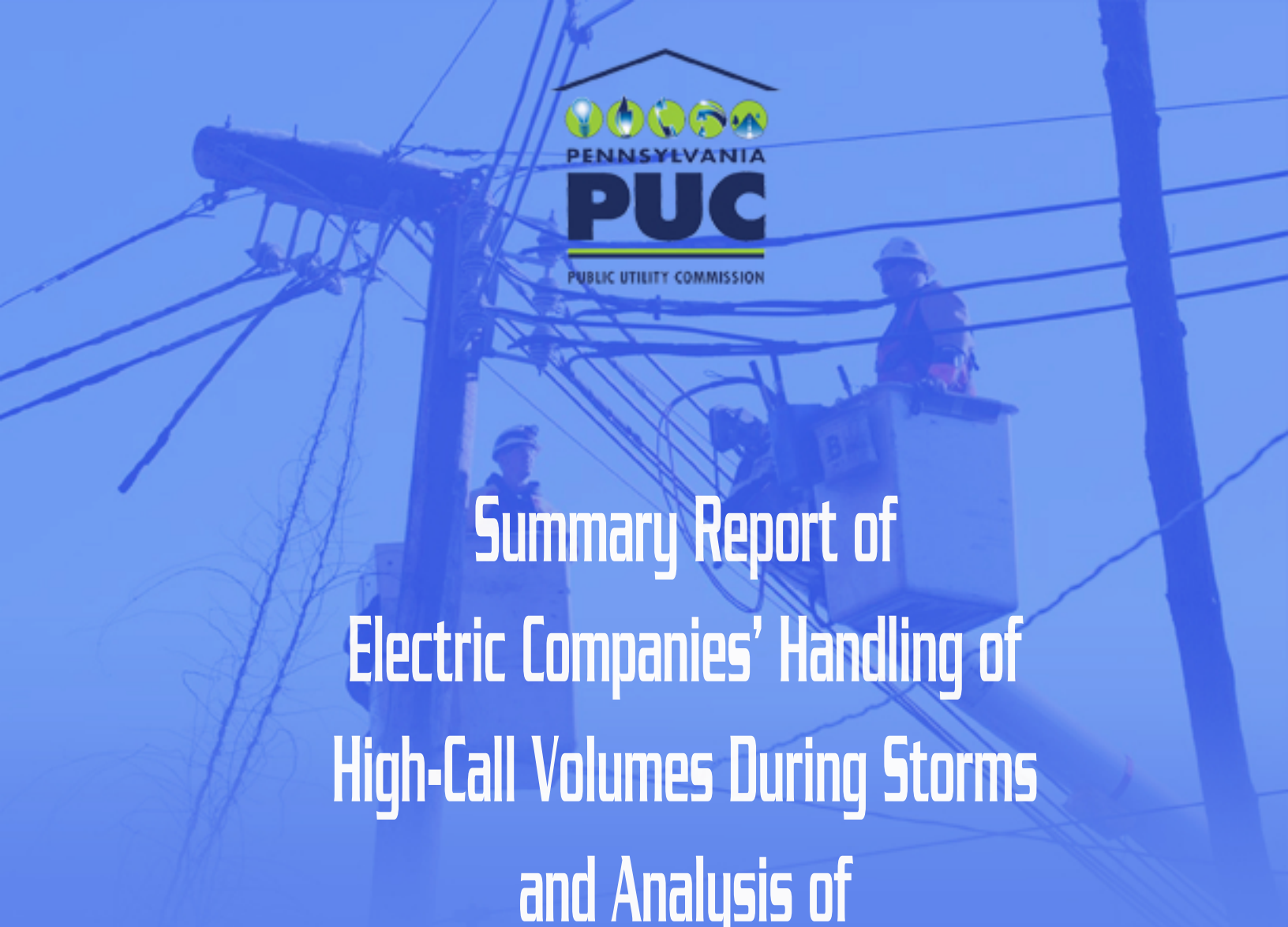

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PUBLIC UTILITY COMMISSION

Summary Report of Electric Companies' Handling of High-Call Volumes During Storms and Analysis of Storm and Severe Weather Data

February 2012

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and

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Technical Utility Services
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INTRODUCTION

The past year was one of extreme weather events that caused over 3.8 million electric customers in Pennsylvania to experience an electric service outage. As shown in this report, that is the highest number of customer electric outages in the past 9 years. Our electric distribution companies (EDCs) were affected by several strong storm systems of varying meteorological circumstances in 2011. All EDCs but Citizen's Electric had at least one Commission reportable outage event in 2011.[1] The significant events included: heavy snow and some ice in February; strong thunderstorms in late May; a direct impact by Hurricane Irene in late August; flooding rains from the remnants of Tropical Storm Lee in early September; and an early-season heavy, wet snow in late October. While the response by EDC linemen and workers was commendable in many ways, under hazardous weather conditions and long hours, there were some critical problems with the ability of customers to contact certain EDCs and with the restoration information and estimates provided by EDCs to customers. The Commission also received numerous general complaints from customers and state legislators on the lack of specific restoration information or in some cases, inconsistent and misleading restoration information. Based on the number of extreme weather events in Pennsylvania, the Commission was interested in learning more about the impacts of weather on EDCs over the past 3 years and the number of reportable storms.

In order to better understand the communication problems and weather impacts, on November 3 and November 4, 2011, the Bureau of Technical Utility Services (TUS) issued data requests to all EDCs. TUS requested information on how the EDCs managed high call volume periods, such as those experienced during the 2011 storms, as well as how restoration messaging is managed during events where long-term service outages are expected. TUS also asked for information on severe weather events and storm events experienced by EDCs over the past 3 calendar years. For those EDCs that were affected by Hurricane Irene and where many of the communication problems arose, TUS requested corrective action steps and timeframes to address those problems. This report is a summary of the EDC responses as well as some additional information on severe weather and EDC reportable storms. This report also includes recommendations to the Commission and EDCs for further action and discussion.

[1] Service outages reports are required under 52 Pa. Code §67.1. The reporting requirements are an initial phone call to the Commission when it is believed the threshold will be reached, followed by a written report 10 days after the last customer is restored. The reporting threshold is service outages to 5% of total customers or 2,500 customers, whichever is less, for 6 or more consecutive hours.

EXECUTIVE SUMMARY

The severe weather events of 2011 caused significant and long-term electric outages for Pennsylvania EDCs. Those outages brought to light the inadequacy of certain EDCs' ability to handle a high volume of customer calls within the first day or more of the long-term outage events. Also, customers received inconsistent or incorrect restoration information and estimates from EDCs, especially within that same initial time-period of the outage event.

The Commission was concerned that these problems recurred during the continuing severe weather events in 2010 and 2011. The Commission also wished to better understand if EDCs were experiencing more severe weather events and if the number of PUC reportable outage events was increasing over the past 3 years. As a result, TUS requested information from all EDCs on the above concerns.[2] TUS reviewed weather data from the National Weather Service (NWS), as well as outage data from submitted EDC outage reports from 2003 until 2011. TUS also reviewed reports on weather and other natural disasters from insurance company Munich RE, which has an extensive and publicly available database on such information, including insured losses. Based on a review of the EDC submissions and data, TUS recommends the following:

Recommendation 1 – TUS, in conjunction with Bureau of Consumer Services (BCS), will continue to monitor the performance of EDCs during storm events in regards to their handling of calls during high-volume periods and provision of consistent and reasonably accurate restoration messaging.

Recommendation 2 – TUS will require quarterly reporting by EDCs on the progress of their corrective actions and initiatives outlined in their responses. This reporting requirement will be submitted as part of the EDCs' Quarterly Reliability Reports.

Recommendation 3 – EDCs that experience problems adequately handling high-call volumes or that issue inconsistent and inadequate restoration message during their next PUC reportable storm should be referred to Investigation & Enforcement.

Recommendation 4 – The EDCs and Commission should form a working group to discuss options for addressing the increase in severe weather events. The group should focus on a systematic approach to resiliency of utility infrastructure and mitigation of storm damages.

[2] The requests are attached as Appendix A and B. Appendix A contains the letter addressed to EDCs that were affected by Hurricane Irene and experienced the most trouble with high-call volumes and therefore, were required to respond with corrective actions. Appendix B contains the letter sent to all other EDCs.

Recommendation 5 – EDCs should consider the needs and vulnerabilities identified by the process in Recommendation 4, above, when developing their Long-Term Infrastructure Improvement Plans under the new regulations at 66 Pa. Code §1352.

Recommendation 6 – TUS will review with the EDCs to compile data on the costs of storm damages to determine if there was an average increase year-over-year if the information is available and the compilation would not be burdensome.

Recommendation 7 – TUS staff will continue to compile data on PUC reportable storm events and the number of customers affected and shall provide a summary report yearly as part of its public Annual Electric Reliability Report.

SUMMARY OF UTILITIES' RESPONSES

High-Call Volume and Restoration Messaging

Please provide the process or procedure for handling high-call volumes and any corrective action steps taken or contemplated to address deficiencies in this regard.

- **Citizens' Electric Company**
    - Citizens' adds additional office personnel to handle outage calls when call volume exceeds normal levels. When conditions warrant, Citizens' will also add operators to the after-hours call center in Wellsboro, PA. Redundant systems allow calls to be routed to the extra operators via the Internet if traditional common carrier paths fail.
    - Overflow calls are automatically routed to the Interactive Voice Response (IVR) system to allow customers to report outages when all live operators are busy.
- **Duquesne Light**
    - Duquesne will add live agents during times of high-call volume, which includes additional Duquesne staff as well as an outside service. Duquesne utilizes an automated call-out service for when rapid staffing is needed.
    - Duquesne also uses a home-base program that allows employees to login to Duquesne's phone and computer systems from home and answer customer calls.
    - Duquesne has an IVR system capable of handling up to 138 simultaneous calls, where customers can report outages and receive customized restoration updates and messages.
    - Duquesne also has a third-party call overflow provider that can handle an additional 500 calls.
- **Metropolitan Edison**
    - Met-Ed ensures contact center management is notified ahead of anticipated significant outage events for staffing needs. Contact center management also participates in multiple conference calls on restoration efforts during the event.

- Met-Ed schedules additional call center representatives for anticipated high-call volume periods. Met-Ed also utilizes staff from non-call center departments to assist during high-call volume periods.
- Med Ed routes overflow calls during high-call volume periods to a third-party provider.
- Met-Ed uses an upfront IVR message to inform customers of restoration efforts and to alert non-outage customer callers to the high-call volume. Met-Ed offers virtual hold call backs for non-emergency/non-outage callers.
- Met-Ed utilizes Twitter to post restoration and safety messages.
- FirstEnergy is moving towards the integration of the Fairmount Contact Center, which now serves West Penn Power customers. Met-Ed notes that once the integration is completed in April 2012, customers will have access to the combined resources of 200 to 400 additional customer service representatives.

- **PECO Electric**
  - During high-call volume events, PECO supports its care center with an emergency response manager and staff from resource management, logistics, communications and supervisory personnel.
  - PECO utilizes a third-party provider to handle high-volume call overflow. Approximately 90% of calls are handled by the overflow provider during typical high-call volume events.
  - When high-call volume events are anticipated: call center staffing is increased; the third-party high-volume call overflow system is turned on; regular business (billing, general inquires) closes; and PECO's affiliate company, ComEd, is prepared to receive transferred electric emergency calls. PECO also performs outreach to the public and media to prepare customers for what to expect in terms of large restoration efforts and readiness in order to decrease anticipated call volume.
  - PECO notes that in the early morning of August 28, 2011, during Hurricane Irene, the third-party call overflow provider lost its ability to process calls from PECO for approximately 6 hours due to an IT issue. PECO's call center was unable to handle the influx of calls and approximately 50,000 calls either received a busy signal or experienced long wait times during that time. Other clients of the provider were

affected as well. PECO and the provider conducted a root-cause-analysis and are coordinating together on corrective actions to mitigate the risk of re-occurrence. The specific IT issue from August 28, 2011 was addressed.

- **Pennsylvania Electric**
    - Penelec ensures contact center management is notified ahead of anticipated significant outage events for staffing needs. Contact center management also participates in multiple conference calls on restoration efforts during the event.
    - Penelec schedules additional call center representatives for anticipated high-call volume periods. Penelec also utilizes staff from non-call center departments to assist during high-call volume periods.
    - Penelec routes overflow calls during high-call volume periods to a third-party provider.
    - Penelec uses an upfront IVR message to inform customers of restoration efforts and to alert non-outage customer callers to the high-call volume. Penelec offers virtual hold call backs for non-emergency/non-outage callers.
    - Penelec utilizes Twitter to post restoration and safety messages.
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- **Pennsylvania Power**
    - Penn Power ensures contact center management is notified ahead of anticipated significant outage events for staffing needs. Contact center management also participates in multiple conference calls on restoration efforts during the event.
    - Penn Power schedules additional call center representatives for anticipated high-call volume periods. Penn Power also utilizes staff from non-call center departments to assist during high-call volume periods.
    - Penn Power routes overflow calls during high-call volume periods to a third-party provider.

