State of Nebraska
Hazard Mitigation Plan

2014

Prepared by the Nebraska Emergency Management Agency

PREFACE

The State Hazard Mitigation Plan establishes the policies, plans, guidelines and procedures for the Hazard Mitigation Program in Nebraska. This plan is compliant with the Stanford Disaster Relief and Emergency Assistance Act, Public Law 93-288; Hazard Mitigation Act of 2000 and the applicable rules and regulations promulgated from these Laws.

The Plan is organized in a manner that enhances its meeting of the rules and regulations by incorporating the following components:

1. Basic Plan
2. Six sections that correlate with the requirements of 44 CFR §201.4 for a Standard State Plan
3. Attachments: Other supporting information is attached where needed (maps, lists, tables, etc.)
4. Nebraska Flood Hazard Mitigation Plan Annex: The Flood Hazard Mitigation Plan, written by Nebraska Department of Natural Resources, has been included as Annex A.
5. Public Power District Annexes: The plans written by Public Power Districts included in the State Plan because of their independent status as Statutory Public Jurisdictions.

Below is a summary of the changes, additions, and corrections to the 2014 State Plan.

Section 1: Introduction	♦ The introduction was updated to reflect changes made throughout the State Hazard Mitigation Plan
Section 2 Planning Process	♦ During the interim period between 2011 and 2014, NEMA coordinated with the State's 23 Natural Resource Districts (NRDs) to effectively promote the creation and updates of multi-jurisdictional plans throughout the state. Eight multi-jurisdictional NRD plans have been approved and another six multi-jurisdictional NRD plans under development. Besides the NRD plans, there are a number of local hazard mitigation plans and county multi-jurisdictional hazard mitigation plans approved or in the process of development. ♦ Invitation letters and twenty CDs of the 2014 Plan Update initial draft and were mailed to member agencies of the GTFDR to attend a meeting. Greater input from member agencies was the result. ♦ Hazard specific information concerning recent federal disasters 4013 and 4014 were incorporated into the plan. ♦ Greater participation from Public Power Districts (PPDs) has occurred. Twelve PPDs Participated and developed Hazard Mitigation Plans and two other PPDs are in the process of developing Hazard Mitigation Plans that will be annexed to the 2014 Plan Update.

Section 3 Risk Assessment	♦ The Risk Assessment was updated in June & July of 2013 to include information from the Hazard Identification and Analysis Risk Assessment completed by NEMA. ♦ Hazard Mitigation Surveys were mailed to local emergency managers of the state's 93 counties and to 9 state agencies that played critical roles in the Nebraska Hazard Mitigation Plan development process. The survey results can be found in Section 2, Attachment 1. The survey results were incorporated into the choice of hazards in Risk Assessment. ♦ Because the HIRA less than a year before the start of the 2011 Plan Update process, most of the changes in this section are directly related to the occurrence of new disasters since 2011. ♦ An attachment was added, providing an overview of state actions, with regard to climate change.
Section 4 Mitigation Strategy	♦ Based on recommendations provided by NDNR and actions in approved Local Hazard Mitigation Plans, Action steps were added to Goal #1: Reduce or Eliminate Long Term Risk to Human Life Objective: 1.2 Promote and support projects that protect or exclude human habitation in flood zones or areas prone to other known hazards. These action steps are; ♦ 1.2.3 Pursue acquisition/demolition projects that remove homes and businesses from dangerous flood zones, ♦ 1.2.4 Pursue flood control projects such as flood retention reservoirs, small dam or levee structures, floodwall systems to protect critical facilities, ring levee systems, and other flood control structures that can be proven cost effective after conducting a benefit cost analysis, ♦ Pursue projects that identify population centers at-risk to dam or levee failure, and ♦ Promote projects that increase public awareness of flood insurance availability for homeowners and flood awareness education. ♦ Action step 3.4 - Wildfire awareness and 3.4.1 - Forest Fuels Reduction Program were added in response to the 2006 fire season. ♦ Updated the Climate Assessment Response Committee's (CARC) - Nebraska Risk Assessment Committee's Planned Mitigation Activities as detailed in Appendix E. ♦ None of the action strategies have been fully completed from the 2005 plan, although many have been initiated. Therefore, the Planning Team decided that the completion timelines for all actions steps will remain listed as ongoing for the 2011 update. ♦ Additional information was included concerning enabling legislation as it relates to Nebraska Regulation on Municipal Zoning §19-901 and County §23-114. ♦ Information concerning the Hazard Identification Risk Assessment (HIRA) ♦ Information concerning additional funding sources was added including the Pre-Disaster Mitigation Program, and Flood Mitigation Program was included. The Severe Repetitive Loss Program and the Repetitive Flood Claims Program were removed as these programs are no longer available under the new FY 2013 Hazard Mitigation Assistance (HMA)

	Unified Guidance. ♦ The description of state agencies relating to the capabilities of the State of Nebraska were updated to include more of an analysis of their abilities as they relate to mitigation.
Section 5 Coordination of Local Mitigation Planning	• More detailed information pertaining to the Local Planning Grant and Project Selection Process criteria was added. • An updated list of approved local hazard mitigation plans was added to this section. • Examples of technical assistance provided by NEMA to local jurisdictions were added. These examples give a more clear depiction of the relationship between the State and local jurisdictions. • A description of how the completion of local mitigation plans and projects conforms to the goals and objectives of the State Hazard mitigation Plan was added. • Table 5.1 was updated, showing the amount of HMGP funds allocated to planning projects since 2008 • A more clear description of the planning process from start to finish was added to this section.
Section 6 Plan Maintenance Process	• The Plan Maintenance Process was expanded to include more detail. • Added section on challenges to implementation of the 20 goals. • Information on the project closeout process was added • More information on the monitoring process of mitigation activities was added to the section.

THIS PAGE INTENTIONALLY LEFT BLANK

Dave Heineman
Governor

STATE OF NEBRASKA
OFFICE OF THE GOVERNOR
P.O. Box 94848 • Lincoln, Nebraska 68509-4848
Phone: (402) 471-2244 • dave.heineman@nebraska.gov

May 9, 2014

Under the authorities of the Nebraska Emergency Management Act, Reissue Revised Statutes of Nebraska, Section 81-829.41(e), (f), and (g), the Nebraska Emergency Management Agency has prepared this All Hazards Mitigation Plan to identify the risks, vulnerabilities of the State and to protect against or mitigate danger, damage, or loss from these risks.

As Governor, I formally adopt this plan for the State of Nebraska and ensure that the State will comply with all applicable Federal statutes and regulations in compliance with 44 CFR 13.11 (c). I also direct the Nebraska Emergency Management Agency to amend the plan whenever necessary to reflect changes in State or Federal laws and statues as required in 44 CFR 13.11 (d).

Sincerely,

Dave Heineman

Dave Heineman
Governor

An Equal Opportunity/Affirmative Action Employer
Printed with soy ink on recycled paper

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS
and
LIST OF ATTACHMENTS

TITLE		PAGE
Preface		i
Governors Adoption		v
Table of Contents		vii
Distribution		xi
Glossary Acronyms and Definitions		xiii
Authorities and References		xv
BASIC (Section 1)		
I.	Introduction	1
II.	Planning Process	2
III.	Plan Organization	4
IV.	Adoption by the State	4
V.	Compliance with Federal Laws and Regulations	5
SECTON 2	PLANNING PROCESS	2-1
Attachment		
1	Risk Assessment Survey Summary	2-21
2	Summary of Prioritization Method	2-39
SECTION 3	RISK ASSESSMENT	3-1
Attachment		
1	Long Term Hazard Overview: Climate Change	3-143
2	Integration of Local Risk Assessment Through the HIRA	3-149

TABLE OF CONTENTS
and
LIST OF ATTACHMENTS
(continued)

TITLE		PAGE
Attachment (Continued)		
3.	Nebraska Statewide Effective Digital Floodplain	3-153
4.	Nebraska Floodplain Mapping Status	3-155
SECTION 4	MITIGATION STRATEGY	4-1
Attachment		
1.	Risk Assessment Committee Planned Mitigation Actions	4-37
2.	Hazard and Potential Activities Chart Definitions	4-43
3.	State Mitigation Goals, Objectives, and Prioritization Criteria	4-49
SECTION 5	COORDINATION OF LOCAL PLANNING	5-1
Attachment		
1.	Current Projects and Action Items	5-17
SECTION 6	PLAN MONITORING	6-1
ANNEXES		
A	Flood Hazard Mitigation Plan (2013)	A-1
	PUBLIC POWER DISTRICTS	
B.	Burt County PPD	B-1
C.	Butler County PPD	C-1

TABLE OF CONTENTS
and
LIST OF ATTACHMENTS
(continued)

TITLE		PAGE
ANNEXES (Continued)		
D.	Cedar Knox PPD	D-1
E.	(Held for Cherry-Todd PPD)	
F.	(Held for Chimney Rock PPD)	
G.	Cornhusker PPD	G-1
H.	(Held for Cuming County PPD)	
I.	Custer County PPD 9/28/2009)	I-1
J.	Dawson PPD	J-1
K.	Elkhorn Rural PPD	K-1
L.	Howard Greeley PP	L-1
M.	KBR Rural PPD (8/15/2009) Loup Power District (8/13/2009)	M-1
N.	Loup Valleys PPD (7/14/2008)	N-1
O.	McCook PPD	O-1
P.	Nebraska Public Power	P-1
Q.	Norris PPD	Q-1
R.	North Central PPD	R-1
S.	(Held for Northeast Nebraska PPD) Under Development	
T.	(Held for Northwest Rural PPD)	
U.	Omaha Public Power	U-1
V.	(Held for Panhandle Rural PPD)	
W.	Perennial PPD	W-1
X.	Polk County PPD	X-1

TABLE OF CONTENTS
and
LIST OF ATTACHMENTS
(continued)

TITLE		PAGE
ANNEXES (Continued)		
Y.	(Held for Roosevelt PPD)	
Z.	Seward County PPD	Z-1
AA.	(Held for South Central PPD)	
BB.	Southwest PPD	BB-1
CC.	Stanton County PPD	CC-1
DD.	Twin Valleys PPD	DD-1
EE.	(Held for Wheat Belt PPD)	

Distribution List

Copy Number	Given To:
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.	

THIS PAGE INTENTIONALLY LEFT BLANK

ACRONYMS & DEFINITIONS

CARC	Nebraska's Climate Assessment Response Committee (CARC), replaced DART, formed to address the state-wide problem of drought; created the Drought Mitigation and Response Plan.
CFR	Code of Federal Regulations
DART	Nebraska's Drought Assessment and Response Team, created to develop written strategies addressing the state-wide problem of drought; predecessor of CARC
DMA 2000	Disaster Mitigation Act of 2000
EMA	Emergency Management Agenc(y)(ies)
FEMA	Federal Emergency Management Agency
FEMA Region VII	Provides oversight for federal emergency management programs in Iowa, Nebraska, Missouri, and Kansas; headquartered in Kansas City, Missouri
FMA	FEMA's Flood Mitigation Assistance programs
GTFDR	Nebraska's Governor's Task Force for Disaster Recovery, co-chaired by NEMA and NDNR, designated the Nebraska Hazard Mitigation Planning Team; created in 1994 to coordinate disaster recovery with an emphasis on efficient utilization of federal supplementary appropriations.
HMGP	Hazard Mitigation Grant Program
NCDC	National Climatic Data Center (NCDC) is part of the U.S. Department of Commerce, and is the world's largest active archive of weather data.
NDED	Nebraska Department of Economic Development
NDEQ	Nebraska Department of Environmental Quality
NDHHS	Nebraska Department of Health and Human Services
NDNR	Nebraska Department of Natural Resources
NEMA	Nebraska Emergency Management Agency
NFIP	FEMA's National Flood Insurance Program, a federal program created by Congress in 1968 that makes flood insurance available in communities that enact and enforce satisfactory floodplain management regulations.
NFS	Nebraska Forestry Service
NIAC	Nebraska Information Analysis Center, the state's Fusion Center providing an avenue for all state law enforcement agencies and participating private partners to receive, validate, analyze and disseminate intelligence information for all crimes and all hazards

NIPP	National Infrastructure Protection Program (NIPP), a program that is involved in identification of critical infrastructure
NOAA	National Oceanic and Atmospheric Administration
NRD	Natural Resource Districts, there are 23 in Nebraska, considered governmental entities of the state of Nebraska, lead agencies in the local hazard mitigation plan development, also responsible for water management, flood control, and other projects within their taxing authority. .
NREA	Nebraska Rural Electric Association, represents 35 smaller PPDs in the state.
PA	Public Assistance, aid programs of the state and federal governments.
Planning Team	Members of the Governor's Task Force for Disaster Recovery, with staff assistance from member agencies, including NEMA and the NDNR
PPDs	Public Power Districts; political subdivisions of the State of Nebraska created by state enabling legislation in 1936; PPDs are publicly owned power generation and delivery systems in Nebraska.
R&R	Response and Recovery
Real Dollars	A synonym for **Constant Dollars,** or dollars which reflect the prices of the base year of the systems life. Constant dollars do not consider the effect of inflation and are normally used in cost/benefit analysis. Constant dollars are always associated with a base year - such as, Fiscal Year 1994 constant dollars - normally the first year of the analysis.
RFC	FEMA's Repetitive Flood Claims program, under the NFIP grant programs for structures and properties insured under the NFIP.
RRPS	Response and Recovery Program Specialist, a position created to assist the State Hazard Mitigation Officer (SHMO) with coordination of mitigation efforts with relevant federal, state, and local agencies.
RRS	Nebraska Reissued Revised Statutes
RVW	Reed, Veach, Wurdeman & Associates—hired on January 23, 2008 to coordinate development of PPD Hazard Mitigation Plans to be annexed to the State Plan.
SHMO	State Hazard Mitigation Officer (SHMO), the lead coordinator for all hazard mitigation efforts being pursued within the State of Nebraska.
SRL	FEMA's Severe Repetitive Loss (SRL) program, under the NFIP
USCOE	U. S. Army Corps of Engineers
USDI	U.S. Department of Interior

AUTHORITIES AND REFERENCES

- Nebraska State Hazard Mitigation Plan 2008 – (Nebraska Emergency Management Agency)

- Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Public Law 93-288) as amended

- National Flood Insurance Reform Act of 1994

- Nebraska Flood Mitigation Plan 2002 – (Nebraska Department of Natural Resources)

- Nebraska Hazard Mitigation Plan 1985 – (Nebraska Emergency Management Agency)

- Nebraska Executive Order 94-3

- FEMA's Multi-Hazard Mitigation Planning Guidance (Revised January 2008)

- FEMA's "How to" Guides;
    - o Guide 1 - Getting Started: Building Support for Mitigation Planning,
    - o Guide 2 – Understanding Your Risks: Identifying Hazards and Estimating losses,
    - o Guide 3 - Developing the Mitigation Plan: Identifying Mitigation Actions and Implementing Strategies,
    - o Guide 4 - Bringing the Plan to Life: Implementing the Hazard Mitigation Plan

- Code of Federal Regulations 44 (Revised October 1, 2009)

- Disaster Mitigation Act of 2000 (P.L. 106 -390)

- Nebraska Emergency Management Act (Revised May 23, 2003)

- State Drought Mitigation Plan by the Municipal Water Supply, Health, and Energy Subcommittee in 1999

- Nebraska School of Natural Resources in the Natural Resource Link" (Volume 4, Number 1, Winter of 2004)

- Kansas Hazard Mitigation Plan 2010

- U.S. Geological Survey publication "Swelling Clays Map Of The Conterminous United States" by W.W. Olive, A.F. Chleborad, C.W. Frahme, Julius Schlocker, R.R. Schneider, and R.L Shuster; 1989
- Nebraska Department of Roads District Operations Center Transportation Management Software "Risk Assessment/Risk Management Plan V 1.0, September 24, 2007

- TERREX 2006 – After Action Report
- Nebraska Department of Agriculture's Monograph No. 002
- The State's Emergency Operations Plan, Emergency Support Function 11 – Agriculture and Natural Resources Annex
- USDA – Agricultural Statistics Service 2009
- National Infrastructure Protection Plan (2009) –Department of Homeland Security
- Earthquakes in Nebraska by Raymond R. Burchett, Educational Circular # 4a, Second Edition (expanded) 1990, Conservation and Survey Division, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln
- Planning for Safer Communities: Improving Community Disaster Resilience Through Natural Hazard Mitigation in the Denver Area Region, Denver Regional Council of Governments.
- National Flood Insurance Program 2007 Flood Claims Data
- (August 1995). "Midwest Flood Information on the Performance, Effects, and Control of Levees." US-GAO, pgs 32-33.
- 2007 American Planning Association (APA) publication "Making Great Communities Happen."
- 2009 Nebraska Forest Service Annual Report
- October 2010 Nebraska Department of Natural Resources Monthly Newsletter
- July 2010 Nebraska Department of Natural Resources Monthly Newsletter
- 2013 Nebraska Department of Natural Resources Flood Hazard Mitigation Plan

Web Resources:

- http://snr.unl.edu/
- http://snr.unl.edu/Data/landslidesintro.asp
- http://snr.unl.edu/data/geologysoils/landslides/index-landslides.asp
- http://www.agr.state.ne.us/division/bai/disease_list.pdf
- http://www.cwdinfo.org/index.php/fuseaction/news.detail/ID/330c47d2c8f7530a1163261633cadd77
- http://www.thehorse.com/viewarticle.aspx?ID=4877
- http://www.michigan.gov/dnr/0,1607,7-153-10370_12150_12220-26647--,00.html
- http://ianrpubs.unl.edu/epublic/pages/publicationD.jsp?publicationId=323
- http://ianrnews.unl.edu/static/0710051.shtml
- http://pdc.unl.edu/
- http://www.apsnet.org/online/sbr/pdf/USDASBRCoordFrameworkJan%2031v3.pdf
- http://www.journalstar.com/articles/2007/11/26/news/local/doc474a0c4fd1841033039610.txt
- http://www.dnr.state.ne.us/docs/damsafety.html
- http://dnrdata.dnr.ne.gov/MapIt/DamsPointImage.aspx?Latitude=41.23167942&Longitude=-101.6727708
- http://drought.unl.edu/dm
- http://hprcc.unl.edu/nebraska/drought
- www.disastercenter.com/nebraska/nebraska.htm
- http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~Storms
- http://www.halfhill.com/inflation.html
- http://neic.usgs.gov/neis/eq_depot/usa/1877_11_15.html
- http://neic.usgs.gov/neis/eq_deopt/usa/1964_03_28_a.html
- http://www.census.gov/
- http://www.dnr.ne.gov/floodplain/mitigation/mofloods.html
- http://www.dnr.ne.gov/floodplain/mitigation/mofloods.html
- http://factfinder.census.gov/servlet/ThematicMapFramesetServlet
- www.fema.gov
- http://www.dnr.ne.gov/dnrnews/news2010/July_2010.pdf
- http://www.nfrmp.us/docs/USACE_National_Flood_Risk_Management_Guidance_Letter.pdf
- http://dnr.ne.gov/dnrnews/news2010/October_2010.pdf
- http://www.planning.org/features/2005/whatissafegrowth.htm
- http://dnr.ne.gov/floodplain/docs/flood_insurance.html
- http://www.ers.usda.gov/StateFacts/NE.htm
- http://www.agr.state.ne.us/pub/bai/vs_brochure.htm
- http://www.agr.ne.gov/division/bai/ledrs.htm
- http://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/casabbr.aspx
- http://safetydata.fra.dot.gov/officeofsafety/publicsite/Query/inctally1.aspx
- http://www.census.gov/

THIS PAGE INTENTIONALLY LEFT BLANK

BASIC PLAN

I. INTRODUCTION

A. The 2014 update to the Nebraska Hazard Mitigation Plan includes summary information on the plan's purpose and organization. The section also provides evidence of plan adoption, and includes assurances regarding compliance with federal statutes and regulations as they pertain to federal mitigation grant funding. The section includes assurances of compliance with state statutes authorizing mitigation programs and organizations in Nebraska.

B. The purpose of the Nebraska State Hazard Mitigation Plan is to provide a comprehensive set of guidelines for hazard response and mitigation in the state. The plan identifies potential risks with appropriate mitigation responses to significantly reduce loss of life, injuries, economic costs, and destruction of natural and cultural resources.

C. The Nebraska State Hazard Mitigation Plan was written in 2005 pursuant to the Disaster Mitigation Act of 2000 ("DMA 2000"). DMA 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 by rescinding the previous hazard mitigation section, Section 409, and replacing it with Section 322. Section 322 emphasized the need for state, tribal, and local entities to closely coordinate mitigation planning and implementation efforts. In order to be eligible for Hazard Mitigation Plan Grant (HMPG) project funding, the new legislation required each state to have a Federal Emergency Management Agency (FEMA) approved hazard mitigation plan prior to November 1, 2004.

D. DMA 2000 requires update of the Nebraska State Hazard Mitigation Plan every three years. This document is the 2014 update of the 2011 Nebraska Hazard Mitigation Plan, and will be referred to in this document as "the 2014 Plan Update."

E. The Nebraska Emergency Management Agency (NEMA) Response and Recovery Section Manager was assigned responsibility for preparation of the 2014 Plan Update for submittal to FEMA for approval. The state began the planning process for the 2014 State Hazard Mitigation Plan by bringing together state and federal agencies to identify potential hazards and develop a clearly stated hazard mitigation strategy. The agencies involved provided different perspectives and expertise in a rich planning environment that led to a more effective and efficient mitigation strategy development effort.

F. The 2014 Plan Update process continues to involve federal and state agencies, providing input regarding the plan's overall effectiveness. Recognizing the importance of the 2014 Plan Update, the GTFDR met on August 10, 2013, for the purpose of looking at the plan and providing fresh recommendations for the planning process. Presidentially declared disaster numbers (4013 and 4014) occurring in the interim between the 2011 Nebraska Hazard Mitigation Plan and

the 2014 Plan Update have resulted in Nebraska's eligibility to receive disaster assistance available through the Stafford Disaster Relief and Emergency Assistance Act P.L. 93-288 as amended.

G. The State of Nebraska pledges compliance with all applicable federal statutes and regulations during the periods for which it receives grant funding, pursuant to 44 CFR §13.11(c), and will amend its plans whenever necessary to reflect changes in state or federal laws and statues as required in 44 CFR §13.11 (d).

H. NEMA has acted, and will continue to act, as the lead agency in overall hazard mitigation planning for the State of Nebraska. Other state agencies have been heavily involved, including the Nebraska Department of Natural Resources (NDNR). The NDNR has been the lead agency in the development of hazard mitigation plans for specific hazards such as flooding. Nebraska's first mitigation plan was written in 1985, and has been reviewed and revised every few years.

I. Upon FEMA approval and formal adoption, the 2014 Plan Update will be posted on NEMA's Website for easy access by the public and local emergency response agencies.

II. PLANNING PROCESS

A. The 2014 Plan Update process began with designation of the Governor's Task Force for Disaster Recovery ("GTFDR") as the Planning Team responsible for coordinating the development of the plan. The GTFDR was also the Planning Team for the 2014 plan Membership on the GTFDR is comprised of staff from the following key agencies:

1. Nebraska Department of Agriculture
2. Nebraska State Patrol
3. Nebraska Department of Economic Development
4. Nebraska Department of Environmental Quality
5. Nebraska Department of Natural Resources
6. Nebraska Game and Parks Commission
7. Nebraska Historical Society
8. Nebraska Department of Administrative Services
9. Nebraska Department of Revenue

10. Nebraska Department of Health and Human Services

11. Nebraska Climate Assessment Response Committee

12. Nebraska Forest Service

13. Nebraska Public Health Laboratory – UNMC

14. University of Nebraska - School of Natural Resources

15. Nebraska Emergency Management Agency

B. The GTFDR plays an important role in disaster response and hazard mitigation planning in Nebraska. Further information concerning the organization and purpose of this entity will be provided in Section 2 of this document.

1. The Planning Team reviewed each section of the 2011 Nebraska Hazard Mitigation Plan. The Planning Team determined that all sections except the goals should be updated due to extensive federally declared disaster activity in the state during the period between the initial plan approval in 2008 and the update in 2014.

2. The Planning Team then added to the list of natural hazards impacting the state, as detailed in the Risk Assessment section of this document.

3. Finally, the Planning Team assessed the validity of the goals established in the 2011 Nebraska Hazard Mitigation Plan. It was determined that the goals remained timely and relevant, and the goals should not be changed. However, federal disaster declarations in Nebraska between the years of 2011 and 2014 required amendment and updating of the 2011 objectives and actions. This activity was conducted using input from local hazard mitigation plans, a review of “lessons learned” during recent federal disaster declaration activity, assessment and analysis of past hazard mitigation projects, and review of stakeholder input. The activity was conducted using the guidance provided by the Standard State Hazard Mitigation Plan Review Crosswalk (April 8, 2011). The Planning Team determined that all objectives and actions developed would be reflective of one of the following three hazard mitigation goals from the 2011 Nebraska Hazard Mitigation Plan:

   a. Reduce or eliminate long term risk to human life
   b. Reduce or eliminate long term risk to property and or the environment
   c. Promote public awareness of hazards and associated response

III. PLAN ORGANIZATION

The 2014 Plan Update is organized around FEMA's mitigation planning process and is divided into six chapters with supporting appendices:

A. Basic Plan**:** This section includes a summary of the activity that occurred in the plan development, the state's adoption of the plan and assurances that the state will comply with all applicable federal statutes and regulations.

B. Section 2 -- Planning Process: This section explains the planning process, including how the plan was prepared, who was involved, and how the process was integrated with other related planning efforts.

C. Section 3 Risk Assessment**:** This section features the risk assessment, which identifies the type and location of hazards that can affect Nebraska, analyzes the state's vulnerability to the hazards identified, and serves as the factual basis for the mitigation strategy.

D. Section 4 Mitigation Strategy: This section provides the state's mitigation blueprint. Specifically, it includes goals and objectives, state and local capabilities, mitigation activities, and funding sources.

E. Section 5 Coordination of Local Mitigation Planning: This section describes the state's coordination efforts between state agencies, the state's role in funding, developing, coordinating, and approving local mitigation plans, and how the state prioritizes funding for local mitigation plans and projects.

F. Section 6 Plan Maintenance Process: This section presents the method NEMA and the GTFDR/Planning Team uses to monitor, evaluate, and update the plan. It also outlines how the state reviews progress on achieving the goals of the mitigation strategy

Requirement §201.4(c)(6): The plan must be formally adopted by the state prior to submittal to [FEMA] for final review and approval.

IV. ADOPTION BY THE STATE

The governor of the State of Nebraska has adopted this 2014 Update of the Nebraska Hazard Mitigation Plan for implementation. The plan had been previously adopted by the governor of the state on April 4, 2011.

Requirement §201.4(c)(7): The plan must include assurances that the state will comply with all applicable federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with 44 CFR 13.11(c). The state will amend its plan whenever necessary to reflect changes in state or federal laws and statutes as required in 44 CFR 13.11(d).

V. COMPLIANCE WITH FEDERAL LAWS AND REGULATIONS

A. This plan was prepared in compliance with the requirements of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (as amended by the Disaster Mitigation Act of 2000); all aspects of 44 CFR pertaining to hazard mitigation planning and other activities; the interim final rules and final rules pertaining to hazard mitigation planning and grants; all pertinent presidential directives associated with the U.S. Department of Homeland Security and FEMA; all Office of Management and Budget circulars; and other federal government documents, guidelines, and rules.

B. The State of Nebraska agrees to comply with all federal statutes and regulations in effect with respect to mitigation grants it receives, in compliance with 44 CFR §13.11(c) As stated in the introductory paragraphs of Section 1, the Nebraska Hazard Mitigation Planning Team pledges to review the plan at least annually and update it every three years or as needed based on changes in priorities, disaster events, and funding availability. Amendments will be made as necessary to address changes in federal and state statutes, regulations, and policies. The next update of the plan is to be approved by FEMA in April 2017.

THIS PAGE INTENTIONALLY LEFT BLANK

PLANNING PROCESS

I. A. This section documents the process used in the development of the 2014 Plan Update, including how the state coordinates its efforts with other agencies and state-wide planning efforts. The section is divided into three parts:

1. Documentation of the planning process
2. Coordination among agencies
3. Integration with other planning efforts

B. The process established for this planning effort is based on the Disaster Mitigation Act of 2000 planning requirements and the Federal Emergency Management Agency's (FEMA) associated guidance for state hazard mitigation plans. The Planning Team's general formula followed FEMA's recommended four-step mitigation planning process:

1. Update the identification and organization of available resources
2. Update the identification of hazards and assessment of risk
3. Update the mitigation strategy
4. Update the implementation of the plan and monitor progress

Requirement §201.4(c)(1): [The state plan must include] a description of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how other agencies participated.

II. DOCUMENTATION OF THE PLANNING PROCESS

The Nebraska statewide mitigation planning program is designed to coordinate the efforts of many state agencies and organizations in mitigation planning and programming on an ongoing basis. For the 2014 Plan Update the planning process was used, to complement newly approved mitigation plans through the state; with the promotion of continual local mitigation planning and an emphasis on the implementation of the state mitigation strategy listed in Section 4 of this plan. It is also intended to actively promote and coordinate mitigation planning and programming by local jurisdictions by accomplishing the follow activities:

A. Encourage and facilitate a multi-organizational, multi-jurisdictional approach to mitigation planning, in an effort to develop interrelated and coordinated plans and programs at both the state and local levels;

B. Use a consistent and practical technical approach to mitigation plan development, allowing information exchange on a state-wide basis, including all jurisdictions and all levels of government as well as volunteer and non-governmental organizations throughout the state;

C. Promote a mitigation planning process that prioritizes available time and resources to address the highest-risk hazards confronting the communities of

Nebraska and the mitigation goals that have been established at both the state and local levels;

D. Recognize that mitigation planning and programming must be an ongoing and continuous process involving continuous updating to reflect changes in hazard conditions as well as the resources and capabilities available to mitigate vulnerabilities to those hazards.

III. EVOLUTION OF THE STATE HAZARD MITIGATION PLAN IN NEBRASKA

A. Hazard mitigation planning has a lengthy history in Nebraska. Early planning activity was hazard-specific. As early as the 1970's, Nebraska Executive Orders addressed additional flood hazard mitigation measures. Nationally, the hazard mitigation process was furthered with the amendment of the Disaster Relief Act by P.L. 100-707. In 1991, the National Flood Insurance Program incorporated the Community Rating System. The National Flood Insurance Reform Act was approved in 1994 and enacted the Flood Mitigation Assistance Program. These and other federal mitigation actions encouraged mitigation efforts in Nebraska.

B. Another hazard-specific mitigation activity began in the 1980's, which was adopted in 1986. The state formed the Drought Assessment and Response Team (DART) to create written strategies addressing the state-wide problem of drought. It was published in 1990 by DART. Largely as a result of experiences in responding to the drought of 1988-89, the State of Nebraska began to consider ways to improve the effectiveness of the drought plan. The Nebraska Climate Assessment Response Committee (CARC), replacing DART, was created by law in 1991. CARC began the drought plan revision in 1998 at the urging of the National Drought Mitigation Center at the University of Nebraska in Lincoln. CARC formally adopted Nebraska's Drought Mitigation and Response Plan on June 26, 2000. The plan was later revised and updated on May 9, 2004. The plan's mitigation objectives and implementation measures are included as State mitigation goals in the 2014 Plan Update. For a more complete history of drought planning in Nebraska, refer to the Drought Mitigation and Response Plan, which is available on Nebraska's Website.[1]

C. A hazard specific mitigation plan also was created and approved by FEMA Region VII in April of 2002. The Nebraska Department of Natural Resources (NDNR) created a flood mitigation plan in response to consistent flooding issues in the state. The NDNR flood mitigation plan was last revised in 2013, and is the source for 2014 Plan Update flooding information. The purpose of the NDNR plan was to explain flood mitigation planning, chronicle previous flood problems in Nebraska, and recommend mitigation alternatives that will reduce or eliminate the potential threat to life safety and economic impacts of flooding.

[1] http://carc.agr.ne.gov/

D. Multi-hazard mitigation planning began in Nebraska with the development of an emergency management plan in 1985. The plan was developed by the Nebraska Emergency Management Agency (NEMA) with the assistance of the following state agencies: NDNR; Department of Health and Human Services; Department of Economic Development; Department of Agriculture; and the Nebraska Historical Society. These agencies participated in the planning meetings, making recommendations for revisions to the drafts. Subsequent revisions were completed using the same process and agencies.

E. A significant development in the history of multi-hazard mitigation planning in Nebraska was the formation of the Governor's Task Force for Disaster Recovery (GTFDR). It was created in January of 1994, following a year of significant flooding and tornados that culminated in two Federal Disaster Declarations. The Governor signed Executive Order 94-3, which directed the creation of the GTFDR. The GTFDR is co-chaired by NDNR and NEMA, and is comprised of the agencies listed in the previous paragraph, as well as the Nebraska Department of Environmental Quality and the Nebraska Department of Labor. The Executive Order also requested the support of federal agencies including the U.S Army Corps of Engineers (USACE), U.S. Department of Agriculture (USDA) and FEMA to recover from the floods of 1993.

F. By Executive Order, the GTFDR was directed to coordinate disaster recovery with an emphasis on efficient utilization of federal supplementary appropriations. The GTFDR has also been tasked with oversight of the Hazard Mitigation Grant Program (HMGP) in Nebraska. The GTFDR has acted as the coordinator of Nebraska's Hazard Mitigation Plans since 1994, including the 2011 Plan Update. With staff assistance from NEMA, FEMA, and other state agencies, the GTFDR has acted as the Nebraska Hazard Mitigation Planning Team ("Planning Team") for the development of the 2014 Plan Update.

IV. THE 2014 PLAN UPDATE PROCESS

A. The 2014 Plan Update process included the review, revision, and update of each section of the 2011 Nebraska Hazard Mitigation Plan. The Nebraska Emergency Management Agency initiated the plan review and update process. It was determined after the first review of the previously approved plan that all sections needed to be updated and revised to meet the requirements of FEMA as well as remove material that was no longer current. Changes made after the initial review were according to guidance provided by:

1. FEMA's Multi-Hazard Mitigation Planning Guidance under the Disaster Mitigation Act of 2000 (Revised January 2008),
2. FEMA's "How to" Guides;
    a. Guide 1 - Getting Started: Building Support for Mitigation Planning,

b. Guide 2 – Understanding Your Risks: Identifying Hazards and Estimating losses,

c. Guide 3 - Developing the Mitigation Plan: Identifying Mitigation Actions and Implementing Strategies,

d. Guide 4 - Bringing the Plan to Life: Implementing the Hazard Mitigation Plan,

3. Code of Federal Regulations 44 (Revised October 1, 2012),

4. Disaster Mitigation Act of 2000 (P.L. 106 -390),

5. National Flood Insurance Act of 1968, Nebraska Emergency Management Act (Revised May 23, 2003).

B. A summary chart of the changes made in the 2014 Update is located in the Preface. Important information from a variety of state and federal agencies was included in the 2011 Nebraska Hazard Mitigation Plan as well as the 2014 Plan Update. For example, CARC's Drought Mitigation and Response Plan adopted on June 26, 2000 and amended in May 2004, was an important source of data. The 2013 Nebraska Flood Mitigation Plan was another important source. The Flood Plan will be referenced in other sections of the 2014 Plan Update.

C. Member agencies of the GTFDR/Planning Team playing key roles in the development of the 2011 Plan Update included the following:

1. Nebraska Department of Agriculture
2. Nebraska State Patrol
3. Nebraska Department of Economic Development
4. Nebraska Department of Environmental Quality
5. Nebraska Department of Natural Resources
6. Nebraska Game and Parks Commission
7. Nebraska Historical Society
8. Nebraska Department of Administrative Services
9. Nebraska Department of Revenue
10. Nebraska Department of Health and Human Services
11. Nebraska Climate Assessment Response Committee
12. Nebraska Forest Service
13. Nebraska Public Health Laboratory – UNMC
14. University of Nebraska - School of Natural Resources
15. Nebraska Emergency Management Agency

D. Participation of state agencies was determined by the information considered necessary for the successful completion of the 2014 Plan Update. This information was determined after the first in-house review of the 2011 mitigation plan by NEMA staff. Coordination for the framework and timeframe for approval of the 2014 Plan Update was established through regular email and phone contact with participating state agencies. Those state agencies were asked to review the 2011 plan taking into consideration their own designated roles and responsibilities in effectively implementing mitigation programs and activities throughout the state. Participants were encouraged to pinpoint and comment on potential changes in the plan. Recent disaster activity and findings from Nebraska's local and state risk assessments were reviewed. Key roles for the 2014 Plan Update were discussed and the project selection process was reviewed. Table 2.1 lists core Nebraska State Hazard Mitigation team members.

Table 2.1: Core Nebraska State Hazard Mitigation Team Members

Name	Agency
Steve Sulek	Department of Administrative Services
Lara Huskey	Department of Economic Development
Thomas Jensen	Department of Agriculture
John Moeschen	U.S. Army Corps of Engineers
Joe Francis	Department of Environmental Quality
Al Berndt	NEMA
Cindy Newsham	NEMA
Earl Imler	NEMA
Mary Baker	NEMA
Brent Curtis	NEMA
Russ Wren	Department of Health & Human Services
Tom Sands	Department of Roads
Craig Stover	Game and Parks Commission
Robert Puschendorf	Nebraska Historical Society
Brian Dunnigan	Department of Natural Resources

E. The above-named agencies were also tasked with providing input and formulate recommendations for the 2014 Plan Update. For each of these agencies, the 2011 goals and objectives were reviewed in order to determine the portions of the plan needing revision. Included in this was integration of local goals and objectives with the states goals and objectives. In addition, agency-specific data with which to update the plan was requested.

F. The Planning Team further coordinated and developed the plan during the fall and winter months of 2013-2014. Table 2.2 summarizes the agencies involved in development of the 2014 Plan Update and their contribution to the development.

Table 2.2: Agency Responsibilities for Hazard Mitigation Plan Development

Agency	Designated Responsibilities
Nebraska Department of Roads	Provide feedback on overall hazard mitigation strategy, and list of current mitigation activities advocated by the Department of Roads. Supply information on infrastructure.
Nebraska Department of Natural Resources	Provide information concerning current mitigation activities. Information of FMA grants administered 2011-2014.
Nebraska Public Power Districts	Compile list of possible PPD hazard mitigation projects and supply list of current mitigation activities. Create annexes for inclusion in the 2014 Plan Update. Mitigation Successes 2011-2014. Public Power Hazard Mitigation activities.
U. S. Army Corps of Engineers	Supply updated list of levees in Nebraska constructed, operated, or sponsor-operated by the USACE. Supply a list of proposed levees, and suggest mitigation activities.
Nebraska Department of Environmental Quality	Make available information on current/ongoing mitigation activities being undertaken by the NDEQ. Provide data on environmental concerns.
Nebraska Emergency Management Agency	NEMA's Hazard Mitigation Section Program Specialist was tasked with reviewing, updating, and gathering research for the 2014 Plan Update. NEMA coordinated efforts with other state agencies, and private non-profits.
Nebraska Department of Administrative Services – Building Division	Provide updated list of state-owned properties, indicating 2013 property value, square footage, and location. This information was included in the risk assessment section of the 2014 Plan Update, to assess state owned-property in vulnerable areas.
Nebraska Department of Revenue – Property Assessment Division	Provide information concerning state-wide property assessment data by county/property type.
Nebraska State Patrol	Provided recent information on the Critical Infrastructure Project mentioned in the 2008 Hazard Mitigation Plan.

G. Nebraska's ninety-three counties, federal entities, state agencies, and other stakeholders played critical roles in the development of a comprehensive mitigation plan for the state. The 2014 Plan Update was developed in accordance with the FEMA Multi-Hazard Mitigation Planning Guidance (January 2008). The 2014 Plan Update was based on current and historic information from the National Weather Service, state-wide electrical infrastructure data from Nebraska's Public Power Districts, and flood control project information from the state's system of Natural Resource Districts.

H. DMA 2000 requires coordination and integration of local planning efforts. Since the approval of the 2011 Plan, a large amount of local Hazard Mitigation Plans have been approved in Nebraska. The Planning Team used information from local mitigation plans and sought alternative methods to obtain input from counties and other local entities concerning hazard mitigation situations and needs. The Planning Team developed Risk Assessment Surveys to obtain local on hazard risks. In July of 2013 a new statewide risk assessment was completed

using the tool from FEMA's Planning Guidance (CPG 101). The results of the completed surveys provided useful information for the Risk Assessment Section.

I. The State of Nebraska has pledged to comply with all applicable federal statutes and regulations during the periods for which it receives grant funding, in compliance with 44 CFR 13.11(c), and will amend its plans whenever necessary to reflect changes in state or federal laws and statues as required in 44 CFR 13.11(d). Approval of the 2014 Plan Update will result in Nebraska's eligibility for HMGP funding based on 15% for amounts of not more than $2,000,000,000, 10% for amounts of more than $2,000,000,000 but not more than $10,000,000,000, and 7.5% on amounts of more than $10,000,000,000 but not more than $35,333,000,000 of the total estimated eligible Stafford Act disaster assistance. This formula was established by the Emergency Management Reform Act of 2006, effective October 2, 2006. The general requirement of the Act is for state coordination of mitigation planning with tribal and local jurisdictions, as well as documentation of funding and technical assistance provided to local jurisdictions. More specifically, §201.4 includes the requirement that plans meet the following basic standards for FEMA approval:

1. Describe how the state coordinates with local mitigation planning efforts;

2. Develop a statewide hazard mitigation strategy based on local and state vulnerability analyses and risk assessments;

3. Describe how the state provides funding and/or technical assistance to local governments;

4. Discuss how the state prioritizes jurisdictions that will receive mitigation planning and project grants and other state assistance; and

5. Establish a hazard mitigation plan maintenance process.[2]

J. Section 201.6 requires local jurisdictional demonstration that proposed mitigation actions are based on a sound planning process that accounts for the inherent risk and capabilities of the individual communities.

K. Funding for plan development (44 CFR 206.434) authorizes up to seven percent of the state's HMGP grant to be used to develop state, tribal, and local mitigation plans to meet the planning criteria outlined in 44 CFR Part 201. Pre-Disaster Mitigation Program Competitive grant funding also is available to applicants to develop mitigation plans.

L. The original federal legislation required state, local, and tribal governments to obtain approval for hazard mitigation plans prior November 1, 2004 for eligibility for HMGP project funding during subsequent declared disasters. In extraordinary

[2] FEMA (November 2006) "Multi-Hazard Mitigation Planning Guidance," pg. v.

circumstances, FEMA was authorized to grant justifiable extensions for state and Indian tribal governments of up to six months, or no later than May 1, 2005. In order to continue hazard mitigation grant assistance eligibility, regulations require review and updating of state hazard mitigation plans, and FEMA approval of the update, every three years. Local hazard mitigation plans must be reviewed, updated, and approved by FEMA every five years.

M. In the spring of 2013 the Nebraska Emergency Management Agency began the process of completing a Statewide Hazard Identification Risk Assessment. The HIRA was completed in July of that year and the results are included in Section 3 Risk Assessment.

N. Throughout January, 2014, the Planning Team corresponded via email to review the initial draft of the 2014 Plan Update. An announcement with copies of the draft was mailed to the individuals and agencies listed in the table 2.3.

Table 2.3: Planning Team Meeting Notification List

State Agency or Entity	Name	Address
Nebraska Forest Service	Don Westover	105 Plant Industry Bldg. East Campus-UNL, Lincoln, NE 68583-0815
Nebraska Department of Roads	Tom Renniger	1500 Hwy. 2, Lincoln, NE 68509
Nebraska Department of Agriculture	Tom Jensen	Agriculture Laboratories, Department of Agriculture, 3703 South 14th Street, Lincoln, NE 68502
Nebraska Department of Economic Development	Kevin Andersen	301 Centennial Mall South, Lincoln, NE 68501
Nebraska Department of Administrative Services	Dacia Kruse	State Capitol Room 1315, Lincoln, NE 68509
Nebraska Department of Health and Human Services	Russ Wren	301 Centennial Mall South, Lincoln, NE 68509
Nebraska Historical Society	Jill Dolberg	1500 R Street, Lincoln, NE 68501
Nebraska Department of Environmental Equality	David Haldeman	1200 North Street, Suite 400, Lincoln, NE 68509
Nebraska Department of Natural Resources	Mitch Paine	301 Centennial Mall South, Lincoln, NE 68509
Nebraska Rural Electric Association	Bob Cooper	800 South 13th Street PO Box 82048, Lincoln, NE 68501
Omaha PPD	Mary Mally	444 South 16th Street Mall, Omaha, NE 68102
Nebraska Game & Parks Commission	Jim Fuller	2200 North 33rd Street, Lincoln, NE 68508
Southern PPD	Darrell Peters	4550 West Husker Highway, PO Box 1667, Grand Island, NE 68802
Seward PPD	Joel Navis	1363 Progressive Road, PO Box 69, Seward, NE 68434
Nebraska Department of Natural Resources	Bill Jones	301 Centennial Mall South, Lincoln, NE 68508
Little Blue Natural Resource District	Mike Onnen	PO Box 100, Davenport, NE 68335

State Agency or Entity	Name	Address
Lower Platte South Natural Resource District	Glen Johnson	3125 Portia Street, PO Box 83581, Lincoln, NE 68501
Papio-Missouri Natural Resource District	John Winkler	8901 South 154th Street, Omaha, NE 68138
Nebraska Public Power Districts	Sharon Brown	1414 15th Street, PO Box 499, Columbus, NE 68602-0499
Omaha PPD	Mary Finley	444 South 16th Street Mall, Omaha, NE 68102

O. The 2014 Plan Update draft was revised and a copy submitted to FEMA Region VII for approval on March 20, 2014. Once the plan has been approved pending adoption, it will be submitted to the Governor of the State of Nebraska for adoption and implementation. The final draft of the 2014 Plan Update will be submitted to the Federal Emergency Management Agency Region VII for final approval.

Requirement §201.4(b): The [state] mitigation process should include coordination with other state agencies, appropriate federal agencies, interested groups, and . . .

V. COORDINATION AMONG STATE AGENCIES

A. Planning Team Composition

The Planning Team designated for the development of the 2014 Plan Update, as previously stated, is the GTFDR, a body established in January of 1994 by Executive Order of the governor of Nebraska. Its purpose was to ensure a coordinated disaster response and recovery operations for all disasters in the State of Nebraska. The duties of the GTFDR included a detailed examination of all features of the state's recovery efforts, both pre- and post-disaster, including FEMA's Hazard Mitigation Grant Program. The Executive Order requested the support of the following federal agencies in planning for and mitigating against disasters:

1. U.S. Army Corps of Engineers
2. USDA Emergency Organizations
3. U.S. Department of Housing and Urban Development
4. U.S. Environmental Protection Agency

B. The GTFDR was the Planning Team for the 2008 Nebraska Hazard Mitigation, 2011 and the 2014 Plan Update. The Planning Team has been tasked with prioritization of hazard mitigation projects for both the pre- and post-disaster hazard mitigation grant programs. Planning Team staff includes the following positions:

1. The Governor's Authorized Representative (GAR) is the person empowered by the Governor to execute, on behalf of the State, approval of all necessary documents for Hazard Mitigation Assistance.

   a. State Hazard Mitigation Officer (SHMO) is the position established to act as the lead coordinator for all hazard mitigation efforts being pursued within the State of Nebraska. These activities include: administration of FEMA's Pre-Disaster Mitigation (PDM) and Hazard Mitigation Grant Program (HMGP). The SHMO does not have responsibility for the National Flood Insurance Funded programs such as Flood Mitigation Assistance (FMA), which are administered through the NDNR. The SHMO is responsible for the administration and oversight of all PDM and HMGP activities related to the lifecycle and implementation of each grant.

   b. Response and Recovery Program Specialist (RRPS) is a position created in 2007 to assist the SHMO with coordination of hazard mitigation efforts with relevant federal, state, and local agencies. Activities include planning and lifecycle implementation of PDM and HMGP. This position also includes assistance in the administration of the Public Assistance programs when needed, including preliminary damage assessments, development of subgrant applications, and working disasters/projects as assigned.

