Northeast

Three storms affected NY, NJ and New England in 1944, including “Great Atlantic Hurricane”

- 46 deaths
- $100 million damage
- 109 mph gusts in Hartford

Storm Season of 1954:
The Northeast Hit Again

NY/New England areas hit by Carol & Edna two weeks apart
Carol: 8-10 ft. floodwaters in Providence
Edna hits Cape Cod
Combined: 80 deaths, $501 million losses

Storm Season of 1960:
Brenda & Donna Came to Visit

NY/New England areas were hit twice in 1960.
Donna killed 50, $387 million damage along East Coast

After a 25 Year Hiatus, Hurricane Gloria Hit in 1985

NY/New England areas were hit by Gloria 9/27/85
8 deaths
$900 million damage

Floyd Visited in 1999, Causing $4.5 Billion in Losses

NY/New England areas were hit by Floyd 9/14 – 9/17/99
$4.5 B in damage US

In the five-year period between 2002 and 2006, the total number of policies in-force in the NY FAIR plan grew slightly by 2.5 percent.
NY FAIR Plan Exposure to Loss ($000)

In the five year period from 2002 to 2006, total exposure to loss in the NY FAIR plan increased by 43 percent from $9.1 billion to $12.9 billion.

Source: PIPSO; Insurance Information Institute
Historical Hurricane Strikes and Population Growth Along the Northeast Coast

A Collision Course
Historical Hurricane Strikes in Atlantic County, NJ, 1900-2007

Legend

- X Hurricane Category 1-2
- X Hurricane Category 3-5
- • Storm moving faster than 30 m.p.h.
- Direct Strike
- Indirect Strike
- Conventional Landfall Storm (Moving from water to land)
- Exiting or Inland Storm (Moving from land to water)

Population

Decade


Historical Hurricane Strikes in Nassau County, NY, 1900-2007

Historical Hurricane Strikes in Suffolk County, NY, 1900-2007

Legend
- Hurricane Category 1-2
- Hurricane Category 3-5
- Storm moving faster than 30 m.p.h.
- Direct Strike
- Indirect Strike
- Conventional Landfall Storm (Moving from water to land)
- Exiting or Inland Storm (Moving from land to water)

Historical Hurricane Strikes in Queens, NY, 1900-2007

Legend

- X Hurricane Category 1-2
- X Hurricane Category 3-5
- X* Storm moving faster than 30 m.p.h.
- Red Direct Strike
- Red dashed Indirect Strike
- Green Conventional Landfall Storm (Moving from water to land)
- Red triangle Exiting or Inland Storm (Moving from land to water)

Hurricane Strike Data: National Hurricane Center
Population Data: U.S. Census Bureau

NOTE: Population values may be missing in some counties, particularly for earlier periods. This is most often attributable to the fact that the county had not yet been established.

NOTE: There may be discrepancies between the strike data shown in this chart and the HURDAT strike data used in the Historical Hurricanes Tracks Tool. The National Hurricane Center is currently updating the strike data used for these charts.

For more information visit http://www.esrl.noaa.gov/hurricanes/data/analyzed

NOTE: Population data is current as of 2000 U.S. Census. X-axis on graphs depict years through 2010 to illustrate storms that have occurred from 2000-2006.

Historical Hurricane Strikes in Newport County, RI, 1900-2007

Hurricane Strikes vs Population for Newport, Rhode Island

Legend:
- Hurricane Category 1-2
- Hurricane Category 3-5
- Storm moving faster than 30 m.p.h.
- Direct Strike
- Indirect Strike
- Conventional Landfall Storm (Moving from water to land)
- Exiting or Inland Storm (Moving from land to water)

Historical Hurricane Strikes in Barnstable County*, MA, 1900-2007

Historical Hurricane Strikes in Dukes County*, MA, 1900-2007

Legend
- hurricane Category 1-2
- hurricane Category 3-5
- Storm moving faster than 30 m.p.h.
- Direct Strike
- Indirect Strike
- Conventional Landfall Storm (Moving from water to land)
- Exiting or Inland Storm (Moving from land to water)

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