- Penn Power uses an upfront IVR message to inform customers of restoration efforts and to alert non-outage customer callers to the high-call volume. Penn Power offers virtual hold call backs for non-emergency/non-outage callers.

- **Pike County Light & Power**
  - Pike, though its parent company, Orange & Rockland, utilizes a "cloud" based call system that has an unlimited ability to answer calls and provide customers with an upfront message. However, the number of calls that can be routed from the cloud to Pike's call system is limited by the number of available phone lines. If the number of available phone lines is exceeded, customers will receive a busy signal.
  - Pike has increased its telephone system capacity to allow for additional phone lines. Also, Pike is pursuing a third-party high-call volume vendor that will enable customers to report outage information and receive messages via an IVR system. The vendor's IVR system would feed the information to Pike's OMS.
  - Pike now has the ability to use mutual aid call center staff from its affiliate Consolidated Edison (NY) to receive calls from Pike customers in the call queue. Pike also plans to supplement call center staff with other Pike employees that can handle "escalated" customer calls (emergencies, critical customers, etc.), which will free up call center representatives.
  - Pike added Internet and smart-phone applications to provide further messaging to customers during outage events.
  - Pike also supplements staff at its business office in Milford, PA to be available for customer concerns.
  - Pike offers members of its staff to local and county emergency management to provide information and updates.

- **PPL Electric**
  - PPL contracted with a third-party IVR vendor to minimize the chance that the call center and IVR will be overwhelmed and customers will receive busy signals. The vendor service is designed to replicate PPL's IVR model so that customers will not notice any difference. PPL notes that approximately 80% of customers report their outage via self-service, with most of that through the IVR.

- During subsequent high-call volume events, PPL will re-route calls directly to the high-volume IVR service. The IVR service will re-route critical (wire down, etc.) calls and callers back to the PPL call center for handling.
- PPL is working to integrate the high-volume IVR service with their outage management system (OMS).
- PPL added 92 lines to its existing 414 in its customer call center. The work was completed in December 2011.
- PPL will suppress estimated times of restoration (ETRs) during major service outage events until assessments are completed, which will lessen the burden on the OMS and call center volume. This was completed in November 2011.
- PPL is increasing outbound communications to provide proactive update to customers to increase customer awareness and reduce inbound calls. This was completed in December 2011. PPL also increased its use of social media such at Twitter and Facebook to communicate information and reduce the need for inbound calls. As of late October, PPL had over 2,300 followers on Twitter, which is enhanced when followers "re-tweet" the messages PPL disseminates to followers.
- PPL is developing additional customer identification methods so that more customers can utilize the IVR and lessen the burden on the call center. This is expected to be completed by early 2012. At the same time, PPL plans to run campaigns to obtain additional customer contact information so that information in the system in current, which reduces the need for customer service personnel to spend time verifying account information.
- PPL is engaging third-party expertise to assist PPL in determining the optimum system capacity required and to evaluate future options. This is expected to be completed by early 2012.
- PPL plans to expand the number of call center customer service personnel during emergencies. This may include use of a third-party provider or site or mutual aid. The first steps of this effort are expected to be completed by early 2012.
- PPL planned several items to upgrade in the OMS, including server upgrades, interface monitoring, database tuning and software upgrades. Those items were completed in December 2011. Future upgrades planned include an architectural

review, operational query assessment and other system upgrades. Those are planned for completion some time in 2012.

- PPL is developing a self-service offering for smart phones for customers to enter outages and receive outage information, which may reduce inbound calls. The initial version was completed in early 2012.
- PPL plans to conduct extensive benchmarking efforts with other utilities as well as non-utility companies that have experience in dealing with high call volumes at various times. PPL met with utility companies, PEPCO Holdings and Entergy, in 2011. Based on those meetings, PPL is implementing a communication initiative to hold regularly scheduled daily conference calls with elected officials during major outage events in order to present the most up-to-date restoration efforts and to field questions. PPL held benchmarking meetings with QVC, Vanguard and DTE (Detroit Edison's parent) in early 2012.
- PPL implemented an interim touch-tone-only storm mode during the high-call volume Hurricane Irene event. This reduced processing times for service outage reporting calls.
- In October 2011, PPL conducted a root-cause-analysis in areas such as OMS performance, restoration estimate (ERT) accuracy, telephony system capacity and information services department processes. The analysis in each of these areas included construction of cause and effect relationships, identification of key causes, development of recommendations and assignment of responsible parties.
- In October 2011, PPL modified the service outage reporting path in the IVR system, which improved inbound call handling capability by 60% (from 10,000 calls per hour to over 16,000 calls per hour).

- **UGI Electric**
  - During high-call volume periods, UGI has called in additional staff to answer calls. Call center staff is increased based on response to anticipated need. For future events, UGI added 29 trained non-call center staff to the available pool.
  - UGI also has certain representatives that work from home and can sign on and take customer calls. UGI continues to examine the feasibility of adding more home-based representatives but to date, has not added any additional home-based representatives.

- During high-call volume periods, UGI will close non-vital call queues and provide a detailed automated message as to why the queue is closed and when it is expected to re-open. An example of non-vital service would be answering basic billing inquires. UGI also may suspend activities such as collections in order to free up phone lines. UGI is preparing a plan that outlines those queues and services that may be temporarily closed in order to open lines for emergency and outage calls.
- UGI plans on upgrading their OMS. Once the OMS upgrade is complete, additional on-line and smart-phone functionality will be added and should reduce the number of in-bound calls by providing another means to report and receive information on outages.
- UGI also plans to expand the use of social media such as Twitter and Facebook to provide information to customers and hopefully reduce calls.

- **Wellsboro Electric Company**
  - Wellsboro will augment its call center staff during high-call volume periods. Wellsboro's policy is to call in one additional employee for every 5 calls in queue. Callers may wait for a representative or use the self-service function on the IVR. Customers do not receive a busy signal if all available lines are busy, but they do receive a message to try their call later.
  - Wellsboro has a mutual aid agreement for call center representatives with its parent and affiliate companies.

- **West Penn Power**
  - West Penn ensures contact center management is notified ahead of anticipated significant outage events for staffing needs. Contact center management also participates in multiple conference calls on restoration efforts during the event.
  - West Penn schedules additional call center representatives for anticipated high-call volume periods. West Penn also utilizes staff from non-call center departments to assist during high-call volume periods.
  - West Penn routes overflow calls during high-call volume periods to a third-party provider.

- West Penn uses an upfront IVR message to inform customers of restoration efforts and to alert non-outage customer callers to the high-call volume. Customers have the option to hear a message that provides 10 outage tips for handling outage situations.
- West Penn can make manual and automated calls for power restoration confirmation. During these calls, if available, customers are provided with the cause of the outage and restoration information.

Please provide the process or procedure for ensuring consistent and correct restoration messaging during events where long-term service outages are expected and any corrective action steps taken or contemplated to address deficiencies in this regard.

- **Citizens' Electric Company**
  - Until a comprehensive field assessment can be completed, Citizens' will limit the restoration message to a general overall restoration estimate based on circuit status and system analysis. The field assessment is typically completed in less than 24 hours.
  - Once the field assessment is complete, restoration estimates are assigned to each geographic area and entered in the Outage Management System (OMS) and utilized by customer service representatives. The estimates are also listed on Citizens' online outage map.
  - During long-term service outage events, Citizens' provides periodic updates to local media.
  - Citizens' has scheduled an upgrade to the IVR system for early 2012 that will allow the customer to receive individual restoration estimates via self-service.
  - Citizens' is also collecting email addresses from customers interested in receiving outage status updates via email. Citizens' customers may also now sign up to receive communications via Facebook and Twitter.
- **Duquesne Light**
  - Duquesne will provide a generic restoration message during the initial stages of the outages while assessments of the damage are performed. The assessments are

typically completed within a 24-36 hour period, after which more specific restoration estimates are given by specific geographic area.

- Duquesne provides restoration messaging to internal and external stakeholders (customers, employees, media, local and state elected officials, county emergency managers, etc.) via several methods including social media (Facebook, Twitter), emails, Duquesne website, texting, and IVR. Restoration estimates are updated as needed, but typically follow the local news cycles.
- Duquesne also utilizes an Outage Liaison Employee stationed in the distribution operations center during outage events. The liaison updates the outage information system, which in turn automatically updates the IVR and customer data systems.
- Duquesne is finalizing a new outage/storm web site page that will have an outage map as well as list outages by affected area.

- **Metropolitan-Edison**
  - Met-Ed will provide generic restoration messaging during the assessment stage. Met-Ed uses IVR, the outage website and customer service representatives to deliver the messages.
  - As damage assessment is completed, more specific restoration information is provided to customer service representatives. The IVR and outage website will be updated with the same global and/or district level restoration estimates and information.
  - Met-Ed notes that the integration of the Fairmount Contact Center will provide improvements to the company's voice and data networks, which will improve performance during high-call volume events.

- **PECO Electric**
  - PECO's process for establishing restoration estimates is as follows:
    - Storm damage is assessed.
    - The number of outages versus the number of available crews is analyzed.
    - Global (system or regional) estimated times of restoration (ETRs) are established.
    - Customers calling the customer care center will receive an ETR.

        - After crews arrive on the job sites and assess job-specific damage, the ETRs are updated with circuit-specific information.
    - In normal outage situations or minor storms, customer will receive an ETR when calling the customer care center.
    - In larger storms or large-scale outage situations, PECO may suspend ETRs due to the weather conditions and time needed to perform assessments. PECO has a media outreach message prepared to communicate to customers and other stakeholders that ETRs will be suspended until assessments are completed and to communicate the overall expectation of duration.
    - PECO's pre-planning for severe storms now includes more directed focus on suspension of ETRs. Talking points were developed for the customer care center to inform customers when ETRs are suspended and why.

- **Pennsylvania Electric**
    - Penelec will provide generic restoration messaging during the assessment stage. Met-Ed uses IVR, the outage website and customer service representatives to deliver the messages.
    - As damage assessment is completed, more specific restoration information is provided to customer service representatives. The IVR and outage website will be updated with the same global and/or district level restoration estimates and information.
    - Penelec notes that the integration of the Fairmount Contact Center will provide improvements to the company's voice and data networks, which will improve performance during high-call volume events.

- **Pennsylvania Power**
    - Penn Power will provide generic restoration messaging during the assessment stage. Penn Power uses IVR, the outage website and customer service representatives to deliver the messages.
    - As damage assessment is completed, more specific restoration information is provided to customer service representatives. The IVR and outage website will be updated with the same global and/or district level restoration estimates and information.

- **Pike County Light & Power**
    - Pike is developing an action plan based on an analysis of their processes and systems that calculate and communicate restoration estimates (ERTs). Process or system improvements that are to be implemented will be determined by the first half of 2012. Improvements being considered at this time include:
        - Enhancement and/or possible replacement of the interface between the OMS and IVR.
        - Modification of the formulas in the OMS that calculate the ERTs
        - Changes in the OMS that provide better information and functionality for development of ERTs.
- **PPL Electric**
    - For small-scale storms and minor outage events, PPL's OMS will automatically provide a restoration estimate (ERT), via self-service or through a customer service representative, based upon normal weather conditions and the expected average time for the damage to be repaired. This average time depends on the predicted damage to the device involved in the outage and if on-call crews would need to be called in to affect the repairs. This process typically provides reliable restoration estimates.
    - In future instances where escalating storm damage is occurring or expected, PPL plans to suppress ERTs until the storm passes and field assessments of damage are completed. Customers calling in will receive an upfront message noting that assessment is being performed and ERTs are not currently available and when ERTs are expected to be available.
    - As noted, above, PPL plans to utilize a third-party high-volume IVR firm to better handle high-call volume periods and provide restoration messaging.
    - PPL launched an initiative to develop and formalize an enhanced damage assessment process that will enable PPL to more quickly obtain and more accurately interpret damage assessment data. PPL plans to conduct a comprehensive review of its restoration strategies as part of this effort. This process is expected to be completed during the first half of 2012.
- **UGI Electric**

- UGI has the capability to easily change the upfront messages that customers receive during outage events. During severe storms, UGI will provide a message that indicates that ETRs are not currently available due to crews assessing damage along with a time and date for customers to call back and receive updated outage information.
- UGI updates its internal and external outage websites with the most current ETR information. UGI is adding an "Alert" feature that will indicate when new information is available. Customer service representatives will receive the alerts and be able to provide the updated information to customers as it becomes available.
- Once the OMS is upgraded, UGI plans to supplement its IVR so that it will provide ETRs automatically to customers without having to speak to a representative.
- UGI is also contemplating utilizing a central command and communications center that would provide a physical location for customers and other stakeholders to receive outage status information. This process would be for a major storm with extended outages.