C. Other Entities Contributing to Planning Team Activities

1. <u>Drought Management Team</u>

   In 2000 the governor of Nebraska created the current Drought Management Team. The team included members from the following state agencies: Department of Agriculture; NDNR; Department of Health and Human Services, Water Division; NEMA; Nebraska State Patrol; Department of Roads; Military Department; State Fire Marshall; and the Governor's Policy Research Office. The purpose of the team is to share information and facilitate drought relief measures such as roadside haying, oversight of a Rural Mental Health Hotline, provide aid to stress municipal water systems, the writing and dissemination of drought contingency plans for local governments, and conduct of water conservation measures for all municipalities. This team has continued to meet as called by the governor during drought years.

2. <u>Climate Assessment and Response Committee (CARC)</u>

   CARC, previously discussed on page 2 of this section, is legislatively authorized with a variety of tasks. One project has been the creation and maintenance of the State Drought Mitigation Plan by the Municipal Water Supply, Health, and Energy Subcommittee in 1999. CARC's role in state mitigation activities extends beyond rainfall calculations. It includes advising

the governor on requests for federal disaster declarations and coordinating federal and state agencies for drought mitigation activities. CARC has convened on an annual basis since its inception to provide timely and systematic data concerning drought and other severe climate occurrences. CARC is comprised of the following state agencies: the Governor's Policy Research Office; Department of Agriculture; NDNR; Department of Health and Human Services; University of Nebraska Cooperative Extension; University of Nebraska Conservation and Survey Division; a Nebraska livestock producer; a Nebraska crop producer; NEMA; and others as the governor deems necessary.

3. CARC Subcommittees

CARC broadened its range of authority by forming three sub-committees to address other potential climate-related natural hazards. These newly formed subcommittees include the Water Availability Outlook Committee (WAOC), the Risk Assessment Committee (RAC), and the Emergency Response Committee (ERC). RAC drafted the drought mitigation objectives for the State in 1999 and 2005, which are incorporated into the state's overall hazard mitigation strategy.

4. Federal Agencies and Federal Involvement

FEMA, the USACE, and the National Weather Service played integral roles in the planning process. The following federal agencies provided data and statistics to help assist with plan formation and development of the risk analysis section:

a. U.S. Army Corps of Engineers
   1. Missouri River Division
   2. Omaha District
b. U.S. Department of Transportation
c. U.S. Small Business Administration
d. U.S. Department of Agriculture
e. U.S. Environmental Protection Agency Region VII
f. U.S. Department of Health and Human Services
g. U.S. Geological Survey
h. FEMA provided training on the Disaster Mitigation Act of 2000 and the companion regulations for state emergency management agencies. In May of 2010 FEMA's G318 Mitigation Planning Workshop for Local Governments was held in Lincoln to assist and provide guidance for city, county, state, and private non-profit officials in the process of developing local hazard mitigation plans for their communities.

D. Coordination of Activities of Other Interest Groups:

This section has documented the planning process of the 2014 State Hazard Mitigation Plan Update. As discussed previously, many agencies played an

important role in the successful update of this plan by providing updated and additional data necessary for completion. Described below in more detail are two other major participants in hazard mitigation efforts; Nebraska's Public Power Districts and Natural Resources Districts**.**

1. Public Power Districts (PPDs)

   a. PPDs are political subdivisions of the State of Nebraska created by state enabling legislation in 1936, the Rural Electrification Act (REA). The REA created publicly owned power generation and delivery systems, bringing power to the rural areas of Nebraska. With the passage of REA, Nebraska started the task of creating a consumer-owned power generating system. Nebraska is the only state in America served totally by a consumer-owned public power system delivering electricity as a nonprofit service. Nebraska is historically known to have some of the lowest rural electric rates in the nation. The 30 PPDs in Nebraska are governed by Chapters 70 and 77 of the state statutes. Although each PPD has its own locally elected board of directors and management team, each must adhere to the state statutes as a "political subdivision" of the state of Nebraska. As governmental entities, PPDs are eligible applicants for both FEMA Public Assistance and Hazard Mitigation Grants. A large percentage of FEMA Public Assistance (PA) damages during wind-related storms are sustained by the PPDs, as illustrated in table 2.6.

Table 2.2: Funding to Nebraska PPDs in Federal Disaster Declarations

Federal Disaster #	Year	HMGP Federal $ to PPDs	PA Federal $ to PPDs	PA Total Federal $ Paid	% of total $ Going to PPDs
998	1993	$1,528,099.00	$21,604,222.00	$45,963,467.00	47.00%
1027	1994	$3,052,640.00	$25,419,389.00	$28,866,703.00	88.06%
1123	1996	$0.00	$8,424.00	$2,355,576.00	0.36%
1190	1997	$691,447.00	$13,923,118.00	$35,723,476.00	38.97%
1286	1999	$200,760.00	$146,888.75	$2,077,781.23	7.07%
1373	2001	$349,628.00	$2,843,462.62	$2,851,799.07	99.71%
1394	2001	$125,047.00	$30,944.71	$1,533,655.75	2.02%
1480	2003	$242,461.00	$1,387,976.63	$2,098,281.16	66.15%
1517	2004	$409,500.00	$6,537,874.20	$13,642,713.02	47.92%
1590	2005	$0.00	$261,138.88	$515,965.35	17.22%
1627	2006	$373,058.00	$4,808,789.81	$4,941,294.26	97.32%
1674	2007	$8,976,483.00	$142,787,166.01	$148,819,511.95	95.95%
1706	2007	$638,288.00	$302,920.54	$5,962,148.37	5.08%

Federal Disaster #	Year	HMGP Federal $ to PPDs	PA Federal $ to PPDs	PA Total Federal $ Paid	% of total $ Going to PPDs
1714	2007	$9,750.00	$0.00	$2,335,531.17	0%
1721	2007	$0.00	$0.00	$1,182,074.62	0%
1739	2007	$0.00	$1,653,251.20	$3,047,339.02	54.25%
1765	2008	$0.00	$21,558.39	$602,939.05	3.58%
1770	2008	$2,489,250.00	$13,914,129.49	$34,689,487.90	40.11%
1779	2008	$0.00	$6,236,180.28	$11,214,500.58	55.61%
1853	2009	$0.00	$315,619.13	$4,935,420.89	6.39%
1864	2009	$0.00	$4,620,037.49	$5,134,087.94	90.00%
1878	2010	$14,615.78	$2,521,666.62	$6,515,084.01	38.71%
1902	2010	$8,784.08	$146,564.56	$3,145,742.07	4.66%
1924	2010	$798,987.92	$16,177,640.61	$50,165,759.27	32.25%
1945	2010	$10,005.00	$1,659,492.05	$2,138,192.01	77.61%
4013	2011	$192,242.08	$10,127,447.56	$85,860,008.06	11.80%
4014	2011	$60,443.00	$2,375,155.56	$3,448,581.03	68.87%

b. Overall, 61.2% of FEMA Public Assistance funding in Nebraska has been awarded to PPDs. During the same time period, the PPDs have been awarded $19,086,411.00 in hazard mitigation funds as well.

c. The 2011 Plan included 23 Public Power District Plans as annexes to the state plan with 15 of the PPD's working on current updates. It is always in the best interest of NEMA to more closely coordinate with the PPDs as they complete their plan updates and to encourage 100% participation by all PPD's to submit an annex to the State Plan.

d. In furtherance of PPD plan development, NEMA has in the past conducted meetings with the Nebraska Rural Electric Association (NREA). The NREA represents 26 of the 30 PPDs in Nebraska as well as Rural Electric Associations in the most rural areas throughout the state. The NREA represents the following 26 PPDs and nine Rural Electric Associations: Burt County PPD, Butler PPD, Cedar-Knox PPD, Cherry-Todd Electric Cooperative, Chimney Rock PPD, Cornhusker PPD, Cumming County PPD, Custer PPD, Dawson PPD, Elkhorn PPD, High West Energy, Highline Electric Association, Howard-Greely PPD, KBR PPD, La Creek Electric Association, Loup Valley Rural PPD, McCook PPD, Midwest Electric Cooperative Corporation, Niobrara Electric Association, Niobrara Valley Electric Membership Corporation, Norris PPD, North Central PPD, Panhandle Rural Electric Membership Association, Perennial PPD, Polk County Rural PPD, Roosevelt PPD,

Seward County PPD, South Central PPD, Southwest PPD, Stanton County PPD, Twin Valleys PPD, and Wheat Belt PPD.

e. As of the writing of the 2014 Plan, the following NREA member PPDs have completed plans as annexes to the State Hazard Mitigation Plan: Burt County PPD, Butler PPD, Cedar-Knox PPD, Cornhusker PPD, Custer PPD, Dawson PPD, Elkhorn Rural PPD, Howard Greeley Rural PPD, KBR PPD, Loup Power District, Loup Valleys Rural PPD, McCook PPD, Nebraska PPD, Norris PPD, North Central PPD, Omaha PPD, Perennial PPD, Polk County Rural, Seward County PPD, Southwest PPD, Stanton County PPD, Twin Valleys PPD and Wheat Belt PPD. Omaha Public Power and Nebraska Public Power completed hazard mitigation plans in-house.

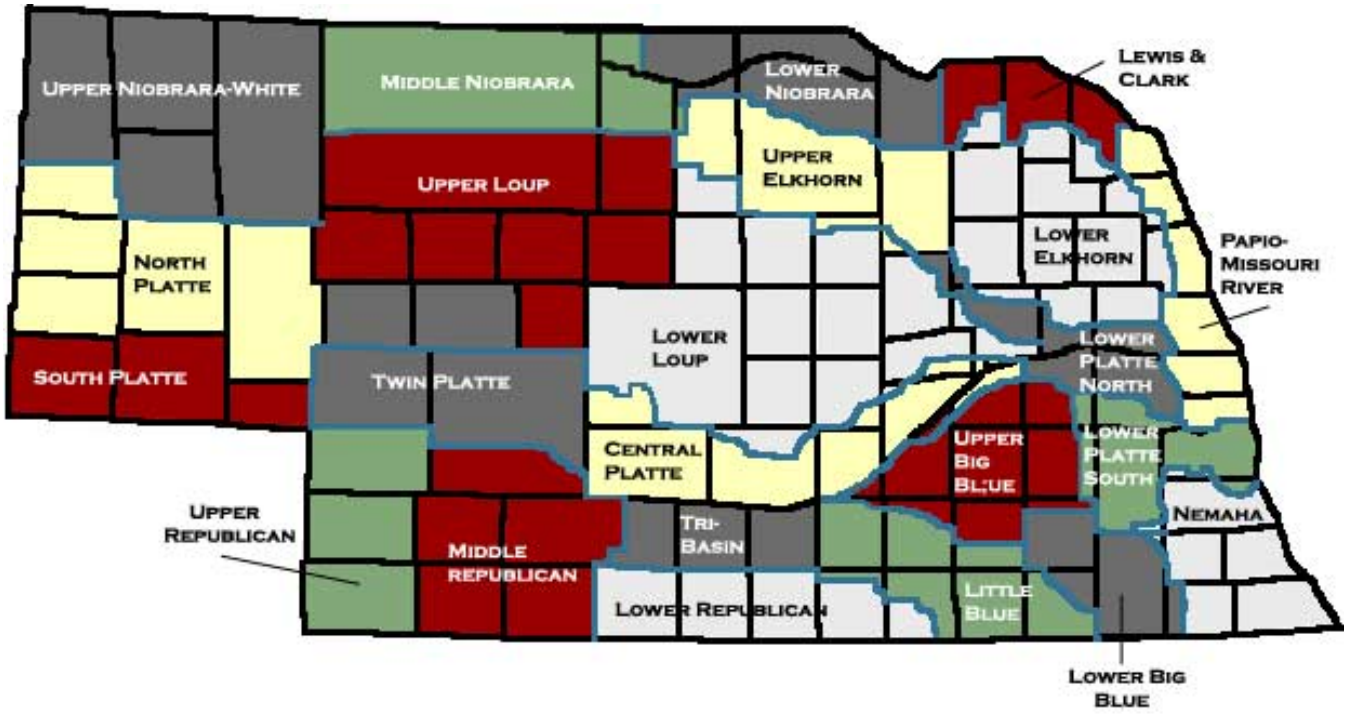
f. A majority of the PPD transmission lines are located above ground on wooden or steel structures. Most hazard mitigation activities in the PPD plans will continue to concentrate on underground replacement of electrical lines and strengthening existing above ground lines with five-pole dead-end structures and T2 conductor lines, or strengthen structures that support the lines. Because of these efforts, damages to power distributing structures and economic losses due to power outages will be reduced. Examples of mitigation activity successes can be found in Section 4 of the 2014 Plan Update.

2. Natural Resources Districts:

a. The second group of organizations critical to Nebraska's hazard mitigation planning is the Natural Resources Districts (NRDs). These districts are vital to water management, flood control, and other projects within their taxing authority.

b. Twenty-three NRDs were created in Nebraska by legislation passed on July 1, 1972. The purpose of the NRDs is to conserve, develop, and manage land and water resources; to develop and execute plans, facilities, works, and programs relating to erosion, flooding, soil conservation, water supply, groundwater, pollution control, and wildlife; and management of recreation, and forestry affairs. The NRDs in Nebraska coordinate activities with the U.S. Army Corps of Engineers, U.S Department of Agriculture, NDNR, National Weather Service, and local political subdivisions within and adjacent to the areas of proposed projects. Most NRDs include all or parts of several different counties, as shown Figure 2.1 below.

Figure 2. 1: Nebraska's Natural Resource Districts Boundaries



c. NRDs have made significant progress in the establishment of flood controls in Nebraska. These measures have reduced or eliminated flooding caused by the heavy rainfall common in Nebraska. NRDs have established 2,825 dams in the state, 136 of which are classified as "high hazard" dams based on the density of population below the dam. Many are specifically designed to control floodwater and provide for subsurface recharge of aquifers.

d. As previously stated, the Planning Team determined that the state's NRDs should be the lead agencies in the development of local multi-jurisdictional plans. The decision was made because few counties have a large enough population to support the creation of plans on a county basis. This delegation is supported by state statutes, which include the following NRD responsibilities.

1) § 2-3231: Act as agent of the United States or any of its agencies, or for this State or any of its agencies, in connection with the acquisition, constructions, operation, maintenance or management of any project within its boundaries.

2) § 3-3228: Invite the local governing body of any municipality or county to designate a representative to advise and counsel with the board on programs and policies that may affect the property, water supply, or other interests of such municipality or county.

f. The Planning Team's long-term goal is to have all 23 NRD's have an approved multi-jurisdictional plan that covers their watershed territory. To date, thirteen NRD multi-jurisdictional plans have been approved and five of the NRDs are working on current updates for their districts. The thirteen plans approved by FEMA cover approximately 58% of the state's total population and 64.5% of the state's total land area. This enables the NRDs to act as sub-grantees for projects in their districts. The NRDs have been instrumental in providing outreach and advocating for the development of all-hazards local hazard mitigation plans. Counties and municipalities participating in the process will create specific risk assessments and mitigation strategies to be included in the plan.

f. As the NRD plans were completed and approved, a clearer picture of mitigation shortfalls developed. As shortfalls were acknowledged, strategies were identified and included in the 2014 Plan Update. Additional approval of plans will provide for more identification of shortfalls which will be provided in the state plan update in 2017. Additional information concerning the use of NRDs as lead agencies for local plan mitigation development is included in Section 4 Mitigation Strategy.

g. Other NRD activities to promote hazard mitigation have been sponsorship of periodic lectures, seminars, and workshops. The training sessions have taught flood-proofing techniques to developers, contractors, and homeowners. The NRDs also have been instrumental in floodplain mapping and coordinating efforts in areas where floodplain maps are inadequate. Since funds for mapping have been limited, the NRD's developed prioritization criteria for determining areas of higher importance.

h. At the time of the 2014 Plan Update, the NRDs were not actively participating in FEMA's Repetitive Flood Claims (RFC) or Severe Repetitive Loss (SRL) grant programs for structures and properties insured under the National Flood Insurance Program (NFIP), as these grants are no longer available. DNR strategies for repetitive loss are explored in the Nebraska Flood Mitigation Plan and through the Flood Mitigation Assistance, FMA, Grant administered by NDNR.

4. <u>Nebraska's Sovereign Native American Nations:</u>
In 2007 and early 2008, federal and state hazard mitigation outreach activities occurred with the Omaha, Ponca, Winnebago, Santee Sioux, Sac, and Fox Native American Nations. All Native American tribes in Nebraska have been contacted with information on the application process for FEMA grant money as sub-grantees of the state pursuant to Section 404 of the Stafford Act. They also have the option of applying directly as grantees under Section 322 of the Disaster Mitigation Act of 2000. However, due to

the limited population and resources of Nebraska's reservations, activity has continues to be limited as of the 2014 Plan Update development. Since 2011 Plan Update, the Ponca Tribe of Nebraska and The Omaha Tribe of Nebraska and Iowa have a FEMA approved Mitigation Plan. NEMA will continue to provide technical assistance to the Native American Tribes with the development of project and planning applications.

5. Nebraska Wild Fire Coordinating Council:
The Nebraska Wild Fire Coordinating Council has been involved in hazard mitigation planning. The Council is comprised of one appointed representative from each of the state agencies which are signatory to the Interagency Cooperative Fire Management Agreement. Those signatory agencies are NEMA, Nebraska Forest Service, Nebraska Game & Parks Commission, Nebraska Military Department, and Nebraska State Fire Marshall. The Interagency Cooperative Fire Management Agreement is an interagency state and federal cooperation and coordination agreement between the State of Nebraska, U.S. Department of Interior's (USDI) National Park Service/Midwest Region, the USDI's Bureau of Indian Affairs/Great Plains Region, the USDI's Bureau of Reclamation/Great Plains Region, the USDI's Fish & Wildlife Service/Mountain Prairie Region, the U.S. Department of Agriculture's Forest Service/Rocky Mountain Region, and the Nebraska Volunteer Firefighters Association. The Council is an advisory group formed to establish a basis for wildfire management activities on the state level. The Council's purpose is to coordinate policy and procedures within state agencies, utilizing both state and national resources to assist local Fire Protection Districts.

VI. INTEGRATION WITH OTHER RELATED PLANNING EFFORTS, PROGRAMS, AND INITIATIVES

A. State Planning Efforts

1. Hazard Specific Mitigation Planning

a. The 2014 Plan Update is part of an overall planning process that is on-going in the State of Nebraska. The NDNR has written and updated the State of Nebraska Flood Mitigation Plan. FEMA has reviewed the Flood Mitigation Plan, in advance of its inclusion in the 2014 State Hazard Mitigation Plan. CARC created the State Drought Mitigation Plan in 1999 (most recently updated in 2011) which is now incorporated in the drought section of this plan.

b. NEMA has worked with the Nebraska Department of Roads and Department of Administrative Services Building Division identifying critical infrastructure for Homeland Security. During these meetings information was gathered for incorporation in the 2014 Plan Update. It

was agreed state critical facilities needed protection from natural disasters as well as from possible terrorist acts. The State Emergency Operations Plan includes a discussion of mitigation as part of the Recovery Annex.

2. Critical Infrastructure Project
An important portion of hazard mitigation planning is the identification of critical facilities in the planning area. In 2003, Nebraska began a project called the Nebraska Strategy for Physical Protection of Critical Infrastructures and Key Assets. The project was under the direction of the Nebraska Department of Homeland Security and involved useful information which was utilized in the 2008 and 2011 State Hazard Mitigation Plan. The project was ongoing and has now developed into a web-based program managed by the Department of Homeland Security Office of Infrastructure Protection. Automated Critical Asset Management System (AMACS) enables both state and local governments to build their Critical Infrastructure/Key Resource (CIKR) protection programs. For the purposes of mitigation planning, the most useful capability of the program is its ability to inventory and prioritize assets, conduct criticality and vulnerability assessments, and provide detailed asset information to first responders. The Nebraska Information Analysis Center (NIAC) uses ACAMS to continually identify and update Nebraska's assets. Currently there are 1,074 assets identified within the system. AMACS is a PCII (Protected Critical Infrastructure Information) Protected Database. Under the Critical Information Act of 2002, Congress created the PCII Program. The program offers protection from Freedom of Information Act Disclosure (FOIA), state and local disclosure laws, and use in civil litigation. Protection is offered to private sector infrastructure information voluntarily shared with government entities for purposes of homeland security. The data is not available to the general public because of security concerns. Future Nebraska Hazard Mitigation Plan updates will continue to include data and map information from this database.

3. NDNR - As previously stated, the NDNR has legislatively delegated authority concerning all matters pertaining to floodplain management. This authority is extended to include the administration of the Flood Mitigation Assistance Program and the National Flood Insurance Program for Nebraska. The NDNR and has the authority to supply technical assistance and guidance. The NDNR has no compliance authority. More information on FEMA's Flood Mitigation Assistance programs can be found in Section 4 of this plan.

B. Federal Planning Efforts
Nebraska has been active in the Hazard Mitigation Grant Program (HMGP) after the appointment of a Nebraska's State Hazard Mitigation Officer (SHMO). The SHMO coordinates the activities of the Planning Team/GTFDR, making recommendations concerning provisions of the HMGP, the Robert T. Stafford

Disaster Relief and Emergency Assistance Act 93-288 as amended, and the Pre-Disaster Mitigation Grants from the Disaster Mitigation Act of 2000.

1. Federal and State Agency Coordination

   a. The Federal Emergency Management Agency (FEMA) provided technical assistance to the Nebraska Emergency Management Agency in the 2014 Plan Update. Technical assistance was also provided to various local government agencies during the development of Local Hazard Mitigation Plans throughout the State of Nebraska.

THIS PAGE INTENTIONALLY LEFT BLANK

RISK ASSESSMENT SURVEY SUMMARY

In order to obtain feedback from local jurisdictions in the Risk Assessment process, the Planning Team created a Risk Assessment Survey. The Risk Assessments Surveys were distributed to all of Nebraska's 93 counties, as described in the 2014 Plan Update. County Emergency Agency (EMA) Managers were asked to rate twenty hazards based on Potential Magnitude (percentage of geographic area that can be affected), Frequency of Occurrence, Areas Likely to be Affected Most, and Potential Speed of Onset (Probable amount of warning time). Each of the nineteen hazards was scored, in each county, as follows:

	Factor
	Potential Magnitude: Percentage of geographic area that can be affected
	Catastrophic: More than 50% **(40 points)**
	Critical: 25 to 50% **(32 points)**
	Limited: 10 to 25% **(16 points)**
	Negligible: Less than 10% **(8 points)**
	Frequency of Occurrence
	Highly Likely: Near 100% probability in a year **(40 points)**
	Likely: Between 10 and 100% probability in a year, or at least one chance in the next ten years **(36 points)**
	Possible: Between 1 and 10% probability in a year, or at least one chance in the next 100 years **(12 points)**
	Unlikely: Less than 1% probability in the next 100 years **(6 points)**
	Areas Likely to be Affected Most
	Agricultural (4 points)
	Residential (12 points)
	Business/Retail (8 points)
	Industrial (12 points)
	Potential Speed of Onset (Probable amount of warning time)
	Minimal or no warning (8 points)
	6-12 hours of warning (6 points)
	12 to 24 hours of warning (4 points)
	More than 24 hours warning (2 points)

For each hazard, the total score determined the priority of the hazard.

Low = (A score of 40 or less) – Hazard perceived as having a low priority risk rating, hazard event likelihood or probability of occurrence within the jurisdiction over the next 10 years is considered low.

Moderate = (A score between 41 and 79) – Hazard perceived as having a moderate priority risk rating, hazard event likelihood or probability of occurrence within the jurisdiction over the next 10 years is considered moderate.

High = (A score of 80 or higher) – Hazard perceived as having a high priority risk rating, hazard event likelihood or probability of occurrence within the jurisdiction over the next 10 years is considered high.

County EMA's Risk Assessment Survey Summary:

Ninety three Risk Assessment Surveys were emailed. Results from all 93 were returned to the Planning Team for analysis. A summary of the returned survey worksheets is shown in Table 2. This table was developed by averaging the composite scores of the Surveys. This data was later grouped by Risk Assessment Regions as shown in Figure 1 below.

Table C.0: County EMA Risk Assessment Survey Results

STATE HAZARD MITIGATION ANALYSIS STATEWIDE COMPOSITE AVERAGES		
Risk	***Hazard***	***Average Score***
High	Severe Thunderstorm	111.70
	Severe Winter Storm	109.57
	Power Failure	108.28
	Tornado	106.02
	Drought	94.09
	Flood/Flash Flood	88.27
	Ag Animal Disease	82.74
	Chemical Transportation	80.75
Medium	Transportation	76.63
	Chemical Fixed Facility	75.59
	Ag Plant Disease	72.99
	Urban Fire	71.74
	Wildfire	69.31
	Terrorism	64.61
	Earthquake	57.81
	Radiological Transportation	55.37
	Dam/Levee Failure	55.25
	Civil Disorder	47.10
Low	Radiological Fixed Site	19.74
	Public Health Emergency	16.54

Figure C.1: State Agency Risk Assessment Regions

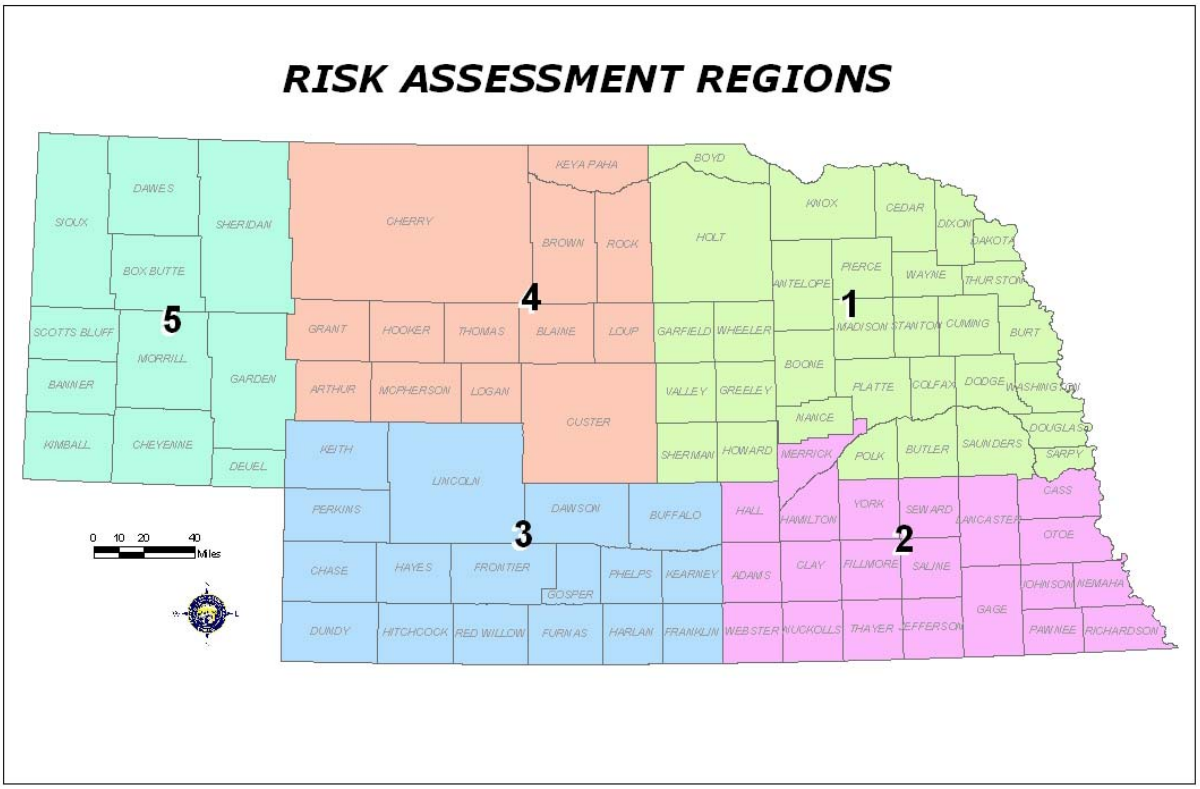


Table C.1: Regional EMA Risk Assessment Survey Results

STATE HAZARD MITIGATION COMPOSITE AVERAGES					
	REGION 1	REGION 2	REGION 3	REGION 4	REGION 5
Ag - Animal Disease	85.19	85.71	72.35	96.00	66.18
Chemical Fixed Facility	76.00	86.86	65.06	57.23	58.36
Chemical Transportation	87.48	89.33	70.00	64.31	81.45
Civil Disorder	44.90	53.81	42.59	45.23	49.64
Dam/Levee Failure	61.94	64.33	54.82	29.23	51.45
Drought	91.23	101.24	91.06	96.00	90.91
Earthquake	54.19	69.71	50.12	55.69	59.64
Flood/Flash Flood	91.77	96.48	78.71	78.92	88.55
Ag - Plant Disease	76.52	71.43	65.18	71.85	79.45
Power Failure	106.19	113.14	101.29	113.23	109.82
Radiological Transportation	55.81	62.95	52.35	53.38	45.64
Radiological Fixed Facility	19.42	31.24	12.59	6.15	25.82
Severe Thunderstorm	110.39	116.10	114.24	104.92	111.09
Severe Winter Storm	112.39	112.86	96.12	112.31	112.91
Tornado	109.87	107.33	100.82	98.62	109.45
Terrorism	62.03	84.29	56.71	48.92	65.09
Transportation	73.48	84.67	69.29	62.00	90.00
Urban Fire	67.55	77.24	62.71	68.77	70.00
Wildfire	63.13	72.19	80.24	91.54	100.00
Public Health Emergency	18.13	25.52	13.18	0.00	19.64

Figure C.2: State Agency Risk Assessment Region 1

Table C.2: State Agency Risk Assessment Region 1

STATE HAZARD MITIGATION ANALYSIS		
REGION 1 COMPOSITE AVERAGE		
Risk	***Hazard***	***Average Score***
HIGH	**Severe Winter Storm**	112.39
	Severe Thunderstorm	110.39
	Tornado	109.87
	Power Failure	106.19
	Flood/Flash Flood	91.77
	Drought	91.23
	Chemical Transportation	87.48
	Ag - Animal Disease	85.19
MEDIUM	**Ag - Plant Disease**	76.52
	Chemical Fixed Facility	76.00
	Transportation	73.48
	Urban Fire	67.55
	Wildfire	63.13
	Terrorism	62.03
	Dam/Levee Failure	61.94
	Radiological Transportation	55.81
	Earthquake	54.19
	Civil Disorder	44.90
LOW	**Radiological Fixed Facility**	19.42
	Public Health Emergency	18.13

Figure C.3: State Agency Risk Assessment Region 2

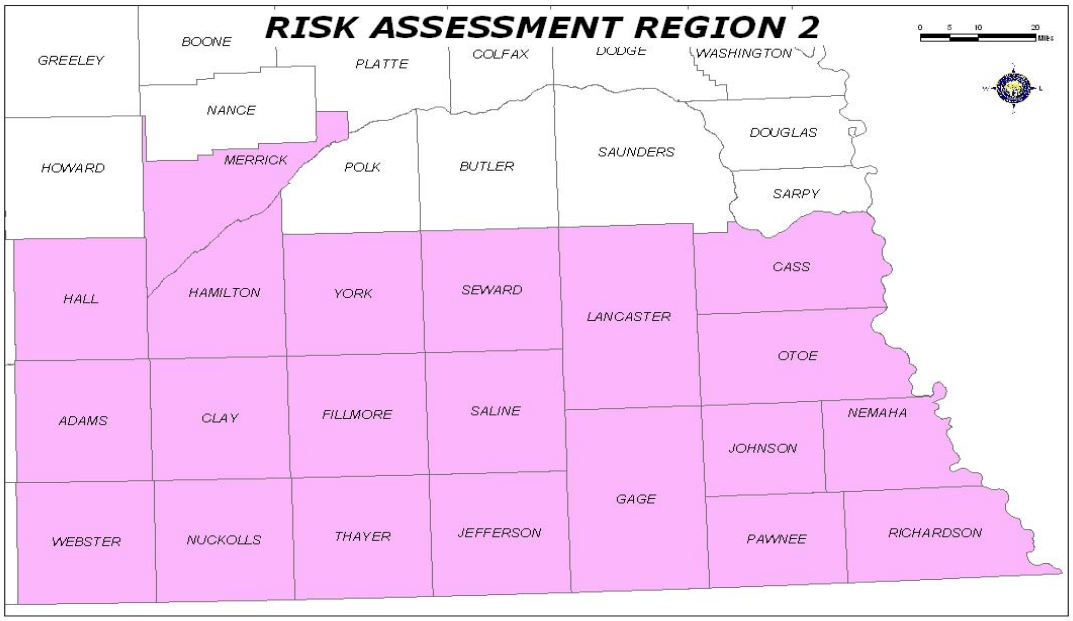


Table C.3: State Agency Risk Assessment Region 2

STATE HAZARD MITIGATION ANALYSIS		
REGION 2 COMPOSITE AVERAGE		
Risk	***Hazard***	***Average Score***
HIGH	**Severe Thunderstorm**	116.10
	Power Failure	113.14
	Severe Winter Storm	112.86
	Tornado	107.33
	Drought	101.24
	Flood/Flash Flood	96.48
	Chemical Transportation	89.33
	Chemical Fixed Facility	86.86
	Ag - Animal Disease	85.71
	Transportation	84.67
	Terrorism	84.29
MEDIUM	**Urban Fire**	77.24
	Wildfire	72.19
	Ag - Plant Disease	71.43
	Earthquake	69.71
	Dam/Levee Failure	64.33
	Radiological Transportation	62.95
	Civil Disorder	53.81
LOW	**Radiological Fixed Facility**	31.24
	Public Health Emergency	25.52

Figure C.4: State Agency Risk Assessment Region 3

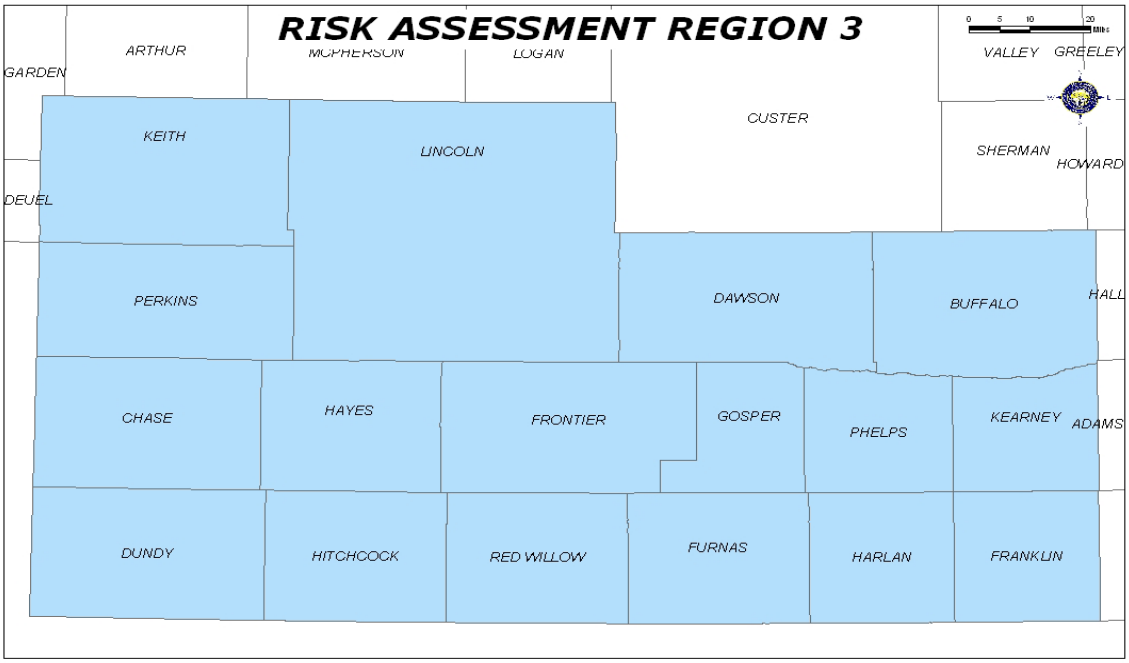


Table C.4: State Agency Risk Assessment Region 3

STATE HAZARD MITIGATION ANALYSIS		
REGION3 COMPOSITE AVERAGE		
Risk	***Hazard***	***Average Score***
HIGH	**Severe Thunderstorm**	114.24
	Power Failure	101.29
	Tornado	100.82
	Severe Winter Storm	96.12
	Drought	91.06
	Wildfire	80.24
MEDIUM	**Flood/Flash Flood**	78.71
	Ag - Animal Disease	72.35
	Chemical Transportation	70.00
	Transportation	69.29
	Ag - Plant Disease	65.18
	Chemical Fixed Facility	65.06
	Urban Fire	62.71
	Terrorism	56.71
	Dam/Levee Failure	54.82
	Radiological Transportation	52.35
	Earthquake	50.12
	Civil Disorder	42.59
LOW	**Public Health Emergency**	13.18
	Radiological Fixed Facility	12.59

Figure C.5: State Agency Risk Assessment Region 4

Table C.5: State Agency Risk Assessment Region 4

STATE HAZARD MITIGATION ANALYSIS REGION 2 COMPOSITE AVERAGE		
Risk	***Hazard***	***Average Score***
HIGH	**Power Failure**	113.23
	Severe Winter Storm	112.31
	Severe Thunderstorm	104.92
	Tornado	98.62
	Ag - Animal Disease	96.00
	Drought	96.00
MEDIUM	**Wildfire**	91.54
	Flood/Flash Flood	78.92
	Ag - Plant Disease	71.85
	Urban Fire	68.77
	Chemical Transportation	64.31
	Transportation	62.00
	Chemical Fixed Facility	57.23
	Earthquake	55.69
	Radiological Transportation	53.38
	Terrorism	48.92
	Civil Disorder	45.23
LOW	**Dam/Levee Failure**	29.23
	Radiological Fixed Facility	6.15
	Public Health Emergency	0.00

Figure C.6: State Agency Risk Assessment Region 5

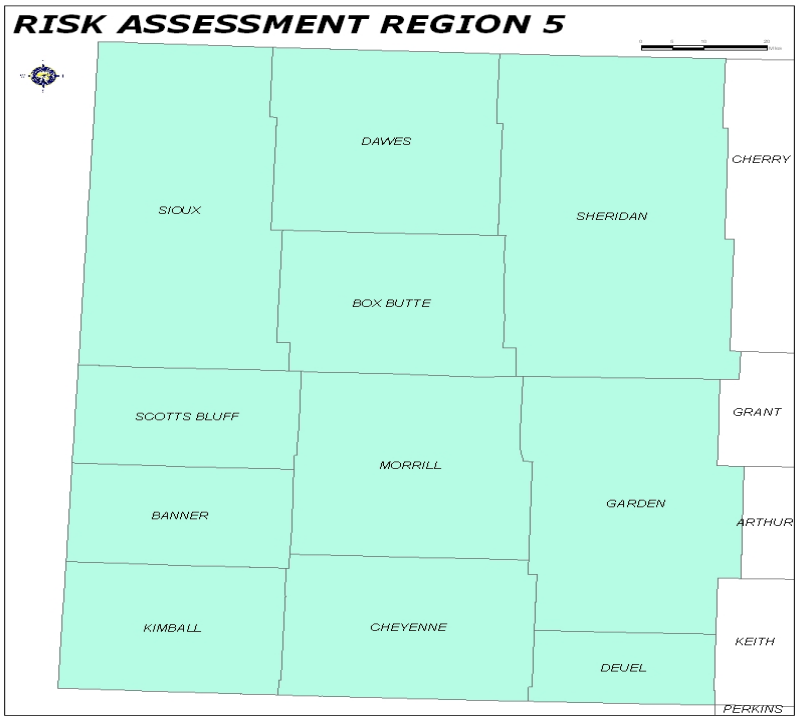


Table C.6: State Agency Risk Assessment Region 5

STATE HAZARD MITIGATION ANALYSIS		
REGION 2 COMPOSITE AVERAGE		
Risk	***Hazard***	***Average Score***
HIGH	**Severe Winter Storm**	112.91
	Severe Thunderstorm	111.09
	Power Failure	109.82
	Tornado	109.45
	Wildfire	100.00
	Drought	90.91
	Transportation	90.00
	Flood/Flash Flood	88.55
	Chemical Transportation	81.45
MEDIUM	**Ag - Plant Disease**	79.45
	Urban Fire	70.00
	Ag - Animal Disease	66.18
	Terrorism	65.09
	Earthquake	59.64
	Chemical Fixed Facility	58.36
	Dam/Levee Failure	51.45
	Civil Disorder	49.64
	Radiological Transportation	45.64
LOW	**Radiological Fixed Facility**	25.82
	Public Health Emergency	19.64

INSTRUCTIONS:

I. Open the Hazard Profiles workbook in Excel Labeled "*Your Co 2014 HIRA*". (I have also enclosed the previously submitted HIRA from your County to reference and hopefully make this easier for you to complete)

You will find tabs across the bottom of the workbook that includes:

A. Participants list you can print out and use as an attendance roster or just enter the information for the people who are helping to complete the assessment.

B. Summary sheet:

1. This sheet will automatically populate as numbers are entered into the Hazard Profile sheets.
   a. You should not have to enter any data into this sheet unless you add a localized hazard on one of the two bottom rows
   b. The other blanks contain formulas and are locked so you cannot put numbers directly into the cells without deleting the formulas.
2. The hazards listed on the sheet are the hazards identified in the State Emergency Operations Plan (SEOP). To simplify this process some of these have been combined. The SEOP lists, nuclear attack, conventional attack, sabotage, insurrection, cyber-attack, bio/chemical attack and terrorism as a single hazard titled Terrorism.
3. There are two blank rows at the bottom of the Summary sheet. These blank rows will auto populate with the hazard you identify in Tabs labeled "Blank 1 or Blank 2", if you do not identify additional localized hazards the rows will populate with "0's". If your County feels that there are any localized hazards that should be included in this analysis but are not on the list, please see the last two tabs in the excel Workbook titled "Blank 1" and "Blank 2". Use these tabs to develop the hazard profile for your localized hazards. Enter the name of the hazard on the top of the profile sheet Cell B2, but **Do Not Change the Tab Name**. The numbers entered on the profile on tab named "Blank 1" will populate the first blank row on the Summary sheet and numbers entered on the profile sheet on tab "Blank 2" will populate the second blank row on the Summary sheet.

C. Hazard Profile Sheets:

1. This is the worksheet used to profile each of the hazards. This worksheet was taken from the FEMA planning guide CPG-101 with a few modifications for Nebraska.
2. Each hazard is scored using the four factors listed below. For each factor there are sub-factors with points assigned to each sub-factor. Once your team has determined which of the sub-factors best describes the affect that factor has on your county, enter the assigned number in the white (or un-shaded) cell to the right of that sub-factor.
   a. **Potential Magnitude**: or the percentage of the county that could be affected by the hazard. This is an indication of the geographical area that could be impacted by a hazard. Other factors will indicate who could be affected.

b. **Frequency of Occurrence:** or how often does/can this hazard affect the county.

c. **Areas Likely to be Most Affected:** This is the exception to the scoring instruction as you will select all that apply. For example if you have a river or stream which floods your county, you would select each of the sub-factors that are located within the flood zones for that river or stream. It could be agricultural only so you would only place a score in the orange shaded area to the right of the "Agricultural" sub-factor and it would look like this:

Areas Likely to be Affected Most	Sub-Score	
Agricultural (4 points)	4	
Residential (12 points)		
Business/Retail (8 points)		
Industrial (12 points)		
	Factor Total	4

If have a major highway where Chemical or Radiological shipments are transported and that highway goes through both Agricultural and Industrial areas but not through a residential or retail/business area, your sheet will look like this:

Areas Likely to be Affected Most	Sub-Score	
Agricultural (4 points)	4	
Residential (12 points)		
Business/Retail (8 points)		
Industrial (12 points)	12	
	Factor Total	16

The Factor Total cell will automatically do the addition; you only need to enter numbers in white or un-shaded cells.

d. **Potential Speed of Onset**: or the time you have to warn the citizens of the hazard so they can take protective actions to protect themselves and possibly their property from the hazard.

II. Hazard definitions are for the most part self-explanatory. To ensure that all of the counties have the same understanding, below are definitions for a few of the hazards on the tool.

A. Power Failure: by any cause that lasts or is expected to last longer than eight (8) hours.

B. Terrorism: as was pointed out in the instructions this is a combination of several hazards listed in the SEOP. It includes nuclear attack, conventional attack, sabotage, insurrection, cyber-attack, and a bio/chemical attack. If your team determines that one of these hazards should be profiled on its own, please list it on one of the blank rows and complete the appropriate blank profile sheet.

C. Chemical and Radiological Transportation on either highway or rail.

D. Transportation: since we list chemical and radiological transportation as separate hazards, this hazard is for any rail and/or air transportation incident.

E. Radiological Fixed Sites: not for just Nuclear Power Plants but any fixed site with a radiological source where an incident could cause off-site consequences. Normally a medically licensed radiological source is not strong enough to cause off-site consequences. If you are not sure or don't know if your county has such a source, you may contact Jon Schwarz, our

Radiological Officer at 402-471-7420 or email at jon.schwarz@nebraska.gov. If you have no sites in the county please check or X the box "Does Not Apply" on that Profile sheet.

III. RANKING

A. Once you have completed all of the profiles you should have a completed Summary sheet. *If you wish* you can sort the hazards highest to lowest by highlighting the "Total Score" column and using the sort icon (an A over a Z with an arrow to the right). Once you choose this you may get a dialogue box that asks if you wish to expand the sort, choose yes and your hazards should sort with the highest ranking on the top line. The ranking scores for the hazards are:

1. High – any hazard that ranks above 80 points
2. Medium – any hazard that ranks between 40 and 79
3. Low – any hazard that ranks 40 or lower

B. You can use these rankings as a tool to identify what scenarios you may need to focus on as you continue the planning process and can use the identified High ranking hazards as we proceed on to the Capability Assessment that we will roll out regionally this summer.

IV. Once you have completed the process, please send a copy of the entire Hazard Analysis including the Participants sheet, summary sheet and all of the Profile sheets to Sheila Hascall by June 30th, by emailing the completed workbook to sheila.hascall@nebraska.gov, or by printing the entire workbook and mailing it to:

Nebraska Emergency Management Agency
% Sheila Hascall (Hazard Mitigation Officer)
2433 N.W. 24th Street
Lincoln, NE 68524-1801

Finally thank you for completing this tool. We at the State will compile the scores from all of the county hazard analysis to determine the High, Medium and Low hazards across the State and use that information to complete three processes.

First we will determine if there is a hazard scoring High that is not currently included in the State Hazard Mitigation Plan (SHMP) Risk Assessment Section and, if so, we will complete a detailed profile of that hazard to be included in an Annex to the SHMP and that information will be added to the Risk Assessment Section of the 2014 revision of the Plan.

Second we will do an Impact Study on the High and perhaps some of the Medium hazards to determine who and how these hazards impact various areas like the public, responders, continuity of operations, property, infrastructure, environment, and economics. This Impact matrix will also become part of the SHMP annex and eventually the 2014 revision

Third we will use the information gathered from your assessments /regional response to that hazard. We will develop a matrix of resources needed for each hazard, identifying who within State government has these resources and, if we find a resource not available in the necessary quantity, or at all, where we can acquire it when necessary.

Hazards by County

County	Animal Disease		Chemical Fixed		Chem Transport		Civil Disorder		Dam/Levee Failure		Drought		Earthquake		Flood Flash Flood		Plant Disease		Power Failure		Rad Transport	
Adams	106	High	88	High	108	High	48	Medium	72	Medium	114	High	54	Medium	94	High	104	High	112	High	64	Medium
Antelope	84	High	90	High	104	High	0	None	78	Medium	102	High	18	Low	93	High	86	High	86	High	0	None
Arthur	64	Medium	46	Medium	52	Medium	48	Medium	16	Low	50	Medium	52	Medium	58	Medium	14	Low	100	High	46	Medium
Banner	52	Medium	46	Medium	52	Medium	42	Medium	56	Medium	102	High	90	High	66	Medium	50	Medium	120	High	46	Medium
Blaine	124	High	44	Medium	64	Medium	34	Low	0	None	106	High	54	Medium	72	Medium	84	High	124	High	72	Medium
Boone	76	Medium	92	High	92	High	56	Medium	76	Medium	82	High	54	Medium	84	High	76	Medium	116	High	34	Low
Boyd	110	High	42	Medium	56	Medium	40	Low	52	Medium	82	High	80	High	98	High	54	Medium	120	High	52	Medium
Box Butte	64	Medium	16	Low	72	Medium	42	Medium	20	Low	94	High	46	Medium	74	Medium	48	Medium	96	High	22	Low
Brown	108	High	48	Medium	60	Medium	60	Medium	32	Low	102	High	72	Medium	94	High	96	High	116	High	60	Medium
Buffalo	52	Medium	88	High	96	High	44	Medium	60	Medium	98	High	68	Medium	84	High	52	Medium	120	High	64	Medium
Burt	82	High	88	High	88	High	54	Medium	82	High	94	High	54	Medium	118	High	90	High	120	High	22	Low
Butler	112	High	58	Medium	64	Medium	62	Medium	38	Low	94	High	62	Medium	100	High	88	High	92	High	60	Medium
Cass	46	Medium	68	Medium	68	Medium	58	Medium	40	Low	106	High	72	Medium	94	High	62	Medium	112	High	48	Medium
Cedar	64	Medium	66	Medium	52	Medium	30	Low	76	Medium	106	High	38	Low	76	Medium	64	Medium	88	High	60	Medium
Chase	88	High	34	Low	38	Low	22	Low	30	Low	94	High	46	Medium	86	High	96	High	108	High	22	Low
Cherry	96	High	68	Medium	56	Medium	60	Medium	48	Medium	114	High	92	High	94	High	76	Medium	120	High	0	None
Cheyenne	64	Medium	84	High	88	High	56	Medium	48	Medium	86	High	54	Medium	110	High	112	High	112	High	56	Medium
Clay	108	High	96	High	120	High	40	Low	48	Medium	114	High	50	Medium	96	High	96	High	112	High	68	Medium
Colfax	62	Medium	120	High	112	High	54	Medium	120	High	26	Low	64	Medium	118	High	74	Medium	96	High	96	High
Cuming	108	High	84	High	96	High	64	Medium	22	Low	114	High	72	Medium	110	High	84	High	120	High	96	High
Custer	84	High	60	Medium	124	High	46	Medium	20	Low	96	High	38	Low	74	Medium	72	Medium	116	High	72	Medium
Dakota	98	High	96	High	112	High	66	Medium	86	High	112	High	70	Medium	106	High	106	High	112	High	96	High
Dawes	76	Medium	38	Low	72	Medium	42	Medium	26	Low	94	High	46	Medium	74	Medium	56	Medium	96	High	22	Low
Dawson	120	High	96	High	96	High	56	Medium	96	High	114	High	84	High	118	High	120	High	120	High	64	Medium
Deuel	58	Medium	68	Medium	96	High	52	Medium	56	Medium	74	Medium	58	Medium	98	High	112	High	112	High	50	Medium
Dixon	66	Medium	88	High	112	High	48	Medium	38	Low	82	High	58	Medium	72	Medium	58	Medium	72	Medium	58	Medium
Dodge	0	None	48	Medium	48	Medium	0	None	54	Medium	26	Low	58	Medium	72	Medium	0	None	48	Medium	40	Low
Douglas	36	Low	88	High	92	High	56	Medium	88	High	70	Medium	92	High	110	High	40	Low	120	High	60	Medium
Dundy	72	Medium	52	Medium	60	Medium	34	Low	24	Low	114	High	34	Low	48	Medium	64	Medium	112	High	34	Low

Hazards by County

County	Rad Fixed		Severe Tstorm		Severe Winter Storm		Tornado		Terrorism		Transportation		Urban Fire		Wildfire		Public Health		Explosion		Aircraft	
Adams	0	None	122	High	116	High	112	High	120	High	120	High	92	High	52	Medium	0	None	0	None	0	None
Antelope	0	None	114	High	80	High	156	High	35	Low	38	Low	25	Low	45	Medium	0	None	0	None	0	None
Arthur	0	None	86	High	106	High	50	Medium	72	Medium	52	Medium	48	Medium	74	Medium	0	None	0	None	0	None
Banner	90	High	114	High	116	High	100	High	42	Medium	76	Medium	42	Medium	100	High	0	None	56	Medium	0	None
Blaine	0	None	104	High	122	High	124	High	32	Low	72	Medium	92	High	84	High	0	None	0	None	0	None
Boone	46	Medium	112	High	108	High	92	High	72	Medium	46	Medium	48	Medium	38	Low	0	None	0	None	0	None
Boyd	0	None	94	High	118	High	124	High	64	Medium	54	Medium	52	Medium	104	High	0	None	0	None	0	None
Box Butte	0	None	112	High	106	High	100	High	32	Low	72	Medium	40	Low	96	High	0	None	0	None	0	None
Brown	0	None	86	High	118	High	82	High	52	Medium	34	Low	60	Medium	40	Low	0	None	0	None	0	None
Buffalo	0	None	122	High	120	High	120	High	44	Medium	96	High	84	High	94	High	0	None	0	None	0	None
Burt	22	Low	122	High	120	High	112	High	90	High	52	Medium	76	Medium	84	High	90	High	0	None	0	None
Butler	0	None	80	High	120	High	120	High	88	High	48	Medium	68	Medium	48	Medium	0	None	0	None	0	None
Cass	0	None	116	High	122	High	116	High	80	High	112	High	92	High	52	Medium	0	None	0	None	0	None
Cedar	0	None	124	High	118	High	112	High	52	Medium	60	Medium	34	Low	52	Medium	0	None	0	None	0	None
Chase	0	None	110	High	106	High	108	High	46	Medium	22	Low	42	Medium	112	High	0	None	0	None	0	None
Cherry	0	None	106	High	118	High	94	High	52	Medium	48	Medium	92	High	120	High	0	None	0	None	0	None
Cheyenne	90	High	108	High	116	High	116	High	90	High	112	High	80	High	88	High	82	High	0	None	0	None
Clay	0	None	110	High	120	High	112	High	84	High	88	High	60	Medium	64	Medium	0	None	0	None	0	None
Colfax	0	None	88	High	124	High	64	Medium	76	Medium	64	Medium	124	High	96	High	58	Medium	0	None	0	None
Cuming	0	None	114	High	114	High	110	High	64	Medium	96	High	92	High	68	Medium	0	None	0	None	0	None
Custer	34	Low	122	High	100	High	124	High	52	Medium	84	High	40	Low	90	High	0	None	0	None	0	None
Dakota	0	None	126	High	122	High	122	High	96	High	112	High	60	Medium	96	High	0	None	0	None	0	None
Dawes	0	None	112	High	106	High	76	Medium	32	Low	92	High	88	High	104	High	0	None	0	None	0	None
Dawson	0	None	116	High	120	High	116	High	72	Medium	100	High	80	High	64	Medium	0	None	0	None	0	None
Deuel	0	None	112	High	116	High	116	High	86	High	112	High	82	High	96	High	0	None	0	None	0	None
Dixon	0	None	104	High	116	High	100	High	54	Medium	88	High	48	Medium	52	Medium	0	None	0	None	0	None
Dodge	36	Low	70	Medium	70	Medium	72	Medium	0	None	40	Low	48	Medium	38	Low	0	None	0	None	0	None
Douglas	44	Medium	122	High	112	High	108	High	96	High	92	High	108	High	52	Medium	78	Medium	0	None	0	None
Dundy	0	None	118	High	110	High	100	High	38	Low	72	Medium	60	Medium	108	High	54	Medium	0	None	0	None

Hazards by County

County	Animal Disease		Chemical Fixed		Chem Transport		Civil Disorder		Dam/Levee Failure		Drought		Earthquake		Flood Flash Flood		Plant Disease		Power Failure		Rad Transport	
Filmore	86	High	124	High	124	High	58	Medium	52	Medium	114	High	90	High	108	High	0	None	120	High	26	Low
Franklin	64	Medium	60	Medium	52	Medium	42	Medium	44	Medium	102	High	44	Medium	74	Medium	56	Medium	60	Medium	0	None
Frontier	36	Low	64	Medium	64	Medium	30	Low	64	Medium	98	High	26	Low	64	Medium	34	Low	72	Medium	48	Medium
Furnas	100	High	96	High	96	High	72	Medium	88	High	90	High	72	Medium	100	High	96	High	120	High	96	High
Gage	96	High	72	Medium	72	Medium	60	Medium	70	Medium	106	High	72	Medium	110	High	84	High	108	High	72	Medium
Garden	58	Medium	68	Medium	108	High	68	Medium	56	Medium	112	High	58	Medium	96	High	112	High	112	High	56	Medium
Garfield	124	High	44	Medium	64	Medium	34	Low	60	Medium	106	High	54	Medium	72	Medium	84	High	124	High	0	None
Gosper	86	High	40	Low	72	Medium	22	Low	62	Medium	66	Medium	34	Low	64	Medium	38	Low	88	High	72	Medium
Grant	84	High	54	Medium	60	Medium	42	Medium	0	None	78	Medium	54	Medium	60	Medium	78	Medium	108	High	58	Medium
Greeley	124	High	96	High	96	High	34	Low	50	Medium	106	High	54	Medium	88	High	84	High	124	High	72	Medium
Hall	72	Medium	60	Medium	64	Medium	46	Medium	92	High	82	High	68	Medium	94	High	44	Medium	88	High	64	Medium
Hamilton	46	Medium	92	High	96	High	36	Low	32	Low	102	High	78	Medium	76	Medium	78	Medium	120	High	72	Medium
Harlan	76	Medium	84	High	72	Medium	60	Medium	88	High	102	High	54	Medium	100	High	60	Medium	120	High	72	Medium
Hayes	88	High	34	Low	38	Low	22	Low	30	Low	82	High	54	Medium	86	High	96	High	108	High	22	Low
Hitchcock	40	Low	30	Low	64	Medium	22	Low	64	Medium	106	High	26	Low	64	Medium	26	Low	72	Medium	22	Low
Holt	92	High	60	Medium	64	Medium	38	Low	32	Low	74	Medium	38	Low	90	High	92	High	96	High	40	Low
Hooker	64	Medium	56	Medium	60	Medium	42	Medium	26	Low	82	High	52	Medium	68	Medium	30	Low	108	High	76	Medium
Howard	76	Medium	76	Medium	100	High	34	Low	56	Medium	94	High	48	Medium	106	High	76	Medium	100	High	46	Medium
Jefferson	96	High	72	Medium	72	Medium	60	Medium	70	Medium	106	High	72	Medium	110	High	84	High	108	High	72	Medium
Johnson	96	High	72	Medium	72	Medium	60	Medium	70	Medium	106	High	72	Medium	110	High	84	High	108	High	72	Medium
Kearney	32	Low	52	Medium	40	Low	44	Medium	28	Low	82	High	54	Medium	50	Medium	40	Low	82	High	40	Low
Keith	90	High	72	Medium	72	Medium	54	Medium	72	Medium	90	High	52	Medium	96	High	90	High	120	High	66	Medium
Keya Paha	88	High	56	Medium	48	Medium	44	Medium	50	Medium	114	High	68	Medium	84	High	88	High	88	High	60	Medium
Kimball	58	Medium	68	Medium	96	High	52	Medium	86	High	74	Medium	58	Medium	98	High	112	High	112	High	50	Medium
Knox	112	High	64	Medium	112	High	46	Medium	40	Low	114	High	60	Medium	72	Medium	120	High	112	High	72	Medium
Lancaster	112	High	92	High	112	High	82	High	76	Medium	90	High	72	Medium	128	High	112	High	112	High	88	High
Lincoln	86	High	84	High	84	High	88	High	66	Medium	90	High	64	Medium	114	High	58	Medium	120	High	84	High
Logan	90	High	84	High	64	Medium	42	Medium	26	Low	90	High	42	Medium	88	High	90	High	112	High	64	Medium
Loup	124	High	44	Medium	64	Medium	34	Low	52	Medium	106	High	54	Medium	72	Medium	84	High	124	High	0	None
Madison	79	Medium	70	Medium	104	High	40	Low	56	Medium	90	High	18	Low	81	High	70	Medium	86	High	0	None
McPherso	90	High	72	Medium	72	Medium	54	Medium	72	Medium	90	High	52	Medium	96	High	90	High	120	High	66	Medium
Merrick	76	Medium	92	High	92	High	56	Medium	76	Medium	82	High	54	Medium	84	High	76	Medium	116	High	34	Low
Morrill	58	Medium	108	High	88	High	56	Medium	86	High	74	Medium	30	Low	100	High	112	High	112	High	68	Medium

Hazards by County

County	Rad Fixed		Severe Tstorm		Severe Winter Storm		Tornado		Terrorism		Transportation		Urban Fire		Wildfire		Public Health		Explosion		Aircraft	
Filmore	34	Low	122	High	116	High	100	High	96	High	96	High	72	Medium	72	Medium	0	None	0	None	0	None
Franklin	0	None	104	High	98	High	100	High	46	Medium	46	Medium	56	Medium	44	Medium	0	None	0	None	0	None
Frontier	0	None	88	High	74	Medium	80	High	36	Low	80	High	26	Low	64	Medium	70	Medium	0	None	0	None
Furnas	0	None	124	High	122	High	124	High	112	High	96	High	80	High	116	High	0	None	0	None	0	None
Gage	22	Low	124	High	122	High	116	High	66	Medium	96	High	84	High	96	High	0	None	0	None	0	None
Garden	0	None	112	High	108	High	116	High	90	High	112	High	86	High	96	High	56	Medium	0	None	0	None
Garfield	0	None	104	High	122	High	124	High	32	Low	72	Medium	92	High	84	High	0	None	0	None	0	None
Gosper	0	None	92	High	68	Medium	80	High	26	Low	76	Medium	44	Medium	80	High	0	None	0	None	0	None
Grant	0	None	104	High	102	High	104	High	48	Medium	60	Medium	50	Medium	108	High	0	None	0	None	0	None
Greeley	0	None	104	High	122	High	124	High	32	Low	72	Medium	92	High	84	High	0	None	0	None	0	None
Hall	58	Medium	124	High	116	High	88	High	58	Medium	64	Medium	88	High	68	Medium	90	High	0	None	0	None
Hamilton	0	None	124	High	118	High	120	High	66	Medium	68	Medium	92	High	68	Medium	0	None	0	None	0	None
Harlan	56	Medium	116	High	124	High	96	High	72	Medium	68	Medium	48	Medium	52	Medium	0	None	0	None	0	None
Hayes	6	Low	110	High	86	High	108	High	46	Medium	0	None	42	Medium	112	High	0	None	0	None	0	None
Hitchcock	0	None	168	High	66	Medium	64	Medium	26	Low	64	Medium	36	Low	68	Medium	0	None	0	None	0	None
Holt	0	None	102	High	96	High	104	High	76	Medium	26	Low	42	Medium	80	High	0	None	0	None	0	None
Hooker	0	None	88	High	106	High	84	High	54	Medium	52	Medium	48	Medium	100	High	0	None	0	None	0	None
Howard	0	None	112	High	98	High	112	High	46	Medium	100	High	52	Medium	62	Medium	68	Medium	0	None	0	None
Jefferson	22	Low	124	High	122	High	116	High	66	Medium	96	High	84	High	96	High	0	None	0	None	0	None
Johnson	22	Low	124	High	122	High	116	High	66	Medium	96	High	84	High	96	High	0	None	0	None	0	None
Kearney	32	Low	88	High	112	High	92	High	50	Medium	58	Medium	88	High	54	Medium	0	None	0	None	0	None
Keith	0	None	124	High	114	High	100	High	76	Medium	96	High	68	Medium	96	High	0	None	0	None	0	None
Keya Paha	0	None	110	High	100	High	94	High	52	Medium	60	Medium	68	Medium	120	High	0	None	0	None	0	None
Kimball	0	None	112	High	116	High	116	High	86	High	112	High	82	High	96	High	0	None	0	None	0	None
Knox	0	None	114	High	116	High	96	High	120	High	64	Medium	92	High	76	Medium	0	None	0	None	0	None
Lancaster	66	Medium	98	High	112	High	116	High	112	High	112	High	108	High	52	Medium	82	High	0	None	72	Medium
Lincoln	60	Medium	124	High	120	High	116	High	84	High	92	High	88	High	80	High	46	Medium	0	None	0	None
Logan	46	Medium	104	High	108	High	84	High	30	Low	64	Medium	84	High	96	High	0	None	0	None	0	None
Loup	0	Medium	104	High	122	High	124	High	32	Low	72	Medium	92	High	84	High	0	None	0	None	0	None
Madison	0	None	114	High	122	High	120	High	45	Medium	108	High	42	Medium	30	Low	0	None	0	None	0	None
McPherson	0	None	124	High	114	High	100	High	76	Medium	96	High	68	Medium	96	High	0	None	0	None	0	None
Merrick	46	Medium	112	High	108	High	92	High	72	Medium	46	Medium	48	Medium	36	Low	0	None	0	None	0	None
Morrill	14	Low	120	High	116	High	120	High	90	High	112	High	86	High	96	High	78	Medium	0	None	0	None

Hazards by County

County	Animal Disease		Chemical Fixed		Chem Transport		Civil Disorder		Dam/Levee Failure		Drought		Earthquake		Flood Flash Flood		Plant Disease		Power Failure		Rad Transport	
Nance	76	Medium	92	High	92	High	56	Medium	76	Medium	122	High	46	Medium	84	High	76	Medium	116	High	34	Low
Nemaha	86	High	112	High	92	High	46	Medium	125	High	82	High	96	High	92	High	60	Medium	120	High	60	Medium
Nuckolls	84	High	76	Medium	76	Medium	40	Low	38	Low	90	High	34	Low	82	High	42	Medium	108	High	60	Medium
Otoe	120	High	120	High	120	High	96	High	40	Low	114	High	92	High	108	High	90	High	116	High	72	Medium
Pawnee	84	High	124	High	124	High	60	Medium	110	High	114	High	##	High	120	High	78	Medium	124	High	##	High
Perkins	108	High	68	Medium	112	High	42	Medium	26	Low	82	High	54	Medium	38	Low	108	High	92	High	88	High
Phelps	62	Medium	84	High	68	Medium	30	Low	26	Low	52	Medium	26	Low	78	Medium	34	Low	88	High	42	Medium
Pierce	84	High	90	High	104	High	0	None	78	Medium	90	High	18	Low	89	High	86	High	86	High	0	None
Platte	82	High	60	Medium	96	High	60	Medium	78	Medium	114	High	90	High	124	High	72	Medium	112	High	72	Medium
Polk	88	High	84	High	112	High	68	Medium	60	Medium	50	Medium	42	Medium	104	High	88	High	112	High	##	High
Red Willov	78	Medium	68	Medium	66	Medium	40	Low	64	Medium	86	High	60	Medium	74	Medium	40	Low	120	High	54	Medium
Richardsor	84	High	124	High	124	High	60	Medium	110	High	114	High	##	High	120	High	78	Medium	124	High	##	High
Rock	108	High	68	Medium	48	Medium	48	Medium	38	Low	114	High	40	Low	94	High	48	Medium	112	High	48	Medium
Saline	84	High	72	Medium	64	Medium	60	Medium	46	Medium	94	High	64	Medium	96	High	48	Medium	124	High	58	Medium
Sarpy	32	Low	48	Medium	48	Medium	36	Low	50	Medium	58	Medium	48	Medium	32	Low	20	Low	84	High	56	Medium
Saunders	86	High	60	Medium	72	Medium	60	Medium	64	Medium	82	High	96	High	96	High	64	Medium	120	High	60	Medium
Scotts Blu	66	Medium	64	Medium	96	High	54	Medium	68	Medium	114	High	90	High	70	Medium	66	Medium	120	High	58	Medium
Seward	82	High	60	Medium	72	Medium	48	Medium	38	Low	102	High	48	Medium	68	Medium	82	High	120	High	42	Medium
Sheridan	64	Medium	40	Low	72	Medium	42	Medium	16	Low	94	High	46	Medium	90	High	40	Low	96	High	22	Low
Sherman	124	High	96	High	64	Medium	42	Medium	64	Medium	106	High	68	Medium	88	High	84	High	124	High	72	Medium
Sioux	64	Medium	16	Low	72	Medium	42	Medium	16	Low	94	High	46	Medium	74	Medium	48	Medium	96	High	22	Low
Stanton	118	High	108	High	112	High	46	Medium	106	High	114	High	42	Medium	124	High	114	High	124	High	##	High
Thayer	84	High	76	Medium	76	Medium	40	Low	32	Low	90	High	54	Medium	82	High	42	Medium	120	High	60	Medium
Thomas	124	High	44	Medium	64	Medium	34	Low	0	None	106	High	54	Medium	72	Medium	84	High	124	High	72	Medium
Thurston	110	High	112	High	120	High	80	High	100	High	98	High	26	Low	126	High	110	High	130	High	##	High
Valley	124	High	76	Medium	68	Medium	34	Low	32	Low	106	High	68	Medium	88	High	84	High	124	High	72	Medium
Washingto	26	Low	54	Medium	80	High	54	Medium	78	Medium	82	High	52	Medium	112	High	66	Medium	108	High	42	Medium
Wayne	108	High	88	High	96	High	64	Medium	22	Low	114	High	72	Medium	64	Medium	84	High	120	High	96	High
Webster	72	Medium	72	Medium	56	Medium	30	Low	76	Medium	90	High	34	Low	86	High	76	Medium	84	High	0	None
Wheeler	124	High	44	Medium	64	Medium	34	Low	40	Low	106	High	54	Medium	72	Medium	84	High	124	High	0	None
York	80	High	60	Medium	72	Medium	46	Medium	38	Low	114	High	48	Medium	68	Medium	80	High	120	High	42	Medium

Hazards by County

County	Rad Fixed		Severe Tstorm		Severe Winter Storm		Tornado		Terrorism		Transportation		Urban Fire		Wildfire		Public Health		Explosion		Aircraft	
Nance	46	Medium	112	High	108	High	92	High	72	Medium	46	Medium	48	Medium	44	Medium	94	High	0	None	0	None
Nemaha	94	High	114	High	108	High	110	High	64	Medium	42	Medium	36	Low	112	High	0	None	0	None	0	None
Nuckolls	46	Medium	104	High	106	High	84	High	76	Medium	76	Medium	72	Medium	56	Medium	0	None	0	None	0	None
Otoe	96	High	124	High	120	High	124	High	120	High	100	High	96	High	100	High	86	High	0	None	0	None
Pawnee	66	Medium	124	High	60	Medium	124	High	112	High	112	High	92	High	110	High	0	None	0	None	0	None
Perkins	0	None	124	High	42	Medium	112	High	88	High	64	Medium	92	High	80	High	0	None	0	None	0	None
Phelps	34	Low	92	High	30	Low	88	High	56	Medium	80	High	64	Medium	64	Medium	54	Medium	0	None	0	None
Pierce	0	None	114	High	122	High	120	High	35	Low	38	Low	25	Low	30	Low	0	None	0	None	0	None
Platte	66	Medium	116	High	110	High	96	High	88	High	84	High	68	Medium	64	Medium	0	None	0	None	0	None
Polk	64	Medium	116	High	112	High	108	High	96	High	112	High	84	High	20	Low	0	None	0	None	0	None
Red Willov	26	Low	122	High	122	High	110	High	46	Medium	68	Medium	68	Medium	76	Medium	0	None	0	None	0	None
Richardsor	66	Medium	124	High	122	High	124	High	112	High	112	High	92	High	110	High	84	High	0	None	0	None
Rock	0	None	122	High	122	High	94	High	52	Medium	40	Low	60	Medium	94	High	0	None	0	None	0	None
Saline	0	None	124	High	116	High	100	High	72	Medium	88	High	60	Medium	88	High	0	None	0	None	0	None
Sarpy	0	None	116	High	116	High	92	High	36	Low	60	Medium	48	Medium	40	Low	0	None	0	None	0	None
Saunders	34	Low	110	High	104	High	120	High	60	Medium	56	Medium	60	Medium	38	Low	88	High	0	None	0	None
Scotts Blu	90	High	122	High	118	High	116	High	72	Medium	64	Medium	84	High	112	High	0	None	62	Medium	0	None
Seward	18	Low	110	High	116	High	100	High	96	High	72	Medium	84	High	44	Medium	##	High	0	None	0	None
Sheridan	0	None	112	High	106	High	104	High	32	Low	72	Medium	48	Medium	104	High	0	None	0	None	0	None
Sherman	0	None	104	High	122	High	124	High	72	Medium	72	Medium	54	Medium	96	High	0	None	0	None	0	None
Sioux	0	None	104	High	106	High	100	High	32	Low	72	Medium	40	Low	104	High	0	None	0	None	0	None
Stanton	78	Medium	124	High	122	High	124	High	68	Medium	120	High	68	Medium	68	Medium	0	None	0	None	0	None
Thayer	0	None	116	High	106	High	96	High	58	Medium	76	Medium	72	Medium	68	Medium	0	None	0	None	0	None
Thomas	0	None	104	High	122	High	124	High	32	Low	72	Medium	92	High	84	High	0	None	0	None	0	None
Thurston	70	Medium	130	High	136	High	130	High	82	High	112	High	92	High	116	High	0	None	0	None	0	None
Valley	0	None	124	High	122	High	124	High	32	Low	100	High	108	High	84	High	0	None	0	None	0	None
Washingto	96	High	100	High	88	High	92	High	72	Medium	60	Medium	72	Medium	24	Low	0	None	0	None	0	None
Wayne	0	None	114	High	114	High	112	High	72	Medium	96	High	92	High	68	Medium	86	High	86	High	0	None
Webster	0	None	88	High	106	High	88	High	78	Medium	34	Low	30	Low	32	Low	0	None	0	None	0	None
Wheeler	0	None	104	High	122	High	124	High	32	Low	72	Medium	92	High	84	High	0	None	0	None	0	None
York	0	None	110	High	116	High	100	High	96	High	72	Medium	84	High	44	Medium	80	High	0	None	0	None

THIS PAGE INTENTIONALLY LEFT BLANK

Table 1. Summary of Nebraska Prioritization Method.

Prioritization Criteria	Proposed Assessment Data & Sources	Graphic Example	Point Value Assigned
1. Potential for future development	a) Recent development history, taken from U.S. Census Bureau population statistics 1990 – 2000	Population Change 1990 - 2000	>10% Growth 0 5% to10% 1 -5% to 5 % 2 Loss >5% 3
	b) Number of recent base flood elevation determination requests	Base Flood Elevation Determination Requests	
2. Potential for flood damage or loss of life.	a) Population density	Population Density by County	
	b) Rainfall data	Two-Year, 24-Hour Rainfall Map	
	c) History of disaster declarations due to flooding	Nebraska Counties Designated As Disaster Areas Due To Flooding	8 or more 0 6-8 Declarations 1 3-5 Declarations 2 0-2 Declarations 3
3. Probability that adequate data and maps will be prepared within a reasonable time by other sources.	a) Floodplain mapping scheduled by FEMA b) Floodplain mapping scheduled by U.S. Army Corps of Engineers c) Floodplain mapping scheduled by local government (often utilizing consultants)	Floodplain Mapping Scheduled or Contracted	Not Scheduled 0 Scheduled 3

Prioritization Criteria	Proposed Assessment Data & Sources	Graphic Example	Point Value Assigned
4. Availability and adequacy of any existing maps.	a) Age of existing maps	Nebraska Flood Insurance Rate Map Panels	>15 Years 0 10 to 15 Years 1 5 to 10 Years 2 0 to 5 Years 3
	b) Existence of detailed studies within all city limits (and extraterritorial jurisdiction limits)	Summary of Detailed and Approximate Mapping	No detailed study 0 <25% detailed 1 25% to 75% 2 75% or more 3
	c) Existence of detailed studies for heavily-populated and rapidly growing counties	Summary of Detailed and Approximate Mapping	
	d) Existence of Approximate Zone A maps for counties with low population densities and growth	Summary of Detailed and Approximate Mapping	
	e) The number LOMA/LOMR requests and approvals	Summary of LOMA/LOMR Requests	
	f) Stream miles (draining one square mile or more) that have not been mapped	Stream Miles To Be Mapped (Example From Madison Co.)	No mapping 0 <25% mapped 1 25% to 75% 2 75% or more 3

Prioritization Criteria	Proposed Assessment Data & Sources		Graphic Example	Point Value Assigned
5. Availability of flood data and other information necessary to produce adequate maps	For Approximate Zone A maps	a) Existence of 10-ft. contour data	(None: elevation data available state-wide)	(None)
		b) Regional hydrologic regression equations	(None: approximate hydrologic data available state-wide)	(None)
	For Detailed Study Areas	a) Existence of detailed topographic data	(None: detailed elevation data generally not available)	(None)
		b) Bridge survey data	(None: bridge data generally not available)	(None)
		c) Hydrologic (stream gaging) data.	Streams With Gauging Data Available	Gaging data 0 No gaging data 1
6. Degree of interest shown by the local governments.	a) Participation in the National Flood Insurance Program		Participation in NFIP	Participates 0 No participation 1
	b) Number of NFIP insurance policies		Number of NFIP Insurance Policies	

THIS PAGE INTENTIONALLY LEFT BLANK

RISK ASSESSMENT

I. Introduction

A. The foundation of the Nebraska Hazard Mitigation Plan is the statewide risk assessment completed in July of 2013. In order to define effective mitigation actions to make Nebraska more resilient to the impacts of future disasters, it is necessary to understand the hazards that threaten the state and how they disrupt Nebraska communities. It is also necessary to understand how the communities are vulnerable to the impacts of the identified hazards and the scope or extent of that vulnerability.

B. The purpose of this section is to provide, on a statewide basis, an understanding of the risks posed by the hazards that threaten Nebraska. The risk analysis is the basis for the Planning Team's hazard profiling efforts. The Department of Homeland Security's Risk Lexicon 2010 Edition defines risk assessment terminology as follows:

1. Hazard - Natural or manmade source or cause of harm or difficulty. A hazard can be actual or potential.

2. Vulnerability - Physical feature or operational attribute that renders an entity, asset, system, network, or geographic area open to exploitation or susceptible to a given hazard.

3. Risk - Potential for an unwanted outcome resulting from an incident, event, or occurrence, as determined by its likelihood and the associated consequences.

4. Risk Assessment - Product or process which collects information and assigns values to risks for the purpose of informing priorities, developing or comparing courses of action, and informing decision making. A risk assessment can be the resulting product created through analysis of the component parts of risk.

5. Risk Assessment Tool - activity item, or program that contributes to determining and evaluating risks. Tools can include computer software and hardware or standard forms or checklists for recording and displaying risk assessment data.

C. The risk assessment completed in 2013 is based on the results of the assessment using the Hazard Identification and Risk Assessment (HIRA) tool from the FEMA Planning Guidance (CPG-101). This section is broken down into the following four sub-sections:

1. History of Hazard Mitigation Planning in Nebraska: This sub-section examines the early stages of risk assessment activity and hazard mitigation planning in Nebraska.

2. Hazard Identification: This sub-section identifies the results of the 2013 State wide HIRA. This sub-section also explains why some hazards are not further profiled in this plan.

3. Hazard Profiles and Vulnerability: This section describes each hazard identified in the previous section, discusses where in the state the hazard is most likely to occur, gives examples of previous occurrences, states the probability of occurrence, and analyzes the vulnerability and potential losses by jurisdiction, including discussions on development in hazard-prone areas. This section also addresses the vulnerability and potential loss to state owned or operated critical facilities and infrastructure from the more significant hazards.

D. As with any other aspect of planning, hazard identification and risk assessment is an ongoing, continually evolving process. This plan incorporates efforts to improve the knowledge of the Planning Team/GTFDR, stakeholders, and citizens regarding the hazards known to threaten the state.

E. HISTORY OF HAZARD MITIGATION PLANNING IN NEBRASKA

1. 1985 - 2005

a. The Nebraska Emergency Management Agency (NEMA) created the first State of Nebraska Hazard Mitigation Plan in February of 1985 pursuant to the Disaster Relief Act of 1974 (Public Law 93-288). Nebraska's 1985 risk analysis focused on the natural hazards of flooding and tornados. Successive Hazard Mitigation Plans through September of 2000 continued to focus on these hazards. In the State Hazard Mitigation Plan of 2000, prepared pursuant to the Stafford Act, a 1988 amendment of the Disaster Relief Act, the total number of identified hazards increased to seven. The identified hazards included: Floods/Flash Floods, Tornadoes/High Winds, Blizzards/Winter Storms, Earthquakes, Droughts, Expansive Soils, and Landslides. The historic data was also expanded to include information concerning Federal Declarations from 1985 – 2000. Although these early plans were developed with the involvement of federal, state, local, and private non-profit entities, none had a true state-wide hazard identification or risk assessment process as mandated by the Disaster Mitigation Act of 2000 (a further amendment of the Disaster Relief Act).

b. The 2005 Nebraska Hazard Mitigation Plan was prepared by NEMA staff pursuant to the Disaster Mitigation Act of 2000 (DMA 2000). DMA 2000 required not only the restructure and amendment of Hazard Mitigation

Plan, but of NEMA's overall hazard mitigation planning philosophy. DMA 2000 prompted state government to dialogue more effectively with local and federal counterparts in order to fully assess the hazards facing the state. Because Nebraska's past mitigation efforts focused on natural hazards, those became the overriding theme for the 2005 State Hazard Mitigation Plan.

c. Development of the 2005 Plan began with a November 20, 2002 meeting of the Planning Team and a group of officials from the National Weather Service (NWS), the Omaha District Army Corps of Engineers, the Nebraska Game & Parks Commission, the Nebraska Department of Roads, the Nebraska Department of Environmental Quality, the Nebraska Department of Health & Human Services, and the Nebraska State Patrol. This group was tasked with selecting the hazards that would become the focal point for the hazard identification process for the 2005 State Hazard Mitigation Plan. The nine hazards selected for analysis were Agricultural Incidents, Flooding, Thunderstorms, Tornados, Drought, Earthquake, Severe Winter Storms, Terrorism, and Wildfires. At the time of the 2005 Plan preparation, no Local Hazard Mitigation Plans had been approved in the state, and no jurisdiction-specific hazard information was available. Instead, the 2005 Nebraska Hazard Mitigation Plan included information from approved local emergency operations plans from the state's 93 counties, federal studies, and state reports such as the State Emergency Operations Plan to compile information for the Risk Assessment.

2. 2005 – 2009

a. The Planning Team, met on August 28, 2007 to discuss the 2008 risk assessment and the identification of hazards impacting the state. Because of time constraints caused by 2006 and 2007 disaster declarations and NEMA staffing issues, the group consensus was to focus on the nine previously identified natural hazards, without identification of additional hazards. The hazard profiles would be updated to include information from recent federal disaster declarations, changes in demographics, and information from FEMA approved Local Hazard Mitigation Plans. The updated risk assessment was sent to FEMA Region VII on September 10, 2007, in order to gain further guidance and perspective before the initial FEMA submittal on March 15, 2008. Subsequent FEMA recommendations were forwarded to the Planning Team.

b. The Planning Team met again on December 4, 2007 to discuss the identification of additional hazards in the Nebraska Hazard Mitigation Plan's Risk Assessment section. The previously identified risk of Agricultural Incidents was split into two hazards, Agricultural - Animals/ Livestock and Agricultural - Plant Diseases/Pests, to better clarify the

differences between plant and animal hazards. Dam Failure and Levee Failure were also added to the list of identified hazards. The Dam Safety Division of the Nebraska Department of Natural Resources (NDNR) identified 109 dams classified as "high hazard" and 246 dams classified as "significant hazard." The Dam Safety Division also identified 40 levees in Nebraska that were either federally constructed or sponsored and operated by the United States Army Corps of Engineers (USACE). The Planning Team discussed man-made and technical hazards such as chemical incidents and pandemic flu. It was determined that NEMA's limited resources would be better directed in the analysis of hazards not already addressed by other planning efforts by federal agencies such as the Department of Homeland Security, Department of Transportation, and the Department of Health and Human Services. Nebraska has in place a State Pandemic Flu Plan and a State Emergency Operations Plan, as well as Local Emergency Operations Plans (LEOPs) for Nebraska's 93 counties. These documents include man-made and technical hazard direction and control, communications and warning systems, damage assessment, and debris management procedures. LEOPS also include guidelines for emergency public communications, evacuation, flood response, fire services, hazardous materials accident response, health and human services, mass vaccinations, agricultural disease, law enforcement, terrorism, mass medical care, protective shelter, public works/utilities, and resource management. In an effort to avoid duplication of efforts, Nebraska's Planning Team determined that the 2008 Hazard Mitigation Plan Update would continue to focus on natural hazards.

c. 2011 SHMP UPDATE HISTORY The Planning Team met on November 4, 2011 to discuss the identification of additional hazards in the Nebraska Hazard Mitigation Plan's Risk Assessment section. The previously identified risk Agricultural - Animals/ Livestock and Agricultural - Plant Diseases/Pests, Dam Failure and Levee Failure, The Dam Safety Division of the Nebraska Department of Natural Resources (NDNR) identified 133 dams classified as "high hazard", 188 dams classified as "significant hazard" and 2,062 were low hazard dams. Low hazard dams are located in agricultural areas and breach results in only minimal property loss. The Dam Safety Division also identified 40 levees in Nebraska that were either federally constructed or sponsored and operated by the United States Army Corps of Engineers (USACE). The Planning Team discussed man-made and technical hazards such as chemical incidents and pandemic flu. It was determined that NEMA's limited resources would be better directed in the analysis of hazards not already addressed by other planning efforts by federal agencies such as the Department of Homeland Security, Department of Transportation, and the Department of Health and Human Services. Nebraska has in place a State Pandemic Flu Plan and a State Emergency Operations Plan, as well as Local Emergency Operations Plans (LEOPs) for

Nebraska's 93 counties. These documents include man-made and technical hazard direction and control, communications and warning systems, damage assessment, and debris management procedures. Nebraska's Planning Team determined that the 2011 Hazard Mitigation Plan Update would continue to focus on natural hazards.

II. HAZARD IDENTIFICATION

A. The 2013 Risk Assessment Section does not use estimates of potential losses from local hazard mitigation plans in its methodology to determine which jurisdictions are at greatest risk to various hazards. The Hazard Identification Risk Assessment (HIRA) was implemented to gain a standardized analysis from the perspective of the local and county entities. This determination stems from two major factors.

1. Few local plans included such information because it is not required by federal planning regulations [see 44 CFR 201.6 (c)(2)(ii)]. Local plans are required to provide only a summary of each hazard and its impact on communities.

2. Second, for those jurisdictions that do provide some dollar value loss estimations, the method of gaining such information in many instances is skewed. For example, one jurisdiction that did provide dollar value loss estimations indicated 100% destruction for all hazards. Obviously, while this may be true for some hazards such as a tornado, it is not necessarily true for other hazards, such as flooding. While some portions of multi-story buildings may be impacted by a flood, the entire building may not have been 100% destroyed. Similarly for severe winter storms where not all areas within the county are 100% impacted, the jurisdiction indicates 100% destruction for the hazard. Therefore, much of the data contained in the local plans was not a viable option for use in determining loss estimation. While the state is required to provide an overview and analysis of potential losses to identified structures based on estimates in local risk assessments [see 44 CFR 201.4 (c)(2)(iii)], the state is unable to use most of the available information because the local plans currently lack the necessary detail and accuracy for such an analysis to be performed.

3. Analysis of Local Loss Estimates

   a. The NEMA Mitigation Section staff also reviewed local plan risk assessments to determine whether information on the population and built environment vulnerable to various natural hazards could be used in the state's determination of jurisdictions most vulnerable to various hazards. The staff examination showed that only a few of the plans reviewed included any projected loss estimates, and that provided information was not standardized. The state believes that the sample is insufficient in size, and the information provided too inconsistent, to

include it in decisions that determine jurisdictions most vulnerable to hazards or to use to calculate a statewide loss estimate.

b. It should be noted that the federal regulations on local hazard mitigation planning do not require inclusion of such information in local plans [see 44 CFR 201.6 (c)(2)(ii)]; it is a "should" (i.e., optional) requirement rather than a "must" or "shall" requirement.

B. This sub-section identifies the hazards that pose a threat to Nebraska, and ranks the hazards according to the results from the 2013 HIRA. In presenting these profiles, it is first important to describe how the decisions were formulated. The first step taken by the Planning Team was to determine those hazards that would not be included. The process is described as follows.

Requirement §201.4(c)(2)(i): [The state risk assessment shall include an] overview of the type of all natural hazards that can affect the state.

1. Hazard Elimination Process

a. Nebraska's central location in North America and generally flat, high plains terrain preclude the occurrence of hazards such as volcanoes, tsunamis, coastal erosion, coastal storms, avalanches, and hurricanes. There is no documentation or physical evidence to support claims that these hazards have or will occur within the State of Nebraska.

b. The natural hazards of expansive soils, land subsidence, and landslides in Nebraska were also eliminated from further consideration in the Risk Assessment. The Planning Team based their determination on research by the State of Nebraska's staff, including Steve McMaster (Natural Resources Planning Coordinator with NDNR) and Mark Burbach (Assistant Geoscientist with the University Of Nebraska School Of Natural Resources). Research on the natural hazards of expansive soils, land subsidence, and landslides was also based in part on data that was obtained from the University of Nebraska, School of Natural Resource's website at http://snr.unl.edu/.

c. Extensive research was conducted for the following eliminated hazards. This was done because several local plans identified hazards such as landslides in their plans and due to the results of the HIRA process. Before eliminating the following hazards, the Planning Team thoroughly researched each.

1) Expansive Soils:

a) Expansive soils are soils and soft rock that tend to swell or shrink excessively due to changes in moisture content. The effects of

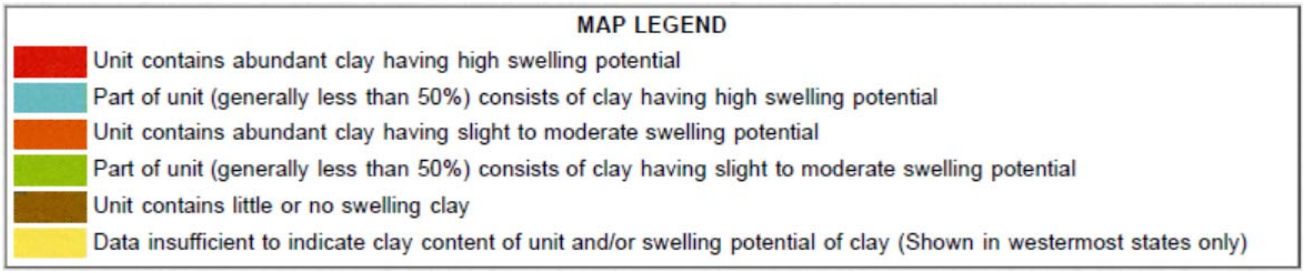
expansive soils are most prevalent in regions of moderate to high precipitation, where prolonged periods of drought are followed by long periods of rainfall.

b) Mark Kuzila in an article published by the Nebraska School of Natural Resources in the Natural Resource Link" (Volume 4, Number 1, Winter of 2004), concluded that "drainage problems are an issue in Eastern Nebraska because soils contain layers that are slowly permeable, meaning water moves into and through them very slowly. When it rains, water moves down through the permeable topsoil until it reaches underlying slowly permeable layers. At that point, water is forced to move laterally, since it can't be readily absorbed." Lateral water movement can cause wet or flooded basements, sidewalks, and driveways.

c) Due to mapping and data deficiencies, estimating the annual losses caused by expansive soils in Nebraska is speculative at best. The map in Figure 3.1 depicts potential swelling clay deposits located in the State of Nebraska. Those areas shaded in red, such as acreage along the Eastern half of the Niobrara River, the South Platte River in Western Nebraska, and the North Platte River in Western Nebraska have a higher potential for swelling clay deposits than other areas of the state.

Figure 3.1: U.S. Geological Survey/ Nebraska Soils Map[1]

[1] These maps are sourced from the U.S. Geological Survey publication "Swelling Clays Map Of The Conterminous United States" by W.W. Olive, A.F. Chleborad, C.W. Frahme, Julius Schlocker, R.R. Schneider, and R.L Shuster; 1989



d) Although soil with expansive potential exists in the state, the Planning Team determined, based on information supplied by Mr. Kuzila, that mitigation activities for expansive soils would be limited.

2). Land Subsistence (Sinkholes):

a) The loss of surface elevation due to the removal of subsurface support defines a sinkhole. Sinkholes range from broad, regional lowering of the land surface to localized collapse. The primary causes of most land subsidence include human activities such as underground coal mining, groundwater or petroleum withdrawal, and drainage of organic soils. An additional factor is the erosion of limestone of the subsurface.

b) Land subsidence and sinkholes are common in areas of karst topography. Karst topography is generally associated with deposits of limestone and/or glaciated areas which are easily eroded by ground water or surface water. Karst topography can include entire streams that disappear by flowing through underground limestone sinkholes or channels, and reappear miles away from the original stream bed.

c) There are no recognized areas of true karst topography in Nebraska. Although most of the state is underlain by limestone, other conditions preclude the formation of true karst topography. In the western part of the state, the limestone is overlaid by thick layers of sand and clay. The only feasible limestone mining areas are in eastern Nebraska, where limestone is found at relatively shallow depths and is of high quality that does not erode, even though it is close to the surface and vertical relief is required for the formation of any type of karst-related concerns. Nebraska is flat with a relatively high water table, precluding karst problems. Karst concerns in the United States are generally limited to regions in the states of Kentucky, Tennessee, and Florida.

d) Based on this information the Planning Team eliminated land subsidence and sinkholes from further consideration in the 2013 Plan Update.