- **Wellsboro Electric Company**
  - During large storms or expected extended outages, Wellsboro will suspend ETRs until assessments are completed.
  - Once assessments are complete, ETRs are provided on a daily basis via press releases, radio media and messaging on the IVR. Wellsboro is contemplating the option of providing outage information on the web site.
- **West Penn Power**
  - West Penn will provide generic restoration messaging during the assessment stage. West Penn uses IVR, the outage website and customer service representatives to deliver the messages.
  - As damage assessment is completed, more specific restoration information is provided to customer service representatives. The IVR and outage website will be updated with the same restoration estimates and information. The outage website displays outage and when available, restoration information by state, city and county.

SUMMARY OF UTILITIES' RESPONSES

Weather and Storm Data

Please provide severe weather information for each of the past three calendar years, such as record rainfall or snowfall, days with wind gusts over 50 mph, days with rainfall rates of over 2 inches, days with ice accumulations of over ½ inch and the number of confirmed tornadoes.

Provide the dates and number of storm events including PUC reportable and PUC excludable for each of the past three calendar years.

A summary of the weather data supplied by the EDCs is presented on page 21, below. Over the past three years, there appears to be a significant increase in heavy rain, snow and in tornadic activity in Pennsylvania. Certainly 2011 was an especially stormy and rainy year. However, forming any ideas on trends with only three years of weather data would be unwise. The same could be said for the information on storm events of the past three years. To provide more depth to this report, TUS utilized publicly available information from third-party experts such as the National Oceanic and Atmospheric Administration (NOAA) and insurance company Munich Re for severe weather information[3]. Also, TUS reviewed its records of reportable storm outage events for the EDCs from 2003 through 2011 as this data was somewhat easily accessible in paper. This information is summarized on pages 22 through 36, below.

TUS believes the summary information provides a good basis for further discussion between the Commission and EDCs on the challenges presented by the potential increase in severe weather events. TUS is unsure as to the cause of the increase in severe weather events. What is germane to the

[3] NOAA created a web page with information on the extreme weather events and record number of billion dollar (in estimated damages) disasters in 2011. <http://www.noaa.gov/extreme2011/index.html>. Munich Re is one of the world's largest insurers and reinsurers. Munich Re collects data on worldwide natural disasters and their costs and produces several reports per year on the subject. The reports and data are publicly available but require signing up for a free username and password.
<https://www.munichre.com/touch/login/en/service/login.aspx?ReturnUrl=/touch/naturalhazards/en/homepage/default.aspx>.

Commission and EDCs is the clear increase in the number and cost of natural disasters in the United States. Also, the data on PUC reportable storm events by EDCs point to an increasing number of customers affected by these events in Pennsylvania.

Some key weather and storm data observations are summarized below:

Key Observations

- As the weather graph on page 21 shows, EDCs were affected by increasing heavy rainfall, snowfall and tornadic activity over the past three years.
- The NOAA chart on page 22 shows data for 1980- 2011. During that timeframe, 2011 had the most weather/climate disasters (14) that caused over a billion dollars in damages as well as the highest damage costs (over $200 billion). The chart displays a steady increase in the number and cost of these billion dollar events from 1980 to 2011.
- The charts from Munich Re on pages 23 through 29 shows that since 1980, there was a steady increase in the number of natural disasters. Also and perhaps more importantly, there is an associated steady rise in both overall and insured losses. A subset of these loses relates to the utility industry. The charts on pages 25 and 26 show the increasing monetary losses due to thunderstorm and winter storm damages.
- It can be inferred from the charts on pages 25 through 27 that it is not an increased number of hurricanes that are causing the damages but increasing storm and climatological events (see page 23).
- The charts on page 28 and 29 show that natural catastrophes and the associated monetary losses are steadily increasing worldwide since 1980.
- The charts on EDC reportable storm data on pages 30 through 36 show that there is a slight increase in the average number of storm events from 2003 through 2011 and that the number of customers affected seems flat (page 31). However, if the two extreme events of Hurricane Isabel and Irene are removed (page 32), one can see a steady rise in the number of customers affected by storm events becomes apparent.
- The charts on pages 34 and 35 show that the number of reportable storms and customers affected are relatively commensurate with the number of customers served in the respective EDC service territories. Also, the chart on page 36 seems to show that there is not one particular quarter of the year that is affected more than another.

RECOMMENDATIONS

TUS provides the following recommendations for the Commission and EDCs in regards to high-call volume periods during storm events, consistent and accurate restoration messaging, and preparing for and reacting to increased severe storms.

Recommendation 1 – TUS, in conjunction with Bureau of Consumer Services (BCS), will continue to monitor the performance of EDCs during storm events in regards to their handling of calls during high-volume periods and provision of consistent and reasonably accurate restoration messaging.

Recommendation 2 – TUS will require quarterly reporting by EDCs on the progress of their corrective actions and initiatives outlined in their responses. This reporting requirement will be submitted as part of the EDCs' Quarterly Reliability Reports.

Recommendation 3 – EDCs that experience problems adequately handling high-call volumes or that issue inconsistent and inadequate restoration message during their next PUC reportable storm should be referred to Investigation & Enforcement.

Recommendation 4 – The EDCs and Commission should form a working group to discuss options for addressing the increase in severe weather events. The group should focus on a systematic approach to resiliency of utility infrastructure and mitigation of storm damages.

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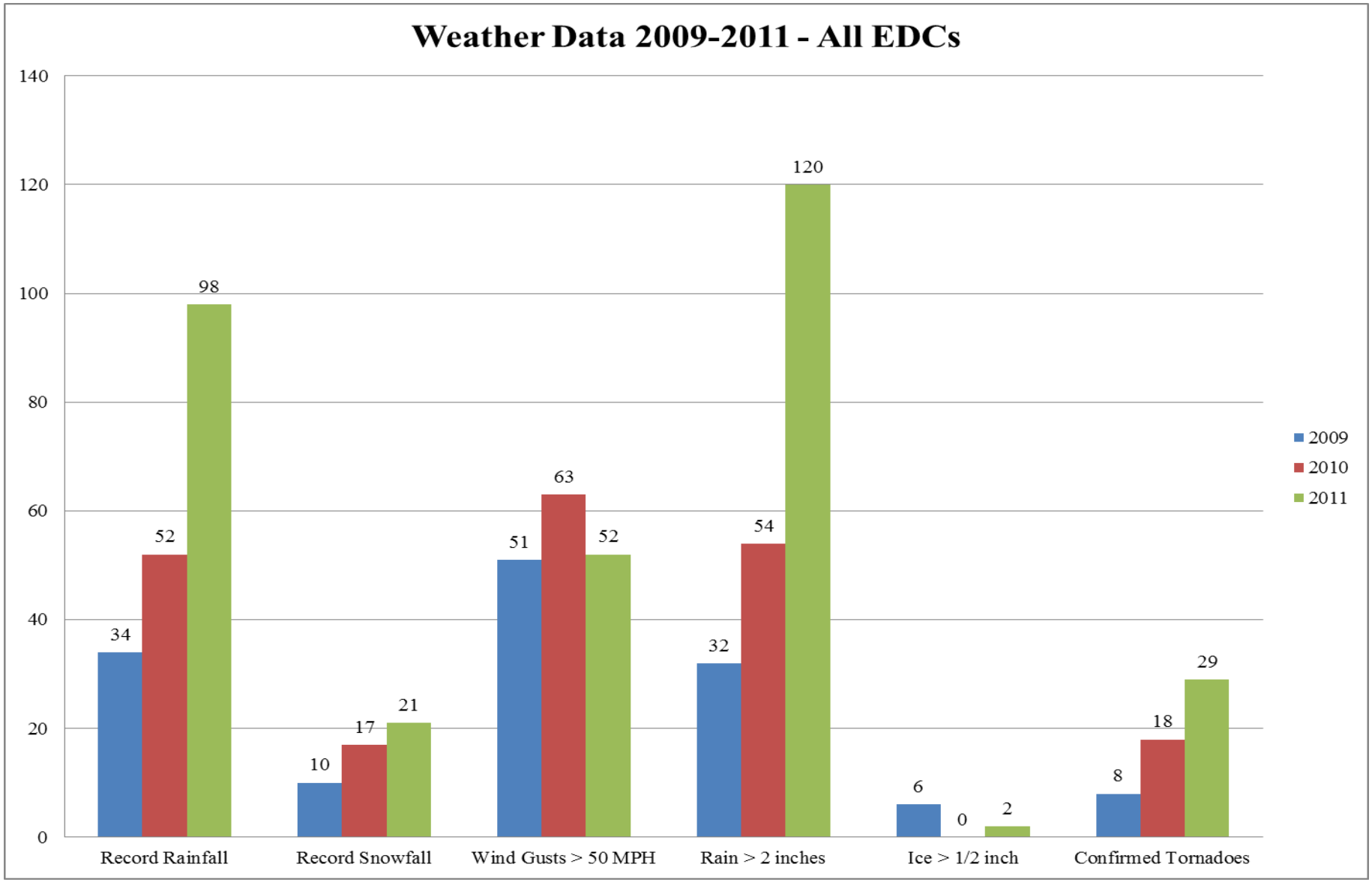
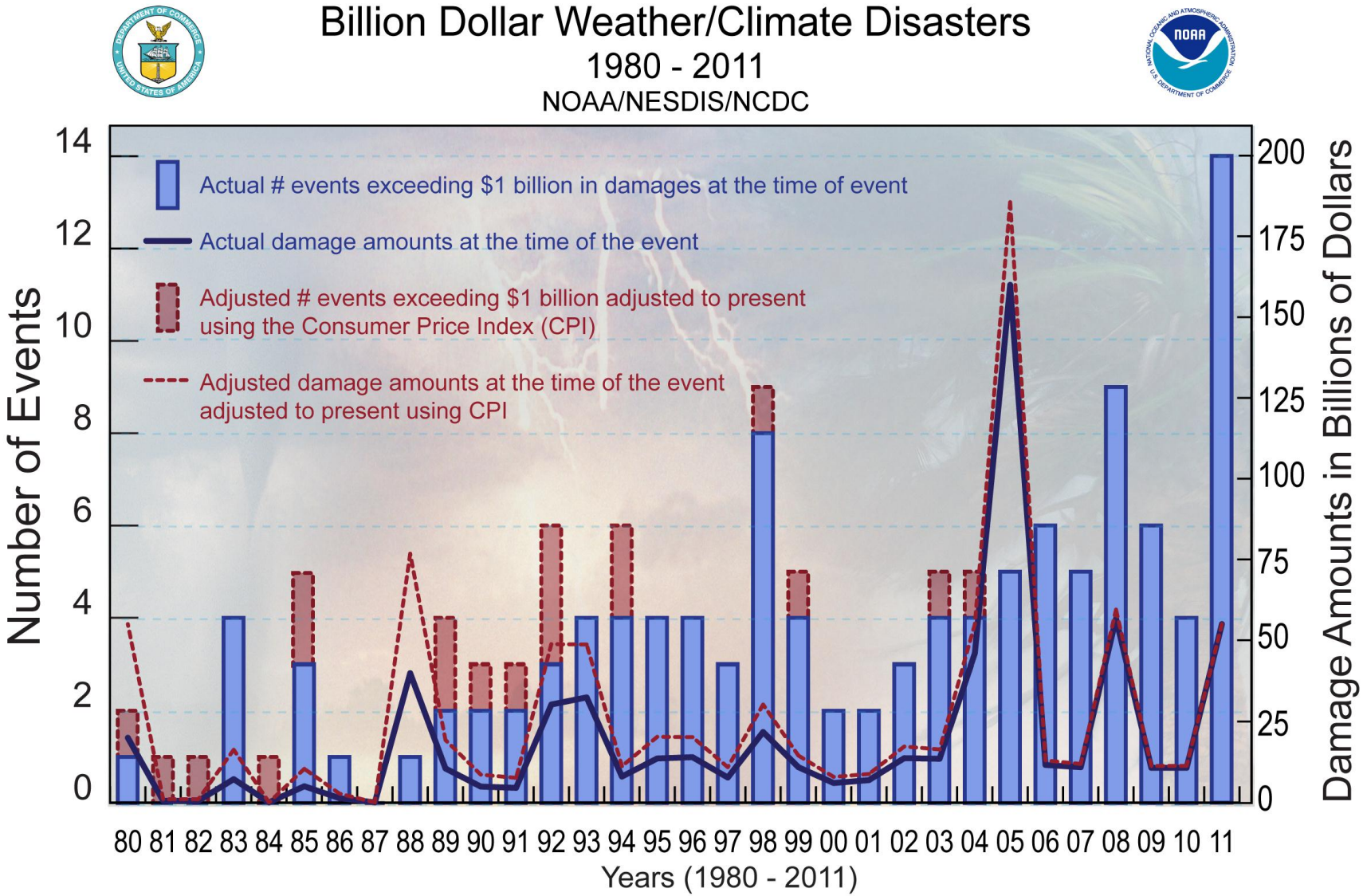
Recommendation 6 – TUS will review with the EDCs to compile data on the costs of storm damages to determine if there was an average increase year-over-year if the information is available and the compilation would not be burdensome.