3). Landslides: According to information compiled by Duane A. Eversoll, Research Geologist Emeritus, University of Nebraska School of Natural Resources, the majority of Nebraska's landslides fall under five categories. These categories are based on the Varnes Classification of Slope Movements, and occur along Nebraska's roadways. The categories are defined as follows.

a) Rock Falls are defined as free-falling rocks from a steep cliff or slope, along an undercut stream bank or an eroding valley wall. They occur mainly in the Greenhorn Limestone of Cretaceous age and in the Permian and Pennsylvanian aged rocks in eastern Nebraska and in the Arikaree, and Ogallala groups of Tertiary age in western Nebraska. They occur mainly in the eastern portions and far western portions of Nebraska.

b) Earth Slumps are defined as non-bedrock deposits (loess, glacial materials, etc.) that move downward on a rotational failure plane. Of the 209 landslides inventoried in Nebraska, 108 were classified as earth slumps. Earth slumps are the most widespread and common type of landslide found in Nebraska.

c) Rock Spreads are defined as blocks or slabs of bedrock that move laterally, usually without a well-defined controlling basal shear surface or zone of plastic flow. Examples in Nebraska were observed along the south-central border. The examples involved limestone with lateral movement on underlying shale deposits. Only one Nebraska landslide was classified as a rock spread in this study.

d) Rock Slumps are defined as masses of bedrock that move downward on a rotational failure plane. Seventy of the landslides inventoried for this study were classified as rock slumps. A majority of these rock slumps occurred in shale formations.

e) Complex slides are defined as those in which one type of movement dominates over the other types in certain areas of a slide or at a particular time. Older and larger slides such as those observed along major river bluffs are classified as complex.

- The University of Nebraska's School of Natural Resources maintains a database at http://snr.unl.edu/data/geologysoils/landslides/landslidesdatabase.asp
- This database includes information on all known landslides in Nebraska. This database was used to create the following table.

Table 3.1: Known Number of Landslides in Nebraska by County

County	Number of Landslides	Total Estimated Damages
Banner	1	$0
Boyd	56	$0
Brown	1	$0
Burt	12	$0
Butler	5	$0
Cass	1	$0
Cedar	7	$0
Colfax	8	$0
Cuming	1	$0
Custer	8	$0
Dakota	2	$0
Dawes	2	$0
Dixon	9	$0
Dodge	2	$0
Douglas	7	$0
Franklin	2	$0
Furnas	1	$0
Gage	3	$0
Hayes	1	$0
Hitchcock	1	$0
Holt	5	$0
Jefferson	7	$0
Johnson	1	$0
Knox	81	$0
Lancaster	23	$0
Madison	1	$0
Morrill	3	$0
Nemaha	3	$0
Otoe	9	$0
Pawnee	4	$0
Polk	1	$0
Richardson	10	$0
Saline	2	$0
Sarpy	4	$0
Saunders	2	$0

County	Number of Landslides	Total Estimated Damages
Scottsbluff	5	$0
Seward	3	$0
Sherman	2	$0
Thayer	5	$0
Thurston	6	$0
Valley	1	$0
Wayne	1	$0
Webster	1	$0
York	1	$0
Total	**313**	**$0**

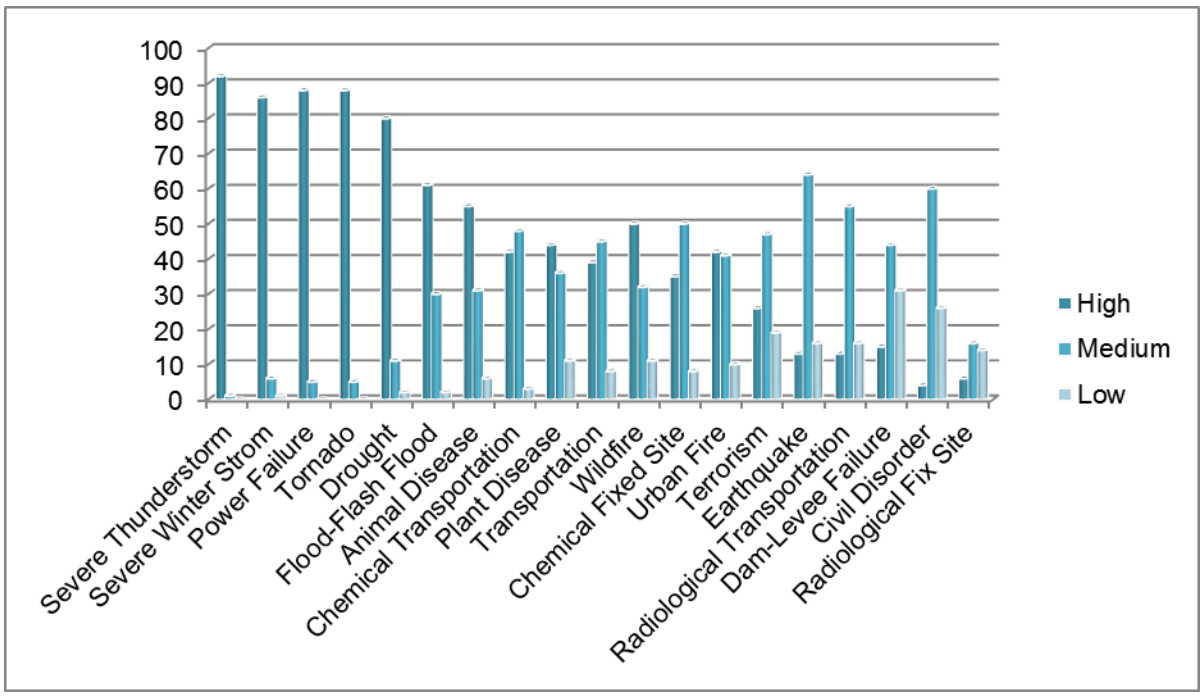
- Table 3.1 above illustrates that although a total of 313 landslides have been documented in the state of Nebraska, none resulted in damages. For this reason, the Planning Team eliminated landslides from further consideration in the 2014 Plan Update.

C. Hazard Identification Process

1. FEMA's Planning Guidance (January 2008) requires that hazard identification be based on information provided from approved local hazard mitigation plans in the state. Section 4, Attachment 1 summarizes the hazards identified in Nebraska's twenty seven approved local/multi-jurisdictional plans from the; Cedar – Dixon Counties, Chase County, Dundy County, Frontier County, Hass County, Hamilton County, Hayes County, Hitchcock County, Perkins County, Ponca Tribe, Quad County, Region 23, Region 24, Seward County, Tri-County, York County, Central Platte NRD, Lower Elkhorn NRD, Lower Loup NRD, Lower Platte North NRD, Lower Platte South NRD, Nemaha NRD, North Platte NRD, Papio-Missouri NRD, South Platte NRD, Twin Platte NRD, and Upper Loup NRD.

2. The Nebraska Emergency Management Agency (NEMA) began the process of completing a Hazard Identification – Risk Assessment (HIRA) for the State of Nebraska in April of 2013. NEMA used the HIRA tool from FEMA Planning Guidance CPG-101 with a few modifications as the basis for the HIRA. This tool was emailed to all of the state's County and Regional Emergency Managers along with an instruction manual. All but four of the 93 Counties sent in completed HIRA Tools. Attachment 1 is a copy of the instructions sent along with the tool. The results of the 2013 HIRA are shown in the charts below. The highest ranking a hazard could score on the profile tool is 124. The first chart shows the total scores for each of the hazards from the tool. The second chart identifies the rankings; High (score 80 or over), Medium (Score 41 to 79), or Low (Score 40 or below).

Risk	Total Score
Severe Thunderstorm	10388
Severe Winter Storm	10190
Power Failure	10070
Tornado	9860
Drought	8750
Flood/Flash Flood	8209
Ag - Animal Disease	7695
Chemical Transportation	7510
Wildfire	7127
Transportation	7030
Ag - Plant Disease	6788
Chemical Fixed Facility	6672
Urban Fire	6446
Terrorism	6009
Earthquake	5376
Dam/Levee Failure	5149
Radiological Transportation	5138
Civil Disorder	4380
Radiological Fixed Facility	1836
Public Health Emergency	1538



a. The following risks (in rank order) were identified and profiled in the 2011 plan and their profiles have been updated for this revision.

1) Severe Winter Storm
2) Severe Thunderstorm
3) Tornado
4) Drought
5) Flood/Flash Flood
6) Animal Disease
7) Wildfire
8) Terrorism
9) Earthquake
10) Dam/Levee Failure

b. The following risks were researched by NEMA staff, presented to the Planning Team and a determination was made not to further profile them in the 2014 plan.

1) Chemical Fixed Sites

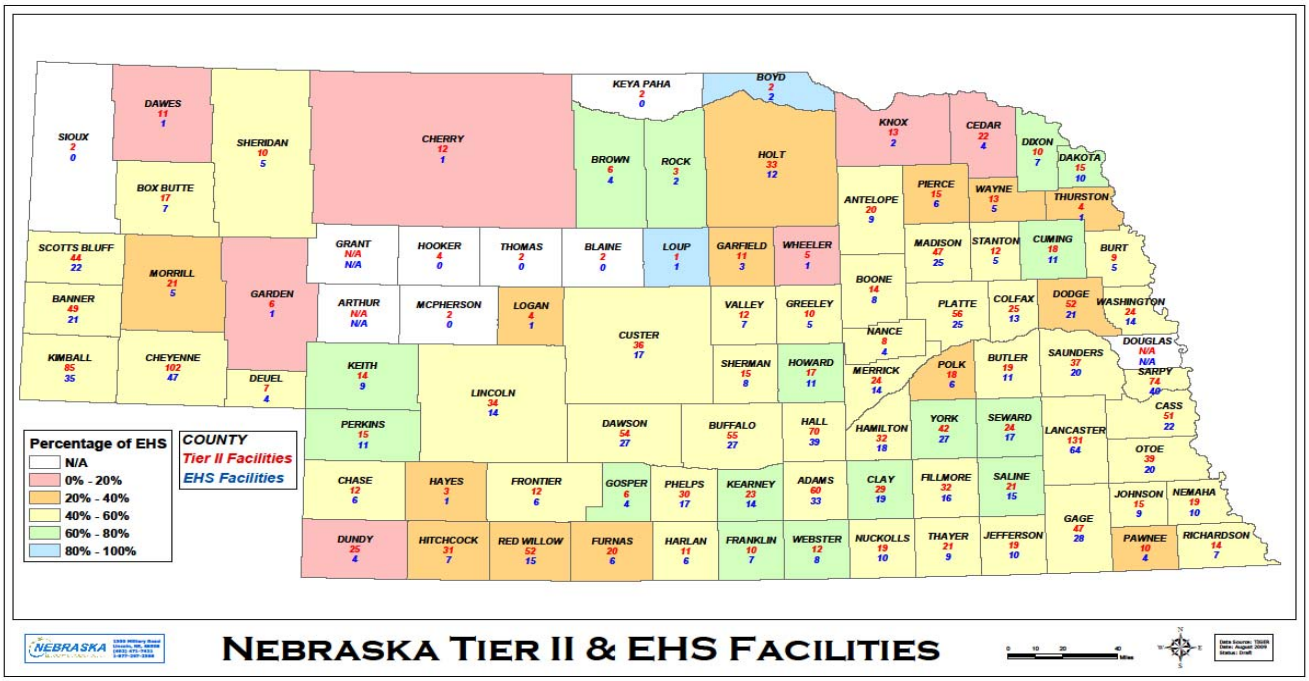
a) Nebraska has approximately 3,624 facilities that report under the Emergency Planning and Community Right to Know Act (EPCRA) §311 & 312 and the Clean Air Act §112(r)(7) identifies the development of a Risk Management Program (RMP) . Facilities that fall under this act report hazardous and extremely hazardous chemicals that are stored in their facility at any given time. Facilities are expected to submit reports to the local emergency planning committee, the local fire jurisdiction and the State Emergency Response Commission (SERC).

b) Under section 112 of the Clean Air Act, facilities that have an identified amount of toxic chemicals report through the RMP. The RMP plan assists the facilities with the development of a plan that outlines the worst case scenarios dealing specifically with seventy-seven toxic chemicals and sixty-three highly flammable substances. Facilities using the RMP submit plans to the Environmental Protection Agency (EPA) with information sharing at the State and local level.

c) In addition to the federal guidelines that have been enacted; the Nebraska Emergency Management Agency has signed agreements with ten fire jurisdictions that can be called upon to respond to a large chemical response. The ten hazmat jurisdictions maintain the training and equipment needed to assist with a large transportation spill or fixed site release.

d) Because facilities that fall under ECPRA and the CAA are highly regulated it has been determined not to further profile the hazard. Safeguards are already in place to protect those directly involved.

e) The following map identifies the counties in which facilities reporting chemicals reside.



2) <u>Civil Disorder</u>

a) The chart below identifies the most recent civil unrest /riots in the State of Nebraska. The Nebraska State Patrol and local police are constantly monitoring events and demonstrations to ensure that order is maintained. The events identified below were handled by the Omaha Police using their resources as well as mutual aid, both formal and informal, and routinely used State support.

Riots and civil unrest in Nebraska		
Date	**Issue**	**Event**
July 4, 1966	Racial tension	After a 103 degree day, a crowd of African Americans gathered at the intersection of North 24th and Lake Streets in the evening. They responded violently when the Omaha Police Department requested their dispersal. The crowd demolished police cars and roamed the North 24th Street business corridor for hours, throwing firebombs and demolishing storefronts. Millions of dollars of damage was caused to businesses in the Near North Side community. The riot lasted three days.

August 1, 1966	Racial tension	Riots erupted after a 19-year-old was shot by a white, off-duty policeman during a burglary. Three buildings were firebombed, and 180 riot police were required to quell the crowds.
March 4, 1968	Racial tension	A crowd of high school and university students were gathered at the Omaha Civic Auditorium to protest the presidential campaign of George Wallace, the segregationist governor of Alabama. After counter-protesters began acting violently toward the youth activists police intervention led to the injury of dozens of protesters. An African-American youth was shot and killed by a police officer during the melee, and fleeing students caused thousands of dollars of damage to businesses and cars.
June 24, 1969	Racial tension	An African-American teenager named Vivian Strong was shot and killed by police officers in an incident at the Logan Fontenelle Housing Projects. Young African Americans in the area rioted in response to the teenager's death, with looting along the North 24th Street business corridor. During this initial surge eight businesses were destroyed by firebombing or looting.

b) No other incidences of civil unrest in other cities were found while researching this hazard. As far as records exist, no State Emergencies were declared and, the State Emergency Operations Center has never been operational for a civil unrest event. Because of this, it has been determined not to further profile this hazard.

2) Radiological Fixed Site – Nebraska has two nuclear power stations in the State, both located on the Missouri River. These two power stations are the only licensed facilities that could have a release that would prompt a State response and are tightly regulated by several federal agencies. Radiological releases or leaks outside of the power industry have been investigated by the Nebraska Department of Health and Human Services as part of their regulatory duties. Both State and local governments have done extensive planning and exercising (evaluated by FEMA) for these power stations. There has been only one incident that required an Alert to be declared. The event caused the activation the State EOC at Level 1 monitoring. Due to the extent this hazard has detailed plans and is extensively regulated and exercised, this hazard will not be further profiled.

3) Radiological Transportation – while there are a considerable amount of radiological materials transported across Nebraska, this hazard is covered extensively in a separate plan. Both high and low level shipments are highly regulated including routes and packaging with high level shipments escorted by the Nebraska State Patrol while traversing the state. There have been no incidents that required state assistance beyond what is routinely provided and have not triggered a State Declaration or the activation of the State Emergency Operations Plan or Center.

4) Urban Fires

a) The chart below, developed from the National Reporting System NFIRS reports by Nebraska fire departments, shows that Nebraska has, and will continue to experience fires in its urban areas. In just the past few years several cities in Nebraska have had complete city blocks destroyed by fires. Over $200 million in property has been lost since 2004, but only 93 fire-related fatalities in building fires have occurred in the last nine years.

b) Using the statistics from the NFIRS reports from business and retail fires, it can be seen that these types of fires are prevalent but in these same reporting years all of these fires have been responded to using mutual aid resources as well as state resources that are routinely available to local governments like the State Fire Marshals, NSP for traffic control, and DOR for blocking roads and highways. There has not been a single incident where the State Emergency Operations Center has been opened at even a monitoring level 1 status.

Year:	2012	2011	2010	2009	2008	2007	2006	2005	2004
Building Fires	494	806	529	755	833	847	771	1,009	881
Structure Fire Fatalities	7	5	7	9	9	8	11	25	12
Total Loss (Building Fires)	$19.4M	$34.9M	$20.2M	$21.9M	$28.4M	$27.1M	$28.6M	$32.9M	$18.0M

c) Because this hazard is one that has historically been responded to through routine channels it has been determined not to further profile this hazard.

4. Based on the results of the 2013 HIRA process the following hazards are further profiled in the Nebraska Hazard Mitigation Plan. The hazards are listed in alphabetical order. The number in parentheses after the hazard represents where the hazard ranked in the HIRA with #1 having the highest overall score.

   a. Agricultural Incidents – Animals/Livestock (7)

   b. Agricultural Incidents – Plants/Crops (11)

   c. Chemical Transportation (8)

   d. Dam/Levee Failure (17)

   e. Drought (5)

   f. Earthquakes (15)

g. Flood/Flash Flood (6)

h. Power Failure (3)

i. Severe Winter Storms/Ice Storms (1)

j. Terrorism (14)

k. Thunderstorms/High Winds/Lightning/Hail (2)

l. Transportation incidents other than hazardous Materials (9)

m. Tornadoes (4)

n. Wildfires (13)

III. HAZARD PROFILES

Requirement §201.4(c)(2)(i): [The state risk assessment shall include an overview of the] location of all natural hazards that can affect the state, including information on previous occurrences of hazard events, as well as the probability of future hazard events, using maps where appropriate.

Requirement §201.4(c)(2)(ii): [The state risk assessment shall include an] overview and analysis of the state's vulnerability to the hazards described in this paragraph (c)(2), based on estimates provided in local risk assessments. The state shall describe vulnerability in terms of the jurisdictions most threatened by the identified hazards, and most vulnerable to damage and loss associated with hazard events. Requirement §201.4(c)(2)(iii): [The state risk assessment shall include an] overview and analysis of potential losses to identified vulnerable structures, based on estimates provided in local risk assessments.

Update Requirement §201.4(d): Plan must be reviewed and revised to reflect changes in development.

Requirement §201.4(c)(2)(iii): [The state risk assessment shall include an overview and analysis of the state's vulnerability to the hazards described in this paragraph (c)(2), based on estimates provided in] the state risk assessment. State owned critical or operated facilities located in the identified hazard areas shall also be addressed. Requirement §201.4(c)(2)(iii): [The state risk assessment shall include an overview and analysis of the state's vulnerability to the hazards described in this paragraph (c)(2), based on estimates provided in] the state risk assessment. State owned critical or operated facilities located in the identified hazard areas shall also be addressed.

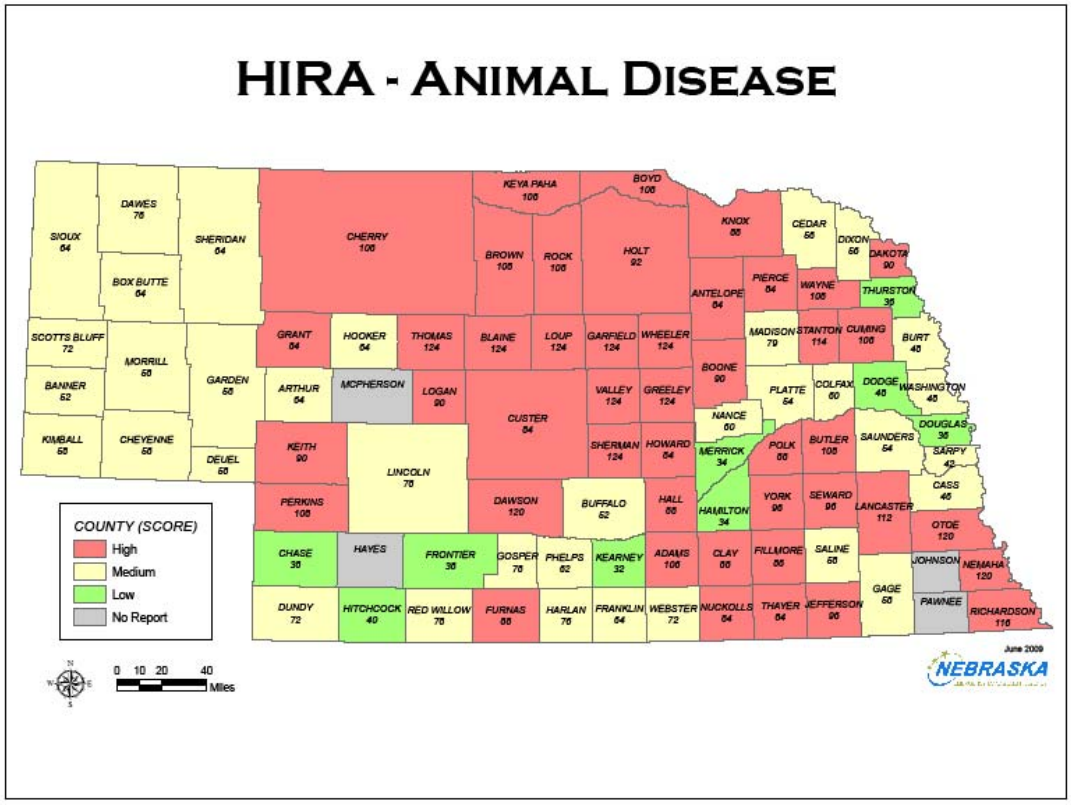
A. Introduction

1. General profiles for the hazards selected by the Planning Team were compiled from the 2008 Nebraska Hazard Mitigation Plan that have been

updated with more recent information, and from the 2013 HIRA. In 2008, agricultural incidents were divided into two categories; animal incidents and plant incidents. Levee and Dam failure were also added in 2008. Other changes and additions will be made as needed to successfully update the plan.

2. Each profile in the following sections describes the hazard and its potential impacts, its location in the state, previous occurrences, its probability of future occurrences, and damages to state facilities. The profiles also explore vulnerability and potential losses by jurisdiction. The magnitude of the impact of a hazard event (past and perceived) is related directly to the vulnerability of the people, property, and the environment to its effects. This is a function of when the event occurs, the jurisdictions and community sectors affected, the resilience of the community, and the effectiveness of the emergency response and disaster recovery efforts.

3. Each hazard is preceded by a map detailing how this hazard was ranked in the 2013 HIRA and an impact statement specific to that hazard.



Hazard: / Impact On:	Animal Disease
Public: Housing, Causalities, Fatalities, Work, Food, Water	Housing - if the disease is widespread many rural homes may be quarantined. Causalities/fatalities - no impact. Work - if the disease is widespread there will be cascading effects in the meat and/or poultry from the farm/ranch to the market. - Food/Water - If the disease is in multiple states the meat/poultry supply could be interrupted. Crop transportation and prices would be affected due to restrictions on crop movement out of quarantined Ares, and change in demand as livestock are culled, producers are not able to sell healthy market animals, and producers institute a moratorium on feeding new livestock.
Responders: Fire, Police, Medical, Public Works	Some responders will be specialized but local responders and/or farmers/ranchers may be used for activities like animal movement and decontamination. The utilization of traditional first responders for animal disease containment may create a shortage for other community and law enforcement needs. Safety, proper PPE and decontamination will be the issues.

Hazard: Impact On:	Animal Disease
Continuity of Operations	State agencies involved in response will divert staff away from normal activities and need to prioritize operations per COOP plans. Ag industries will struggle to move product (animal and crop) within limitations set by response plans. Time sensitive product may need to be destroyed. Continuity of operations for state agencies and industry will be challenged.
Property: Destroyed, Major, Isolated	The property that will be destroyed in a widespread animal disease are the animals. Properties may be isolated by quarantine. Some property (structures) that cannot be cleaned and disinfected may need to be destroyed/burned.
Infrastructure: Electricity, water, roads, bridges	Although little physical/structural damage to infrastructure, infrastructure systems will be impacted - food supply, transportation system disrupted in and around quarantine areas, financial systems due to economic impacts, health care for illness (potential public health implications) and behavioral health issues, and compromised community response capabilities of fire and law enforcement.
Environment	Impact on the environment will need to be mitigated by proper disposal and decontamination methods.
Economic Conditions:	An animal disease in Nebraska can have catastrophic economic consequences. 2007 figures show market value of cattle/calves 7 billion; Hogs/pigs 900 million and poultry/eggs 165 million. For both the state and the nation, ripple effects will have a negative consequence on mortgage payments, employment, banking institutions, markets, international trade. A serious animal disease would have a negative impact on the stability of whole farming communities.
Public Confidence in the Governance	Depends on how quickly and efficiently the outbreak is handled and perception of whether the government could have done more to prevent or protect against the outbreak.

B. Agricultural Incidents – Animals/Livestock

1. Location and Previous Occurrences

a. Ninety-three percent of Nebraska's land area is devoted to agricultural uses, with 45.5 million acres of land in farms. Nebraska's total agricultural output reached $25.58 million in 2012[2]. Livestock and farm animals contributed to the bulk of this amount, with $11.57 million. Crops contributed $11.42 million and services/forestry contributed $2.59 million. An outbreak of animal-to-animal disease would have significant economic implications that could result in a serious a public health risk. Response and recovery operations in response to a contagious animal disease event could be long-lasting. Some producers could not recover.

b. In Nebraska there is an estimated 6.3 million head of cattle; 3.0 million head of swine; 80,000 head of sheep; 2.96 million poultry animals; and a domestic livestock industry consisting of approximately 160,000 horses,

[2] USDA Economic Research Service Data- http://www.ers.usda.gov/StateFacts/NE.htm

elk, bison, and other animals across the state. The state also has a free-ranging animal population consisting of 300,000 deer; 5,000 pronghorn antelope; 300 elk; and 120 bighorn sheep. These animals are all susceptible to disease[3]. The State's Emergency Operations Plan includes an Emergency Support Function in the Agriculture and Natural Resources Annex to the Plan. It provides guidance to state and local governments to meet the challenges arising from a contagious animal disease outbreak. Attachment 2 is the Department of Agriculture's Nebraska Risk Assessment Committee, Nebraska Agricultural, Natural Resources, and Wildlife Subcommittee – Planned Mitigation Actions.

c. Producers are required by state law to report any animal disease occurrence to the Nebraska Department of Agriculture. A disease report form can be downloaded from the Nebraska Department of Agriculture's website at http://www.nda.nebraska.gov/animal/disease_reporting_form.pdf.[4] Due to Homeland Security concerns, the Nebraska Department of Agriculture (NDA) was unable to provide specifics on data from the disease reports. However, the NDA confirmed that no outbreaks or cases involving bovine spongiform encephalopathy, foot & mouth disease, or exotic new castle disease have been reported in Nebraska. A major contamination event or outbreak of any of these diseases could seriously affect the state's economic well-being and long-term vitality. The NDA is the lead coordinating agency for livestock emergency disease response, monitoring, and diagnostic information. The Nebraska Game & Parks Commission is the lead agency for monitoring and surveillance of wild animal species and game throughout the state.

d. Reported Animal Diseases in Nebraska

The following four diseases have been reported only within the state's free range/game population. Only one has been reported within the state's cattle or swine populations. According to the Nebraska Department of Agriculture Disease Inventory, between 1/1/13 and 12/31/13 489 cases of animal disease were reported in the State of Nebraska.[5] There are numerous diseases that affect the state's free range/game population, but due to data limitations, lack of laboratory testing and field studies, only the four listed animal diseases will be analyzed for the 2014 Nebraska Hazard Mitigation update. Additional information will be added to future updates once it becomes available.

- Chronic Wasting Disease (CWS) – This disease was first reported in mule deer, white-tailed deer, black-tailed deer, and

[3] Nebraska State Emergency Operations Plan
[4] http://www.nda.nebraska.gov/animal/disease_reporting.html
[5] http://www.nda.nebraska.gov/animal/year_to_date.html

elk populations in the state's panhandle region beginning in 1998. Symptoms of the disease include weight loss, as well as incessant drinking and urination. An infected animal often stands listlessly, head down and ears drooping, with saliva dripping from its mouth. Between the years of 1997 and 2006 the Nebraska Game and Parks Commission confirmed 117 positive tests of CWS statewide.[6] The livestock within the state have had no confirmed cases of the disease.

- Vesicular Stomatitis (VS) - In 2005 Nebraska had three horses test positive for VS. VS primarily affects cattle, horses, and swine, causing blisters on lips, tongues, and coronary bands. The blisters enlarge and break, leaving raw tissue that is so painful the animals refuse to eat or drink, and they become lame. Severe weight loss usually follows.[7] In a herd affected by VS, nearly 90% of the animals may show clinical signs and nearly all develop antibodies. The disease is spread through direct contact between animals as well as through biting insects. If not properly handled, VS can be spread to humans and cause acute influenza like symptoms for four to seven days[8]. There have been no new confirmed reports of VS in Nebraska since 2005.

- Epizootic Hemorrhagic Disease (EHD), commonly known as "blue tongue," is an acute, infectious, often fatal viral disease of some wild ruminants. It is characterized by extensive hemorrhaging, has been responsible for significant epizootics in deer in the northern United States and southern Canada. There have been ongoing confirmed reports of periodic outbreaks over the last fifty years in the state's deer population since the disease was first identified in 1955. All documented outbreaks of EHD have occurred during the late summer or early fall. Deer in the state's panhandle appear to be the most at risk when compared to other areas of the state. There have been no reports of EHD among the state's livestock; only wild game has been affected. The economic impact from such outbreaks could negatively impact businesses and communities that are reliant upon hunting for the majority of their sales or income.[9]

- Bovine Tuberculosis[10]- In the later stages of the disease it is easier to see the clinical symptoms of Bovine Tuberculosis.

[6] http://www.cwd-info.org/index.php/fuseaction/news.detail/ID/330c47d2c8f7530a1163261633cadd77
[7] http://www.thehorse.com/viewarticle.aspx?ID=4877
[8] http://www.agr.state.ne.us/pub/bai/vs_brochure.htm
[9] http://www.michigan.gov/NDNR/0,1607,7-153-10370_12150_12220-26647--,00.html
[10] http://www.aphis.usda.gov/newsroom/hot_issues/bovine_tuberculosis/faq_bovine_tb.shtml

According to the USDA, symptoms include: emaciation, lethargy, weakness, anorexia, low-grade fever, and pneumonia with a chronic, moist cough. Enlarged lymph nodes may also be present. The disease gets into cattle herds by infected cattle, cervids, swine, and humans. Bovine Tuberculosis can be spread through the respiration of bacteria aerosols, contaminated feed or watering sites, or by drinking milk that is unpasteurized from infected animals. There is a high risk of contamination in enclosed areas such as barns that have poor ventilation. Bovine Tuberculosis primarily affects cattle but can be passed easily to any warm-blooded animal. In certain, but rare, conditions the disease can effect humans. In June of 2009, two beef cows in Rock County tested positive for the disease. In response to the findings, Nebraska Department of Agriculture staff coordinated with federal animal disease officials to properly respond. The NDA with the help of federal officials tested 21,764 head of cattle in association with the investigation. As the NDA traced cattle movement into and out of the affected herd, 61 herds of cattle were quarantined in 20 of Nebraska's 93 counties. By April 7, 2010 all but three of those herds were released from quarantine. The herd that was initially affected was also released from quarantine and endured tests that are part of the USDA federal test and remove strategy. A final test will be conducted in April 2011.[11]

2. Probability of Future Events and Jurisdictional Vulnerability

a. The vulnerable portions of the state depend on the types of agricultural hazards. For livestock, how the disease spreads determines the number of vulnerable jurisdictions. For diseases spread by airborne spores, any livestock surrounding the infected area or downwind from the infected area becomes vulnerable. For other diseases acquired by feeding or direct contact, only the livestock immediately surrounding the infected animal becomes vulnerable.

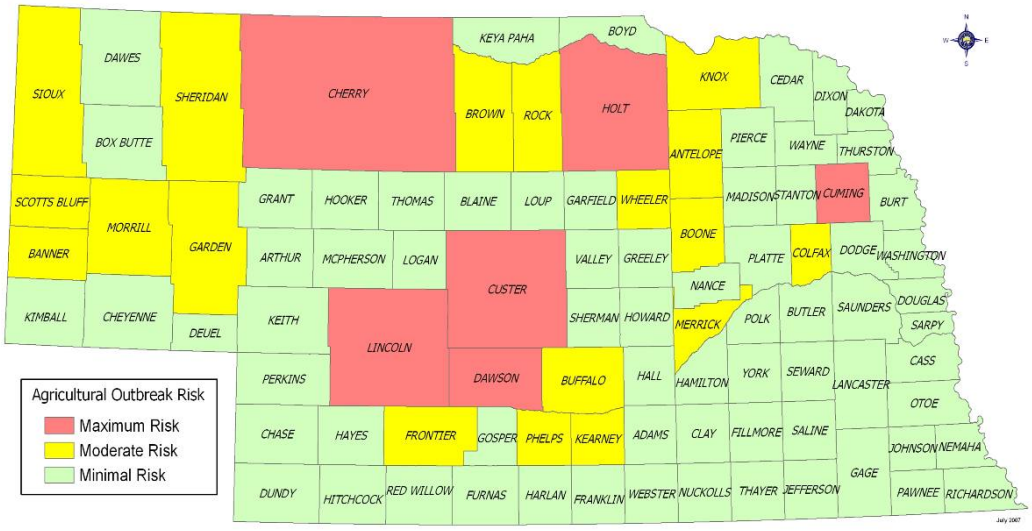
b. In 2004-2005 an agricultural consulting firm based in Merriam, Kansas, SES Inc., was hired to conduct agriculture vulnerability assessments for eleven states, Illinois, Iowa, Kansas, Kentucky, Minnesota, Missouri, Nebraska, Ohio, Oklahoma, South Dakota and Wisconsin. The firm also assisted each state with the drafting of an Agriculture and Food Defense Emergency Response Plan. These planning efforts led to the development of the "Nebraska Department of Agriculture's Monograph No. 002," addressing catastrophic mortality disposal for livestock during a contagious animal disease event.

[11] http://www.agr.state.ne.us/newsrel/april2010/director_tb_update.htm

c. The Department of Agriculture researched the vulnerabilities of the state to agricultural hazards and created the Livestock Emergency Disease Response System (LEDRS). One of the components of Nebraska emergency operations is the LEDRS Veterinary Corps. The system is comprised of a group of volunteer veterinarians who monitor the status of agricultural diseases across the state. Members agree to: increase training and education as needed; participate in exercises and meetings, enhance technology inventory where required, serve as a liaison between the community they serve and emergency response efforts by the government and respond to an emergency when commissioned and available.[12] They received additional training to recognize and respond to agricultural outbreaks. LEDRS has hosted several United States Department of Agriculture (USDA) training sessions focusing on crop and animal disease prevention and emergency response. Since 2002, LEDRS certification training has been provided annually over the past five years at the group's conference in Kearney, Nebraska. LEDRS assets include a LEDRS trailer containing personal protective equipment, decontamination supplies, etc. It is capable of being deployed anywhere in the state.

d. Data from the state-wide annual livestock census shows where the greatest numbers of livestock are located, thereby pinpointing geographic vulnerability by county. This information is of particular importance in the event of artificially induced diseases. Figure 3.2 below is a map showing counties with the highest concentrations of livestock. The counties most at risk include Cherry, Holt, Cuming, Lincoln, Custer, and Dawson.

Figure 3.2: Artificially Induced Agricultural Animal Disease Vulnerability



[12] NDA Bureau of Animal Industry- http://www.agr.ne.gov/division/bai/ledrs.htm

3. Vulnerable State Facilities and Potential Dollar Losses

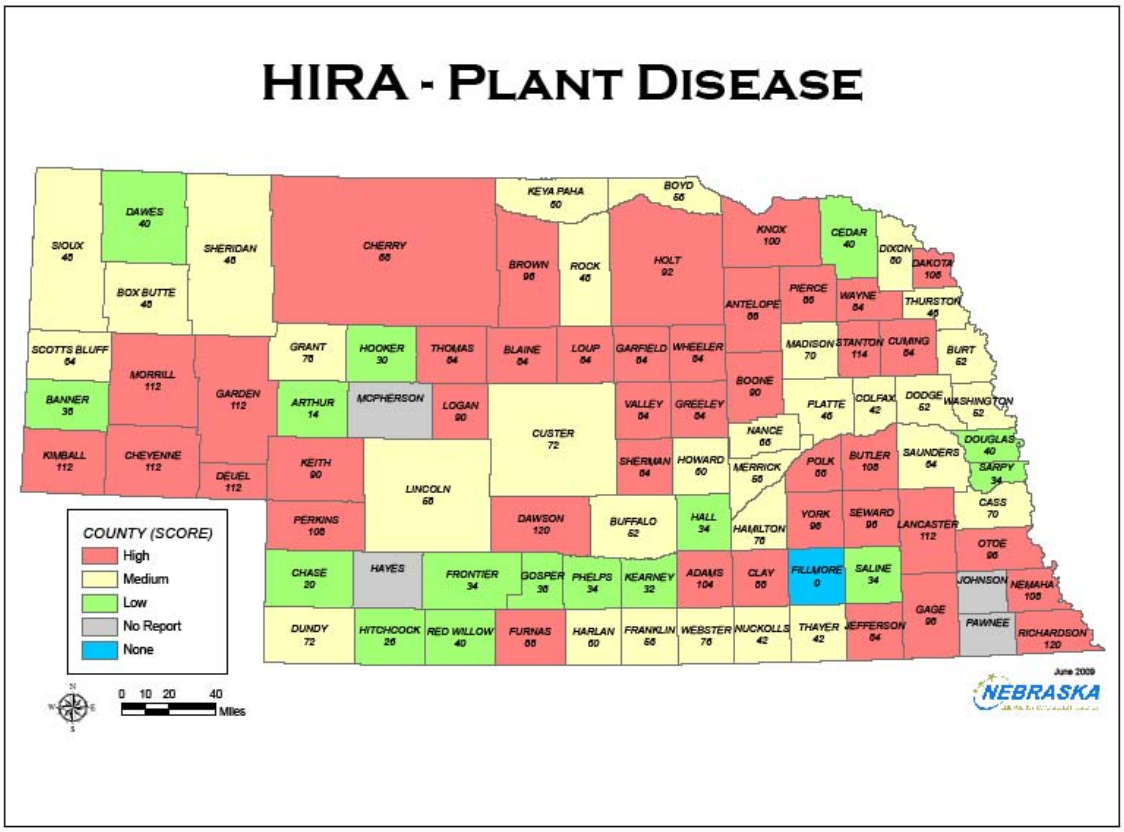
a. Although this hazard does not directly affect state facilities, it seriously affects the economy of the state. Agricultural outbreaks would also seriously affect the food sources of the state, nation, and the world. The information in table 3.3 was provided by the USDA, and provides some background data upon which to base potential dollar loss estimates.

Table 3.3: Farm Income and Value Added Data[13]

	Nebraska		
		2011	2012
	Number of farms	46,800	46,700
		(Thousands $)	
	Final crop output	12,074,369	11,423,919
+	Final animal output	10,352,560	11,571,803
+	Services and forestry	1,450,988	2,586,286
=	Final agricultural sector output	23,877,917	25,582,008
-	Intermediate consumption outlays	12,726,716	15,412,089
+	Net government transactions	-358,748.3	-329,745.2
=	Gross value added	10,792,452	9,840,174
-	Capital consumption	947,432	1,011,478
=	Net value added	9,845,020	8,828,696
-	Factor payments	2,425,639	2,876,466
	Employee compensation (total hired labor)	545,567	557,967
	Net rent received by non-operator landlords	1,093,979	1,531,313
	Real estate and non-real estate interest	738,083	727,676
=	**Net farm income**	7,419,381	5,952,230

b. Although table 3.3 above offers insight, insufficient data is available at the state level to estimate potential damages in the event of an animal disease outbreak. It should be noted that access to some of this data may be limited. The Division Director of the Agriculture Laboratories with the State of Nebraska Department of Agriculture, stated that any data deemed critical or classified will not be made available for security reasons.

[13] http://www.ers.usda.gov/StateFacts/NE.htm



Hazard:	Plant Disease
Impact On:	
Public: Housing, Causalities, Fatalities, Work, Food, Water	Low impact on the population in general until or unless the disease becomes long term then the impacts will be mostly economic.
Responders: Fire, Police, Medical, Public Works	No impact
Continuity of Operations	No impact
Property: Destroyed, Major, Isolated	No impact
Infrastructure: Electricity, water, roads, bridges	No impact
Environment	No impact

Hazard: / Impact On:	Plant Disease
Economic Conditions:	If the disease is invasive and long term there will be severe impacts on the local and statewide economies. Although property may not be destroyed, it may be unavailable for tillage for some time, potentially quite a long time. As with animals a large % of the State's economy is dependent on agriculture. Local rural economy depends on the income and purchasing power of farmers and ranchers.
Public Confidence in the Governance	Depends on how effectively and efficiently governmental agencies respond to the situation.

C. Agricultural Incidents – Plants/Crops

1. Location and Previous Occurrences

a. Nebraska cropland is vulnerable to disease and other agricultural pests. An estimated 1.29 billion bushels of corn, 207 million bushels of soybeans, 53 million bushels of winter wheat, and 1.08 million bushels of great northern beans are grown annually in the state, according to USDA figures. Nebraska's total agricultural output reached $21.81 million in 2011, with crops contributing $11.75 million to that total. A plant disease outbreak or a pest infestation could negatively impact crop production and agriculturally dependent businesses. An extreme outbreak or infestation could potentially result in millions of dollars in production losses. The cascading net negative economic effects could result in wide-spread business failures, reduction of tax revenues, harm to other state economies, and diminished capability for this country to compete in the global market.

b. Jon Stack, an extension plant pathologist with the University of Nebraska Institute of Agriculture and Natural Resources made the following statement.

Disease is a natural part of every crop production system. In any given year, the question becomes which diseases will occur in Nebraska's field crops, and at what incidence and severity. Many factors influence disease development in plants, including hybrid/variety genetics, plant growth stage at the time of infection, weather (e.g., temperature, rain, wind, hail, etc.), single versus mixed infections, and genetics of the pathogen populations."[14] *The two elements of coordination and communication are essential when plant diseases or pest infestations occur. The United States Department of Agriculture/ Animal Plant Health Inspection Service, local producers, local government, assessment teams, and state government entities must work together to effectively*

[14] http://www.ianrpubs.unl.edu/epublic/pages/publicationD.jsp?publicationId=323

diagnose the various plant hazards to determine if immediate crop quarantine and destruction is required. [15]

c. Known plant/pest diseases in Nebraska.
Due to uncalculated variables and lack of reporting and data gathering mechanisms, it is not possible to determine the total net losses caused by specific pests and other plant diseases within the state in a given year. In 2012 there were 46,700 farms in Nebraska. Each farm had its own history of damages, level of severity, duration of each event, and dates of occurrence for each agricultural disease or pest outbreak. However, below are some common plant and crop diseases in Nebraska, according to information from the University of Nebraska Cooperative Extension in Lincoln, Nebraska.

1) Pests - grasshoppers, Western Bean Cutworm, European Corn Borer, Corn Rootworm, Corn Nematodes, Bean Weevil, Mexican Bean Beatle, Soybean Aphids, and Rootworm Beatles.

2) Corn Diseases – Anthrancnose, Bacterial Stalk Rot, Common Rust, Fusarium Root Rot, Maize Chloriotic Mottle Virus, Southern Rust, Stewart's wilt.

3) Soybean Diseases – Bean Pod Mottle Virus, Soybean Mosaic Virus, Brown Stem Rot, and Phytophthora Root Rot. Soybean Rust was detected in Southeastern Nebraska for the first time in October of 2007.[16]

4) Wheat Diseases – Common Leaf Rust, Wheat Streak Mosaic Virus, Wheat Soil Borne Virus, Tan Spot, Crown and Root Rot, and Barley Yellow Dwarf Mosaic Virus.

5) Dry Bean Diseases – Fusariam Root Rot, Haloblight, Rust, White Mold, Fusariam Wilt, and Bacterial Blight, and Rhizoctonia Root Rot.[17]

2. Probability of Future Events and Jurisdictional Vulnerability

a. Due to data limitations, lack of reporting, and lack of field studies, it is impossible to predict which pests or diseases will impact Nebraska's crops or which crops will be affected during any given year. However, it is safe to say that agricultural pests and diseases will occur at some level in any given growing season. An effective policy mitigating damages due to plant hazards must involve coordinated measures to detect, control, and eradicate plant disease and pest contamination as soon as

[15] The State's Emergency Operations Plan, Emergency Support Function 11 – Agriculture and Natural Resources Annex
[16] http://ianrnews.unl.edu/static/0710051.shtml
[17] http://pdc.unl.edu/

possible within the state. Effective mitigation will involve coordination at the federal, state, and local level.[18]

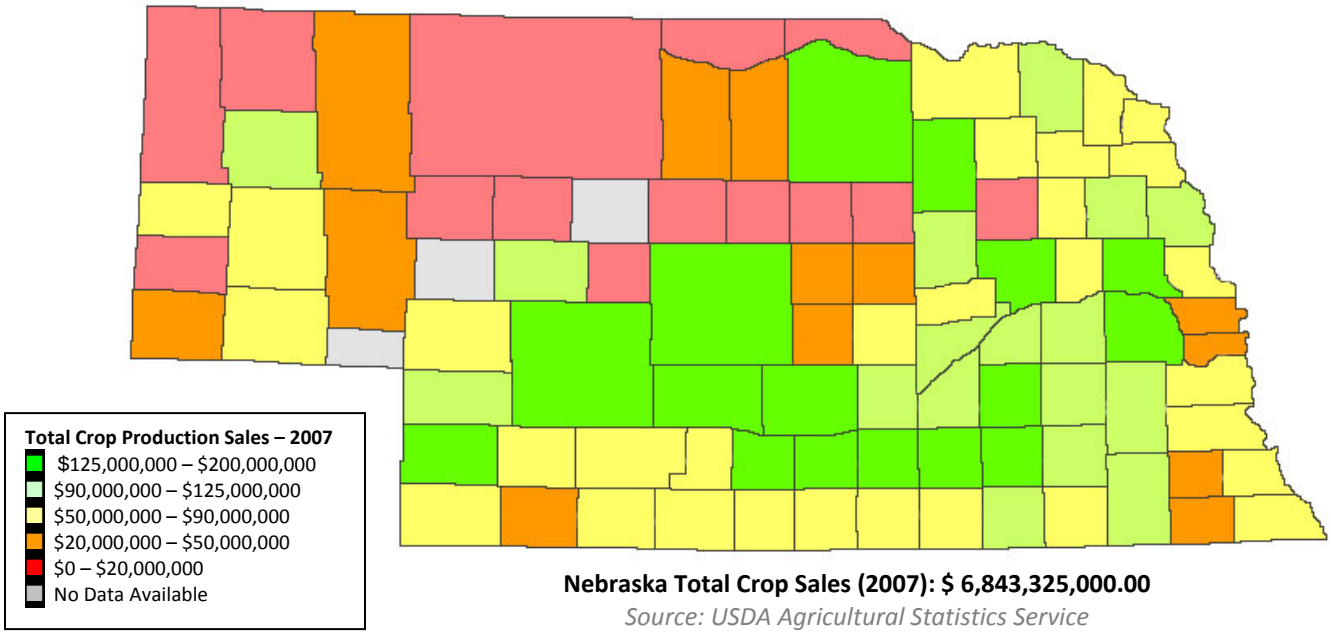
b. The Planning Team chose grain production as a measure of vulnerability to this hazard. It was chosen because more than 85% of Nebraska's non-animal agricultural cash receipts are were for grains, according to the USDA. To minimize the potential economic impact of an epidemic of plant disease or pest infestation, mitigation efforts should concentrate on counties that are primarily grain producers first (annual grain sales of $50,000,000.00 or more), and counties that are minor grain producers second (annual grain sales of $49,999,999.99 or less). Table 3.4 below lists the top ten grain producers in the state, and Figure 3.3 is a geographic depiction of Nebraska grain production by county. This data came from USDA's Agricultural Statistics Service 2007 Census of Agriculture. The USDA compiles these census figures every five years.