Recommendation 7 – TUS staff will continue to compile data on PUC reportable storm events and the number of customers affected and shall provide a summary report yearly as part of its public Annual Electric Reliability Report

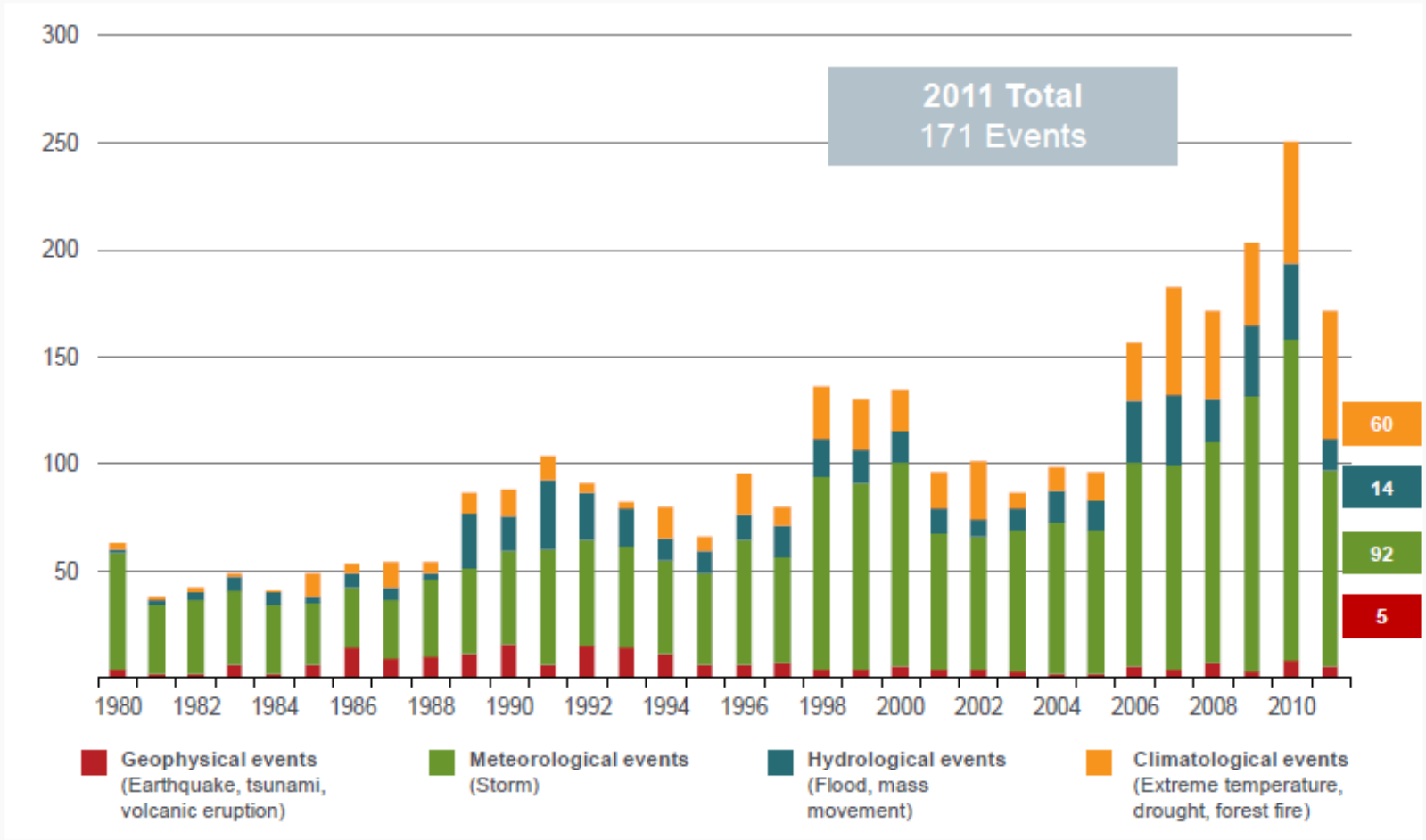

Weather Data 2009-2011 - All EDCs
140
120
100
80
60
40
20
0
34
52
98
10
17
21
51
63
52
32
54
120
6
0
2
8
18
29
Record Rainfall
Record Snowfall
Wind Gusts > 50 MPH
Rain > 2 inches
Ice > 1/2 inch
Confirmed Tornadoes
2009
2010
2011


Billion Dollar Weather/Climate Disasters
1980 - 2011
NOAA/NESDIS/NCDC
Actual # events exceeding $1 billion in damages at the time of event
Actual damage amounts at the time of the event
Adjusted # events exceeding $1 billion adjusted to present using the Consumer Price Index (CPI)
Adjusted damage amounts at the time of the event adjusted to present using CPI
Number of Events
Damage Amounts in Billions of Dollars
0 2 4 6 8 10 12 14
0 25 50 75 100 125 150 175 200
80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05 06 07 08 09 10 11
Years (1980 - 2011)

U.S. Natural Catastrophe Update

Natural Disasters in the United States, 1980 – 2011

Number of Events, Annual Totals



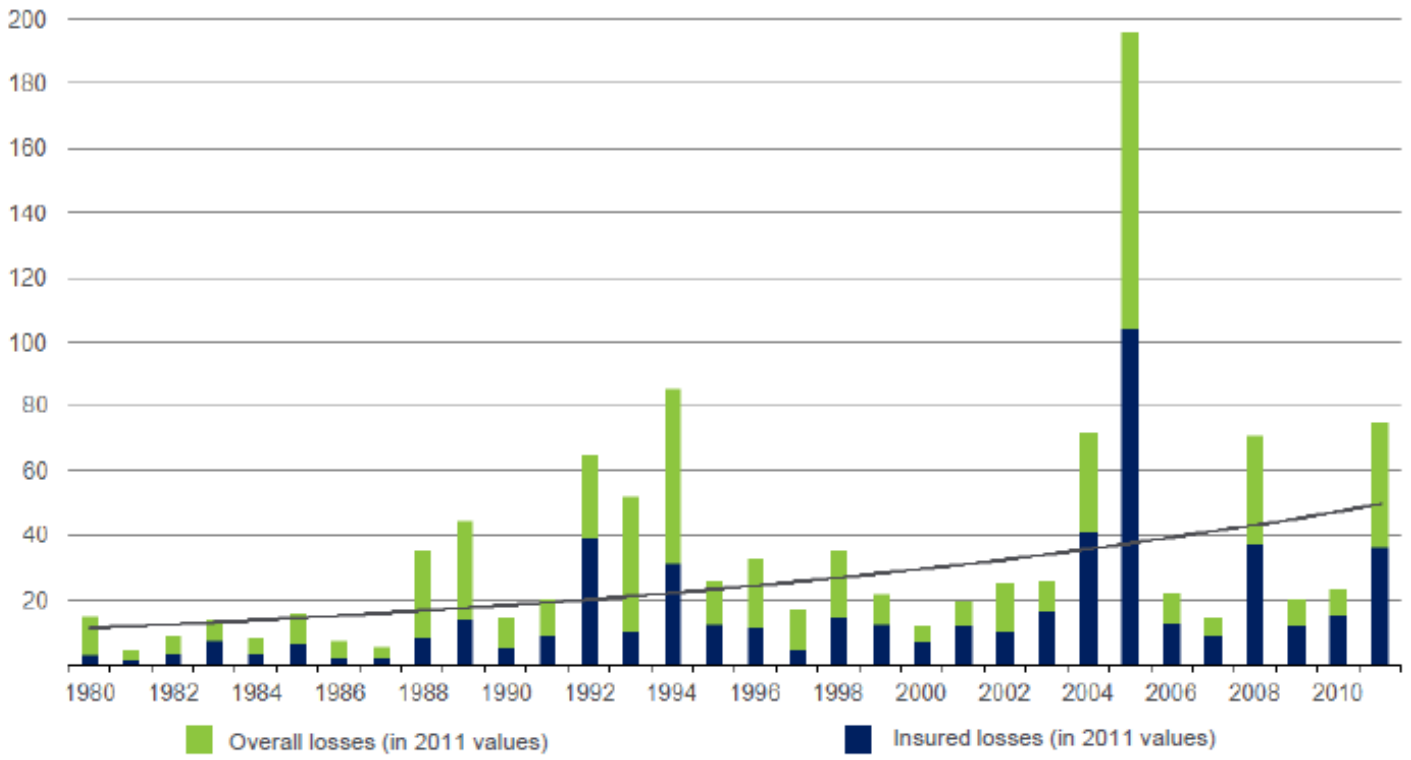
Source: MR NatCat*SERVICE*

U.S. Natural Catastrophe Update

Losses due to Natural Catastrophes in the United States, 1980 – 2011

Munich RE

Insured losses due in the U.S. in 2011 were the 5th highest on record, exceeding $ 35billion.



Sources: MR NatCat*SERVICE*, Property Claims Services

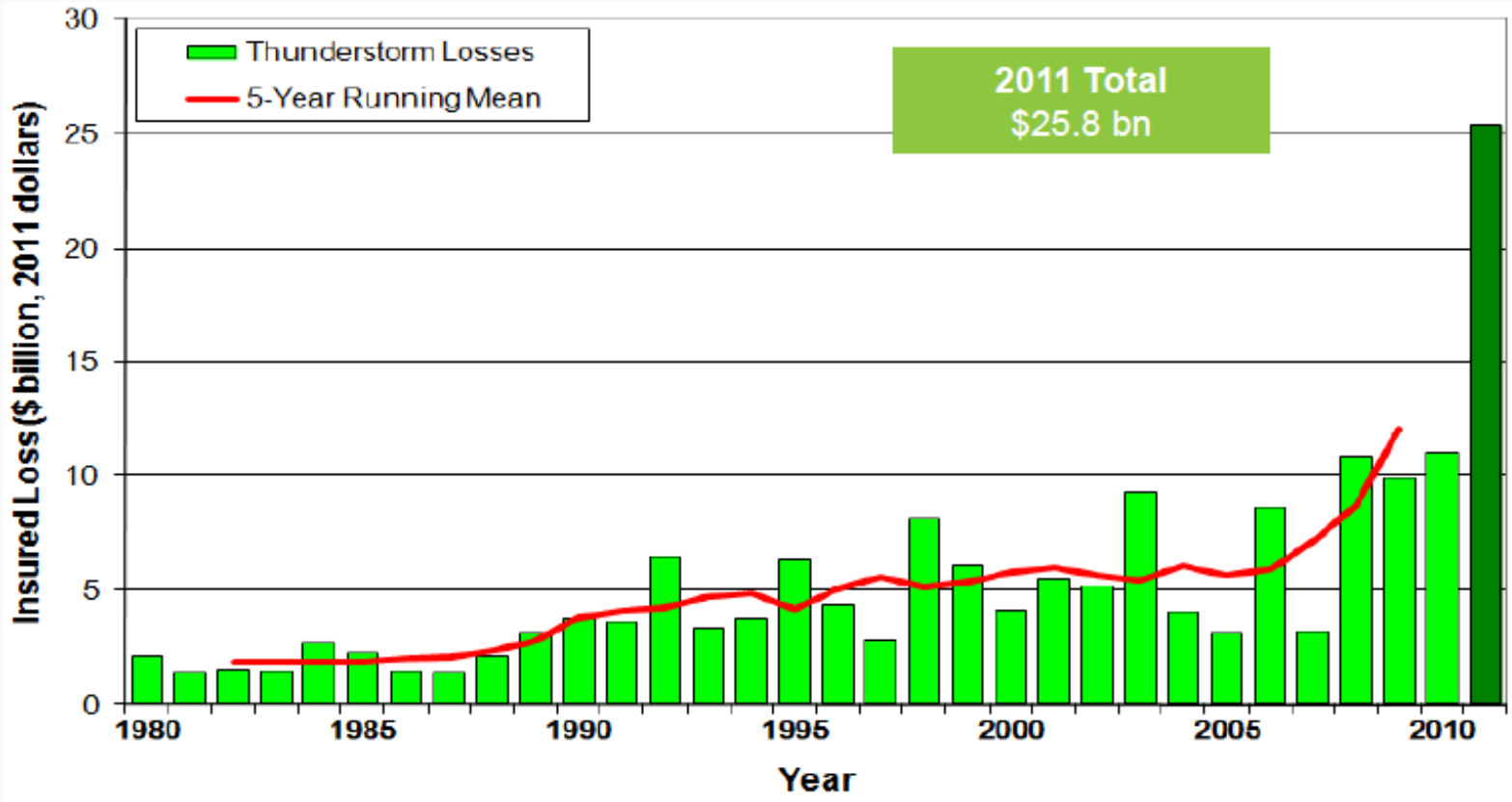
U.S. Natural Catastrophe Update

U.S. Thunderstorm Loss Trends

Annual Totals 1980 – 2011

Munich RE

Average thunderstorm losses have increased fivefold since 1980.



Source: Property Claims Service
MR NatCat*SERVICE*

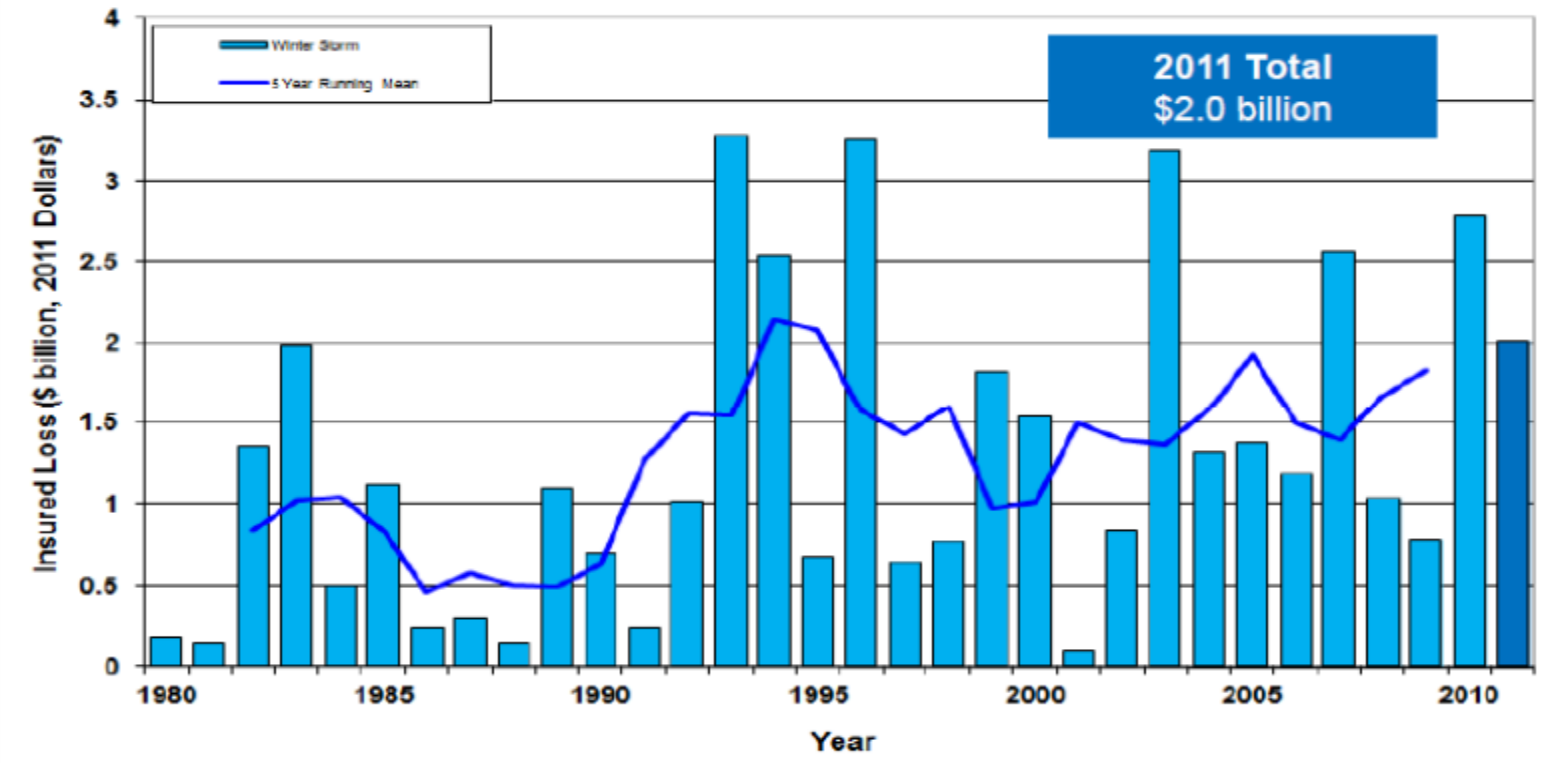
U.S. Natural Catastrophe Update

U.S. Winter Storm Loss Trends

Annual totals 1980 – 2011

Munich RE

Average annual winter storm losses have almost doubled since the early 1980s.



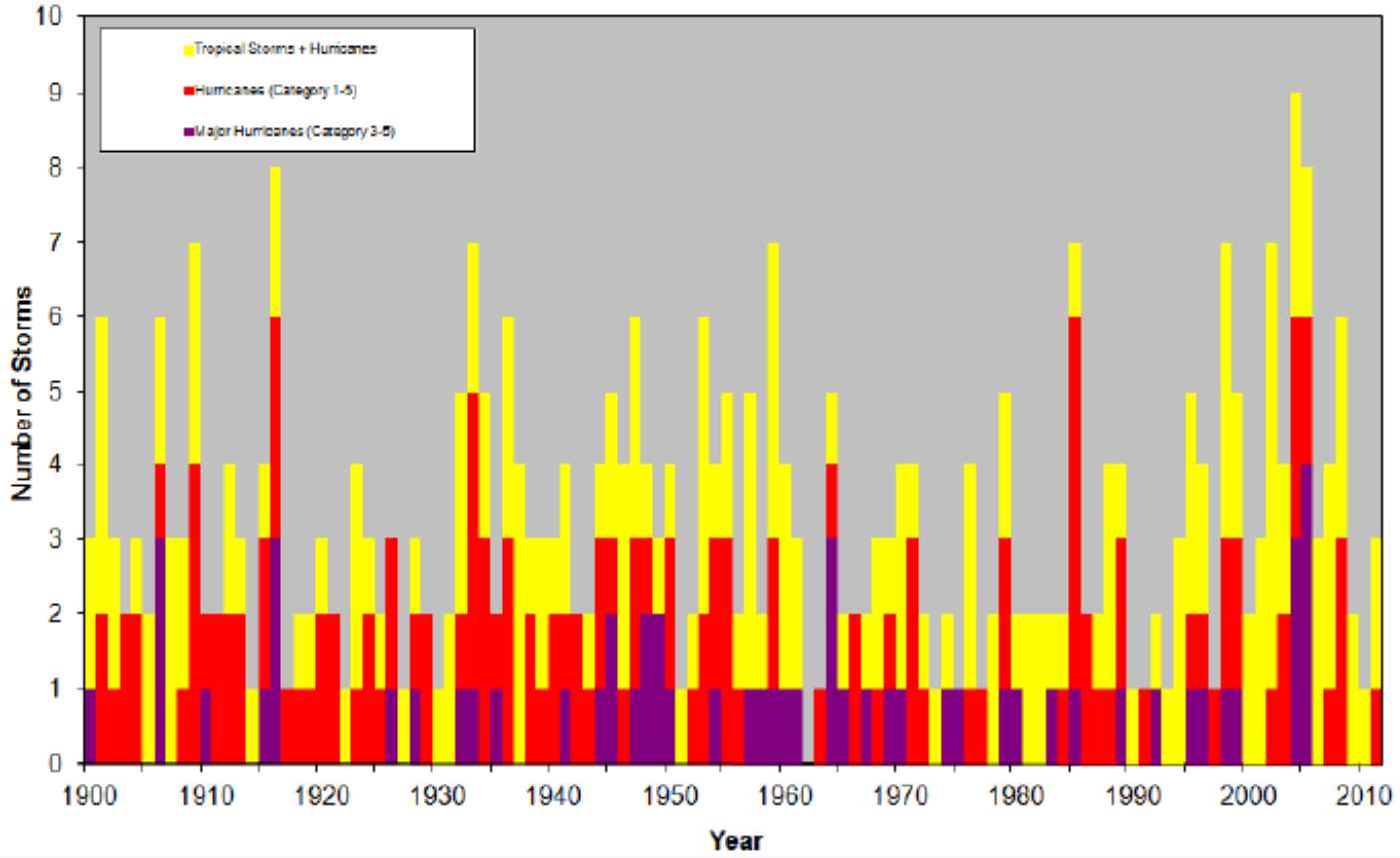
Source: Property Claims Service
MR NatCat*SERVICE*

U.S. Natural Catastrophe Update

Number of U.S. Landfalling Tropical Cyclones 1900 - 2011

Munich RE

There has not been a major hurricane landfall in the U.S. since 2005.