Table 3.4: Nebraska Top 10 Counties in Agricultural Product Sales[19]

County	Total Crop Sales ($)
1. Lincoln	$196,778,000.00
2. Custer	$195,716,000.00
3. Holt	$184,957,000.00
4. York	$165,893,000.00
5. Fillmore	$151,911,000.00
6. Dawson	$151,365,000.00
7. Buffalo	$150,954,000.00
8. Antelope	$147,408,000.00
9. Phelps	$144,690,000.00
10. Platte	$142,820,000.00
Total Sales for Nebraska's Top Ten	**$1,632,492,000.00**

[18] The State's Emergency Operations Plan, Emergency Support Function 11 – Agriculture and Natural Resources Annex
[19] USDA – Agricultural Statistics Service 2007

Figure 3.3: Counties' Total Grain Production Sales (in 1000s of US Dollars)



Nebraska Total Crop Sales (2007): $ 6,843,325,000.00

Source: USDA Agricultural Statistics Service

c. The Planning Team's research determined that the following plant/crop diseases and pests are of particular concern for the state of Nebraska.

1) Soy Bean Rust - University of Nebraska Cooperative Extension, USDA Animal Plant Health Inspection Service (APHIS), and Nebraska Department of Agriculture have been conducting studies to monitor and predict occurrence of soy bean rust. The goal is to prevent the widespread establishment in Nebraska and the U.S. The USDA-APHIS advocates the following the four-step process to prevent further spread.

a) Develop surveillance and monitoring networks to provide timely information on the incidence and severity of soybean rust in the U.S., Caribbean basin, and Central America.

b) Provide a Web-based system (USDA Soybean Rust Monitoring and Prediction System) for disseminating information, forecasts, and decision-making criteria to stakeholders.

c) Develop decision-making criteria for fungicide application.

d) Provide predictive modeling of aerial transport of Soy Bean Rust spores from active source regions to soybean growing areas in the U.S.[20]

2) Emerald Ash Borer – This pest is a slender, emerald green beetle that is ½ inch long, and responsible for the destruction of approximately 20 million ash trees in Ohio, Michigan, Indiana, Illinois, and Maryland. The Nebraska Forest Service estimates that 2.2 million of Nebraska's ash trees could become vulnerable to the pest. The replacement of these trees would cost the state approximately 1.5 billion dollars. The key to stopping this pest is education, monitoring, surveillance, containment, and communication.[21]

3. Vulnerable State Facilities and Potential Dollar Losses

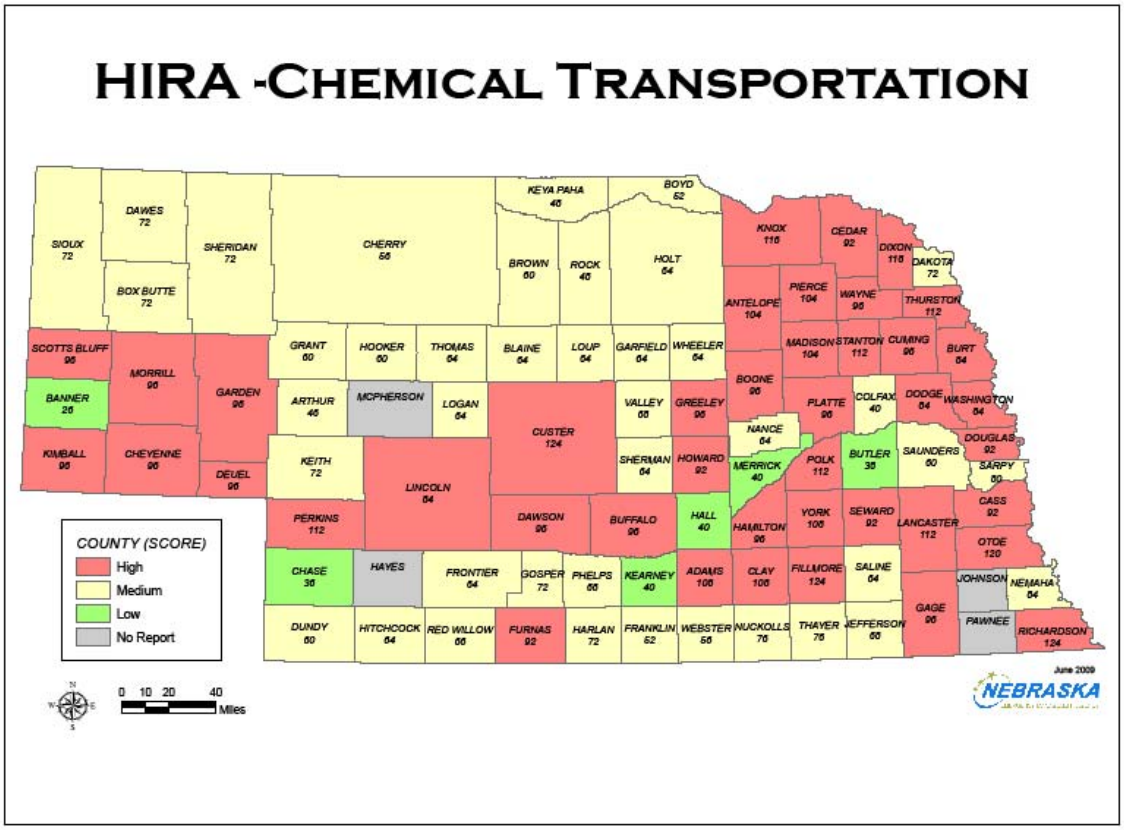
a. Although this hazard does not directly affect state facilities, it seriously affects the economy of the state. Agricultural outbreaks would also seriously affect the food sources of the state, nation, and the world. The information in the following table was provided by the USDA, and provides some background data upon which to base potential dollar loss estimates.

[20] http://www.apsnet.org/online/sbr/pdf/USDASBRCoordFrameworkJan%2031v3.pdf
[21] http://www.journalstar.com/articles/2007/11/26/news/local/doc474a0c4fd1841033039610.txt

Table 3.5: Farm Income and Value Added Data

Nebraska		
	2011	**2012**
Number of farms	46,800	46,700
	(Thousands $)	
Final crop output	12,074,369	11,423,919
+ Final animal output	10,352,560	11,571,803
+ Services and forestry	1,450,988	2,586,286
= Final agricultural sector output	23,877,917	25,582,008
- Intermediate consumption outlays	12,726,716	15,412,089
+ Net government transactions	-358,748.3	-329,745.2
= Gross value added	10,792,452	9,840,174
- Capital consumption	947,432	1,011,478
= Net value added	9,845,020	8,828,696
- Factor payments	2,425,639	2,876,466
Employee compensation (total hired labor)	545,567	557,967
Net rent received by non-operator landlords	1,093,979	1,531,313
Real estate and non-real estate interest	738,083	727,676
= Net farm income	7,419,381	5,952,230

b. Although table 3.5 above offers insight, insufficient data is available at the state level to estimate potential damages in the event of a crop disease outbreak. When asked for this type of data during the 2011 update, staff from the USDA replied that they no longer release this information, it is kept as classified information. It should be noted that access to some of this data may be limited. The Division Director of the Agriculture Laboratories with the State of Nebraska Department of Agriculture stated that any data deemed critical or classified will not be made available for security reasons.



Hazard: / Impact On:	Chemical Transportation
Public: Housing, Causalities, Fatalities, Work, Food, Water	Housing - may be minimal needing decontamination on houses in the plume area depending on the material involved. Causalities/fatalities - very dependent on chemical and plume and on warning time. A history of causalities and fatalities shows limited to those directly involved with the accident. Work - a major accident could cause work stoppage due to evacuation. Food/water - limited impact
Responders: Fire, Police, Medical, Public Works	All responders not trained and equipped to enter a hot zone should be kept in the cold zone. All responders properly equipped and having the appropriate PPE should be monitored during and following their entry into the hot zone and properly decontaminated after exiting.
Continuity of Operations	Governmental Continuity of Operations should not be impacted by a transportation incident unless major governmental offices (I e. courthouse, city/county offices) are severely contamination by the substance released.

Hazard: Impact On:	Chemical Transportation
Property: Destroyed, Major, Isolated	As noted above property in the plume area could be severely contaminated along with contents, depending on the location relative to the accident and the material released. There may be some area isolated due to a release or contamination
Infrastructure: Electricity, water, roads, bridges	Electricity should not be impacted unless a major coordination facility is in the plume area and workers are evacuated. Water could be severely impacted if the chemical is released into or drains into a source that feeds drinking water. Even in this case the dilution factor may, depending on the material released may mitigate the contamination. Roads/Bridges - the chemical release may cause closures during the plume phase and depending on the chemical released may need to be decontaminated.
Environment	Depending on the material released, the medium released into and the nature of the material (liquid, solid, powder, or gas) the impact to the environment will range from negligible to extreme. The clean-up and remediation will need to be over-seen by environmental professional no matter what the material is to ensure proper actions are taken.
Economic Conditions:	The economic conditions will depend on if and how long an evacuation of the area is in place.
Public Confidence in the Governance	Public confidence will be dependence on the perception of whether or not the release could have been avoided by any governmental action either taken or not taken.

D. Chemical Transportation

1. Location and Previous Occurrences

a. Hazardous materials are transported across the state via several means including highways, rail, air, and pipeline. The estimates indicated there are approximately 800,000 hazardous materials shipments every day across the United States. Based on that information there are Federal and State regulations, laws, and statutes to monitor and regulate the movement of these materials.

b. Hazardous materials incidents can strike anywhere in the state. Due to this reality, the Nebraska Emergency Management Agency has set up a system of Memorandum of Understandings with various hazardous materials response fire departments across the state. These MOU's work to ensure the responding departments can operate within the various jurisdictions across the state.

c. Since 2005 there have been a total of 576 hazardous material incidents reported in the state due to transportation. Of these, approximately 5% were serious incidents which are defined by the Pipeline and Hazardous Materials Safety Administration. PHMSA defines "serious incidents" as incidents that involve:

1) A fatality or major injury caused by the release of a hazardous material,

2) The evacuation of 25 or more persons as a result of release of a hazardous material or exposure to fire,

3) A release or exposure to fire which results in the closure of a major transportation artery,

4) The alteration of an aircraft flight plan or operation,

5) The release of radioactive materials from Type B packaging,

6) The release of over 11.9 gallons or 88.2 pounds of a severe marine pollutant, or

7) The release of a bulk quantity (over 119 gallons or 882 pounds) of a hazardous material.

2. Probability of Future Events and Jurisdictional Vulnerability

a. From 2005 through 2013 the total number of hazardous material incidents have dropped significantly after 2008, with a nine year average of 64 incidents per year—as shown in Figure 1. Figure 2 shows the relationship between the three reported transportation types which have had releases. It is clear that the majority of releases have come due to shipments via highways routes.

Figure 1

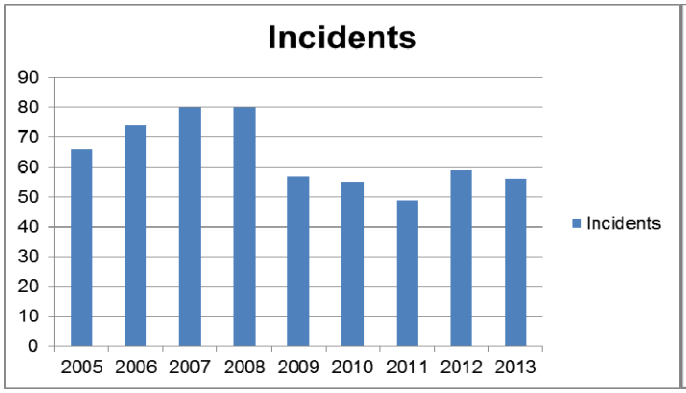
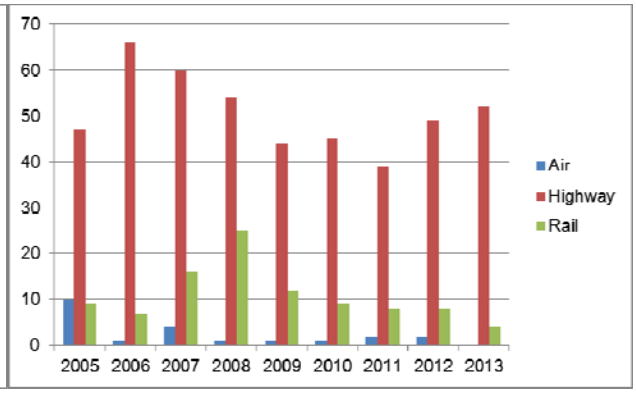


Figure 2



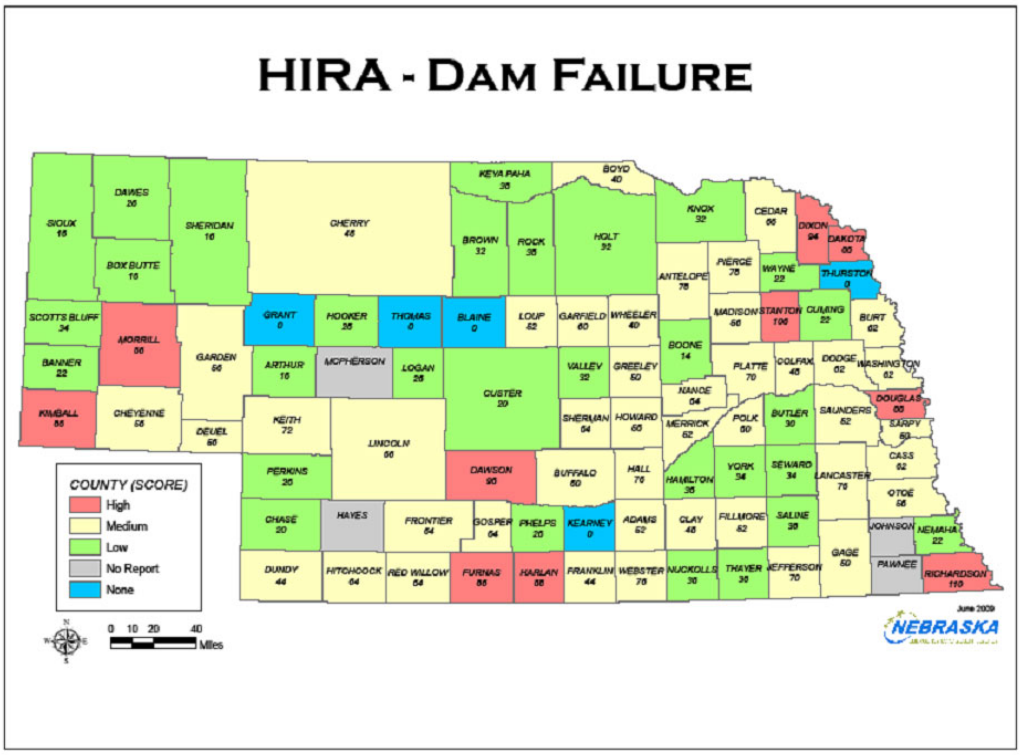
b. The number of serious incidents is only around 5% of all the incidents. Of these, the most serious incidents occurred while the materials are in transit.

c. Pipelines are found across the state transporting various liquids. The locations of these pipelines are not listed on a map in this plan due to the sensitivity of the information. There have been six reported releases from pipelines since 2003 in Nebraska.

d. Due to the unpredictable nature of hazardous materials transportation and spills it is difficult to define additional mitigation measures. Chemical transportation is highly regulated from the containers items are shipped in to the marking of materials to ensure proper response if there is a spill.

e. The Jurisdictions most vulnerable to an incident involving Chemicals in transit are those with major highways including State Highways and I-80, along the major railways particularly the Burlington Northern Santa-Fe and Union Pacific railways. Other vulnerable jurisdictions are those with major pipelines that run underground through or near population centers. From 2004 through October of 2010, there were a total of 456 incidents on Nebraska roadways in which hazardous materials were involved. These are shown in Figure 2.

3. State Owned Buildings at Risk and Potential Dollar Loss
Few if any state owned buildings are near enough to a major highway to be at risk for structural damages. They may be evacuated or have staff shelter in place, depending on the chemical and wind direction.



Hazard:	Dam Failure
Impact On:	
Public: Housing, Casualties & Fatalities, Loss of Income, Shortage of Food,and Water.	Housing - structures within inundation areas could be destroyed depending on the amount of water held by the dam or levee and how far downstream from the dam or levee the structures are. Casualties and fatalities - will be dependent on warning time and how far downstream of the structure they are. People living and/or working in areas with less than 30 minute warning of a complete failure are most at risk. Work - will also be dependent on their location in relationship with the failing structure. Food and water - limited impact
Responders: Fire, Police, Medical, Public Works	Unless the responders live or their facilities are located within inundation areas there should be no impact. During the response care needs to be given to the possibility of pollution, disease and potential hazardous materials in the flood waters. Medical - would be dependent on if the facilities are in the inundation areas. Some medical facilities could become quickly overwhelmed with victims if the inundation area includes a large population. In that event, Medical surge plans will be activated.
Continuity of Operations	If major governmental facilities (courthouse, city/county offices) are in the inundation area failure of the structure could cause extreme damage to buildings and contents including electronic and paper records. If the jurisdiction does not have adequate COOP Planning the impact will be very high.

Hazard: Impact On:	Dam Failure
Property: Destroyed, Major, Isolated	Property within the inundation areas can expect impacts from major and destroyed to minor depending on the relationship of the structure to the failure and the amount of water released.
Infrastructure: Electricity, water, roads, bridges	As with property damages, infrastructure can be seriously damaged. Water and waste water systems contaminated, electrical structures damaged, roads and bridges destroyed or isolated. Repairs could be delayed until water levels recede
Environment	The environment in the inundated areas will be severely impacted with contaminates, erosion from the wave front and debris.
Economic Conditions:	In Nebraska economic impacts could be anywhere from catastrophic to none depending on which structures fail and the amount of water the structure holds.
Public Confidence in the Governance	Public confidence will be dependence on the perception of whether or not the failure could have been avoided by any governmental action either taken or not taken.

E. Dam Failure

1. Location and Previous Occurrences

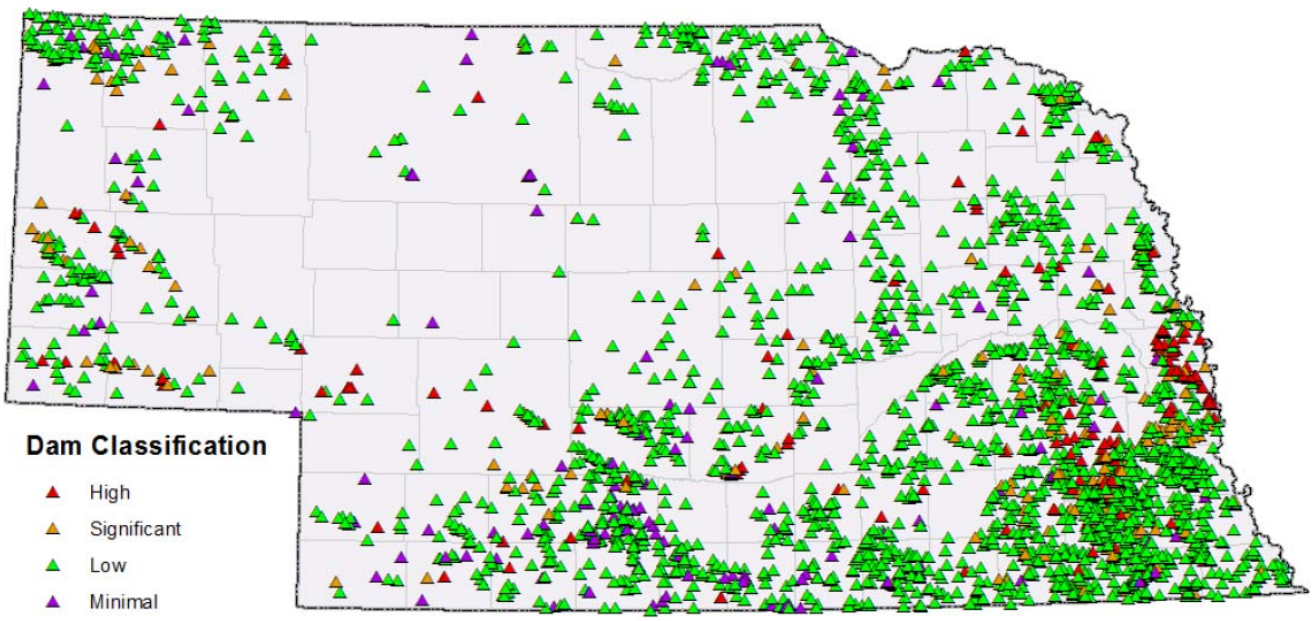
a. Dam failure is the uncontrolled release of impounded water resulting in downstream flooding, affecting both life and property. Flooding, earthquakes, flow blockages, landslides, lack of maintenance, improper operation, poor construction, vandalism, or terrorism can cause dam failures. Dams are constructed for a variety of uses, including flood control, erosion control, water supply impoundment, hydroelectric power generation, and recreation.

b. Dams are classified by the State of Nebraska into three categories based on the potential risk to people and property in the event of breach. The classification of a given dam may change over time because of development downstream from the dam after its construction. Older dams may not have been built to the standards of new classifications. Table 3.6 shows the hazard classifications as defined by the NDNR.

Table 3.6: NDNR Dam Hazard Classification Definitions

High Hazard	Failure expected to result in loss of life and serious damage to residential, industrial, commercial, important public utilities, public buildings, or major transportation corridors.
Significant Hazard	Failure expected to result in damage to important resources, isolated homes, moderately traveled transportation corridors, water supply systems, and other moderate commercial/business uses.
Low Hazard	Failure expected to result in damage to minor resources such as livestock, agricultural land, and lesser used roads. Loss of human life is considered less likely.
Minimal Hazard	Failure expected to result in no economic loss beyond the cost of the structure itself and losses principally limited to the owner's property.

Figure 3.4: Map of Dams in Nebraska (NDNR)



High hazard dams – near urbanized areas with high risk to human life & critical infrastructure
Moderate hazard dams – near important resources, moderate risk to human life & critical infrastructure
Low hazard dams – near agricultural areas with low risk to human life & critical infrastructure

c. In Figure 3.4 above, each colored triangle each represents a dam. As is evident in the map, the majority of the state's dams are located in the southeastern portion of the state near cities or highly productive agricultural areas.

2. Probability of Future Events and Jurisdictional Vulnerability

a. In June of 2010 major/historic flooding caused failure of six dams in different areas of Nebraska. Of the failed dams, five were low hazard dams and one was a significant hazard dam. The dams that failed as a result of flooding include: Ericson Dam, in Wheeler County, Bredthauer

Dam in Valley County, Morgan Dam in Loup County, Gracie Creek Road Dam in Loup County, Taylor-Ord Diversion Dam in Loup County, and the Ord-North Loup Diversion Dam in Valley County. Other dams throughout the state were overtopped but did not fail. Ericson Dam was classified as a significant hazard dam while the other five dams are classified as being low hazard dams. Made clear by the number of dams that were breached or failed during this flooding event, was the need to reassess the states vulnerability to future occurrences. For the 2011 update, Pat Diederich, Dam Safety Chief for NDNR at that time, was consulted on any changes in vulnerability. Pat stated:

"The probability of a high hazard potential dam failing is "very low" due to the high design standards for this class of dam, say 1 chance in 10,000 every year for each dam. These dams must pass the probable maximum flood, which is determined from the probable maximum precipitation that varies from 18.5 inches of rainfall in a twenty-four hour period in the western part of the state to 26.2 inches of rainfall in the extreme southeast corner of the state. The probability of failure for a significant hazard potential dam is somewhat higher because the design flood is approximately half of that for a high hazard potential dam, but I would still say it is quite low, maybe one failure every three to five years. We can expect approximately ten low hazard potential dams to fail every year, because these structures are designed only for the 100-year storm and there are several thousand currently on the inventory. No loss of life is expected for either significant or low hazard potential dams. Rainfall events of the magnitude we experienced last summer and the subsequent dam failures are rare, but not unexpected."

b. The NDNR indicated that as of 2013, the department was monitoring and inspecting a total of 2,825 dams. Of the total number of dams, 136 were high hazard dams, 195 were significant hazard dams, and 2,357 were low hazard, and 137 were minimal hazard dams. Low-hazard dams are located in agricultural areas, and breach results in only minimal property loss. Minimal hazard dams would have no impact or loss beyond the cost of the structure itself and losses to the owner's property.

c. The breakdown of dam ownership in Nebraska is as follows:

1) Federal - 33 dams (Bureau of Reclamation, Army Corps of Engineers, U.S. Forest Service)

2) State - 34 dams (Game & Parks Commission, Board of Education)

3) Public Utility - 35 dams (Nebraska Public Power District, Central Nebraska Public Power District, and Loup River Public Power District)

4) Local Government - 1,063 dams (Counties, Cities, Villages, other Public Power Districts)

5) Private Dams - 1,660

d. Nebraska's Dam Inventory can be found on the NDNR website at - http://NDNRdata.NDNR.ne.gov/Dams/index.aspx

e. Staff of the NDNR reviews engineering drawings for construction of all new "high hazard" dams or rehabilitation of old dams, including livestock waste storage structures created by dams. NDNR staff also reviews emergency preparedness plans required for all dams classified as high hazard. The NDNR maintains an inventory of all dams under NDNR jurisdiction, and maintains a schedule of safety inspections of these dams. High hazard dams are inspected annually, significant hazard dams are inspected every two years, and low hazard dams are inspected every five years. Owners are notified by letter of defects or deficiencies found during field safety inspections with recommended actions or directions for repair. The NDNR has the authority to require owners to correct deficiencies and defects in order that a dam be operated and maintained in a safe condition. All dams are subject to a recertification schedule based on hazard classification.

f. Table 3.7 below lists the top 30 "high hazard" dams in the state based on total population at risk. The highest ranked dam in the state is the Kingsley Dam with an estimated 139,673 persons at risk downstream in the event of failure.[22] Failure of Kingsley dam could impact the communities and surrounding areas of North Platte (population 24,733), Lexington (population 10,230), Kearney (population 30,787), Grand Island (population 48,520), Columbus (population 22,111), and Fremont (population 26,397). The Kingsley Dam is 3 ½ miles long, controls the flow of the North Platte River, and is located in Western Nebraska 10 miles North of Ogallala. The dam forms the western edge of Lake McConaughy, which covers nearly 30,000 acres and when full contains nearly two million acre-feet of water. The dam is owned and operated by the Central Nebraska Public Power & Irrigation District. The Planning Team determined, based on a study by an independent contractor, that failure of the Kingsley Dam is highly unlikely.

[22] (January 2013). "State of Nebraska Flood Mitigation Plan" Nebraska Department of Natural Resources.

Table 3.7: Top 30 Ranked High Hazard Dams Based on Population at Risk

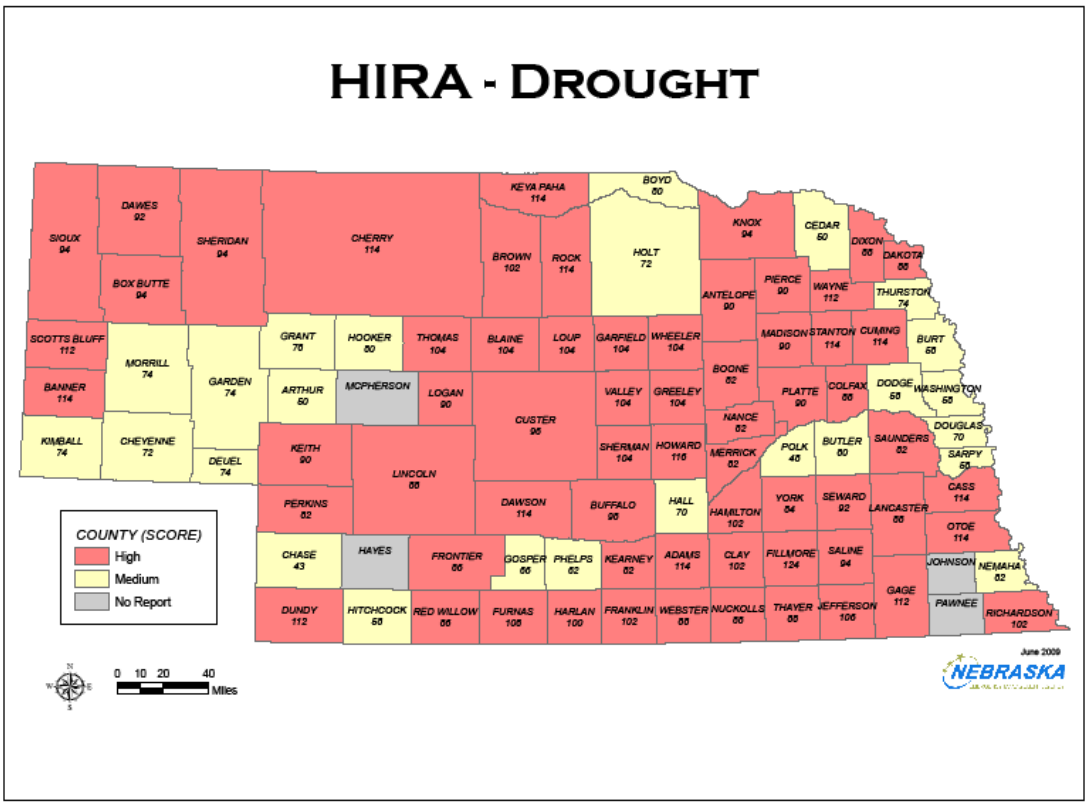
Dam	County/(City)	Stream	Level of Risk	Population At Risk
Kingsley Dam	Keith (Keystone)	North Platte River	High	**139,673**
Oahe/Big Bend/ Ft Randall/Gavins Point Dams (South Dakota/Nebraska)	Dixon (Ponca)	Missouri River	High	**33,357**
Seminoe/Kortes/Pathfinder/Alcova/Gray Reef/Glendo/Guernsey Dams (Wyoming)	Scotts Bluff (Henry)	North Platte River	High	**25,464**
Branched Oak/Site 18	Lancaster (Raymond)	Oak Creek	High	**22,331**
Holmes Lake/Site 17	Lancaster (Lincoln)	Antelope Creek	High	**16,703**
Pawnee/Site 14	Lancaster (Emerald)	N BR Middle Creek	High	**16,450**
Conestoga/Site 12	Lancaster (Lincoln)	Holmes Creek	High	**14,382**
Bluestem/Site 4	Lancaster (Sprague)	Olive BR Salt Creek	High	**12,995**
Wagon Train/Site 8	Lancaster (Hickman)	Hickman BR Salt Crk	High	**10,476**
Twin Lake/ Site 13	Seward (Lincoln)	S BR Middle Creek	High	**10,126**
Gavins Point Dam (alone)	Cedar(Ponca)	Missouri River	HIgh	**9,751**
Stage Coach/Site 9	Lancaster (Hickman)	Hickman BR Salt Crk	High	**8,217**
Olive Creek/Site 2	Lancaster (Sprague)	Olive Creek	High	**8,142**
Yankee Hill/Site 10	Lancaster (Lincoln)	Cardwell BR Salt Crk	High	**6,090**
Gray Rocks Dam (Wyoming)	Scotts Bluff (Henry)	Laramie/North Platte	High	**4,991**
Bennington Lake Dam	Douglas (Bennington)	TR-Big Papio Creek	High	**4,967**
Papio/Zorinsky Lake	Douglas (Omaha)	Box Elder Creek	High	**4,237**
L Alice Lower Dam (No 1 ½)	Scotts Bluff (Scottsbluff)	Interstate Canal	High	**3,407**
Trenton Dam	Hitchcock (Trenton)	Republican River	High	**3,388**
Skyview Lake Dam	Madison (Norfolk)	TR Elkhorn River	High	**2,999**
Papio Site 20/ Wehrspann Creek Lake	Sarpy (Omaha)	TR-S Papio Creek	High	**2,453**
Red Willow Dam	Frontier (Indianola)	Red Willow Creek	High	**2,371**
L Alice Upper Dam (No 1)	Scotts Bluff (Scottsbluff)	Interstate Canal	High	**2,242**
Medicine Creek Dam	Frontier (Cambridge)	Medicine Creek	High	**1,951**
Papio #11 Cunningham	Douglas (Omaha)	Little Papio Creek	High	**1,777**
Candlewood Dam	Douglas (Omaha)	TR- Big Papio Creek	High	**1,700**
Papio #16/ Standing Bear	Douglas (Omaha)	TR – Papio Creek	High	**1,686**
Enders Dam	Chase (Wauneta)	Frenchman Creek	High	**1,608**
Willow Creek Dam	Pierce (Pierce)	Willow Creek	High	**1,565**
Maloney Dam	Lincoln (North Platte)	Sutherland Canal	High	**1,361**
			Total Persons at Risk	**376,860**

g. The three counties with the highest number of “high hazard” dams in Table 3.7 are Lancaster County with 9 dams and 115,786 individuals in the inundation area, Douglas County with 5 dams and 14,367 individuals in the inundation area, and Frontier County with 2 dams and 4,322 individuals in the inundation area. Lancaster and Douglas Counties are both urban counties with a combined population of 816,672 or roughly 44% of the state’s total population. All of the dams listed in Table 3.7 have been inspected within the last five years by NDNR and were without major problems.

3. Vulnerable State Facilities and Potential Dollar Losses

a. Due to NDNR policy and public safety concerns, NDNR will not disseminate dam breach inundation maps for use in local or state hazard mitigations plans. The NDNR will consider special requests for this information on a case-by-case basis. Any information released must be viewed at the NDNR offices. Therefore, neither jurisdiction-specific inundation data nor maps will be included in the 2014 Plan Update.

b. NEMA and the Nebraska State Patrol are participating in the National Infrastructure Protection Program (NIPP). As part of the NIPP program, NEMA and the State Patrol have begun to identify state thresholds for all of the state's 17 Critical Infrastructure/Key Resource sectors (CI/KR) (including critical state facilities and dams) by meeting with sector-specific agency working groups. Dam thresholds are in categories of acres of land irrigated per system, economic impact caused by a total breach, and expected loss of life. The next step in the NIPP program will involve GIS mapping of all 17 CI/KR sectors on various map layers to determine sector-specific inter-relationships. It is estimated that the process will take three to five years to complete. By using these thresholds, state agencies will eventually be able to prioritize dams based on the criteria of location, extent, intensity, and probability without revealing a map or specific information concerning the actual inundation area. However, specific information is not likely to be available for general publication for security reasons.



Hazard:	Drought
Impact On:	
Public: Housing, Causalities, Fatalities, Work, Food, Water	Housing - no impact Causalities/fatalities could come if the drought is accompanied by severe and lingering heat. Food/water - a result of drought is lower ground water levels that can lead to water supply impacts.
Responders: Fire, Police, Medical, Public Works	Due to dry conditions grasslands, CRP croplands and forested area are fire prone
Continuity of Operations	No impact on COOP

Hazard: Impact On:	Drought
Property: Destroyed, Major, Isolated	Property may not be physically destroyed but rural home water wells may go dry
Infrastructure: Electricity, water, roads, bridges	Water systems may be strained by low levels of ground water
Environment	Animals are impacted by loss of food and nesting when grasses die. Streams, creeks, and river levels can lower to the point of fish kills and loss of habitat for water fowl.
Economic Conditions:	Loss of crops, hay and animals due to high feed costs can make a large impact on local and the state's economy
Public Confidence in the Governance	Depends on the efficiency of government to handle the condition

F. Drought

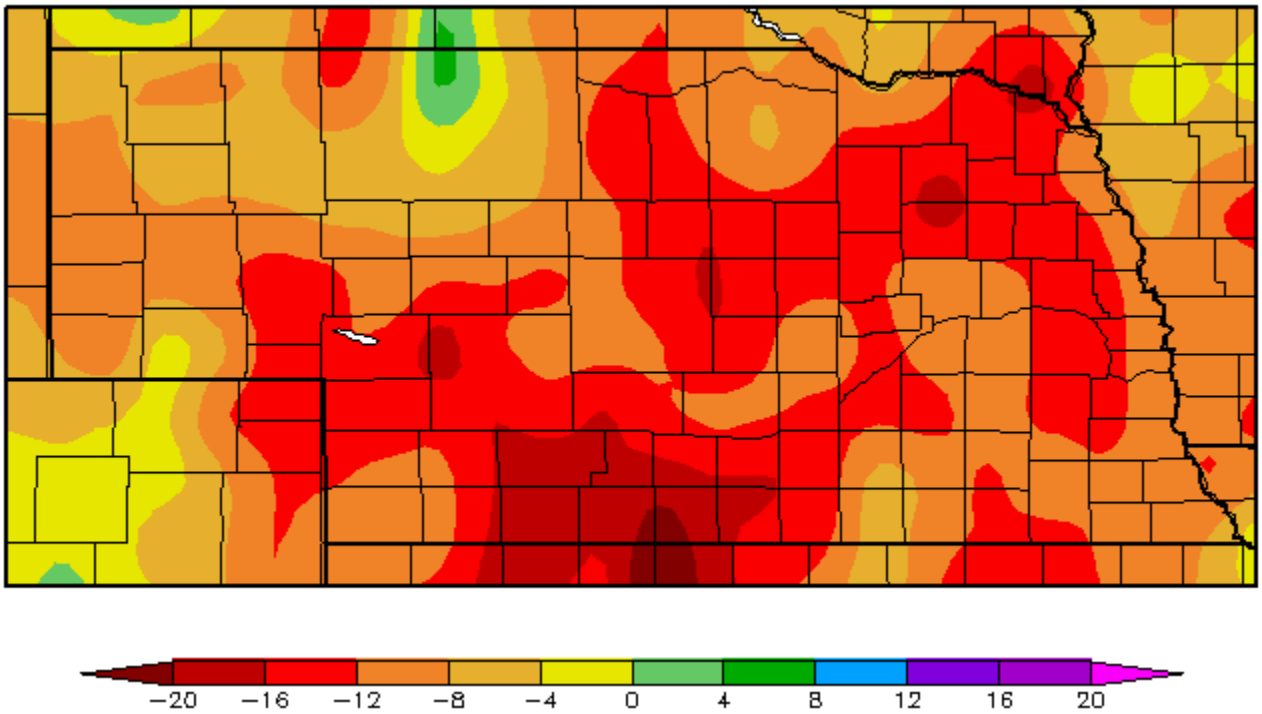
1. Location and Previous Occurrences

a. Drought differs from other natural hazards in several ways. Drought is a slow-onset phenomenon and its impacts are largely non-structural. These factors make early detection or warning of drought conditions more difficult than the detection of quick-onset natural hazards that result in more visible, structural impacts. Drought normally affects more people than other natural hazards, and its impact spreads over a larger geographical area. This makes it more difficult to assess impacts and to provide assistance to drought-stricken areas.

b. Droughts are a part of Nebraska's history, with some of the most severe droughts occurring in the late 1800's, the 1930's and 1954-55. Although drought can occur in any area of the state, current conditions are recorded by drought monitors at the University of Nebraska. Portions of Nebraska are currently experiencing moderate drought. However, drought conditions have seen some improvement over recent years.[23] As seen in Figure 3.5 below, departures from normal precipitation rates improved during 2010.[24] In Figure 3.5 below, the map shows departures from normal rainfall in from January 31, 2012 to January 31, 2014.

[23] http://drought.unl.edu/dm
[24] map data from http://hprcc.unl.edu/

Figure 3.5: Departure from Normal Precipitation, January 31, 2012 to January 31, 2014



c. Table 3.8 below shows the areas in Nebraska hardest hit by rainfall deficits in previous years. Numbers in red indicate a deficit or below normal amount of rainfall. The locations of the 12 communities listed are dispersed throughout the state.

Table 3.8: Nebraska Rainfall Statistics for January 1, 1999 – December 31, 2013[25]

January 1, 1999 – December 31, 2013

All red numbers indicate a deficit or below normal amount

City	Total	Normal	Departure	Percent of Normal
Broken Bow	330.15	354.3	-24.15	93.18%
Grand Island	373.36	399.9	-26.54	93.36%
Harrison	244.06	241.5	2.56	101.06%
Hastings	392.19	406.65	-14.46	96.44%
Kearney	372.91	327.3	45.61	113.94%
Lincoln	410.39	434.25	-23.86	94.51%
McCook	303.33	337.95	-34.62	89.76%
Norfolk	378.39	411.15	-32.76	92.03%
North Platte	304.21	303.45	0.76	100.25%
Omaha	448.87	488.4	-39.53	91.91%
Scotts Bluff	204.39	236.85	-32.46	86.30%
Valentine	286.12	314.4	-28.28	91.01%

[25] http://www.nws.noaa.gov/climate/xmacis.php?wfo=oax

d. Drought impacts the state's economy directly and also results in social and environmental impacts. Drought causes losses in crop yields and quality, insect infestation, disease and wildlife damage, and damage to grazing lands. Irrigated land does not produce as much during drought conditions, while production costs increase. Non-irrigated cropland will produce much less in a drought. The profit margins are thus reduced significantly.

e. Livestock producers suffer reduced productivity from rangeland during periods of drought. Milk production is reduced. Water for livestock is less plentiful, while feed and transportation costs are increased. In severe drought there is higher livestock mortality and land prices may be reduced. Industries dependent on agriculture may suffer in affected regions. Financial institutions will be strained in their effort to assist families and businesses. The rate of unemployment in the affected agricultural areas will rise.

f. The Climate Assessment Response Committee (CARC), described in more detail in on page 2 of Section 2 of the 2011 Plan Update, actively tracks drought conditions in Nebraska. In 1998 CARC revised the drought mitigation plan written in 1986. This plan was again revised in 2000 when the governor appointed a Drought Management Team. The Team reviewed measures to relieve drought impact, including roadside haying, the Rural Mental Health Hotline, measures to aid stressed municipal water systems, writing and dissemination of drought contingency plans for local governments, and water conservation measures to all municipalities. The Team has continued to meet as called by the governor during periods of drought. Future Nebraska Hazard Mitigation Plan updates will include more detailed information concerning the state's drought mitigation plan and its further development and amendment.

g. Since 2009, the National Climatic Data Center (NCDC) website has recorded more than 500 drought events statewide in Nebraska. The NCDC is part of the U.S. Department of Commerce, and is the world's largest active archive of weather data. The NCDC receives data from the National Weather Service (NWS). The NWS receives information from a variety of sources, which include but are not limited to: county, state and federal emergency management officials, local law enforcement officials, "Skywarn" spotters, NWS damage surveys, newspaper clipping services, the insurance industry and the general public. The NCDC data used in the Nebraska 2014 plan update was part of an official publication of the National Oceanic and Atmospheric Administration (NOAA), and is available on their Website.

Table 3.9: Selected 2012 Drought Events and Damages

Selected Drought Events Reported in Nebraska on July 1, 2012.

Location or County	Date	Type	Death	Injuries	Property Damage	Crop Damage
SHERIDAN (ZONE)	7/1/2012	Drought	0	0	10.000M	1.000M
ROCK (ZONE)	7/1/2012	Drought	0	0	1.000M	1.000M
PERKINS (ZONE)	7/1/2012	Drought	0	0	1.000M	1.000M
MCPHERSON (ZONE)	7/1/2012	Drought	0	0	1.000M	30.00K
LOUP (ZONE)	7/1/2012	Drought	0	0	1.000M	500.00K
LOGAN (ZONE)	7/1/2012	Drought	0	0	1.000M	1.000M
LINCOLN (ZONE)	7/1/2012	Drought	0	0	20.000M	10.000M
KEYA PAHA (ZONE)	7/1/2012	Drought	0	0	1.000M	1.000M
KEITH (ZONE)	7/1/2012	Drought	0	0	1.000M	1.000M
HOOKER (ZONE)	7/1/2012	Drought	0	0	1.000M	10.00K
HOLT (ZONE)	7/1/2012	Drought	0	0	50.000M	10.000M
HAYES (ZONE)	7/1/2012	Drought	0	0	1.000M	1.000M
GRANT (ZONE)	7/1/2012	Drought	0	0	1.000M	20.00K
GARFIELD (ZONE)	7/1/2012	Drought	0	0	1.000M	500.00K
GARDEN (ZONE)	7/1/2012	Drought	0	0	10.000M	1.000M
FRONTIER (ZONE)	7/1/2012	Drought	0	0	1.000M	500.00K
EASTERN CHERRY (ZONE)	7/1/2012	Drought	0	0	10.000M	500.00K
DEUEL (ZONE)	7/1/2012	Drought	0	0	50.00K	1.000M
CUSTER (ZONE)	7/1/2012	Drought	0	0	30.000M	500.00K
CHASE (ZONE)	7/1/2012	Drought	0	0	10.000M	500.00K
BROWN (ZONE)	7/1/2012	Drought	0	0	30.000M	10.000M
BOYD (ZONE)	7/1/2012	Drought	0	0	30.000M	20.000M
BLAINE (ZONE)	7/1/2012	Drought	0	0	1.000M	500.00K
TOTALS:					**$213.05 million**	**$62.56 million**

h. The most recent drought in Nebraska, in 2012, affected 86 of the 93 counties throughout Nebraska. The prolonged drought was classified in the “extreme” to “exceptional” categories during the summer and autumn periods. Crop damage between April 1, 2012 and October 31, 2012 was estimated to be in excess of $196 million. Selected records from that event are above, in table 3.9

i. Associated with drought are weather events such as dust storms. The NCDC Website includes table 3.10 showing incidents recorded in Nebraska.

Table 3.10: Historic Dust Storm Events and Damages

2 DUST STORM & DUST DEVIL event(s) were reported in **Nebraska** between **01/01/2000** and **10/31/2013**.	**Mag**: Magnitude **Dth**: Deaths **Inj**: Injuries **PrD**: Property Damage **CrD**: Crop Damage

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 NEZ065	05/22/2002	08:00 AM	Dust Storm	N/A	2	8	0	0
2 NEZ049	05/05/2004	08:18 PM	Dust Storm	N/A	0	9	65K	0
				TOTALS:	**2**	**17**	**65,000**	**0**

j. An example of the severity of dust storms was in the 2002 event listed above. High winds of up to 50 miles per hour blew dust across interstate 80 just east of the Beaver Crossing interchange west of Lincoln. Visibilities were reduced and caused a ten-vehicle accident that killed two people and injured eight others. The eastbound lanes of I-80 were closed for more than seven hours after the accident.

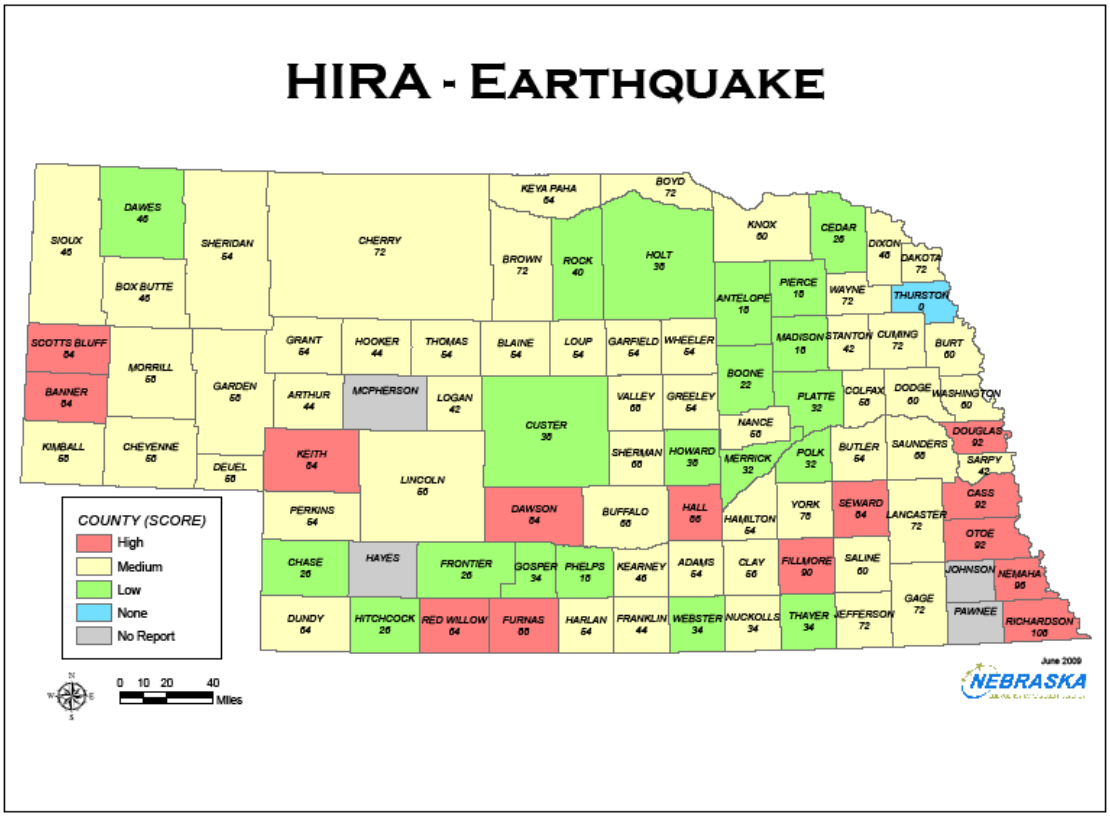
k. Blowing dust in the 2004 event was caused by winds estimated to be approximately 50 miles per hour. The winds were caused by a nearby thunderstorm moving across south-central Nebraska. The thunderstorm produced little rain, but instead produced strong gusting winds that felled trees in Hall, Howard, Merrick, Polk and Adams Counties. Several communities were without power. The wind also stirred dust from freshly plowed fields resulting in near-zero visibility, contributing to the cause of a three-vehicle accident on the Polk/Butler County line resulting in nine injuries.

2. Probability of Future Events and Jurisdictional Vulnerability

Based on the historic occurrence of drought in Nebraska, it can be estimated that drought can occur in Nebraska every ten or twenty years. Although drought cannot be prevented, certain measures can be taken to limit or reduce the effects of drought. The entire state is vulnerable to drought and can be seriously impacted by drought. The most vulnerable portions of the state in terms of economic impact are cropland, pasture land for animals, recreational areas, and businesses that depend on agricultural industries for the bulk of their business. However, all areas of the state can be impacted by drought events.

3. Vulnerable State Facilities and Potential Dollar Losses

There is little or no risk of substantial dollar loss to state buildings due to drought conditions. However, significant dollar losses to the government could incur in the event of a drought-induced economic failure.



Hazard:	Earthquake
Impact On:	
Public: Housing, Causalities, Fatalities, Work, Food, Water	Historically the only damages from earthquakes have been minor, cracked plaster, broken windows, and damage to chimneys. No casualties or fatalities have been recorded.
Responders: Fire, Police, Medical, Public Works	Responders will need to beware of fallen electrical lines and move carefully through any debris
Continuity of Operations	Unless an earthquake of greater magnitude than has historically occurred or is predicted there should be no impact on continuity of operations. Some governmental entities may have damages to the level they need to temporarily move operations according to their COOP Plans.
Property: Destroyed, Major, Isolated	Only minor property damage has occurred or is expected

Hazard: / Impact On:	Earthquake
Infrastructure: Electricity, water, roads, bridges	minor impacts
Environment	little or no impact on the environment
Economic Conditions:	little or no impact on the economy of the State
Public Confidence in the Governance	little or no impact on public confidence

G. Earthquake

1. Location and Previous Occurrences

a. Between 1866 and 1990, 51 earthquakes occurred in Nebraska with intensities of I through VII on the Modified Mercalli scale (explained below in Table 3.11).[26] The strongest occurred in the southeast half of the state. The largest earthquake in Nebraska history occurred on November 15, 1877. The majority of the damages occurred in Columbus, located in Platte County. The courthouse walls were split in nine places and the schoolhouse was damaged. Shocks were felt in North Platte, as well as in neighboring states.[27] A moderately strong earthquake in the mid-1930s did minor damage by shifting foundations by less than inch in three counties.

b. Another major earthquake occurred on March 28, 1964. Damages included cracked roadways in the city of Merriman, steep slope slumping into the Niobrara River, and cracked stucco under residential windows.[28]

Table 3.11: Modified Mercalli Scale Definitions

I. Instrumental	Not felt by many people unless in favorable conditions.
II. Feeble	Felt only by a few people at best, especially on the upper floors of buildings. Delicately suspended objects may swing.
III. Slight	Felt quite noticeably by people indoors, especially on the upper floors of buildings. Many do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration similar to the passing of a truck. Duration estimated.
IV. Moderate	Felt indoors by many, outdoors by few during the day. At night, some

[26] Earthquakes in Nebraska by Raymond R. Burchett, Educational Circular # 4a, Second Edition (expanded) 1990, Conservation and Survey Division, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln.
[27] http://neic.usgs.gov/neis/eq_depot/usa/1877_11_15.html
[28] http://neic.usgs.gov/neis/eq_deopt/usa/1964_03_28_a.html

	awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably. Dishes and windows rattle alarmingly.
V. Rather Strong	Felt by nearly everyone; many awakened. Some dishes and windows broken. Unstable objects overturned. Clocks may stop.
VI. Strong	Felt by all; many frightened and run outdoors, walk unsteadily. Windows, dishes, glassware broken; books off shelves; some heavy furniture moved or overturned; a few instances of fallen plaster. Damage slight.
VII. Very Strong	Difficult to stand; furniture broken; damage negligible in building of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.
VIII. Destructive	Damage slight in specially designed structures; considerable in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture moved.
IX. Ruinous	General panic; damage considerable in specially designed structures, well designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X. Disastrous	Some well built wooden structures destroyed; most masonry and frame structures destroyed with foundation. Rails bent.
XI. Very Disastrous	Few, if any masonry structures remain standing. Bridges destroyed. Rails bent greatly.
XII. Catastrophic	Total damage - Almost everything is destroyed. Lines of sight and level distorted. Objects thrown into the air. The ground moves in waves or ripples. Large amounts of rock may move position.

2. Probability of Future Events and Jurisdictional Vulnerability

   a. As can be seen in the map in Figure 3.6 below, Nebraska has a low probability of strong earthquake occurrence compared to the rest of the United States. However, based on historic events, the state could experience a low-intensity shock every two years.

Figure 3.6.a.: At-Risk Earthquake Areas in the United States

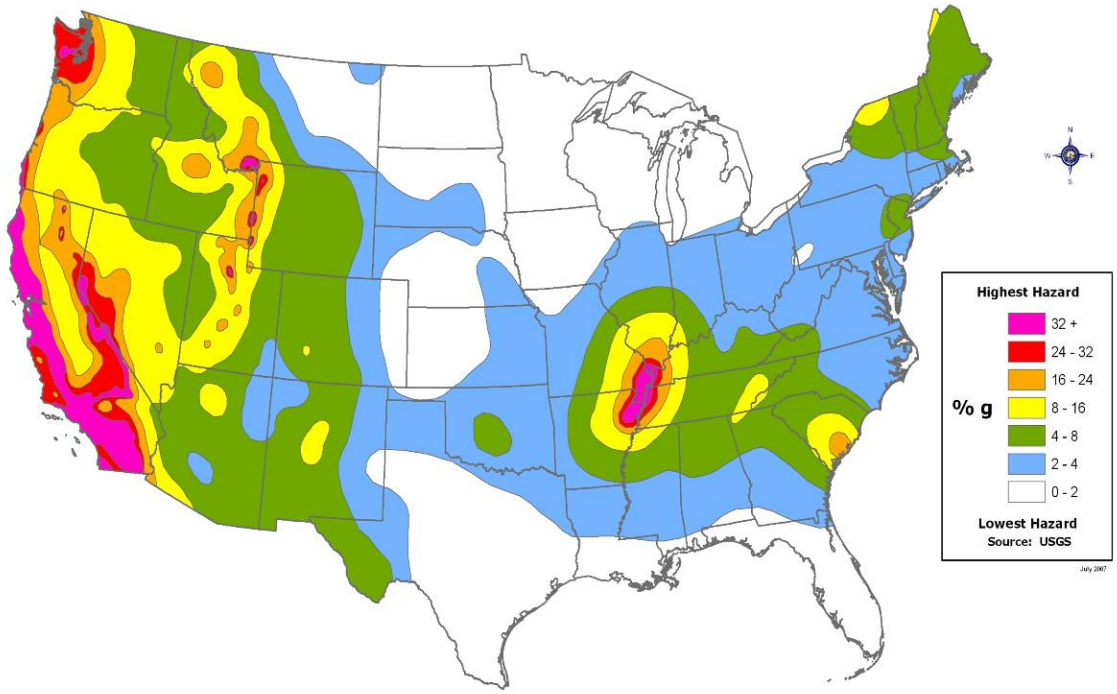
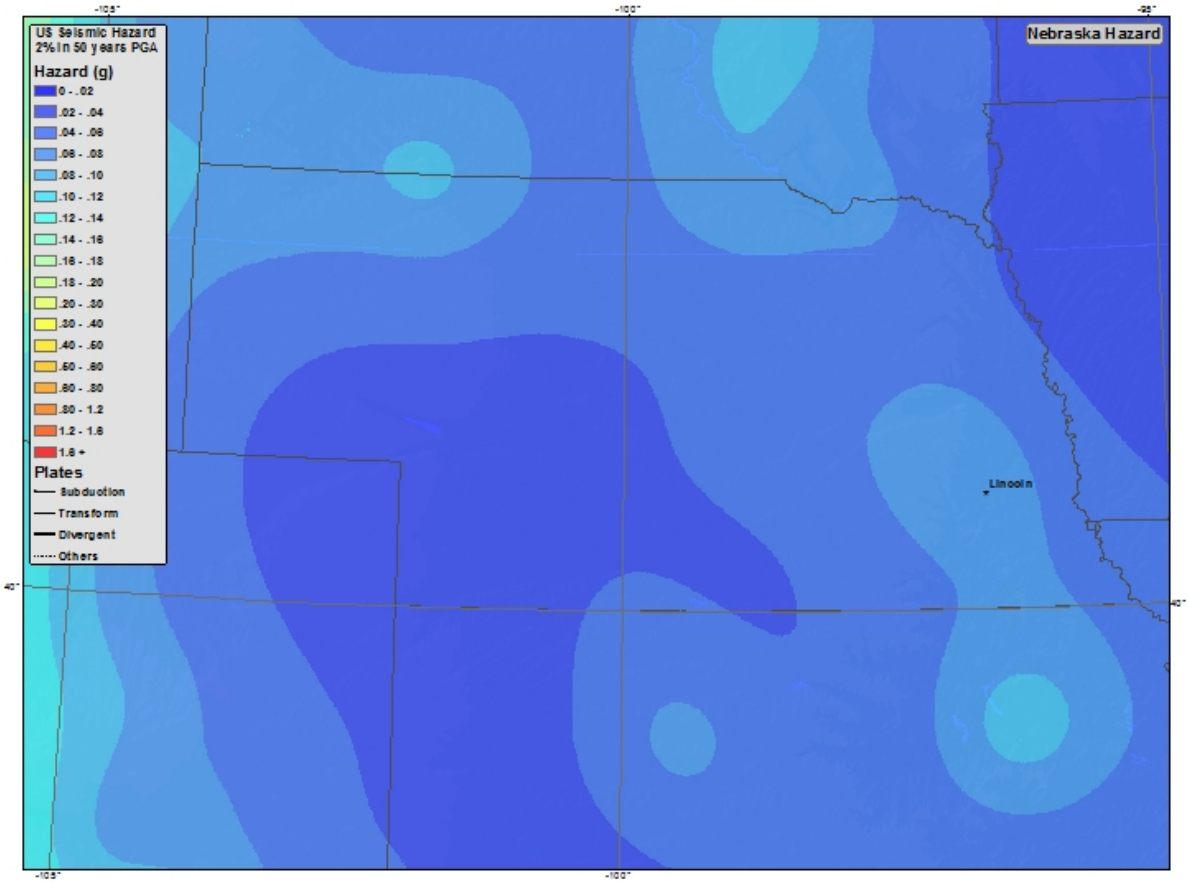


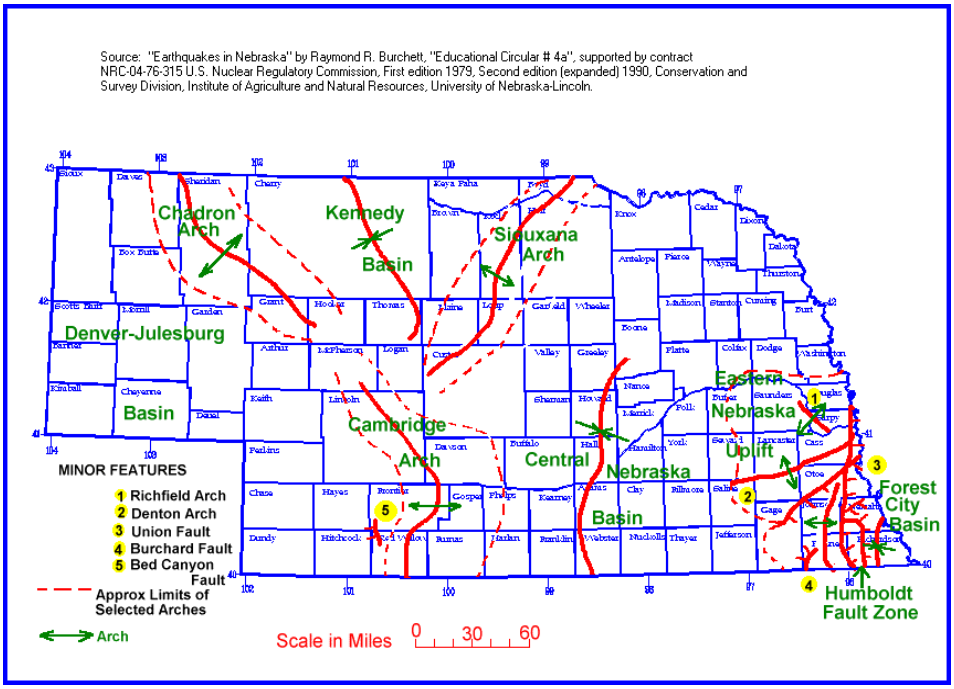
Figure 3.6.b.: Nebraska Seismic Hazard Map



b. The maps above also indicate that earthquakes in Nebraska will cause only minor earth shaking with minimal damage to infrastructure and buildings. The United States Geographical Service (USGS) has rated earthquakes and earth shaking events in Nebraska to be of only "a moderate concern."

c. The map in Figure 3.7.a. below indicates the location of fault lines in Nebraska. Most are located in southeastern Nebraska in the counties of Nemaha, Richardson and Otoe.

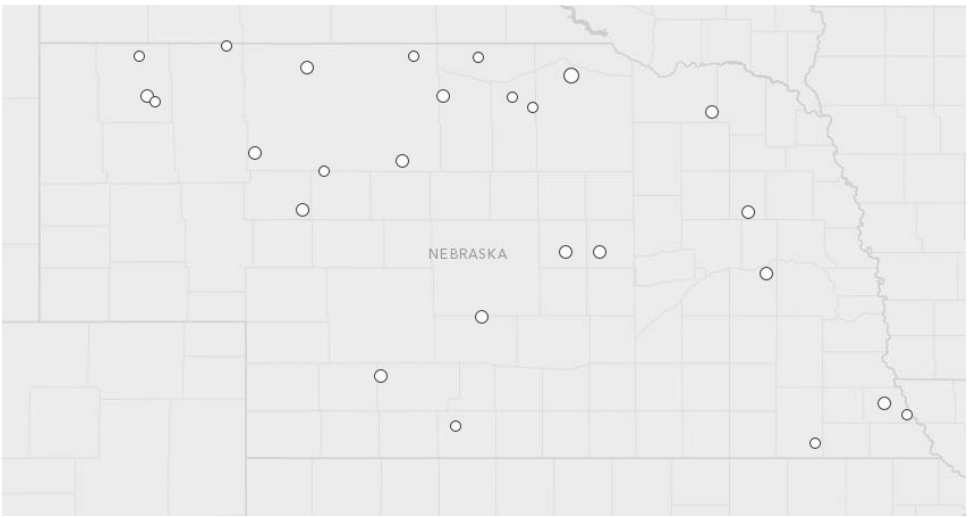
Figure 3.7.a.: Fault Lines in Nebraska



d. Vulnerability to earthquake damage in the southeastern counties is exacerbated by the location of critical utilities such as the Cooper Nuclear Station and a coal-fueled power plant near Nebraska City (Otoe County). Underground pipelines traverse the area. Both the nuclear power plant and coal power plant were designed to withstand projected earthquake loads. However, an earthquake with intensity greater than VII on the Modified Mercalli Scale could pose a threat to underground pipelines.

e. The map in Figure 3.7.b. below indicates the location of earthquakes occurring in Nebraska, with a magnitude of 2.5 or greater, between 1990 and 2013. The size of the indicator corresponds to the strength of the quake, with the weakest being 2.5 and the strongest being 4.3.

Figure 3.7.b. USGS Earthquakes in Nebraska from 1990 through 2013.



f. These maps show that Nebraska's geographical location does not predispose the area to significant earthquake risk. Earthquakes that do occur in Nebraska are often insignificant. In the rare occasions of increased earth movement, only minimal damages to roads, buildings, and other structures occurs.

g. Table 3.12 below indicates, by county, square mileage and population growth during the years 2000-2009 in southeastern Nebraska. Otoe County is the most vulnerable due to the existence of the Humboldt Fault Zone, its greater population density, and the location in the county of important state facilities.

Table 3.12: Population Statistics for Earthquake Risk Areas[29]

County	Square Mileage	Persons per sq. mi. (2010)	2000-2010 Population Growth
Cass	559	44	3.7%
Johnson	377	5	16.2%
Nemaha	409	18	-4.3%
Otoe	616	26	2.2%
Pawnee	433	8	-10.2%
Richardson	553	18	-12.3%
Sarpy	247	640	29.6%
National Average	-	88.6	9.7%

[29] Data is 2009 estimate; http://www.census.gov/

h. Utilities in the above-named counties include one nuclear power plant in Nemaha County, the Cooper Nuclear Station, and one coal-fueled power plant near Nebraska City in Otoe County. Most of the commercial structures in the area date from the late 1800's through the 1940's. Underground pipelines traverse some counties in the area. A moderately strong earthquake in the mid 1930's did minor damage in the area with some minor shifting of foundations.

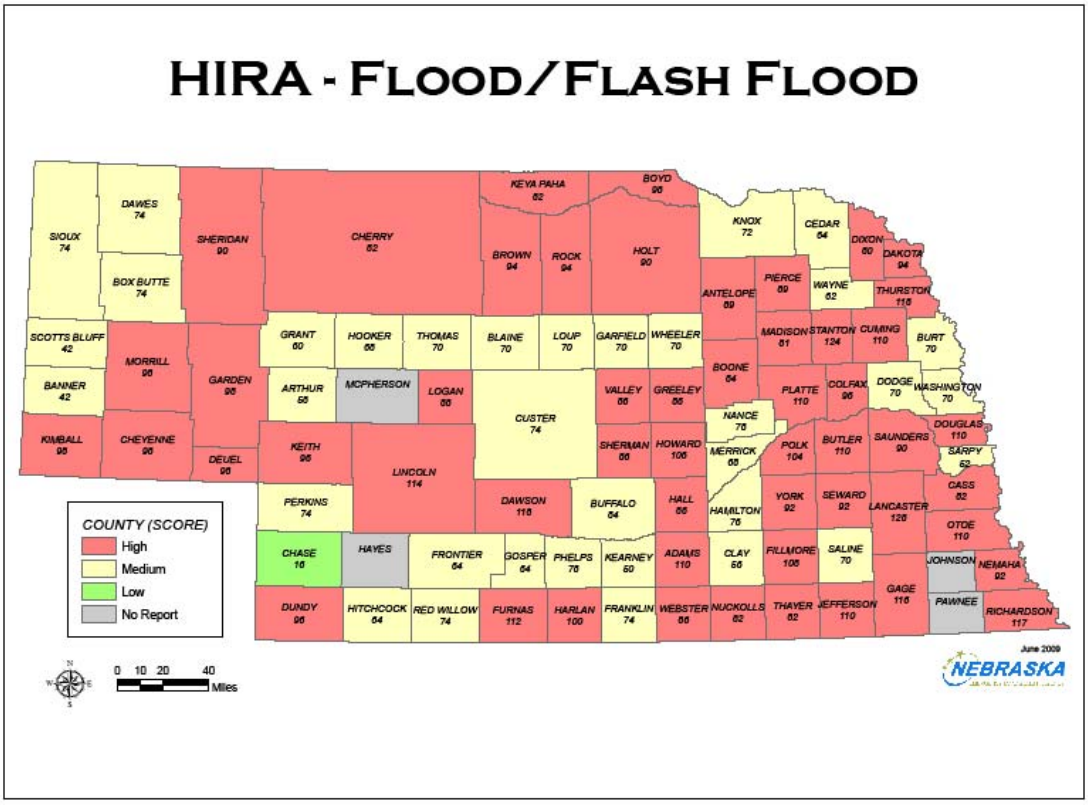
3. Vulnerable State Facilities and Potential Dollar Losses

a. Table 3.13 below shows the total number of state-owned buildings with replacement costs for the above mentioned counties in the southeastern portion of the state. The figures represent total replacement costs rather: than damage estimates for the lower-intensity earthquakes most likely to occur in the area.

Table 3.13: Damages in Earthquake at Risk Counties (State-Owned, Operated Bldgs.)

County	Fault line	# of Buildings	Total Square Footage	Total Replacement Cost (2010)
Cass	Humboldt Fault	105	96,958	$13,615,205.00
Johnson	Humboldt Fault	28	390,038	$99,344,791.00
Nemaha	Humboldt Fault	9	14,073	$942,391.00
Otoe	Humboldt Fault	22	175,232.00	$26,002,743.00
Pawnee	Humboldt Fault	8	9,619	$486,655.00
Richardson	Humboldt Fault	61	23,505	$3,277,681.00
Sarpy	Humboldt Fault	125	273,318	$49,077,411.00

b. State-owned and operated infrastructure most at risk from the lower intensity earthquakes predicted in Nebraska is comprised of roads and bridges. The Department of Roads (DOR) maintains a database of all bridges and road segments along with re-rerouting plans and cost collection methods in the event of damages.



Hazard:	Flood / Flash Flood
Impact On:	
Public: Housing, Causalities, Fatalities, Work, Food, Water	Housing - structures within inundation areas could be destroyed depending on the level of flood water. Causalities and fatalities - will be dependent on warning and how quickly a flash flood moves through an area. People living and/or working in the areas less than 30 minute warning of a flash flood are most at risk. Work - will also be dependent on their location in relationship with the flood plain. Food and water can be delivered to the affected area, water systems could be contaminated by flood water and people will need to boil or purchase water.
Responders: Fire, Police, Medical, Public Works	Unless the responders live or their facilities are located within flooded areas there should be no impact. During the response care needs to be given to the possibility of pollution, disease and potential hazardous materials in the flood waters. Medical - would be dependent on if the facilities are in the inundation areas. Some medical facilities could become quickly overwhelmed with victims if the flooded area includes a large population. In that event, Medical surge plans will be activated.
Continuity of Operations	If major governmental facilities (courthouse, city/county offices) are in the flooded area extreme damage to buildings and contents including electronic and paper records can occur. If the jurisdiction does not have adequate COOP Planning the impact will be very high.

Hazard: Impact On:	Flood / Flash Flood
Property: Destroyed, Major, Isolated	Property within the flooded areas can expect impacts from major and destroyed to minor depending on the relationship of the structure to the failure and the amount of water released.
Infrastructure: Electricity, water, roads, bridges	As with property damages, infrastructure can be seriously damaged. Water and waste water systems contaminated, electrical structures damaged, roads and bridges destroyed or isolated. Repairs could be delayed until water levels recede
Environment	The environment in the flooded areas will be severely impacted with contaminates, erosion from rushing water and debris.
Economic Conditions:	Impacts locally and statewide will depend on the area flooded, the size of the flooded area, and the length of time before the waters recede.
Public Confidence in the Governance	Public confidence will be dependence on the perception of whether or not the flooding could have been avoided by any governmental action either taken or not taken, how good the warning was and how quickly and efficiently the response and recovery is.

H. Flood/Flash Flood

1. Location and Previous Occurrences

a. Flooding in Nebraska is caused primarily by heavy precipitation and ice jams on the rivers and streams. Heavy precipitation can cause flooding either in the region of precipitation or in areas downstream. Heavy accumulations ice or snow can also cause flooding during the melting stage. These events are complicated by the freeze/thaw cycles characterized by moisture thawing during the day and freezing at night. Ice jams occur when ice breaks up in moving waterways, and then stacks on itself where channels narrow. This creates a natural dam, often causing flooding within minutes of the dam formation. In addition, dam and levee failure could also cause flooding, as previously discussed. The NDNR monitors dam conditions in Nebraska to prevent dam failure.

b. Flooding in Nebraska happens most frequently along the Missouri and Platte Rivers, and in the Big Blue, Elkhorn and Republican River basins. To some degree, all parts of the state have experienced some flooding. Each region's geology will impact flooding frequency, volume of water, and damage. The Missouri River basin covers the entire state..

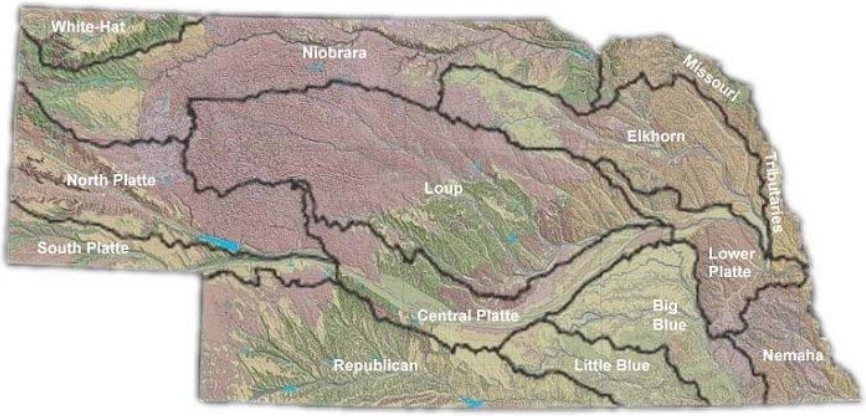
b. Major floods have occurred in the state along the Missouri River in 1881, 1943, 1952, 1967, 1978, 1993, 2010, and 2011. Record snowmelt and record precipitation that occurred in 2011 caused severe flooding across the State of Nebraska. The flooding, beginning May 24, 2011 resulted in the declaration of FEMA Disaster 4013 on August 12, 2011. Of

Nebraska's 93 counties, 16 were included in the disaster declaration: Boyd County, Burt County, Cass County, Dakota County, Dixon County, Douglas County, Garden County, Knox County, Lincoln County, Nemaha County, Otoe County, Richardson County, Sarpy County, Scotts Bluff County, Thurston County and Washington County. During the incident period homes, businesses, crops, and bridges were damaged by the flooding of major rivers and tributaries. The storms caused flooding of the Missouri River and Platte River. Flooding records were set by Ponca, Big Papillion, Weeping Water, and Logan Creeks.

c. The region of north-central Nebraska known as the Sandhills rarely experiences flooding, which covers roughly one-quarter of the state. This is because the rivers in the area are fed primarily through groundwater. In addition to functioning as a capstone for underlying aquifers, the Sandhillls act as a reservoir by absorbing excessive rainfall and releasing it to groundwater supplies in controlled amounts. The Loup River has flooded as a result of intense rainfall and the Niobrara has flooded as a result of an ice jam on the Missouri, but these occasions are rare for Sandhills' rivers. This area did experience flooding during the June Floods of 2010, but the frequency of an event of this level is rare in occurrence.

d. The Figure 3.8 below shows the drainage systems in the state of Nebraska.

Figure 3.8: Map of River Basins of Nebraska



e. The flooding events listed in table 3.14 are from the NCDC Website. In order to obtain a more meaningful data set, the table includes only those events that caused both crop and property damages in excess of $1 million since 1996. A more comprehensive flooding history summary for Nebraska is in the Nebraska Flood Mitigation Plan (Appendix A to the State Hazard Mitigation Plan), Appendix E.

Table 3.14: Historic Flooding Events in Nebraska

12 FLOOD event(s) were reported in **Nebraska** between **01/01/1996** and **10/31/2013** with **at least $1 million in Property Damage and/or Crop Damage**.

Location or County	Date	Type	Deaths	Injuries	Property Damage	Crop Damage
CEDAR (ZONE)	7/16/1996	Flood	0	0	1.000M	0.00K
COLFAX (ZONE)	8/4/1996	Flood	0	0	500.00K	500.00K
DODGE (ZONE)	8/4/1996	Flood	0	0	1.700M	5.250M
WEBSTER (ZONE)	7/4/2000	Flood	0	0	300.00K	1.000M
CLAY (ZONE)	7/4/2000	Flood	0	0	300.00K	1.000M
NUCKOLLS (ZONE)	7/4/2000	Flood	0	0	100.00K	1.000M
ADAMS (ZONE)	7/4/2000	Flood	0	0	1.000M	2.000M
FRANKLIN (ZONE)	7/4/2000	Flood	0	0	500.00K	1.500M
THAYER (ZONE)	6/23/2003	Flood	0	0	1.000M	5.000M
HOWARD CO.	7/10/2006	Flood	0	0	10.00K	1.000M
JOHNSON CO.	4/25/2008	Flood	0	0	1.000M	0.00K
COLFAX CO.	5/30/2008	Flood	0	0	1.000M	0.00K
STANTON CO.	6/11/2010	Flood	0	0	1.500M	0.00K
COLFAX CO.	6/11/2010	Flood	0	0	1.500M	0.00K
DOUGLAS CO.	6/12/2010	Flood	0	0	2.000M	0.00K
ANTELOPE CO.	6/13/2010	Flood	0	0	4.000M	0.00K
MADISON CO.	6/14/2010	Flood	1	0	1.000M	0.00K
HARLAN CO.	5/24/2011	Flood	0	0	50.00K	1.000M
PHELPS CO.	5/24/2011	Flood	0	0	50.00K	1.000M
DOUGLAS CO.	6/1/2011	Flood	0	0	3.000M	0.00K
FRANKLIN CO.	8/30/2011	Flood	0	0	50.00K	1.000M
DOUGLAS CO.	9/1/2011	Flood	0	0	1.000M	0.00K
DAWSON CO.	9/23/2013	Flood	0	0	50.00K	1.000M
TOTALS:			1		$22.61M	$22.25M

g. The most recent event listed on the NCDC Website occurred in October of 2013 when thunderstorms and heavy rain tracked across a 24 county area in the central part of Nebraska. Damages to roadways were incurred.

h. NCDC data indicates that since 1996, there have been 607 flooding events in Nebraska, causing a total of six deaths, four injuries, $139.0 Million in property damages, and $101.9 Million in crop damages.

i. Table 3.15 lists flooding events that resulted in federal disaster declarations.

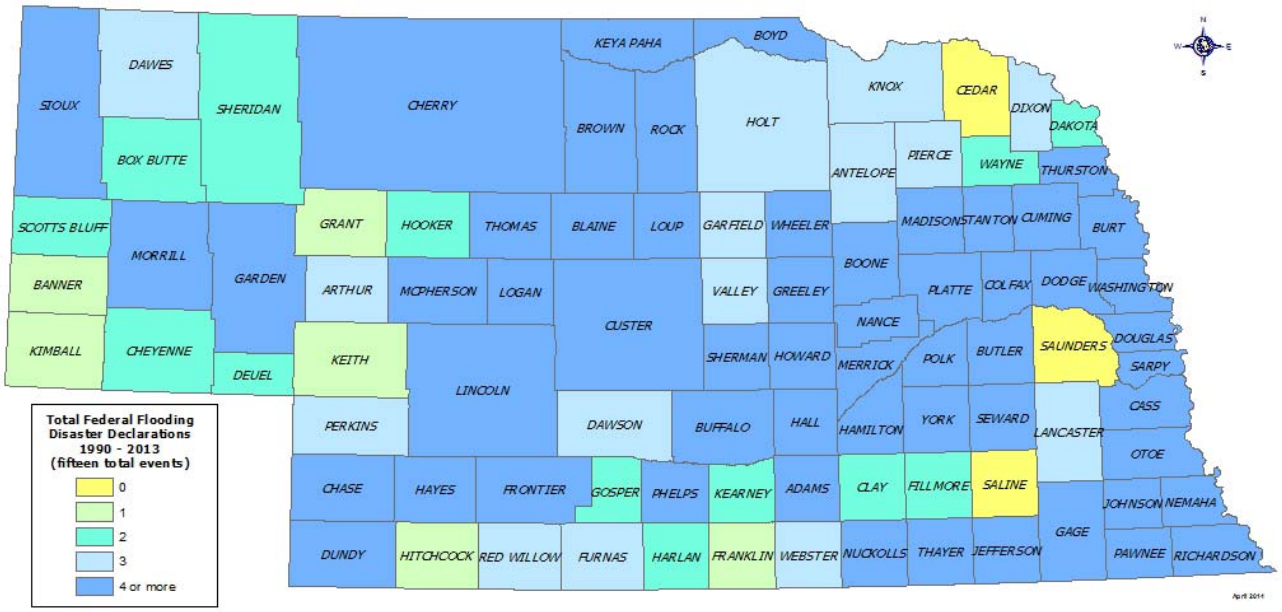
Year	Federal Disaster Number	Dates	Public Assistance $ Awarded	Description/ Location
2011	**4013**	**May 24, 2011 – August 1, 2011**	**$85,554,882.86 (2011 dollars)**	**Flooding resulted in 15 declared counties.**
2011	**4014**	**June 19, 2011 – June 21, 2011**	**$3,448,581.03 (2011 dollars)**	**Severe Storms, Tornadoes, Straight-line Winds, and Flooding resulted in 12 declared counties.**
2010	**1945**	**September 13, 2010 -September 14, 2010**	**$2,132,220.62 (2010 dollars)**	**Severe Storms, Flooding, Tornado, and Straight-line Winds resulted in 7 declared counties.**
2010	**1924**	**June 1, 2010-**	**$50,049,662.47 (2010 dollars)**	**Severe Storms, Flooding, and Tornadoes resulted in 53 declared counties.**
2010	**1902**	**March 6, 2010- April 3, 2010**	**$3,145,009.73 (2010 dollars)**	**Severe Storms, Ice Jams, and Flooding resulted in 35 declared counties.**
2009	**1853**	**June 5, 2009- June 26, 2009**	**$4,489,444.18 (2009 dollars)**	**Severe Storms, Flooding, and Tornadoes resulted in 13 declared counties.**
2008	**1779**	**June 27,2008**	**$12,042,326.48 (2008 dollars)**	**Severe Storms, Straight-line winds, and Flooding resulted in 4 declared counties.**
2008	**1770**	**May 22, 2008**	**$34,689,487.90 (2008 dollars)**	**Severe Storms, Tornadoes, and Flooding resulted in a disaster declaration for 61 counties.**
2008	**1765**	**April 23, 2008- April 26, 2008**	**$602,939.05 (2008 dollars)**	**Severe Storms, Tornadoes, and Flooding resulted in 5 declared counties.**
2007	**1721**	June 11, 2007 – June 16, 2007	$2,207,938.00 (2007 dollars)	Severe rain/flooding resulted in 6 declared counties.
2007	**1714**	May 28, 2007 - June 2, 2007	$3,191,482.25 (2007 dollars)	Severe rain/flooding resulted in 15 declared counties in Central Nebraska. Hayes County had 16 in. rain in 2 days
2007	**1706**	May 4, 2007 – May 19, 2007	$8,063,125.34 (2007 dollars)	Severe rain/flooding resulted in 19 declared counties in Southeast and North-Central Nebraska.
2005	**1590**	May 11, 2005 – May 12, 2005	$2,205,045.96 (2005 dollars)	Severe rain, hail, and flooding resulted in 11 declared counties.
2004	**1517**	May 20, 2004 – May 25, 2004	$18,763,568.69 (2004 dollars)	Severe rains, tornados, flooding resulted in 39 declared counties.
2001	**1394**	August 17, 2001 August 18, 2001	$1,867,064.51 (2001 dollars)	Severe storms/flooding resulted in Dakota County being declared.
1999	**1286**	August 6, 1999 – August 9, 1999	$2,421,277.00 (1999 dollars)	Heavy rains/flooding in 3 declared counties in eastern Nebraska.
1996	**1123**	May 8, 1996 – May 10, 1996	$2,810,025.00 (1996 dollars)	Heavy hail/rains, flashfloods in 4 declared counties in SE Nebraska.
1993	**998**	June 1, 1993 – July 31, 1993	$47,799,461.00 (1993 dollars)	Upper Jet Stream over the Midwest for 2 mo. resulted in heavy rains/record flooding in 52 declared counties.
1993	**983**	November 1, 1992 – January 31, 1992	$7,790,523.00 (1993 dollars)	Flooding in 13 declared counties in Central & Eastern Nebraska from ice jams in Platte & Missouri Rivers, Salt Creek.
1992	**954**	July 11, 1992 – July 29th, 1992	$1,788,512.00 (1992 dollars)	Severe weather, heavy rains, flash floods in 8 declared counties in SE Nebraska.
1991	**908**	May 10, 1991 – June 9, 1991	$4,191,578.00 (1991 dollars)	Severe weather, heavy rains, high winds, tornados, flash floods in parts of the Panhandle, South Central, SE Central, & NE Nebraska (7 declared counties). Moisture content in Sioux and Dawes County was 300% higher than normal.

Year	Federal Disaster Number	Dates	Public Assistance $ Awarded	Description/ Location
1990	**873**	June 5, 1990 – June 19, 1990	$49,828,934.00 (1990 dollars)	Severe weather, tornados, heavy rains, flooding occurred during a series of storms over 15-day period in17 counties.
1984	**716**	Declared 7/3/84	Unknown	Tornados, Flooding
1978	**552**	Declared 3/24/78	Unknown	Storms, Ice Jams, Snowmelt, Flooding
1973	**406**	Declared 10/20/73	Unknown	Severe Storms, Flooding
1971	**308**	Declared 7/7/71	Unknown	Floods
1971	**303**	Declared 2/2371	Unknown	Floods
1967	**228**	Declared 7/18/67	Unknown	Severe Storms, Flooding
1966	**221**	Declared 8/31/66	Unknown	Heavy Rains, Flooding
1964	**174**	Declared 7/20/64	Unknown	Severe Storms & Flooding
1963	**156**	Declared 7/17/63	Unknown	Heavy Rains, Flooding
1962	**134**	Declared 9/5/62	Unknown	Flooding
1962	**131**	Declared 5/10/62	Unknown	Flooding along Missouri R. Evacuations in Bellevue & eastern Nebraska.
1960	**98**	Declared 4/4/60	Unknown	Flooding along Missouri R Evacuations in Rulo & eastern Nebraska.

j. A comprehensive state level source of information for flooding damages, level of severity, duration of event, and date of occurrence for Nebraska's earlier disasters has been compiled and is included in the Nebraska Flood Mitigation Plan (Appendix A to the State Hazard Mitigation Plan). The majority of the information obtained in Table 3.15 above was from FEMA's Website, earlier Nebraska Hazard Mitigation Plans, the National Emergency Management Information System (NEMIS), and general Web-based research.

k. The map in Figure 3.9 below shows, by county, the number of federal disaster declarations from 1990 to August, 2010. There appears that the majority were located in the southeastern portion of the state.

Figure 3.9: Map of Federal Flooding Disaster Declarations by County Since 1990



2. Probability of Future Events and Jurisdictional Vulnerability

a. Flooding is highly probable in the state of Nebraska. By studying past flooding events and reviewing information on population density, vulnerable areas of the state can be identified. As population increases and more acreage is consumed for new development with impermeable surfaces, the possibility of flooding increases. Historically, the eastern and southeastern portions of the state have flooded more frequently than the northern and western portions of the state. The eastern and southeastern areas also include six of the ten counties with the higher percentages of population growth. Table 3.16 below lists the top ten counties for population growth.

Table 3.16: Top Ten Counties Showing a Population Increase 1990 to 2009

County	Increase	County	Increase
1. Sarpy County	25.30%	6. Hall County	7.40%
2. Johnson County	13.20%	7. Adams County	7.00%
3. Lancaster County	12.50%	8. Washington County	8.50%
County	**Increase**	**County**	**Increase**
4. Douglas County	10.10%	9. Cass County	4.80%
5. Buffalo County	8.50%	10. Lincoln County	3.00%

b. Sarpy, Lancaster, Colfax, Cass, Washington, and Douglas, lay in the eastern and southeastern portion of the state. These six counties have the largest concentration of structures and persons that can be impacted

by flooding. A "Safe Growth[30] policy would be beneficial in these counties, using planning tools to increase community safety at all levels of local government. The policy would encourage better coordination among local planners, building/safety inspectors, community leaders, and emergency managers. A "Safe Growth," policy would include structural strategies designed to protect buildings and infrastructure from the forces of wind and water. The policy would also include nonstructural measures such as development regulations and enforcement of a wise land use policy. These activities can target existing development or seek to protect future development by avoiding new construction in hazardous areas such as flood plains.

c. Floodplain Mapping in Nebraska – FEMA and Nebraska Cooperating Technical Partners (CTPs) have crated floodplain maps throughout the state. The current status of these map types is below, in Table 3.17, taken from the 2013 State of Nebraska CTP Business Plan:

Table 3.17 Current Nebraska Flood Hazard Map Counts

55	DFIRMs - Countywide
2	FIRMs – Countywide
39	FIRM – Incorporated Areas Mapped
5	FIRM – Unincorporated Areas Mapped
15	Converted FIRM – Incorporated Areas Mapped
11	Converted FIRM – Unincorporated Areas Mapped
12	FHBM – Incorporated Areas Mapped
1	FHBM – Unincorporated Areas Mapped
9	Unmapped – Countywide
9	Unmapped – Unincorporated Areas
7	NDNR Digital Work Maps - Countywide

f. Tables 3.18 and 3.19 below illustrate the total number of National Flood Insurance Program (NFIP) claims and total dollar amounts paid in each Nebraska County. The top five counties all have the following three characteristics in common: (1) high population density, (2) adjacent to the Platte or Missouri Rivers and (3) increased population growth (1996-2006). According to NFIP data as of 02/13/2014, the state currently has 12,439 policies with a total coverage of $2,084,523,700, and a total annual premium of $10,380,264. There have been a total of 4,425 NFIP claims since 1978, with a total state-wide payout of $38,336,998.

[30] Planning for Safer Communities: Improving Community Disaster Resilience Through Natural Hazard Mitigation in the Denver Area Region, Denver Regional Council of Governments.

Table 3.18: Top Five Nebraska Counties for NFIP Flood Claims (1978- 2/13/2013)

County	Number of Claims	Total Paid
Sarpy County	993	$8,937,901
Douglas County	630	$4,060,790
Dodge County	497	$2,603,567
Cass County	394	$3,503,548
Saunders County	256	$2,145,477

Table 3.19: NFIP County Claims Report – Nebraska (1978 – 2/13/2013)

County	Number of Claims	Total Paid Since '78
Adams	**17**	**$47,596**
Antelope	**10**	**$294,231**
Blaine	**0**	**$0**
Boone	**8**	**$31,509**
Box Butte	**0**	**$0**
Boyd	**9**	**$100,904**
Buffalo	**16**	**$44,862**
Burt	**37**	**$721,193**
Butler	**4**	**$4,434**
Cass	**394**	**$3,503,548**
Cedar	**0**	**$0**
Chase	**1**	**$3,028**
Cheyenne	**17**	**$57,897**
Clay	**0**	**$0**
Colfax	**144**	**$1,257,967**
Cumming	**13**	**$35,468**
Custer	**4**	**$69,883**
Dakota	**73**	**$559,890**
Dawes	**0**	**$0**
Dawson	**55**	**$254,351**
Deuel	**13**	**$26,520**
Dixon	**2**	**$2,820**
Dodge	**499**	**$2,603,567**
Douglas	**630**	**$4,060,790**
Dundy	**0**	**$0**
Fillmore	**2**	**$25,000**
Franklin	**0**	**$0**
Frontier	**0**	**$0**
Furnas	**1**	**$0**
Gage	**154**	**$1,196,485**
Garden	**2**	**$4,926**
Garfield	**0**	**$0**
Gosper	**0**	**$0**
Greeley	**0**	**$0**
Hall	**112**	**$405,254**
Hamilton	**15**	**$86,197**
Harlan	**0**	**$0**
Hitchcock	**1**	**$759**
Holt	**2**	**$0**
Hooker	**0**	**$0**
Howard	**4**	**$2,016**
Jefferson	**7**	**$13,120**
Johnson	**2**	**$1,972**
Kearney	**2**	**$6,349**
Keith	**5**	**$19,968**
Knox	**15**	**$643,982**
Lancaster	**120**	**$311,153**
Lincoln	**73**	**$253,070**
Loup	**0**	**$0**

County	Number of Claims	Total Paid Since '78
Madison	61	$3,099,103
Merrick	11	$16,274
Morrill	1	$7,024
Nance	1	$0
Nemaha	53	$551,998
Nuckolls	3	$7,069
Otoe	18	$376,172
Pawnee	1	$0
Perkins	0	$0
Phelps	8	$74,756
Pierce	5	16,106
Platte	67	$432,795
Polk	1	$150
Red Willow	10	$35,534
Richardson	88	$2,370,749
Rock	0	$0
Saline	117	$403,446
Sarpy	993	$8,937,901
Saunders	256	$2,145,477
Scotts Bluff	50	$184,916
Seward	21	$116,616
Sheridan	0	$0
Sherman	1	$7,046
Stanton	3	$6,032
Thayer	17	$174,713
Thurston	16	$32,901
Valley	5	$28,547
Washington	136	$2,602,788
Wayne	4	$1,495
Webster	1	$1,727
Wheeler	2	$7,763
York	7	$0

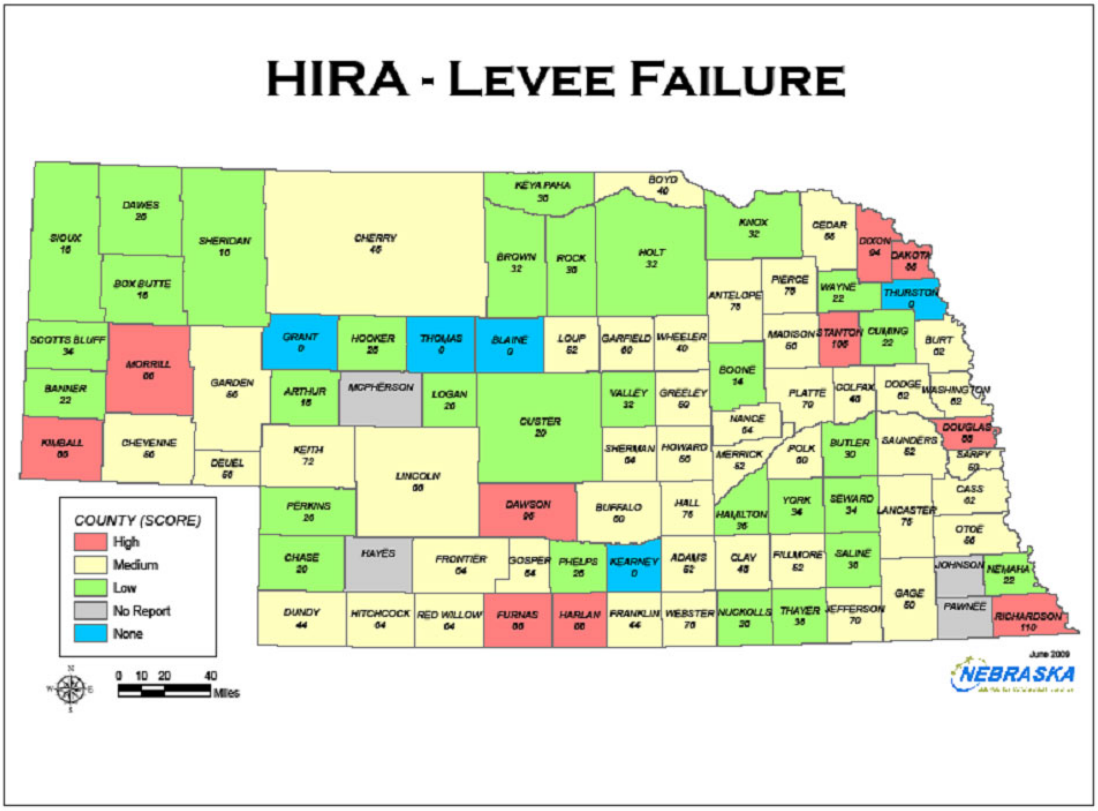
g. Presidential Disaster Declarations resulting from flooding between 1990 and 2014 indicate that Nebraska had total damages of $921,376,203. This figure included public, private, and crop damages. This is approximately $51,187,567 in annual losses resulting from flooding between the years of 1990 and 2014. Note that these numbers are skewed by figures from the 1993 floods. The 1993 floods were arguably the costliest disaster in Nebraska history with a price tag of $669,880,364. Because the 1993 floods were such an extreme scenario, if we remove that disaster and those losses from the statistical pool, average annual flood losses in Nebraska between the years of 1990 and 2014 were approximately $15,718,489.95. Note that use of the past presidential declarations should not be the sole measure of future flood losses.