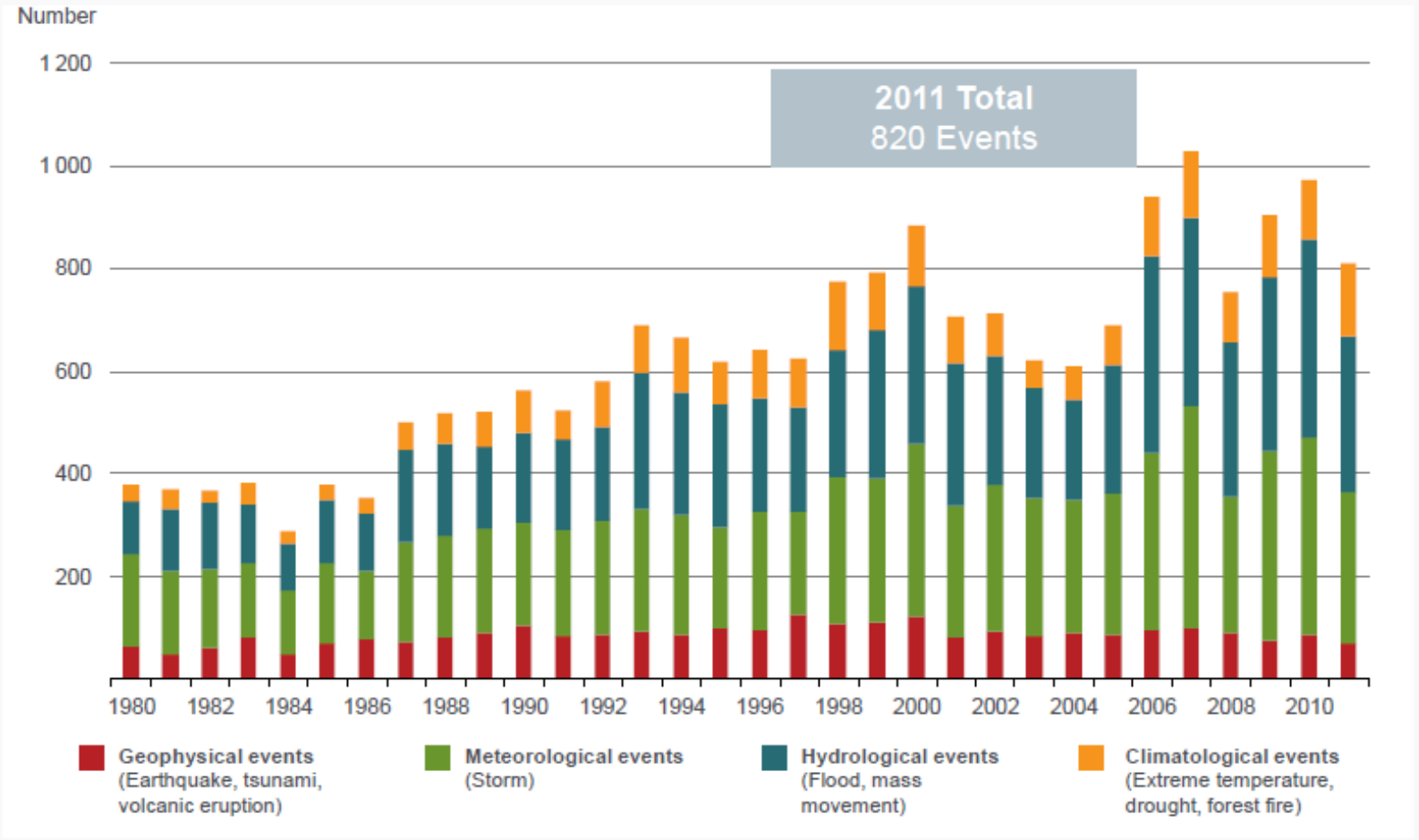


Source: NOAA

Global Natural Catastrophe Update

Natural Catastrophes Worldwide 1980 – 2011

Number of events



Source: MR NatCat*SERVICE*

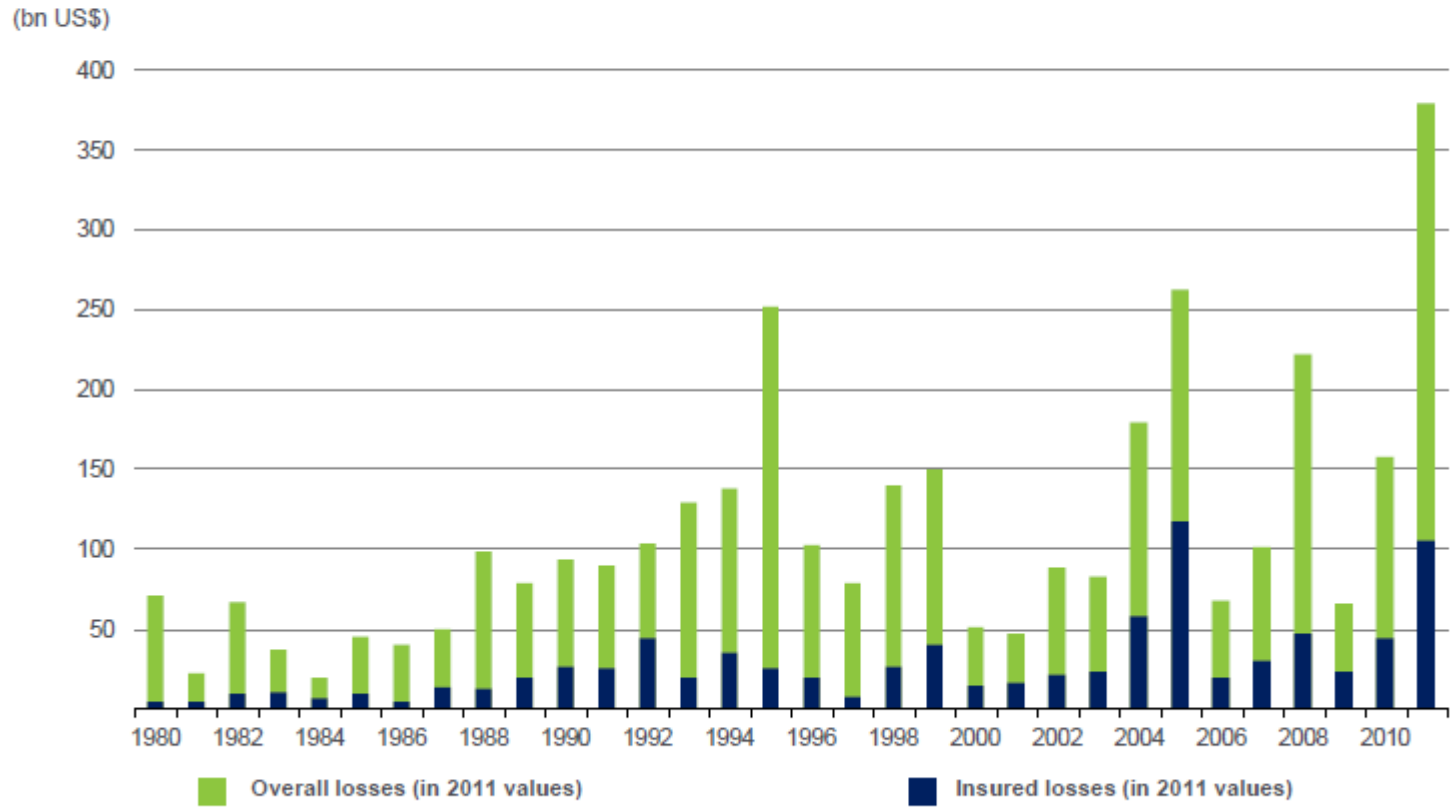
Global Natural Catastrophe Update

Natural Catastrophes Worldwide 1980 – 2011

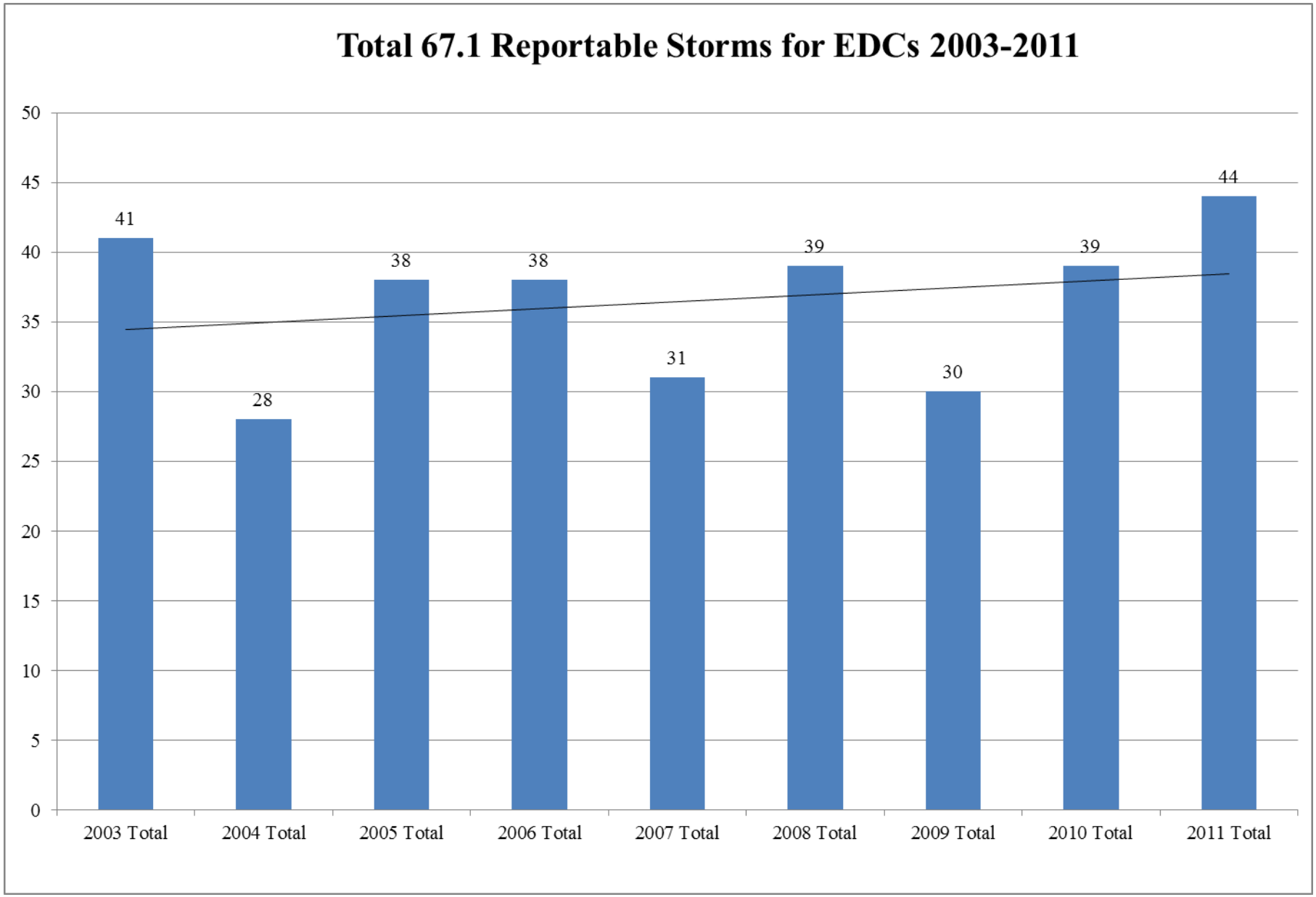
Overall and insured losses

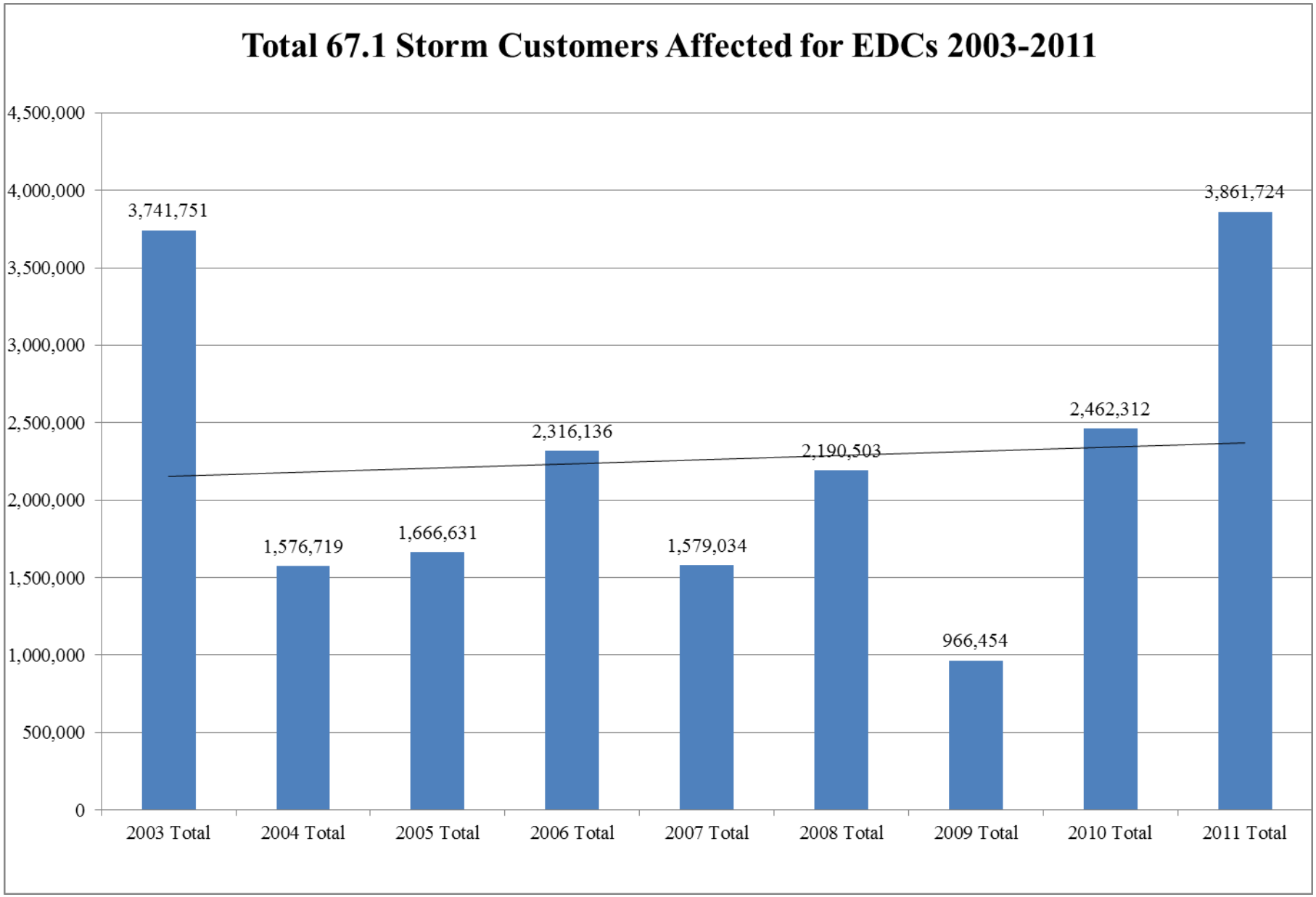
Munich RE

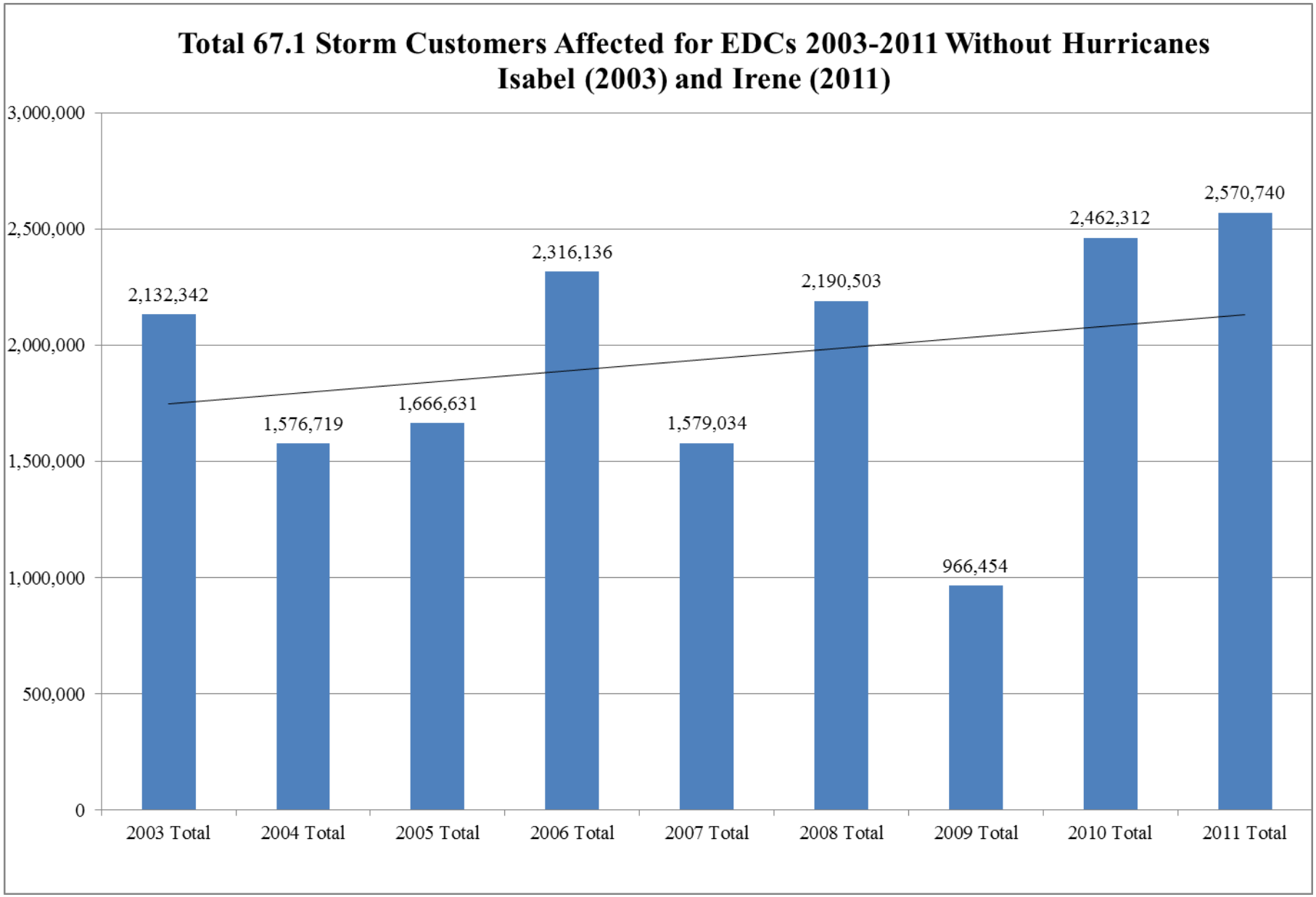
Overall losses totaled $380 billion; Insured losses totaled $105 billion

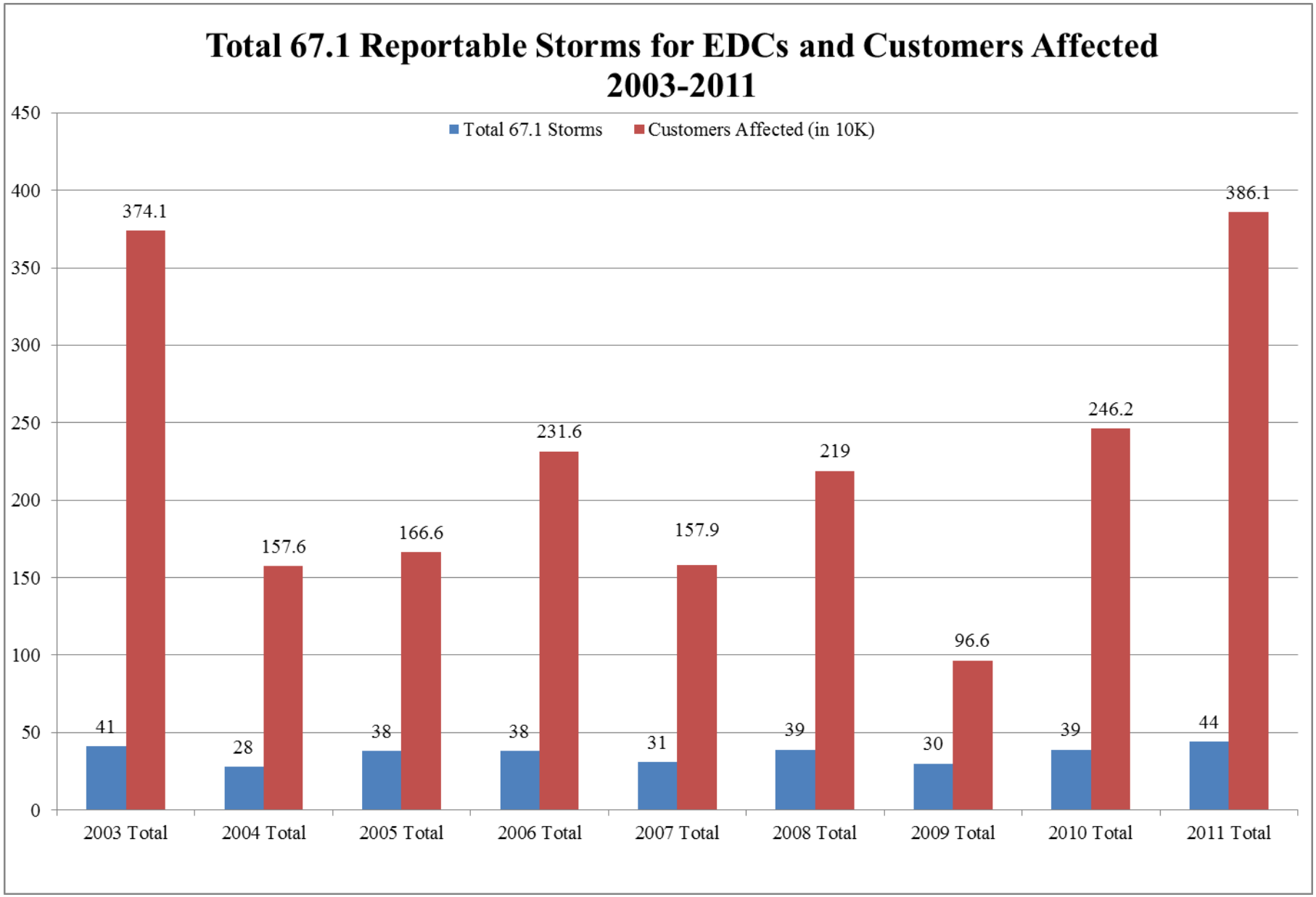


Source: MR NatCat*SERVICE*

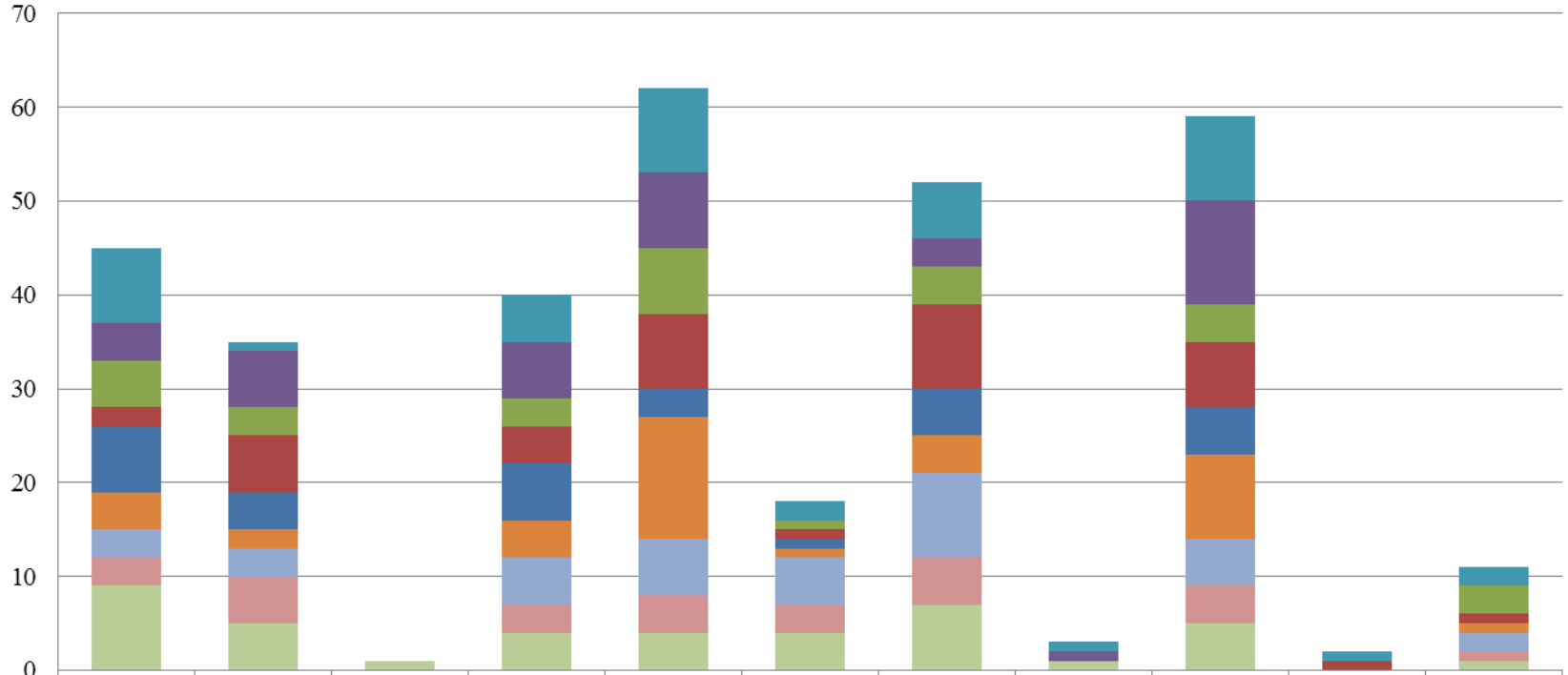

Total 67.1 Reportable Storms for EDCs 2003-2011
50
45
40
35
30
25
20
15
10
5
0
41
28
38
38
31
39
30
39
44
2003 Total
2004 Total
2005 Total
2006 Total
2007 Total
2008 Total
2009 Total
2010 Total
2011 Total


Total 67.1 Storm Customers Affected for EDCs 2003-2011
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
3,741,751
1,576,719
1,666,631
2,316,136
1,579,034
2,190,503
966,454
2,462,312
3,861,724
2003 Total
2004 Total
2005 Total
2006 Total
2007 Total
2008 Total
2009 Total
2010 Total
2011 Total


Total 67.1 Storm Customers Affected for EDCs 2003-2011 Without Hurricanes Isabel (2003) and Irene (2011)
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
2,132,342
1,576,719
1,666,631
2,316,136
1,579,034
2,190,503
966,454
2,462,312
2,570,740
2003 Total
2004 Total
2005 Total
2006 Total
2007 Total
2008 Total
2009 Total
2010 Total
2011 Total

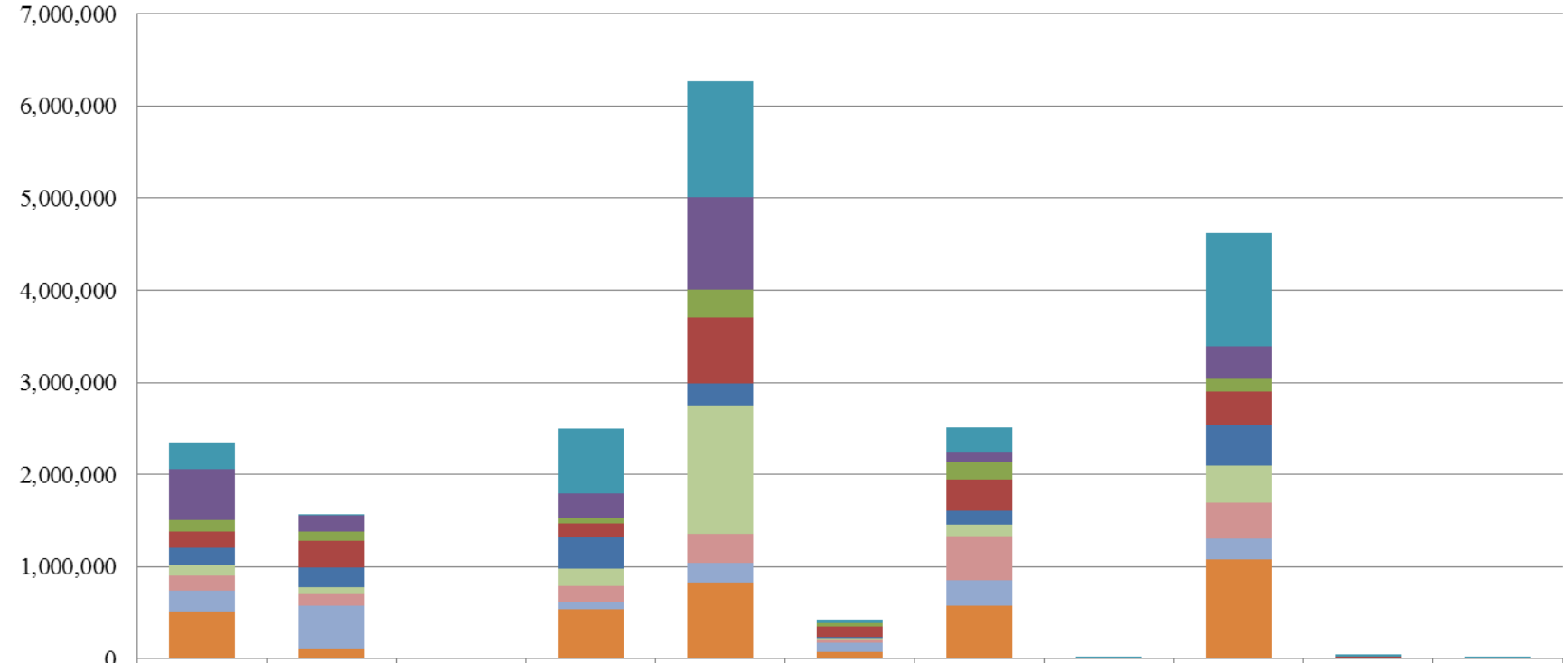

Total 67.1 Reportable Storms for EDCs and Customers Affected 2003-2011
Total 67.1 Storms
Customers Affected (in 10K)
450
400
350
300
250
200
150
100
50
0
374.1
157.6
166.6
231.6
157.9
219
96.6
246.2
386.1
41
28
38
38
31
39
30
39
44
2003 Total
2004 Total
2005 Total
2006 Total
2007 Total
2008 Total
2009 Total
2010 Total
2011 Total