3. State Owned Buildings at Risk and Potential Dollar Losses

a. At the end of the Risk Assessment in Table 3.41 are state owned and operated structures, listed by county, known to be located in NFIP designated flood plains. The approximate replacement dollar value of these structures is estimated to be $307,642,537.00. There are,

however, portions of the state that have not yet been mapped by the NFIP. Therefore, figures in this table will be updated when the data become available.

b. Most of the state's more than 3,500 bridges are located in flood plains. The Nebraska Department of Roads (NDOR) maintains a data base of bridges and a schedule for inspection and maintenance of the bridges. The NDOR also has planning documents designating alternate routing of traffic and cost tracking methodology they would use if an event occurs to track damages.



Hazard:	Levee Failure
Impact On:	
Public: Housing, Causalities, Fatalities, Work, Food, Water	Housing - structures within inundation areas could be destroyed depending on the amount of water held by the dam or levee and how far downstream from the dam or levee the structures are. Causalities and fatalities - will be dependent on warning and how far downstream of the structure they are. People living and/or working in areas with less than 30 minute warning of a complete failure are most at risk. Work - will also be dependent on their location in relationship with the failing structure. Food and water - limited impact
Responders: Fire, Police, Medical, Public Works	Unless the responders live or their facilities are located within inundation areas there should be no impact. During the response care needs to be given to the possibility of pollution, disease and potential hazardous materials in the flood waters. Medical - would be dependent on if the facilities are in the inundation areas. Some medical facilities could become quickly overwhelmed with victims if the inundation area includes a large population. In that event, Medical surge plans will be activated.
Continuity of Operations	If major governmental facilities (courthouse, city/county offices) are in the inundation area failure of the structure could cause extreme damage to buildings and contents including electronic and paper records. If the jurisdiction does not have adequate COOP Planning the impact will be very high.

Hazard: Impact On:	Levee Failure
Property: Destroyed, Major, Isolated	Property within the inundation areas can expect impacts from major and destroyed to minor depending on the relationship of the structure to the failure and the amount of water released.
Infrastructure: Electricity, water, roads, bridges	As with property damages, infrastructure can be seriously damaged. Water and waste water systems contaminated, electrical structures damaged, roads and bridges destroyed or isolated. Repairs could be delayed until water levels recede
Environment	The environment in the inundated areas will be severely impacted with contaminates, erosion from the wave front and debris.
Economic Conditions:	In Nebraska economic impacts could be anywhere from catastrophic to none depending on which structures fail and the amount of water the structure holds.
Public Confidence in the Governance	Public confidence will be dependence on the perception of whether or not the failure could have been avoided by any governmental action either taken or not taken.

I. Levee Failure

1. Location and Previous Occurrences

a. The failure of a levee can be attributed to the loss of structural integrity of a wall, dike, berm, or elevated soil by erosion, piping, saturation, or under seepage. Levee failure causes water to inundate normally dry areas.

b. Levees constructed of compacted clay are especially vulnerable. Clay has a high plasticity and tends to crack during cycles of long dry spells. When the dry periods are followed by heavy rainfalls, the water fills the cracks and fissures in the compacted clay. In addition to increasing the hydrostatic forces, the water is slowly absorbed by the clay. This causes an increase in the unit weight of the clay as well as a decrease in its shear strength. The result is a simultaneous increase of the slide (driving) forces and a decrease of the resisting (shear strength) forces. Furthermore, the cyclic shrink/swell behavior of the cracked clay zone results in a progressive reduction of the shear strength of the clay. It also results in the deepening of the cracked clay zone. Cracks may reach a depth of 9 feet (2.74 m) or more, especially for clays with a plasticity index greater than 40. The end-result may be a sloughing failure following a heavy rainfall. It is believed that fast removal of the runoff water from the interconnected network of cracks could alleviate this surface instability problem.

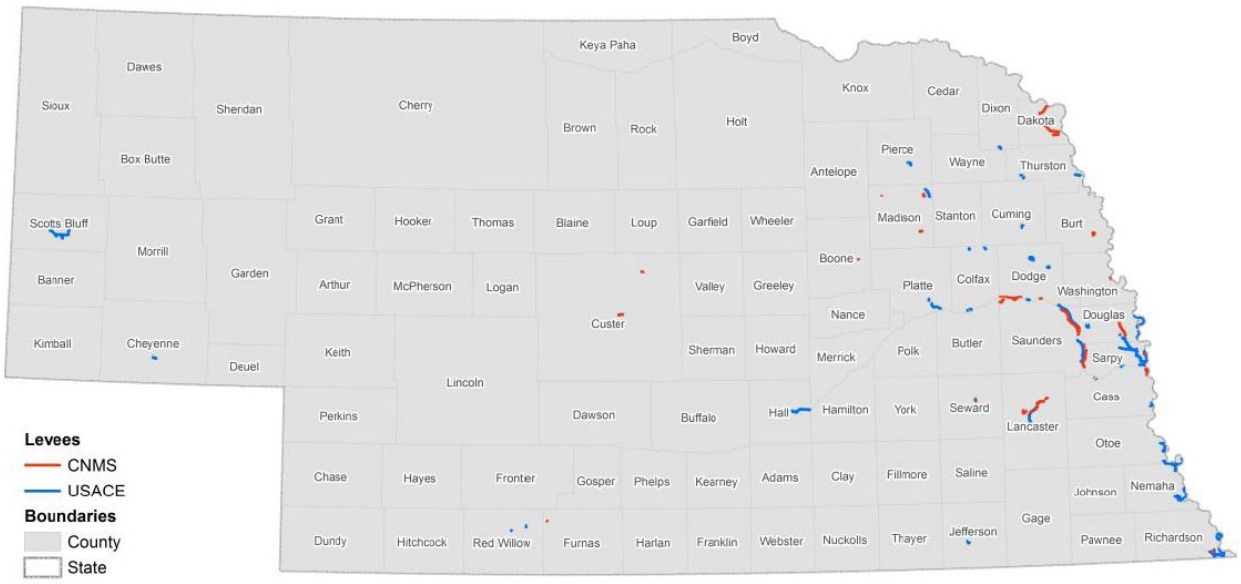
c. Levees and dams along the Missouri River were tested by the 1952 and 1993 floods. Although the crest passed Omaha without causing a breach during the 1952 flood, other areas were not as fortunate. As mentioned on page 32 in the flood section, the Army Corps of Engineers'

preliminary damage estimate was set at $11.9 million (1952 dollars) for the 1952 floods.

d. In 1993, 52 Nebraska counties were declared under disaster number DR-993-NE due to tornados and flooding from severe storms. During the month of July in 1993, statewide precipitation set a record 8.5 inches of rainfall. The Missouri River set record crests in Plattsmouth and Brownville. River levels from Omaha to Rulo were the highest since the 1952 floods. The river from Brownville to Rulo was above flood stage for the entire month. A breach in an Army Corps levee (L-550) near Brownville threatened the Cooper Nuclear Power Plant. Fortunately the water subsided without damages to the plant.

e. During the 1993 floods a total of 32 levees were overtopped. Five of those levees (MRLU L-561, MRLU L-575, MRLU L-550, MRLU R-520, MRLU R-548, and MRLU R-562) are located on the Missouri River along the Nebraska-Missouri or Nebraska-Iowa borders (see Figure 3.10 below). During the 1993 floods a Government Accounting Office (GAO) report verified levee overtopping occurred due to three primary reasons: (1) "decline from the levee's design flow capacity, which attributed to a change in the relationship between the flood level and the flow rate at the levee, resulting in higher flood levels for the same flow rate; (2) the distance between the levee and the gauge used to measure the flood flow resulted in an inaccurate flood flow estimate for the levee location; and (3) the location of the overtopping."[31]

Figure 3.10: Levee Locations in Nebraska (NDNR)



[31] (August 1995). "Midwest Flood Information on the Performance, Effects, and Control of Levees." US-GAO, pgs 32-33.

f. Information provided by FEMA Region VII listed 29 federally constructed, sponsored, or operated levees in the Federal Levee System in urban areas. The information also indicated 12 agricultural levees located in rural agricultural areas. Tables 3.19 show the dam or project name, FEMA R7 dam identification number, county, city (if applicable), river, level of protection, and type of levee (urban or agriculture).

Table 3.19: Nebraska's Federally Owned Levees

Levee or Project Name/ (FEMA - R7 Dam ID #)	County/(City)	River or Stream	Level of Protection	Urban or Agricultural
Lake Waconda (1310)	Cass (N/A)	Missouri	100-500 Year Flood	Urban
Omaha Fish/Wildlife (1311)	Cass (N/A)	Platte	0 -24 year Flood	Urban
YMCA Camp Kitaki (1312)	Cass (N/A)	Platte	100 – 500 Year Flood	Urban
Clarkson FFP (1313)	Colfax (Clarkson)	Maple Creek	50 -99 Year Flood	Urban
Howells FFP (1314)	Colfax (Howells)	Maple Creek	100- 500 Year Flood	Urban
Schuyler FCP (1315)	(Colfax) Schuyler	Platte	50 -99 Year Flood	Urban
West Point FCP (1316)	Cumming (West Point)	Elkhorn	50 -99 Year Flood	Urban
Broken Bow FPP (1317)	Custer (Broken Bow)	Mud Creek	50 -99 Year Flood	Urban
Wakefield (1318)	Dixon (Wakefield)	Logan	100 – 500 Year Flood	Urban
Ames (1319)	Dodge (Ames)	Platte	50 – 99 Year Flood	Urban
Hooper FCP (1320)	Dodge (Hooper)	Elkhorn	100- 500 Year Flood	Urban
Scribner FPP (1321)	Dodge (Scribner)	Elkhorn	100 – 500 Year Flood	Urban
No-Name Dike (1322)	Douglas (Valley)	Platte	50 -99 Year Flood	Agricultural
Omaha Channel Improvements 1323	Douglas (Omaha)	Little Papio Crk	0 – 24 Years	Urban
Omaha FPP (1324)	Douglas (Omaha)	Missouri	100 -500 Year Flood	Urban
Union Dike (1325)	Douglas (Valley)	Platte	100 – 500 Year Flood	Urban
Waterloo (1326)	Douglas (Waterloo)	Elkhorn	100 – 500 Year Flood	Agricultural
Wood River FPP (1327)	Hall (Grand Island)	Wood River	100 -500 Year Flood	Urban
Fairbury (1328)	Jefferson (Fairbury)	Little Blue	100 – 500 Year Flood	Urban
Salt Creek FPP (1329)	Lancaster (Lincoln)	South Creek	50 -99 Year Flood	Urban
Madison FCP(1330)	Madison (Madison)	Union Creek	50 -99 Year Flood	Urban
Meadow Grove FCP (1331)	Madison (Meadow Grove)	Buffalo Creek	50 – 99 Year Flood	Urban
Norfolk FPP (1332)	Madison (Norfolk)	Elkhorn	50 -99 Year Flood	Urban
MR R-548 LD #2 (1333)	Nemaha (Brownville)	Missouri	50 -99 Year Flood	Agricultural
MR R-548 LD #3 (1334)	Nemaha (Nemaha)	Missouri	50 – 99 Year Flood	Agricultural
MR R-562 (1335)	Nemaha (Peru)	Missouri	50 – 99 Year Flood	Agricultural
MR R-573 (1336)	Otoe (Nebraska City)	Missouri	50 -99 Year Flood	Agricultural
MR R-573 DD#2 (1337)	Otoe (N/A)	Missouri	50 – 99 Year Flood	Agricultural
Pierce FCP (1338)	Pierce (Pierce)	Elkhorn	50 -99 Year Flood	Agricultural
Columbus Lost Creek (1339)	Platte (Columbus)	Lost Creek	100 – 500 Year Flood	Urban
Columbus Loup River (1340)	Platte (Columbus)	Loup River	100 -500 Year Flood	Urban
Bartley (1341)	Red Willow (Bartley)	Dry Creek	100 – 500 Year Flood	Agricultural
Indianola (1342)	Red Willow (Indianola)	Coon Creek	100 – 500 Year Flood	Urban
MR R-520 (1343)	Richardson (Rulo)	Missouri	50 – 99 Year Flood	Agriculture
MR R-613 (1344)	Sarpy (Bellevue)	Missouri	100 – 500 Year Flood	Agriculture
MR R-616 (1345)	Sarpy (Bellevue)	Missouri	100 -500 Year Flood	Agriculture
Clear Creek (1346)	Saunders (Ashland)	Platte	50 -99 Year Flood	Urban
Gering FPP (1347)	Scotts Bluff (Gering)	Platte	50 -99 Year Flood	Urban
Seward FPP (1348)	Seward (Seward)	Big Blue	100 – 500 Year Flood	Urban
Marcy FCP (1349)	Thurston (Macy)	Blackbird	50 -99 Year Flood	Agricultural
Pender (1350)	Thurston (Pender)	Logan Creek	100 -500 Year Flood	Urban

g. The federally owned levees listed above represent only a very small fraction of the levees that exist in the state of Nebraska. There is no

known list or source of information for the numerous municipal, agricultural, and other small levees.

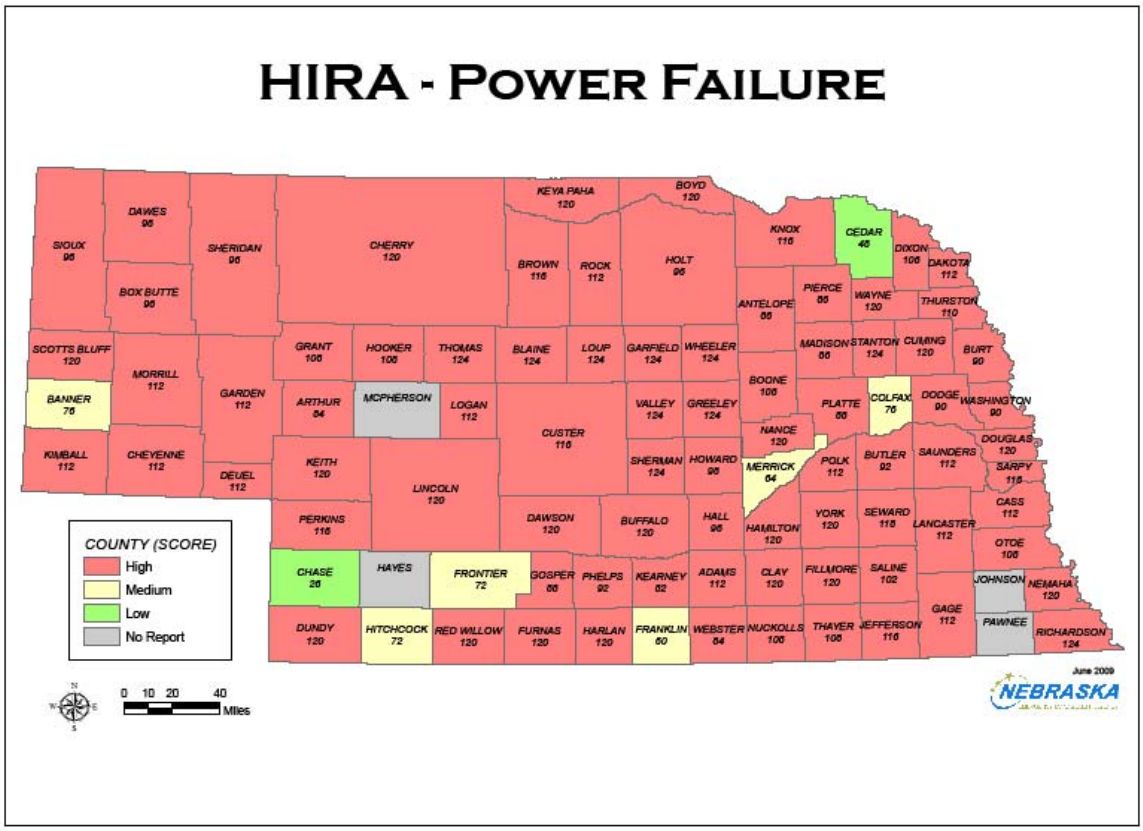
2. Probability of Future Events and Jurisdictional Vulnerability

   a. The rate of failure of a levee or floodwall is difficult to predict because of the lack of data on the state and federal levels. Although sudden failure is certainly a possibility, preventive measures such as proper maintenance, sound design, and proper construction can limit the probability of a levee failure. Development in the watershed can raise flood levels and make a levee designed and constructed under previous characteristics inadequate for current runoff conditions. The Planning Team will continue to monitor the availability of levee data, and will base future probability estimates of better data.

3. State Facilities at Risk and Potential Dollar Losses

   a. NEMA and the Nebraska State Patrol are participating in the National Infrastructure Protection Program (NIPP). As part of the NIPP program, NEMA and the State Patrol have begun to identify state thresholds for all of the state's 17 Critical Infrastructure/Key Resource sectors (CI/KR) (including critical state facilities and levees) by meeting with sector-specific agency working groups. Levee thresholds are in categories of acres of land irrigated per system, economic impact caused by a total breach, and expected loss of life. The next step in the NIPP program will involve GIS mapping of all 17 CI/KR sectors on various map layers to determine sector-specific inter-relationships. By using these thresholds, state agencies will eventually be able to prioritize levees based on the criteria of location, extent, intensity, and probability without revealing a map or specific information concerning the actual inundation area. However, specific information is not likely to be available for general publication for security reasons.

   b. The NDNR does not certify levees nor provide levee breach inundation maps. Therefore, neither jurisdiction-specific inundation data nor maps will be included in the 2014 Plan Update.



Hazard:	Power Failure Over 8 Hours
Impact On:	
Public: Housing, Causalities, Fatalities, Work, Food, Water	Housing - negligible could be minor damages from broken water lines if the temperature is below freezing. Causalities/Fatalities - If the temperature is extreme either hot or cold there can be hospitalizations even death. Work - short term lay-offs if power failure goes longer than 8 hours. Food/water - food in refrigerators and freezers could spoil if the outage goes longer than 12 hours.
Responders: Fire, Police, Medical, Public Works	if the power outage has taken out vital communications systems and there's no back-up there can be significant implications, not only for communications but also for the operation of hospitals, water systems, and waste-water systems. If the outage goes into several days or longer these become more difficult to deal with.
Continuity of Operations	If essential governmental facilities do not have contingency plans for extended power outages, their ability to operate may be severely hindered.
Property: Destroyed, Major, Isolated	Power outage may cause some secondary damages to occur, for example the loss of fire protection, alarms, and broken water pipes
Infrastructure: Electricity, water, roads, bridges	Power outages may cause temporary shut down of water and waste-water treatment facilities, especially if the outage is prolonged and the facilities have no back-up power.

Hazard:	Power Failure Over 8 Hours
Impact On:	
Environment	If some types of facilities or system are not operating properly there is the possibility of releases of hazardous materials or waste into the environment.
Economic Conditions:	Depending on the length of the outage there can be severe economic impacts especially to businesses and industry.
Public Confidence in the Governance	Depends on how governmental agencies handle the response to the outage and take care of their citizens

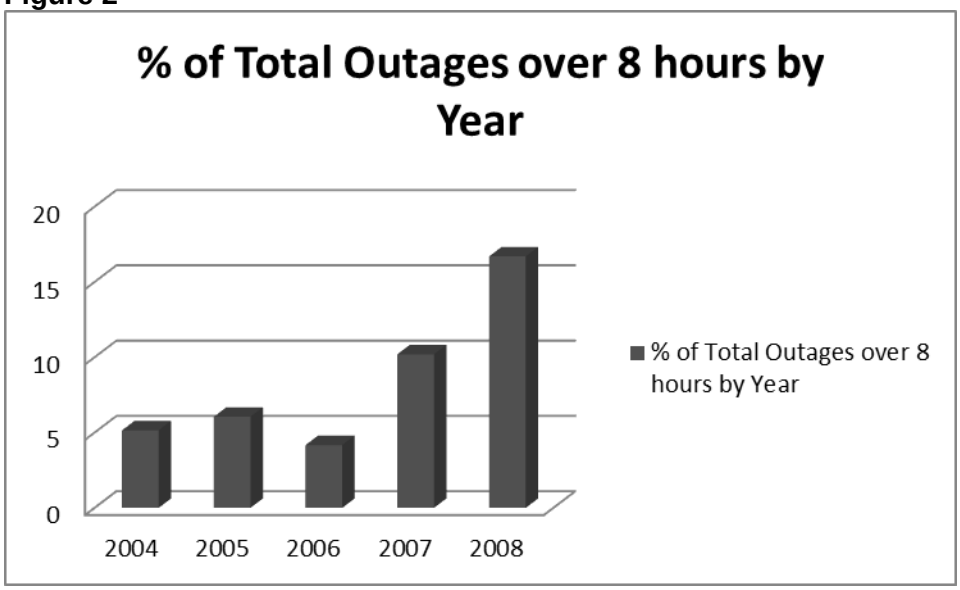
J. Power Outages over 8 Hours

1. Location and Previous Occurrences

a. Electrical power in Nebraska is delivered to commercial, residential, and agricultural customers by public power districts and city owned utilities. There are over 100,000 miles of electrical power line in the state and over 250,000 electrical meters in use. Dependence on electricity has grown and it is being used for cooking, heating homes and businesses as well as pumping water for agricultural use. A long term power outage would affect any electrical customer, no matter which part of the state. Because of this impact, utilities are working to strengthen their power grids and use innovative ways to protect the power grid from future damages. An example of this was provided by the Nebraska Public Power District. Structures were built which were intended to stop the cascade effect of power lines falling to the ground. In the December of 2006 ice storms these measures proved effective, preventing additional damages.

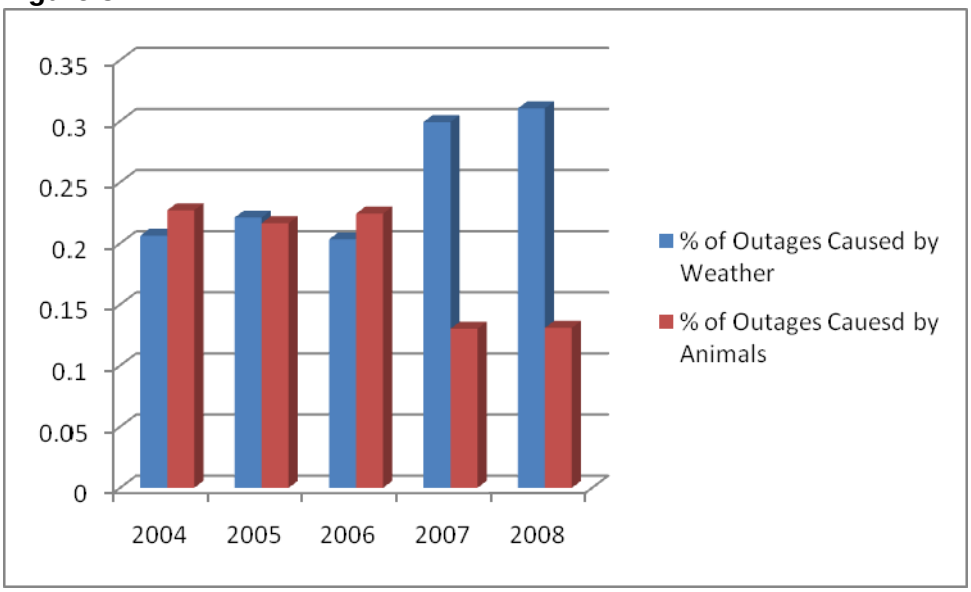
b. Power outages which last for over 8 hours are fortunately a rare event. In all outages reported since 2004 to the Nebraska Emergency Management Agency, only 8.7% of the outages were over 8 hours in duration. Figure 1 shows the percent of outages over 8 hours each year since 2004. There was an increase in that percentage in 2007 and 2008, which can be accounted for due to 4 major disasters occurring in that time frame.

Figure 2



c. Power outages not only cause problems for customers in the state, but increase the cost of power delivery due to damages caused by weather, animals, and other factors such as equipment failure or human causes. Figure 2 shows the causes of outages due to known causes as reported by power districts. We took into account the two single largest causes for power outages which are weather and animals. In 2007 and 2008 there were spikes in the percentages due to weather, this was due to several storms which passed through the state.

Figure 3



d. Weather issues typically cause 20-25% of all outages in a given year. Since 2004, the state has received 18 Presidential Major Disaster Declarations. As shown in figure 3, electrical power damages totaled more than 50% of the damages in 4 of those disasters. In all, there has been over $200 million in damages from the storms since 2004. These figures only include weather related events which resulted in disaster declarations. Figure 5 identifies the dollar amounts in electrical damages for selected disaster since 2004.

Figure 4

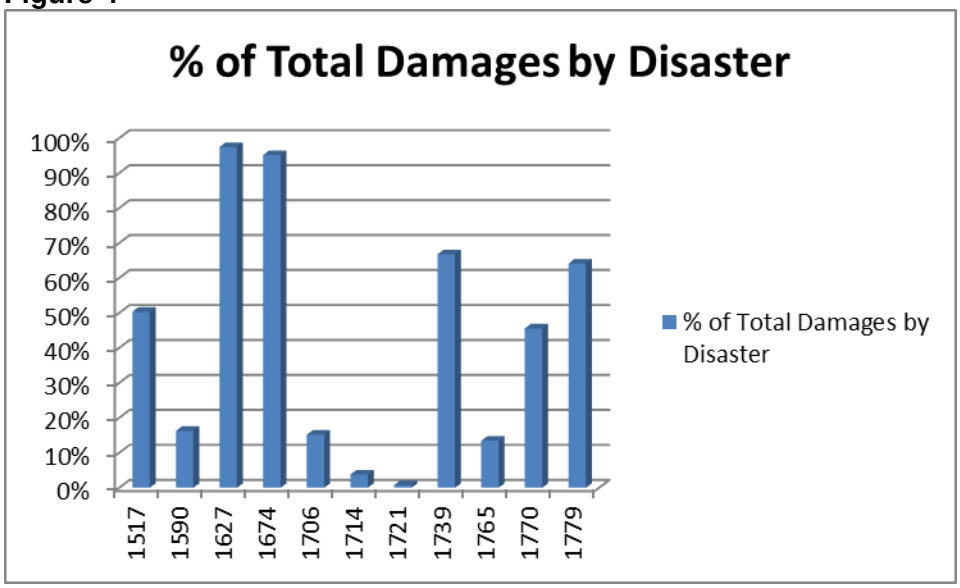
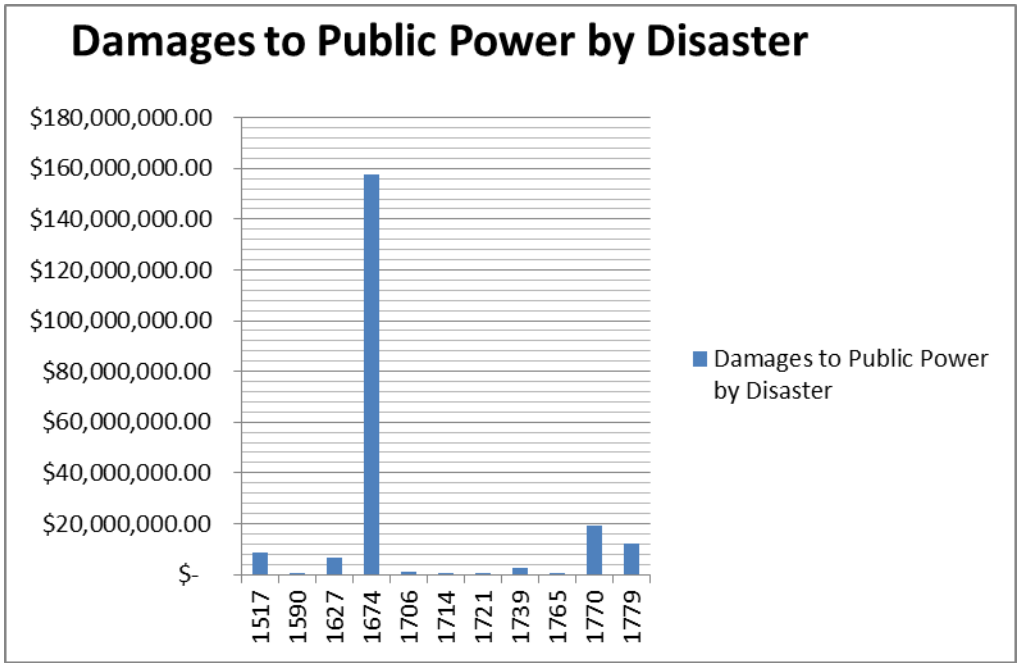


Figure 5



e. Power outages are both costly and disruptive. Weather disruptions account for a large amount of outages and cost significant amounts of money to repair. Since 2004 there have been 16 disaster declarations in Nebraska. Of the declared disasters, seven had over 50% of the damages occur regarding electrical utilities.

1) On May 20, 2004 severe storms, tornadoes, and flooding impacted the state. Most notably, the Village of Hallam was destroyed by a tornado. In this disaster, 50% of the damages were to electrical utilities totaling $8,679,748.Figure 6 is a map of the declared counties.

2) From November 27 to the 28th in 2005 a severe winter storm impacted the state which resulted in 29 counties becoming eligible for FEMA public assistance funding. In this disaster, 97% of the damages were to electrical utilities totaling $6,795,722.68. Figure 7 is a map of the declared counties.

3) From December 19, 2006 to January 1, 2007, winter storms impacted the state affecting 59 counties across the state. In this disaster, 95% of the damages were to electrical utilities totaling $157,840,655 in damages. Figure 8 is a map of the declared counties.

4) From December 10th to 12th, 2007, a severe winter storm impacted the state affecting 8 counties. In this disaster, 67% of the damages were to electrical utilities totaling $2,713,511 in damages. Figure 9 is a map of the declared counties.

5) On June 27, 2008 a single thunderstorm with high winds impacted 4 counties in the state. The damages totaled $12,000,342 for electrical utilities in this storm which accounted for 64% of the total damage. Figure 10 is a map of the declared counties.

6) On November 16th, 2009, rain changed to heavy snow before morning. Snow fell at rapid rates of one to two inches per hour reaching a total snowfall of six to 10 inches across southeast Nebraska. In this disaster, 85.85% of the damages were to electrical utilities, totaling $3,564,427.77 in damages. Figure 11 is a map of the declared counties.

7) Severe storms, flooding, tornadoes, and straight-line winds damaged parts of Southeastern Nebraska during the period of September 13-14, 2010. An estimated 89.55% of the $2,039,306.25 Public Assistance monies will go towards the repair of electrical utilities; estimates are preliminary at this time.