67.1 Reportable Storms Per Year By EDC 2003-2011

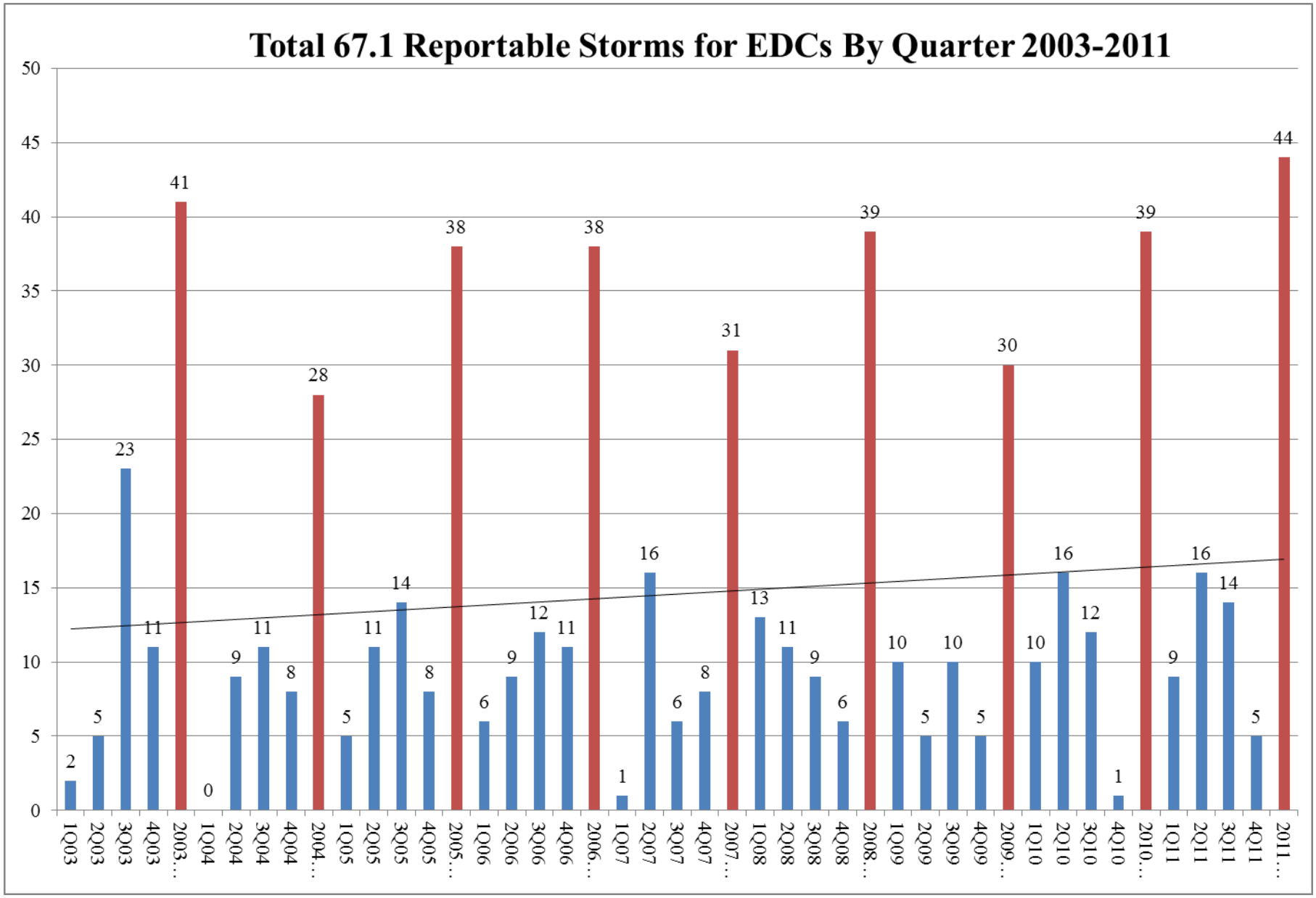


	West Penn	Duquesne Light	Citizens Electric	Met Ed	PECO	Penn Power	Penelec	Pike County	PPL	UGI Electric	Wellsboro
Total 2011	8	1		5	9	2	6	1	9	1	2
Total 2010	4	6		6	8		3	1	11		
Total 2009	5	3		3	7	1	4		4		3
Total 2008	2	6		4	8	1	9		7	1	1
Total 2007	7	4		6	3	1	5		5		
Total 2006	4	2		4	13	1	4		9		1
Total 2005	3	3		5	6	5	9		5		2
Total 2004	3	5		3	4	3	5		4		1
Total 2003	9	5	1	4	4	4	7	1	5		1

67.1 Reportable Storms Customers Affected Per Year By EDC 2003-2011



	West Penn	Duquesne Light	Citizens Electric	Met Ed	PECO	Penn Power	Penelec	Pike County	PPL	UGI Electric	Wellsboro
Total 2011	291,480	12,000		714,879	1,256,566	46,551	252,743	4,366	1,238,571	35,975	8,593
Total 2010	557,500	177,200		254,916	1,005,964		114,174	1,758	350,800		
Total 2009	126,842	99,000		67,051	301,391	32,859	187,838	4,368	137,172		9,933
Total 2008	170,330	296,866		152,657	720,584	118,314	348,036		365,518	17,500	698
Total 2007	194,189	211,915		338,735	240,099	8,616	143,085		442,395		
Total 2006	112,367	76,000		187,112	1,389,060	16,476	129,874		404,640		607
Total 2005	153,259	120,746		177,812	319,419	31,958	480,690		381,090		1,657
Total 2004	236,094	461,958		69,459	203,663	101,000	270,106		234,439		
Total 2003	508,666	117,000	6,300	542,616	833,307	74,473	579,295	4,300	1,073,794		2,000


Total 67.1 Reportable Storms for EDCs By Quarter 2003-2011
50
45
40
35
30
25
20
15
10
5
0
2
5
23
11
41
0
9
11
8
28
5
11
14
8
38
6
9
12
11
38
1
16
6
8
31
13
11
9
6
39
10
5
10
5
30
10
16
12
1
39
9
16
14
5
44
1Q03
2Q03
3Q03
4Q03
2003…
1Q04
2Q04
3Q04
4Q04
2004…
1Q05
2Q05
3Q05
4Q05
2005…
1Q06
2Q06
3Q06
4Q06
2006…
1Q07
2Q07
3Q07
4Q07
2007…
1Q08
2Q08
3Q08
4Q08
2008…
1Q09
2Q09
3Q09
4Q09
2009…
1Q10
2Q10
3Q10
4Q10
2010…
1Q11
2Q11
3Q11
4Q11
2011…

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA PUBLIC UTILITY COMMISSION
ENERGY, WATER & EMERGENCY PREPAREDNESS DIVISION
BUREAU OF TECHNICAL UTILITY SERVICES
P.O. BOX 3265, HARRISBURG, PA 17105-3265

IN REPLY PLEASE
REFER TO OUR FILE

APPENDIX A

November 3, 2011

Letters distributed to: Met-Ed, PECO, Penelec, Pike County, PPL and UGI

RE: Response Improvement Report

Dear Mr./Ms.:

Since Hurricane Irene the Commonwealth of Pennsylvania has experienced two significant weather events creating long-term duration electrical outages. At the Commission's Special Reliability Meeting on October 12, 2011, the following issues were addressed:

- Overload of the customer call centers of the utilities. Some customers received a busy signal or a message noting that all lines were busy.
- Some customers noted that the automated restoration information was unavailable at times, inaccurate or so general as to be of little value to the customer.

Many of the above issues arose again during the early-season snowfall on October 29th and the Commission wanted to address these issues as well as concerns relating to the many severe weather events in the Commonwealth over the past few years that have caused large-scale and extended-duration electrical outages.

As a result of the above storm events and extreme weather in your service territories, the Commission would like your company to file a report within two (2) weeks of the date of this letter addressing the following:

1. Provide the corrective action steps taken to ensure customer calls can be received during high-volume calling periods as occurred with Hurricane Irene in August and the early-season snowfall last week.
   a. Include the steps to ensure the customer wait time in the queue for a customer service representative is minimized.
   b. Include the action steps implemented since the Special Reliability Session on October 12, 2011.
   c. Include any contemplated action steps and the expected dates of completion.

2. Provide the corrective action steps taken to ensure customers receive more accurate and consistent restoration information from the interactive voice response (IVR)

system, particularly during high-volume calling periods and when extended duration customer outages are expected or predicted.

a. Include the action steps implemented since the Special Reliability Session on October 12, 2011.
b. Include any contemplated action steps and the expected dates of completion.

3. Provide severe weather information for your service territory for each of the past three (3) calendar years including record weather events, such as record rainfall or snowfall, days with wind gusts over 50 mph, days with rainfall rates of over 2 inches, days with ice accumulations of over ½ inch and the number of confirmed tornadoes.

4. Provide the dates and number of storm events including PUC reportable and PUC excludable for each of the past three (3) calendar years.

This report should be filed with Mr. Dan Searfoorce, Emergency Coordinator of the Bureau of Technical Utility Services, within two (2) weeks from the date of this letter.

Once the report is filed and reviewed, our office will be in contact with you to confirm dates and times whereby to meet to review the implementation of the steps in your report.

Very truly yours,

Paul T. Diskin
Director
Bureau of Technical Utility Services

DS:jld

xc: Mr. Nick Austin, Director, Operation Services
Mr. Eric J. Dickson, Director, Operations Services
Mr. Jan Freeman, Executive Director, PUC
Ms. Karen Moury, Director of Regulatory Operations, PUC
Mr. Dan Searfoorce, Emergency Preparedness Coordinator, TUS
Mr. Festus Odubo, Deputy Emergency Preparedness Coordinator, TUS
Mr. Darren Gill, Acting Manager, TUS

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA PUBLIC UTILITY COMMISSION
ENERGY, WATER & EMERGENCY PREPAREDNESS DIVISION
BUREAU OF TECHNICAL UTILITY SERVICES
P.O. BOX 3265, HARRISBURG, PA 17105-3265

IN REPLY PLEASE
REFER TO OUR FILE

APPENDIX B

November 4, 2011

Letter Distributed To: Citizen's, Duquesne, Penn Power, Wellsboro and West Penn

RE: Response Process Report

Dear Mr./Ms.:

Although your service areas were not materially impacted by the two significant weather events in the Commonwealth of Pennsylvania, Hurricane Irene and the early-season snowfall on October 29th, there were issues identified such as the handling of high-call volume and restoration communications to customers that the Commission is reviewing as a result of these severe weather events.

As a result of the above storm events, the Commission would like your company to file a report within two (2) weeks of the date of this letter providing the process by which you handle the following:

5. Handling high-call volumes—third party backup systems, cloud computing, etc.

6. How do you process restoration messaging during events where long-term service outages are expected, such as general message on the IVR, hold off on restoration estimates for a certain time period, 24-48 hours, etc.

The Commission also would like you to include the following concerning storm events in past years in your service territories:

1. Provide severe weather information for each of the past three (3) calendar years including record weather events, such as record rainfall or snowfall, days with wind gusts over 50 mph, days with rainfall rates of over 2 inches, days with ice accumulations of over ½ inch and the number of confirmed tornadoes.

2. Provide the dates and number of storm events including PUC reportable and PUC excludable for each of the past three (3) calendar years.

This report should be filed with Mr. Dan Searfoorce, Emergency Coordinator of the Bureau of Technical Utility Services, within two (2) weeks from the date of this letter.

Once the report is filed and reviewed, our office will be in contact with you to discuss your processes and opportunities to share best practices with other electric utilities.

Very truly yours,

Paul T. Diskin
Director
Bureau of Technical Utility Services

DS:jld

xc: Mr. Gene E. Cree, CFO/Treasurer, Citizens Electric Co.
Mr. John A. Kelchner, Vice President of Engineering and Operations, Citizens Electric Co.
Mr. Jan Freeman, Executive Director, PUC
Ms. Karen Moury, Director of Regulatory Operations, PUC
Mr. Dan Searfoorce, Emergency Preparedness Coordinator, TUS
Mr. Festus Odubo, Deputy Emergency Preparedness Coordinator, TUS
Mr. Darren Gill, Acting Manager, TUS