Figure 6

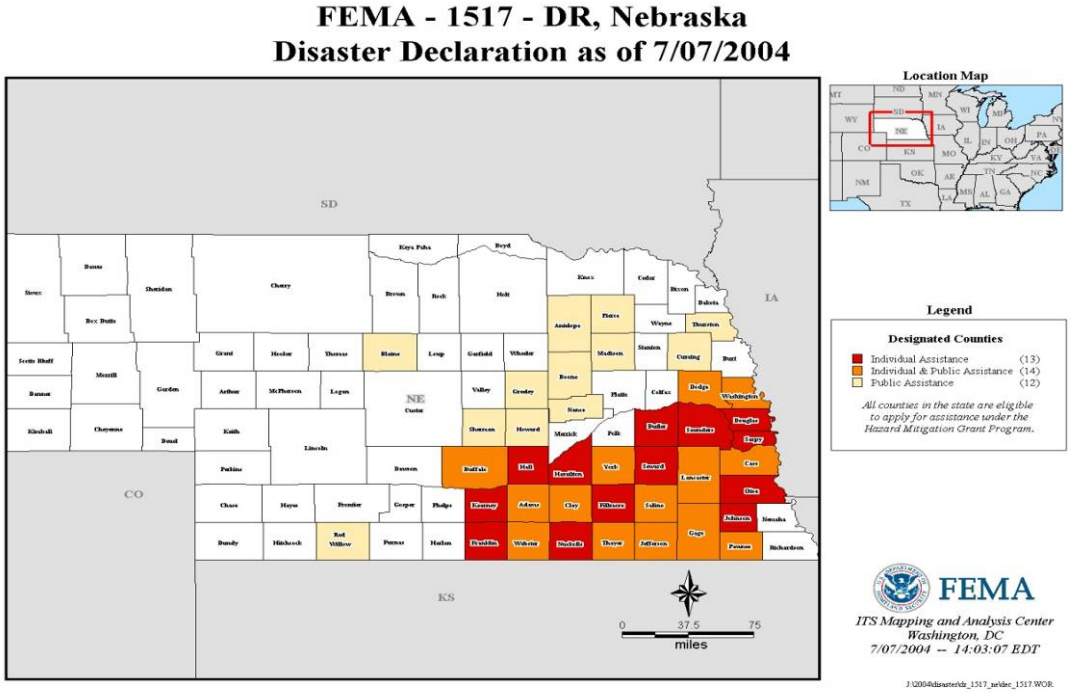


Figure 7

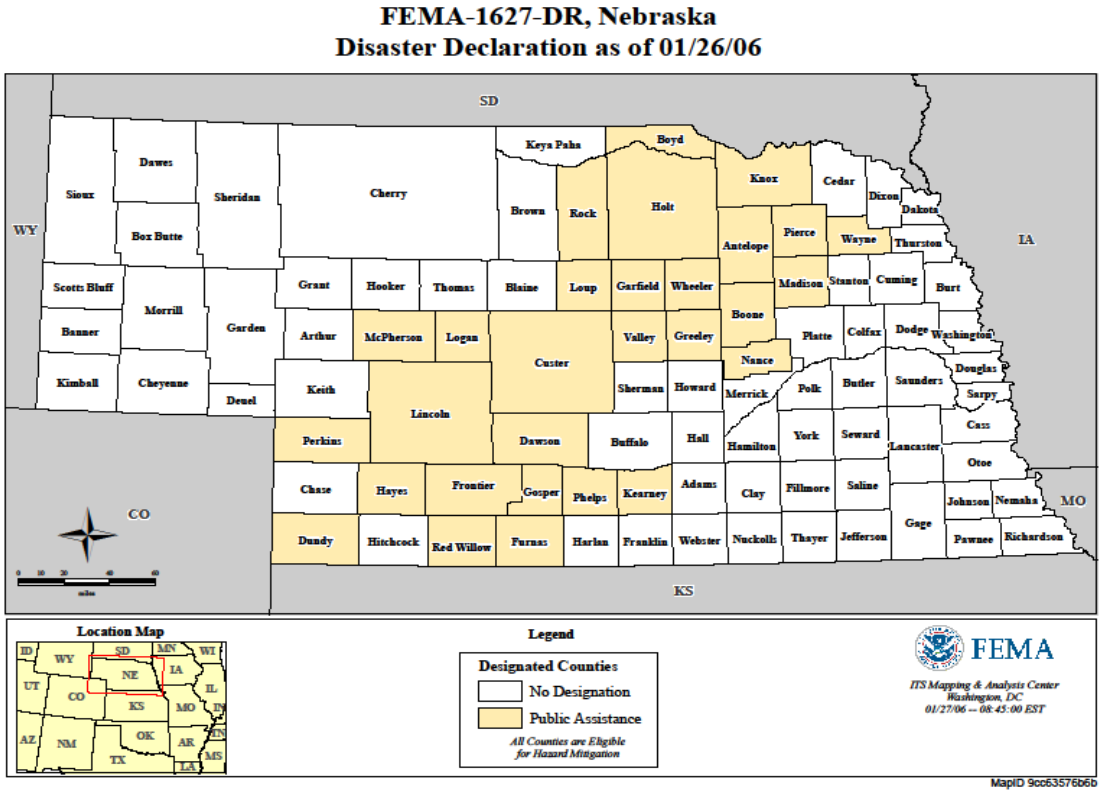


Figure 8

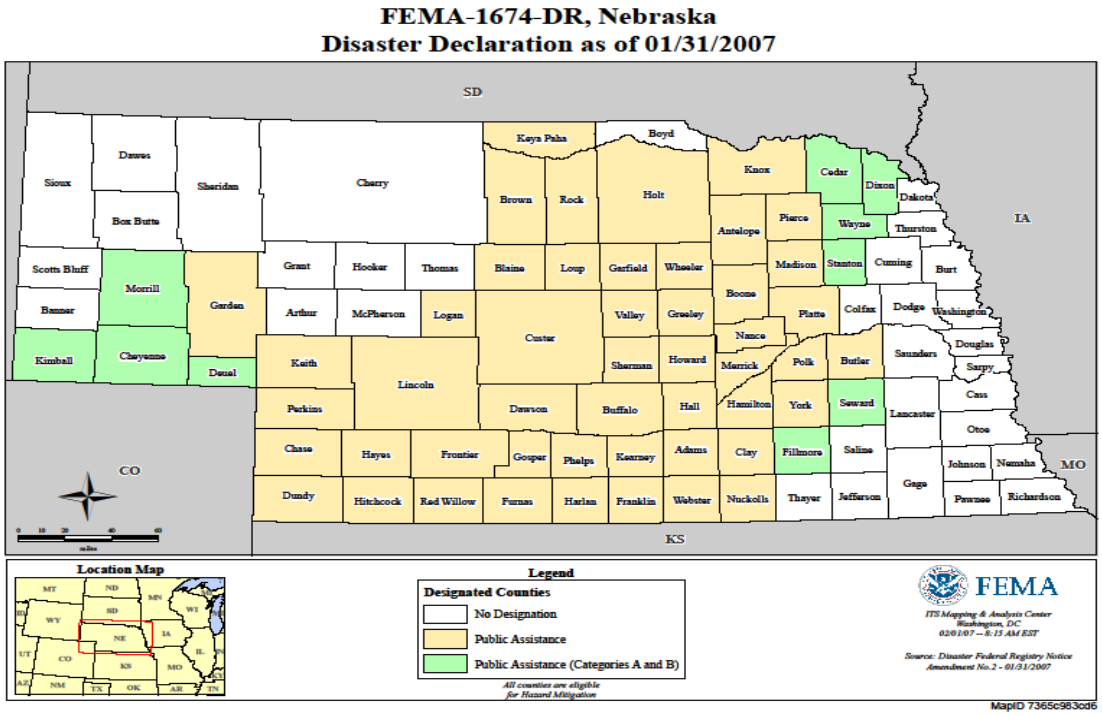


Figure 9

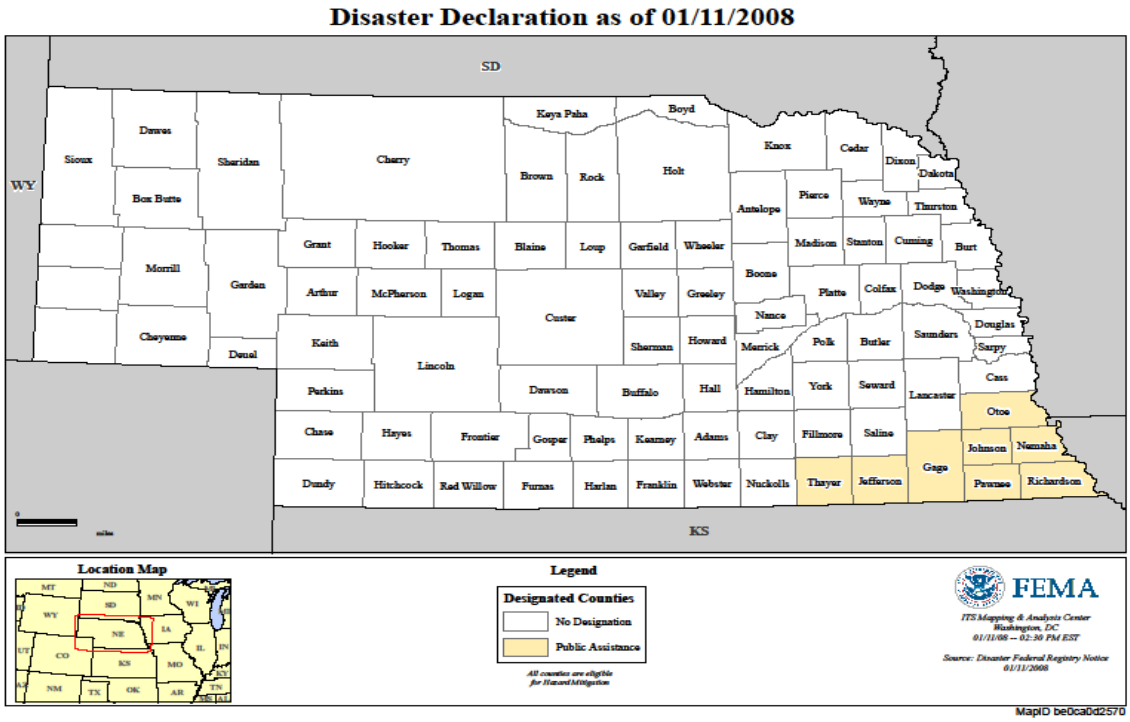


Figure 10

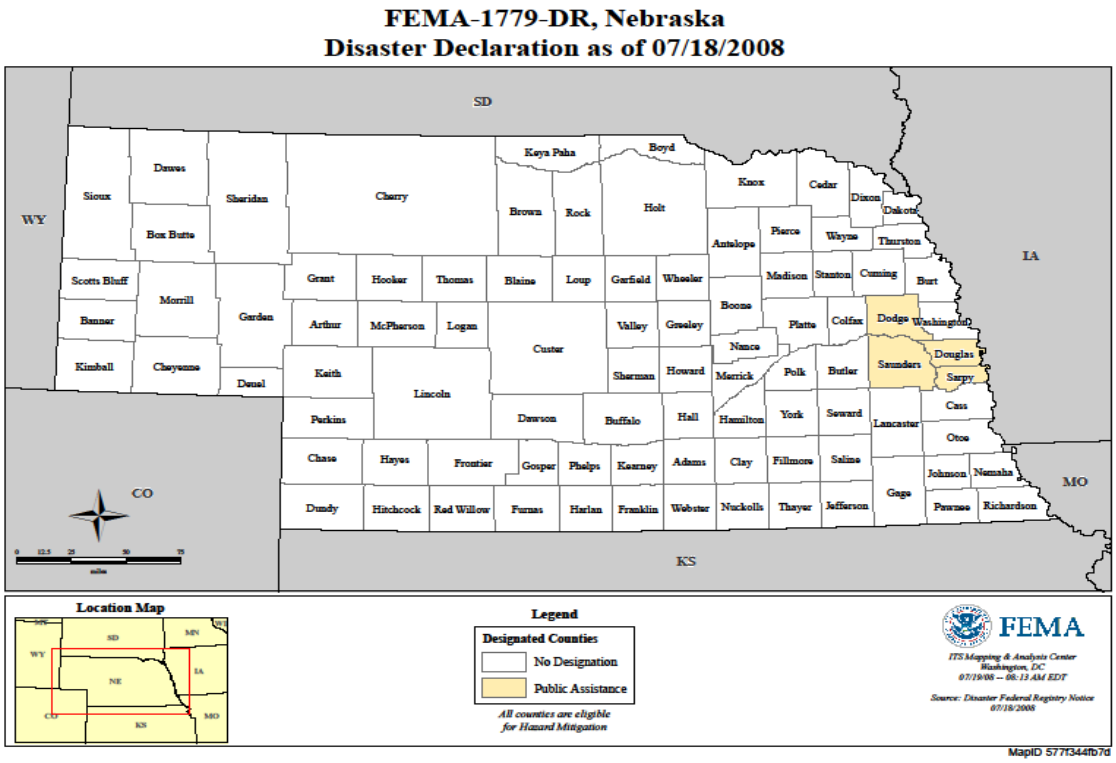


Figure 11

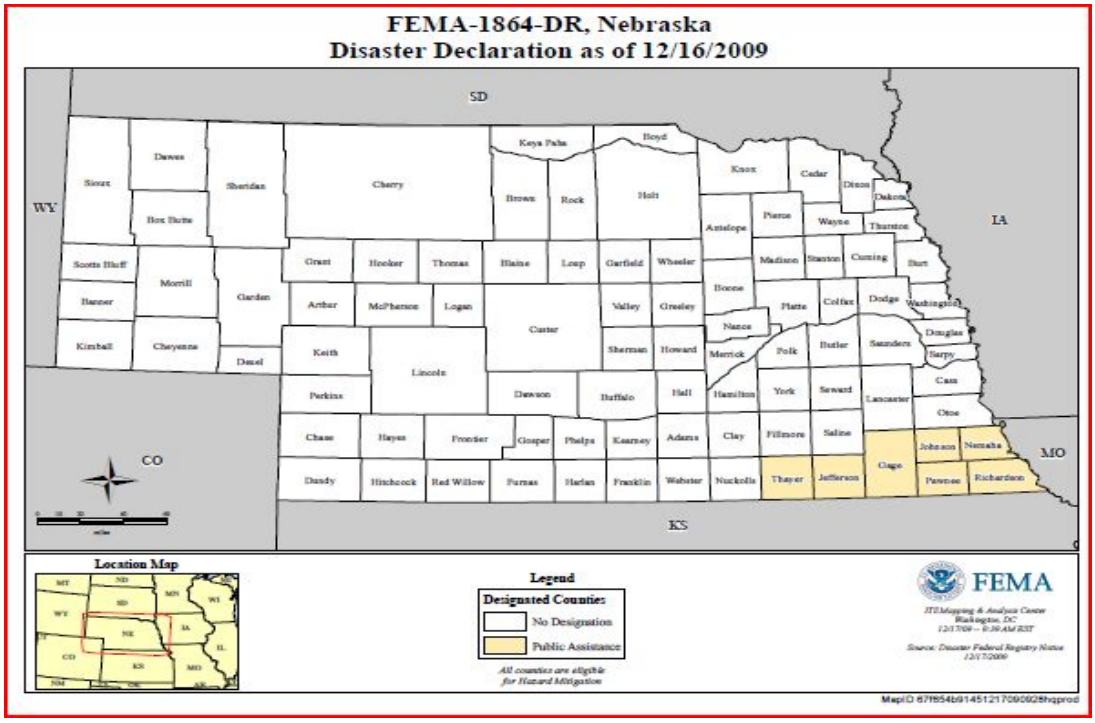
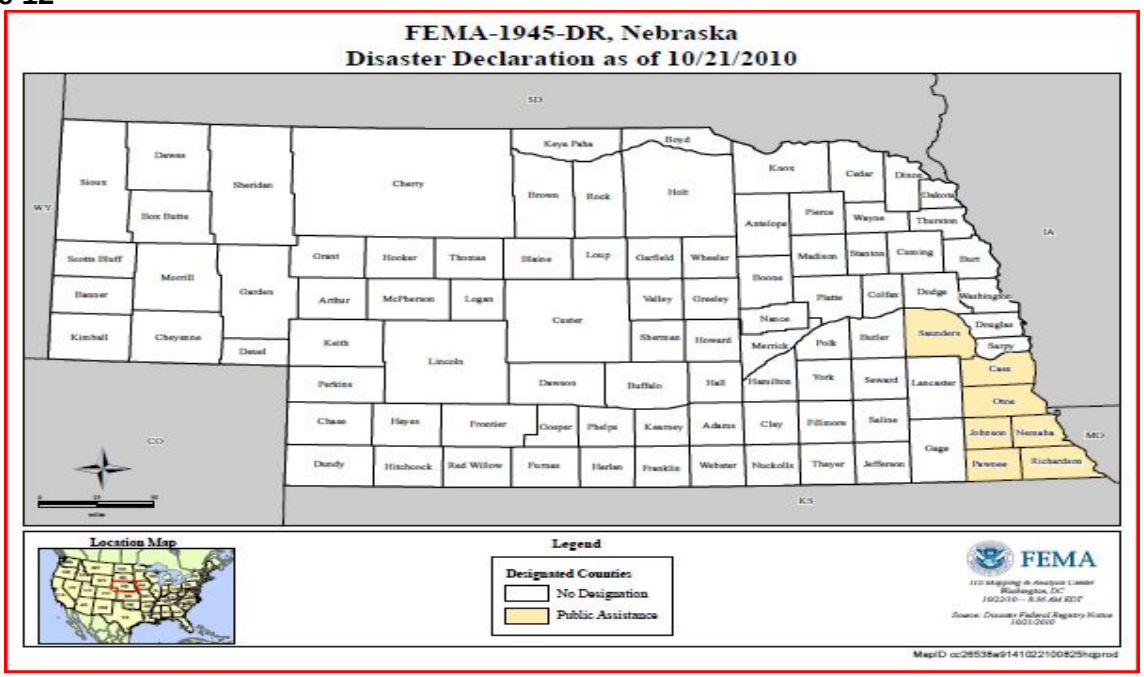
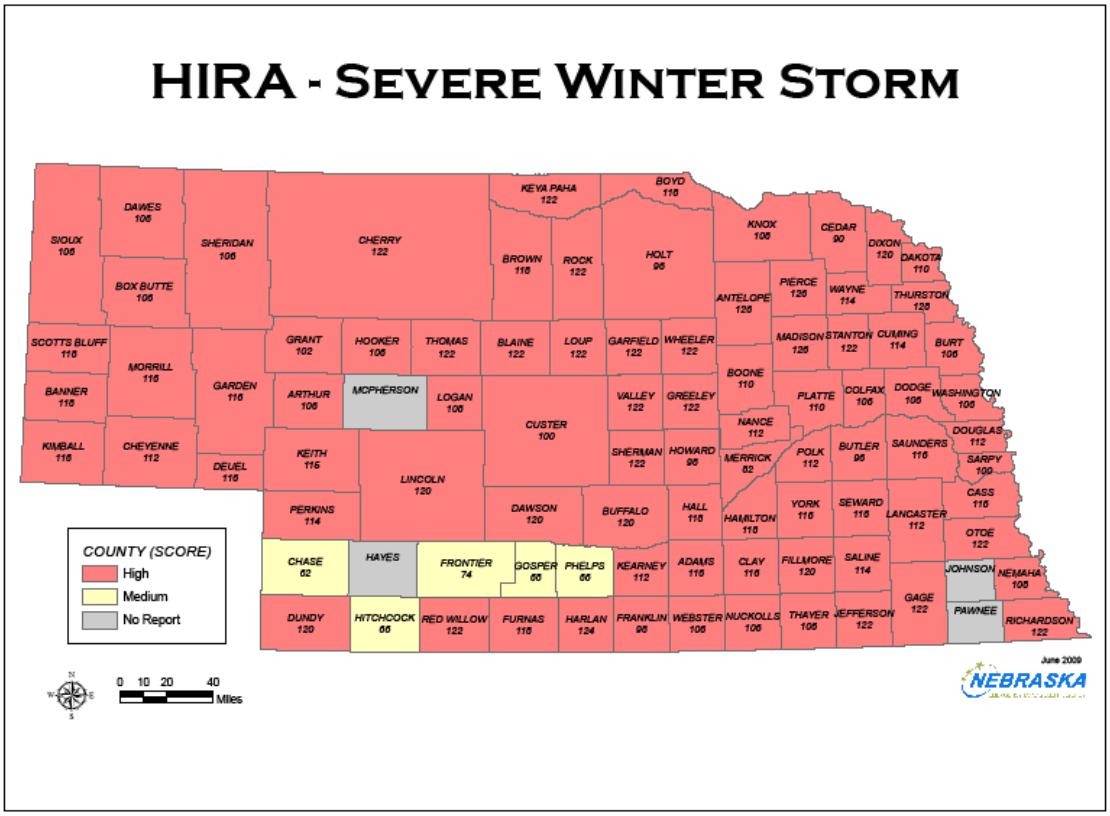


Figure 12



2. <u>Probability of Future Events and Jurisdictional Vulnerability</u>
   The likelihood of damages to the electrical transmission and distribution systems are high across the state. Due to weather extremes which occur in all parts of the state, these occurrences are unpredictable and can cause significant damages. All areas are affected as electrical power is used for residential and commercial purposes as well as agricultural land needs, which covers 95% of the state. Severe weather events cause outages on a regular basis during all seasons.

3. <u>Vulnerable State Facilities and Potential Dollar Losses</u>
   While all public power districts are quasi-governmental entities, the State of Nebraska does own some utility services. Two facilities are located in Lincoln, one at the University of Nebraska and the other is the central utility plant for the Nebraska State Penitentiary. State owned property information is located on page 3-92 of the State of Nebraska Hazard Mitigation Plan.



Hazard:	Severe Winter Storm
Impact On:	
Public: Housing, Causalities, Fatalities, Work, Food, Water	Housing - roofs can collapse from heavy wet snow. Pipes can break from cold if there is a prolonged electrical outage causing water damage. Causalities/fatalities - there are chances for frostbite on exposed skin, hypothermia for people caught outdoors which can cause death, people suffer heart attacks shoveling snow. Work - buildings can also have roof damage or fail due to heavy snow, there can be prolonged power outages causing work stoppage. Food/water - on an individual basis an individual or family can be caught with low or no food and unable to leave the house or travel to a store due to winter storm conditions
Responders: Fire, Police, Medical, Public Works	Conditions are very hard and dangerous for rescuers in severe winter storms. Low temps strong winds and heavy snow make traveling dangerous for the responders who need to be aware of their own condition and sometimes make the difficult decision that it is not safe for them to rescue stranded people
Continuity of Operations	Government can struggle for a few days with limited staff able to get to work. Plans for working from home may not be feasible if electrical power is also affected by the storm
Property: Destroyed, Major, Isolated	Property damage is usually limited to some roof damage or failure. There can be isolation of large areas due to the inability to maneuver snow packed and icy streets

Hazard: Impact On:	Severe Winter Storm
Infrastructure: Electricity, water, roads, bridges	All infrastructure is impacted in a severe storm, electrical systems are brought down by winds and ice, water systems and waste-water system can be affected by the temperatures, inability of operators to reach the facilities and prolonged electrical outages. Roads and bridges become impassable and require large amount of effort, time and money to clear.
Environment	limited impact, there may be larger than normal loss of wild life due to a lack of food
Economic Conditions:	Plowing snow and repairing major electrical systems can go way beyond what's budgeted causing stress on local and state economies.
Public Confidence in the Governance	Depends on how quickly and efficiently government opens roads, restores power and brings things back to normal winter conditions.

K. Severe Winter Storms/Ice Storms

1. Location and Previous Occurrences

a. Winter weather affects all areas of the state equally. Severe winter storms and ice storms are common in Nebraska from late fall to spring. Winter storms have occurred as early as October and as late as May. They are the result of the collision of high-pressure systems with moderate temperatures and low-pressure systems having lower temperatures. These storms may contain freezing rain, sleet, significant snowfall, and high winds. The complex mixture of moisture, temperature, high pressure, and low-pressure systems creating winter storms is generally unique for each storm.

b. Averaging statistics from the five-year period between 2005 and 2009 results in 64.4 events per year.[32] The five-year period included 4 fatalities and 4 injuries directly related to winter weather. A further breakdown of statistics indicates the following:

1) Winter storm events over the five-year period numbered 139 events or an average of 27.8 events per year.

2) Heavy snow events over the five-year period numbered 59 events or an average of 11.8 events per year.

3) Blizzard storm events over the five-year period numbered 74 events or an average of 14.8 events per year.

4) Ice storm events over the five-year period numbered 25 events or an average of 5 events per year.

c. Table 3.20 represents recorded fatalities in Nebraska per winter season.

[32] Source-National Climate Data Center.

Table 3.20: Severe Winter Storm Fatalities by Winter Season

Season	Fatalities	Season	Fatalities
1996-1997	4	2005-2006	2
1997-1998	3	2006-2007	0
1998-1999	0	2007-2008	0
1999-2000	1	2008-2009	0
2000-2001	4	2009-2010	1
2001-2002	0	2010-2011	0
2002-2003	0	2011-2012	0
2003-2004	2	2012-2013	1

d. These figures do not include deaths caused indirectly, such as health issues exacerbated by shoveling snow or deaths due to motor vehicle accidents.

e. Tables 3.21 and 3.22 were provided by the NCDC Website, and shows recent snow and ice storm events in Nebraska. The data in these two tables may not coincide with data in the above table (Fatality Breakdown by Winter Season) that was gathered by the state. The NCDC data includes only those storms that caused significant property damage—in excess of $1 million. Limiting the data to only those storms causing a specific dollar amount of damages was necessary in order to obtain a data set in a manageable size. NCDC data indicates that since 1993 when data collection began in Nebraska, there have been more than 500 snow and ice events. The storms above the $1 million threshold resulted in a total of 23 deaths, 35 in juries, $143.5 million in property damages, and $9.4 million in crop damages. Again, these costs may differ from the total costs listed in table 3.21 below because of the limits placed on the data searched for in order to obtain a manageable set.

Table 3.21: Historic Snow and Ice Storm Events in Nebraska

16 SNOW & ICE event(s) were reported in **Nebraska** between **01/01/1997** and **10/31/2013** with **at least $1 Million in Property Damage**.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 NEZ001>003 - 019>021 - 054>055	04/04/1997	05:00 PM	Blizzard	N/A	0	0	5.0M	0
2 NEZ050>053 - 065>068 - 078 - 088>089	10/25/1997	08:00 PM	Heavy Snow	N/A	0	0	56.5M	1.6M
3 NEZ039>041 - 046>049 - 060>064 - 072>077 - 082>087	10/25/1997	12:00 AM	Winter Storm	N/A	0	0	15.0M	1.5M
4 NEZ005>006 - 008>010 - 022>026 - 028 - 035 - 035>037 - 056>058 - 069	04/11/2001	03:30 PM	Winter Storm	N/A	0	0	10.0M	0
5 NEZ039>040 - 046>047 - 060>061 - 072>074 - 082>084	11/27/2005	04:00 PM	Blizzard	N/A	0	0	3.0M	0

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
6 NEZ005>010 - 025>029 - 037>038 - 059 - 071	11/27/2005	09:00 PM	Blizzard	N/A	0	0	7.6M	0
7 NEZ011>012 - 015>018 - 030>033 - 042>043	11/28/2005	12:00 AM	Winter Storm	N/A	0	0	3.0M	0
8 NEZ060>064 - 072>077	03/20/2006	03:00 AM	Winter Storm	N/A	0	0	1.7M	0
9 NEZ060 - 072	12/19/2006	04:00 AM	Ice Storm	N/A	0	0	1.0M	0K
10 NEZ039 - 046 - 060 - 072>073 - 082	12/29/2006	12:00 PM	Ice Storm	N/A	0	0	2.0M	0K
11 NEZ040 - 047>048 - 062 - 074>075 - 084	12/29/2006	18:00 PM	Ice Storm	N/A	0	0	10.0M	0K
12 NEZ016	12/29/2006	19:00 PM	Winter Storm	N/A	0	0	5.0M	0K
13 NEZ030	12/30/2006	00:00 AM	Winter Storm	N/A	0	0	8.0M	0K
14 NEZ049 - 063 - 076>077 - 086	12/30/2006	00:00 AM	Ice Storm	N/A	0	0	4.0M	0K
15 NEZ031	12/30/2006	13:00 PM	Winter Storm	N/A	0	0	1.5M	0K
16 NEZ042	12/30/2006	21:00 PM	Winter Storm	N/A	0	0	3.2M	0K
				TOTALS:	**0**	**0**	**136.5 Million**	**3.1 Million**

4 SNOW & ICE event(s) were reported in **Nebraska** between **01/01/1995** and **10/31/2013** with **at least $1 Million in Crop Damage**.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

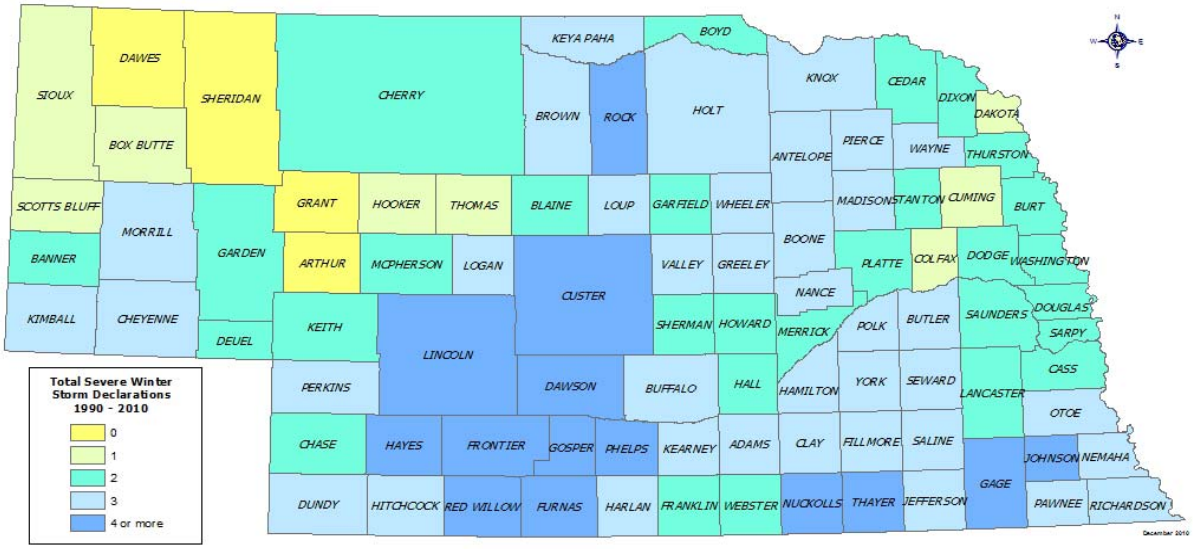
Nebraska

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 NEZ079	09/20/1995	1600	Heavy Snow	N/A	0	0	5K	3.0M
2 NEZ068 - 089>093	10/22/1996	03:00 PM	Winter Storm	N/A	0	0	0	3.2M
3 NEZ050>053 - 065>068 - 078 - 088>089	10/25/1997	08:00 PM	Heavy Snow	N/A	0	0	56.5M	1.6M
4 NEZ039>041 - 046>049 - 060>064 - 072>077 - 082>087	10/25/1997	12:00 AM	Winter Storm	N/A	0	0	15.0M	1.5M
				TOTALS:	**0**	**0**	**71.5 Million**	**9.3 Million**

f. The October 25, 1997 snowstorm impacted central and south central Nebraska with record early snows. Wind driven snowfall amounts totaled as much as two feet. The storm's origin was in the southwest United States with a strong upper level low pressure riding along the southern jet stream. Several highways were closed, including Interstate 80, as near blizzard conditions developed. Guide Rock received twenty-four inches of snow, Clay Center twenty -three inches and Hastings seventeen inches. The heavy, wet snow was responsible for many power outages in the area as tree limbs broke and fell on power lines. On Highway 136 east of Alma, road crews worked for ten hours carving through a ten foot drift which covered the road. Record cold accompanied the snow as temperatures dropped to the single digits the morning of the 26th.

g. Figure 3.11 shows winter storm federal disaster declarations by county in Nebraska.

Figure 3.11: Map of Winter Storm Federal Disaster Declarations 1990-2012



h. Although the map does show some clustering of winter storm incidents in the south-central portion of the state, it is clear that storms are geographically widely dispersed throughout the entire state.

i. Table 3.22 summarizes information on the winter storm federal disaster declarations in Nebraska

Table 3.22: Federal Disaster Declarations (Winter Storms)

Year	Federal Disaster Number	Dates	Public Assistance $ Awarded	Est. Private Structural & Crop Losses/ Public Assistance Damages	Description/ Location
2010	**1878**	12/22/09-1/8/10	$6,515,084.01 (2010 dollars)	$6,515,084.01 (2010 dollars)	Severe winter storms and snowstorm in Nebraska between December 2009 and January 2010 lead to the declaration of 34 Counties in Nebraska
2009	**1864**	11/16/09-11/17/09	$5,134,087.94 (2009 dollars)	$5,134,087.94 (2009 dollars)	Severe winter storm resulted in the declaration of Gage, Jefferson, Johnson, Nemaha, Pawnee, Richardson, and Thayer Counties in Nebraska.
2008	**1739**	12/10/07-12/12/07	$3,047,339.02 (2008 dollars)	$3,047,339.02 (2008 dollars)	Severe winter storm lead to the declaration of Gage, Jefferson, Johnson, Nemaha, Otoe, Pawnee, Richardson, and Thayer Counties in Nebraska.
2006/ 2007	**1674**	12/21/06 – 1/4/07	$198,516,136.52 (2007 dollars)	$198,516,136.52 (2007 dollars)	Severe winter storm created large amounts of debris, extensive damage to State's electrical Infrastructure, 30,000 persons without powering Western/Central Nebraska (59 counties)
2005	**1627**	11/27/05 – 11/28/05	$6,771,810.48 (2005 dollars)	13,900,000.00 (2005 dollars)	Severe winter storm created large amounts of debris, extensive damage to State's electrical infrastructure, Western/Central Nebraska (29 counties)
1997	**1190**	10/24/97 – 10/26/97	$45,138,306.00 (1997 dollars)	$74,950,000.00 (1997 dollars)	Severe Snow Storm created large amounts of debris, extensive damages to electrical infrastructure in Eastern/Central Nebraska, 200,000 customers without power (39 Counties declared).
1994	**1027**	April 10, 1994 – April 13, 1994	$45,797,684.00 (1994 dollars)	$54,000,000.00 (1994 dollars)	Severe snow storm, high winds 30-40 mph, extensive damages to electrical infrastructure in Central Nebraska, (15 Counties)
1976	**500**	Declared: April 8, 1976	Unknown	Unknown	Severe snow storm, high winds, extensive damages to electrical infrastructure in Central Nebraska.

j. The majority of the information in the above table is from FEMA's Website, former State Hazard Mitigations Plans 1985-2008, NEMIS (National Emergency Management Information System), National Oceanic and Atmospheric Administration (NOAA) Climatic Data Center, and general Web-based research.

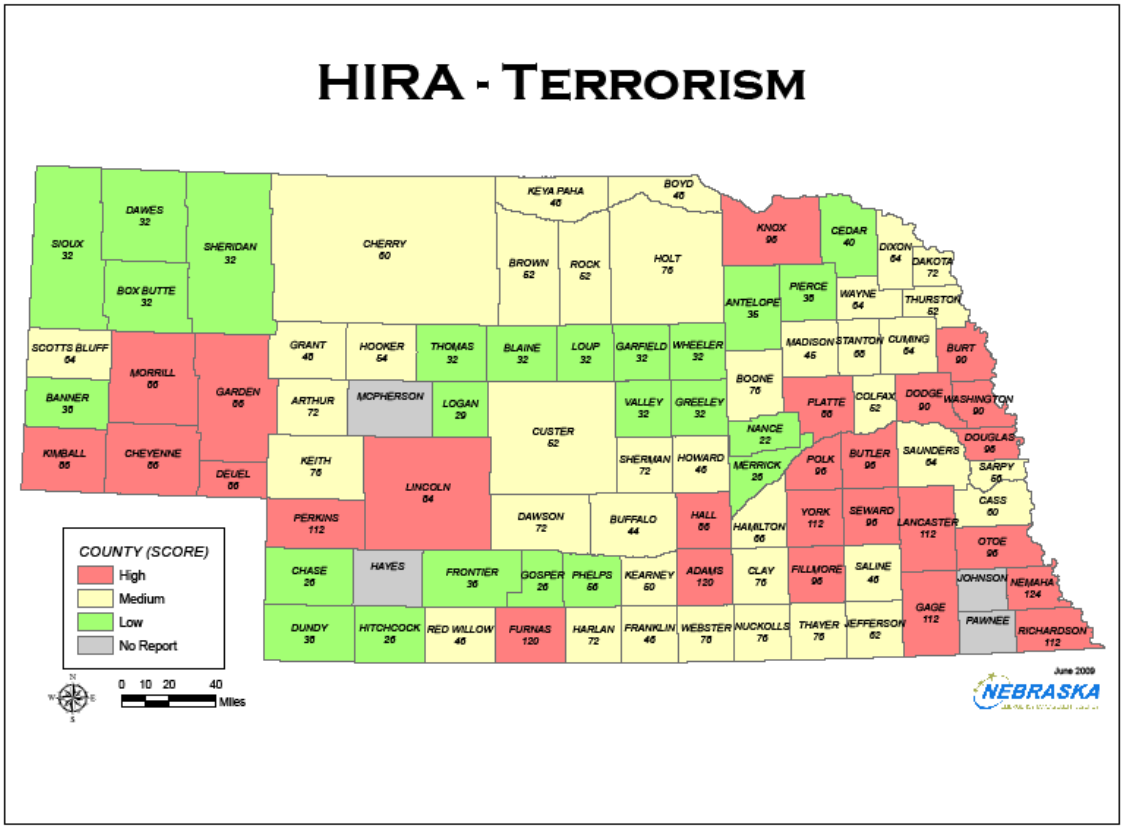
2. Probability of Future Events and Jurisdictional Vulnerability

a. The probability of future severe winter storm and ice storm events is high based on historical record. Data indicates that on average, 64.4 winter weather events occur each year (see page 82 of this section). The average number of winter weather events has doubled since the 2008 plan, showing an increased likelihood of the event occurring. Most winter weather events are not considered localized events but generally affect a significant geographical area of the state. The entire state of Nebraska is vulnerable to winter storms, yet the nature of the vulnerability varies greatly. In populated areas, travel difficulties along with some power outages are significant. In rural areas, wind-driven snows hamper vehicle traffic along with power outages lasting from several hours to several days. In addition to these, stresses on livestock increase losses, and can cause water and feeding concerns. In the western parts of the state, communities and farmsteads are spread out over vast distances, complicating emergency response efforts.

c. Winter storm Presidential Disaster Declarations in Nebraska occurring between 1990 and 2012) resulted in total damages of $380,795,665 (in 2010 real dollars).This total included public, private, and crop damages. The annual average during this period was approximately $18,133,127 per year. Note that these numbers are skewed by the December 2006 – January of 2007 snow storms. These storms were arguably the costliest snow/ice storm in Nebraska history, with a price tag of $198,516,137 in 2007 dollars. Because the December 2006 – January 2007 winter storm was an extreme scenario, if we remove that disaster and those damages from the statistical pool, annual snow storm losses in Nebraska for the period averaged approximately $8,679,978. The use of past presidential declarations should not be the sole measure for future winter storm losses. The Planning Team will revisit this issue for the next revision or wait until better data becomes available.

3. State Owned Buildings at Risk and Potential Dollar Losses

The entire state is highly vulnerable to winter storm damage. However, the state owned and operated buildings in the ten most populous counties listed in Table 3.40 of this section, are more numerous, as these counties have increased concentrations of infrastructure, buildings, and population. These counties have higher vulnerability.



Hazard: Impact On:	Terrorism
Public: Housing, Causalities, Fatalities, Work, Food, Water	Housing - impact on housing should be small as residential areas are not highly rated as targets. There could be damage to housing adjacent to a larger target. Causalities/Fatalities - are dependant on the target and if there is warning to the facility impacted. Since high fatalities and causalities could be the goal, a terrorism attack can quickly become a mass causalities/fatality incident. Work - dependant on the target and medium of attack. Food/Water - Unless these facilities are targeted or near the target they should not be impacted
Responders: Fire, Police, Medical, Public Works	Responders need to be aware and vigilant for any secondary device at the scene. All precautionary measures such as scene security and proper PPE is important following a terrorist attack. Even if a scene is a **potential** terrorist event it need s to be treated like a crime scene with other responders working closely with law enforcement.
Continuity of Operations	If the target is governmental buildings, having good COOP plans will get the essential services up and running as quickly as possible. If the target is other than governmental, there should be no impact.
Property: Destroyed, Major, Isolated	The target of the attack may suffer major damage or be destroyed. Other properties in the vicinity of the target may also suffer damages.
Infrastructure: Electricity, water, roads, bridges	If targeted infrastructure could be destroyed. If not targeted there could be little or no impact on the services outside of the immediate targeted area.

Hazard: Impact On:	Terrorism
Environment	Environmental impact will depend on the target, facilities with hazardous chemical could cause severe environmental impact. Every day chemicals in use at a targeted facility, or the debris from destroyed structures can also cause an impact on the surrounding environment.
Economic Conditions:	With this type of attack, depending on how large the attack is, how emotional the target is, there can be a large economic impact on markets. The localized economic impact will again depend on the target. Questions like is it a large employer, is it a large contributor to the tax base and economy of the area will identify the actual impact.
Public Confidence in the Governance	As with many of the other hazards, the ability of government to get the jurisdiction back to normal conditions quickly and efficiently will play a role in public confidence. With an attack there will also be the questions; was enough done to prevent the attack, and ow quickly were the offender(s) identified and captured.

L. Terrorism

1. Location and Previous Occurrences

a. All areas of the state are at risk for some form of terrorist incident. For the purpose of this risk assessment, both international and domestic terrorism events are included. The Federal Bureau of Investigation defines terrorism as "the unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives." The threat of terrorism, both international and domestic, is always present. An attack could occur when least expected.

b. There are many categories of terrorism. For example, an act of agricultural terrorism consists of acts to intentionally contaminate, ruin, or otherwise make agricultural products unfit or dangerous for consumption or further use. As previously stated, agriculture is an important industry in Nebraska.

c. Terrorism could also be within the category of "civil disorder". Although in the United States, civil disorder has been most commonly associated with urban areas and college campuses, it is certainly within the realm of possibility in Nebraska.

d. The most recent act of terrorism in Nebraska involved mailbox bombs. On May 5, 2002 six unexploded pipe bombs were found in mailboxes in Fillmore, Howard, Thayer, Platte and Valley Counties in south and central Nebraska. This occurred after similar devices exploded and injured six people in eastern Iowa and western Illinois. The pipe bombs in Illinois and Iowa had been accompanied by typewritten anti-government notes. All devices had been placed by hand in the

mailboxes, not sent through the mail. Four were found by mail carriers and one was discovered by a resident. A college student was later arrested and deemed incompetent to stand trial.

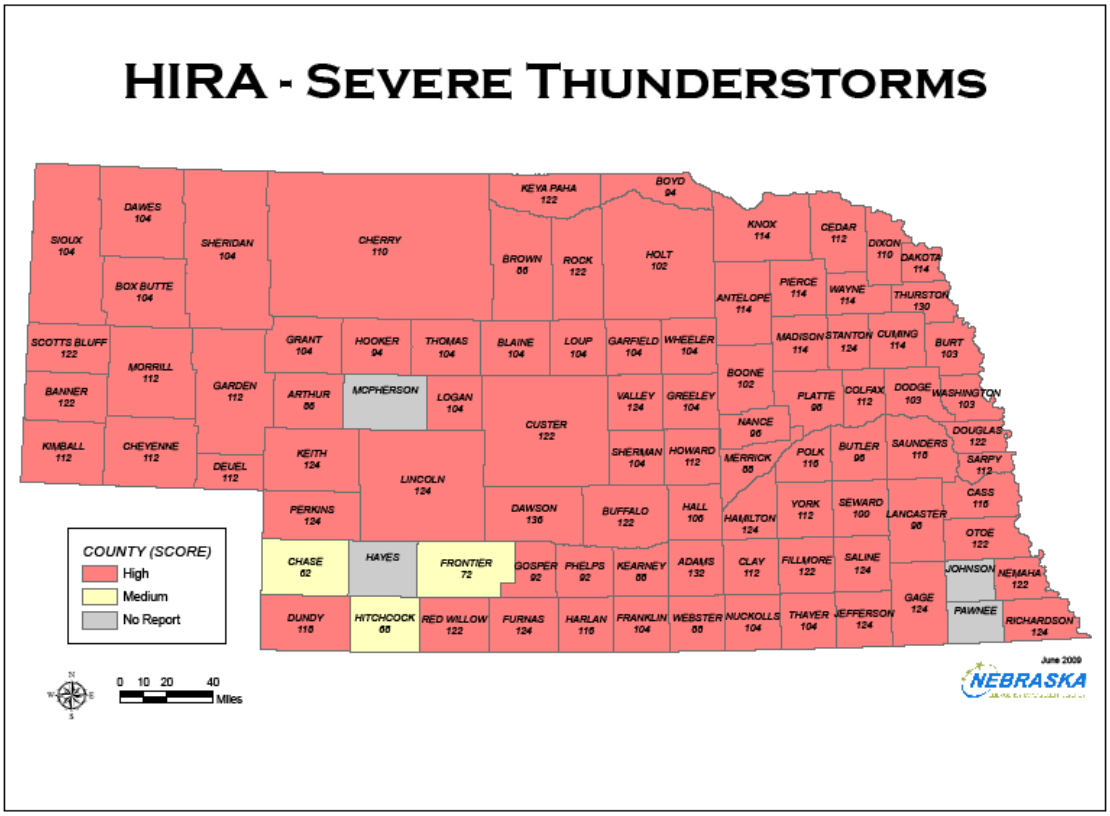
2. Probability of Future Events and Jurisdictional Vulnerability

a. Determining even the probability of terrorism is an inexact science. Terrorists could strike anywhere at any time, depending on the goals, opportunities, and methods of the terrorists. Historically, domestic terrorists such as politically radical or anti-government groups may become more active in times of economic stress.

b. Identifying jurisdictions that are most threatened in Nebraska could be based on population density. There are two population centers, the Omaha Metropolitan Statistical Area and the Lincoln area. However, there are other noteworthy targets in Nebraska because of their economic, transportation, communication, agriculture, or food production significance. These facilities have been entered into a database approved by Department of Homeland Security by the Nebraska fusion center called the Nebraska Information Analysis Center (NIAC). Most of this data is classified as Protected Critical Infrastructure Information (PCII) under Federal Regulations.

c. The NIAC coordinates with the Department of Homeland Security's Security Protective Advisor to identify critical facilities that rise to National Tier I or Tier II levels. These lists of facilities are classified by DHS.

3. <u>State Owned Buildings at Risk and Potential Dollar Losses</u>
The entire state is vulnerable to terrorism (see state-owned facility information by county included as Table 3.40 of this section). However, the state owned and operated buildings in the ten most populous counties (shaded in Table 3.40) of this section, are more numerous, as these counties have increased concentrations of infrastructure, buildings, and population. These counties have higher vulnerability. Analysis of the most vulnerable State facilities is classified.



Hazard:	Severe Thunderstorm
Impact On:	
Public: Housing, Causalities, Fatalities, Work, Food, Water	Housing - depending on the wind and the size of hail most damages are roofs, siding, and windows from wind and hail. if there is Extreme straight-line winds, homes and buildings may incur major damage or be destroyed. Work - Business and industrial buildings can incur similar damages or can be shut down for a time due to loss of electrical power. Food/water - little impact
Responders: Fire, Police, Medical, Public Works	Depending on the strength of the wind and size of hail responders need to be aware of the possibility of downed electrical lines as they move debris from roadways. Some search and rescue may be needed but is unusual unless the storm spawns tornados.
Continuity of Operations	Unless governmental facilities are severely damaged which is rare, or there is a prolonged loss of power where some electronic records are destroyed or damaged there is little impact.
Property: Destroyed, Major, Isolated	Property may have minor damages similar to the housing. There may be some homes isolated due to flash flooding.
Infrastructure: Electricity, water, roads, bridges	Electricity can be the most impacted by a severe thunderstorm. High winds can affect structures and lines causing outages. Water and waste water systems can be impacted if an electrical outage is prolonged
Environment	limited impact except that due to flash flooding

Hazard:	Severe Thunderstorm
Impact On:	
Economic Conditions:	limited impact
Public Confidence in the Governance	limited impact

M. Thunderstorms/High Winds/ Hail/Lightning

1. Location and Previous Occurrences

a. For the purpose of the 2014 Plan Update, the hazard "thunderstorms" will be inclusive of storm-related high winds, lightning, and hail, which are also associated with these storms. Thunderstorms and high winds are common events in the state. Because of its geographic location, Nebraska commonly experiences warm gulf moisture from the Gulf of Mexico that meets cool, dry air from Canada. This collision of warm, moist air with cool, dry air provides the ingredients for the production of thunderstorms. These thunderstorms can and often do become severe in the early spring and summer. Severe thunderstorms can produce gusting straight line winds in excess of 60 mph, heavy rain, hail up to the size of baseballs, micro-bursts, severe lightening, and, in extreme cases, tornadoes. Tornadoes are treated separately in this Section.

b. Thunderstorms are frequent in the state. Thunderstorms can be isolated events covering a relatively small geographical area or can develop into squall lines that traverse the entire state. The risk of thunderstorms is equal throughout the state, with random variations in frequency from county to county.

c. NCDC data indicates that Nebraska has experienced a total of 361 thunderstorm/high wind events since data collection began in 1993. The storms resulted in no deaths, but 14 injuries, $180 Million in property damages, and $42.5 Million in crop damages. Table 3.23 below, is a listing of all thunderstorms reported in Nebraska that have caused at least $1 Million in property damages and at least $1,000 in crop damages. These limitations were put on the data in order to achieve a manageable set. Because of the limitations, the costs below do not reflect all costs incurred in the State of Nebraska by severe thunderstorms historically.

Table 3.23: Historic Thunderstorm/High Wind Events in Nebraska

12 THUNDERSTORM & HIGH WINDS event(s) were reported in **Nebraska** between **01/01/1993** and **10/31/2013** with **at least $1 Million in Property Damage** with **at least $100 Thousand in Crop Damage**.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 Sutton	07/01/1994	1815	Thunderstorm Winds	N/A	0	2	5.0M	50.0M
2 South Sioux City	07/16/1996	09:05 PM	Thunderstorm Winds	70 kts.	0	0	3.0M	3.0M
3 Carleton	05/29/1998	01:30 AM	Thunderstorm Winds	65 kts.	0	0	1.0M	250K
4 Elm Creek	09/25/1998	04:23 PM	Thunderstorm Winds	87 kts.	0	5	2.4M	2.0M
5 Beaver City	06/29/2000	05:40 PM	Thunderstorm Winds	61 kts.	0	0	1.0M	2.0M
6 Lawrence	06/13/2001	10:10 PM	Thunderstorm Winds	80 kts.	0	0	1.4M	3.0M
7 Shelby	06/09/2003	09:15 PM	Thunderstorm Winds	70 kts.	0	1	1.0M	1.0M
8 Countywide	07/12/2004	07:00 PM	Thunderstorm Winds	77 kts.	0	0	3.5M	3.5M
9 Saronville	08/22/2007	16:55 PM	Thunderstorm Wind	N/A	0	0	1.5M	2.0M
10. ORD	5/30/2011	19:00	Thunderstorm Winds	72 kts.	0	0	1.0M	250K
11. CLARKS	6/19/2011	23:25	Thunderstorm Winds	70 kts.	0	0	1.0M	250K
12. CLAY CO.	8/1/2013	21:39	Thunderstorm Winds	70 kts.	0	0	1.0M	10.0M
				TOTALS	0	8	21.8M	77.25M

d. In the 2007 storm listed above, winds of at least 80 miles per hour knocked to the ground a newly constructed 125 foot tall grain bin and pulled the anchor bolts out of the cement foundation. In addition, over $100,000 in electrical equipment for the facility was lost. Winds were estimated at 80 miles per hour. Tree damage in Hastings was excessive due to straight line winds of nearly 70 miles per hour. Further east in Fillmore County the roof was torn from a local car wash and tree damage was extensive. In many parts of Fillmore County power was lost, farm outbuildings were damaged, and corn crops were flattened by the wind. Damage to corn and soybeans, while hard to assess, probably exceeded two million dollars from the storm, according to data from NCDC.

e. Tables 3.24 and 3.25 summarize hail damages in the state are also based on NCDC data, and are limited by damages caused as stated.

Table 3.24: Historic Hail Events in Nebraska

54 HAIL event(s) were reported in **Nebraska** between **01/01/1993** and **10/31/2013** with **at least $1 Million in Property Damage**.	**Mag**: Magnitude **Dth**: Deaths **Inj**: Injuries **PrD**: Property Damage **CrD**: Crop Damage

Nebraska								
Location or County	**Date**	**Time**	**Type**	**Mag**	**Dth**	**Inj**	**PrD**	**CrD**
1 Friend	07/01/1994	1720	Hail	2.75 in.	0	0	5.0M	5.0M
2 Benkleman	07/24/1994	2003	Hail	2.75 in.	0	2	5.0M	50.0M
3 Bellevue	05/16/1995	1020	Hail	3.00 in.	0	0	20.0M	0
4 Grand Island	08/05/1995	1435	Hail	1.75 in.	0	0	1.0M	0
5 Grand Island	08/05/1995	1455	Hail	2.00 in.	0	0	1.5M	500K
6 Hooper	06/20/1996	08:35 PM	Hail	2.75 in.	0	0	10.0M	12.0M
7 Plattsmouth	07/28/1996	12:05 PM	Hail	1.50 in.	0	0	1.0M	250K
8 Kimball	06/25/1997	01:28 PM	Hail	1.75 in.	0	0	1.0M	6.0M
9 Wallace	06/25/1997	04:45 PM	Hail	1.75 in.	0	0	1.5M	1.5M
10 Wellfleet	06/25/1997	05:30 PM	Hail	1.75 in.	0	0	1.5M	1.4M
11 Maywood	06/25/1997	05:50 PM	Hail	1.75 in.	0	0	3.0M	0
12 Johnstown	06/30/1997	05:00 PM	Hail	2.00 in.	0	0	1.2M	3.4M
13 O Neill	08/14/1997	05:05 PM	Hail	2.00 in.	0	0	1.0M	500K
14 Imperial	08/21/1997	06:00 PM	Hail	2.75 in.	0	0	1.0M	1.5M
15 Imperial	08/21/1997	06:20 PM	Hail	1.75 in.	0	0	1.0M	1.5M
16 Holdrege	05/21/1998	07:30 PM	Hail	2.75 in.	0	0	1.0M	750K
17 Columbus	05/15/1999	10:15 PM	Hail	2.75 in.	0	0	7.5M	0
18 Brownson	06/26/1999	07:06 PM	Hail	2.75 in.	0	0	6.0M	20.0M
19 Scottsbluff	06/27/1999	04:17 PM	Hail	2.75 in.	0	25	55.0M	2.0M
20 Kimball	05/07/2000	02:30 PM	Hail	1.75 in.	0	1	5.0M	0
21 Crofton	06/23/2000	07:55 PM	Hail	1.75 in.	0	0	1.5M	50K
22 Firth	07/20/2000	01:05 AM	Hail	2.75 in.	0	0	2.0M	1.0M
23 Omaha	04/10/2001	10:40 AM	Hail	1.75 in.	0	1	300.0M	0
24 Omaha	04/30/2001	08:30 PM	Hail	1.75 in.	0	0	200.0M	0
25 Omaha	05/13/2001	04:50 AM	Hail	2.50 in.	0	0	1.0M	0
26 Scottsbluff	07/04/2001	05:41 PM	Hail	3.00 in.	0	12	50.0M	0
27 Doniphan	05/05/2002	04:47 PM	Hail	2.75 in.	0	0	1.0M	0
28 Grand Is	05/05/2002	04:55 PM	Hail	3.00 in.	0	0	2.0M	100K

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
29 Amherst	06/12/2002	07:20 PM	Hail	5.00 in.	0	0	10.0M	3.0M
30 Riverdale	06/12/2002	07:30 PM	Hail	5.00 in.	0	0	10.0M	3.0M
31 Kearney	06/12/2002	07:40 PM	Hail	5.00 in.	0	15	50.0M	2.0M
32 Minden	06/12/2002	07:45 PM	Hail	2.75 in.	0	0	5.0M	2.0M
33 Minden	06/12/2002	08:05 PM	Hail	4.50 in.	0	0	20.0M	3.0M
34 North Platte	07/20/2003	02:44 PM	Hail	2.75 in.	0	1	7.1M	0
35 Ogallala	07/21/2003	04:20 PM	Hail	4.00 in.	0	0	1.0M	50K
36 Blair	05/22/2004	06:35 PM	Hail	2.75 in.	0	0	10.0M	0
37 York	04/18/2005	03:33 PM	Hail	1.75 in.	0	0	1.0M	0
38 Geneva	04/18/2005	06:00 PM	Hail	1.75 in.	0	0	1.5M	0
39 Kearney	05/07/2005	04:31 PM	Hail	2.75 in.	0	0	1.0M	0
40 Hastings	05/11/2005	04:10 PM	Hail	2.75 in.	0	0	40.0M	2.5M
41 Cozad	08/17/2005	07:35 PM	Hail	1.75 in.	0	0	1.0M	10.0M
42 David City	9/24/2007	22:30 PM	Hail	2.00 in.	0	0	4.0M	0K
43 Hayes Center	06/04/2007	18:54 PM	Hail	4.00 in.	0	0	1.0M	0K
44 Schuyler	07/20/2008	08:56 AM	Hail	1.75 in.	0	0	1.75M	0K
45 (hsi)hastings Arpt	06/05/2009	22:28 PM	Hail	2.00 in.	0	0	1.5M	0K
46 YORK	5/21/2011	16:10	Hail	3.00 in.	0	0	1.0M	250.0K
47 NORTH PLATTE	4/14/2012	16:27	Hail	1.75 in.	0	0	4.0M	0
48 NORTH PLATTE	4/14/2012	16:39	Hail	1.75 in.	0	0	2.0M	0
49 SPALDING	4/14/2012	10:54	Hail	2.00 in.	0	0	1.0M	3.0M
50 JUNIATA	5/2/2012	22:38	Hail	2.00 in.	0	0	1.8M	250.0K
51 HASTINGS	5/2/2012	22:47	Hail	2.50 in.	0	0	1.0M	250.0K
52 ST PAUL	5/4/2012	20:07	Hail	2.75 in.	0	0	2.0M	3.0M
53 WELLFLEET	5/30/2012	15:58	Hail	1.75 in.	0	0	5.0M	0
54 CLAY CO.	8/1/2013	21:39	Hail	1.75 in.	0	0	1.0M	10.0M
				TOTALS:	**0**	**57**	**872.55M**	**149.5 Million**

11 HAIL event(s) were reported in **Nebraska** between **01/01/1950** and **10/31/2013** with **at least $10 Million in Crop Damage**.	**Mag**: Magnitude **Dth**: Deaths **Inj**: Injuries **PrD**: Property Damage **CrD**: Crop Damage

Nebraska

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 Archer	07/23/1994	2130	Hail	1.75 in.	0	0	0	50.0M
2 Benkleman	07/24/1994	2003	Hail	2.75 in.	0	2	5.0M	50.0M
3 Winslow	06/20/1996	07:39 PM	Hail	2.75 in.	0	0	0	10.0M
4 Hooper	06/20/1996	08:35 PM	Hail	2.75 in.	0	0	10.0M	12.0M
5 South Sioux City	07/16/1996	09:05 PM	Hail	1.75 in.	0	0	500K	22.0M
6 Paxton	07/25/1996	03:30 PM	Hail	1.75 in.	0	0	0	10.5M
7 Grant	06/25/1997	04:00 PM	Hail	1.00 in.	0	0	0	14.0M
8 Brownson	06/26/1999	07:06 PM	Hail	2.75 in.	0	0	6.0M	20.0M
9 Cozad	08/17/2005	07:35 PM	Hail	1.75 in.	0	0	1.0M	10.0M
10 MC COOK	8/9/2011	15:40	Hail	1.75 in.	0	3	1.00K	10.000M
11 CLAY CO.	8/1/2013	21:39	Hail	1.75 in.	0	0	1.000M	10.000M
				TOTALS:	**0**	**5**	**23.5M**	**218.5 Million**

f The 2005 hail event listed in the above tables recorded 70 mile per hour winds accompanied by golf ball sized hail. It destroyed crops and damaged a power plant in Dawson and Gosper Counties. Approximately 22,000 acres of corn and soybeans in Dawson County sustained 90 percent losses. The local County Extension Agent stated that "the crop was pounded to nothing." South of the community of Cozad several buildings sustained window, siding, and shingle damage. Numerous trees fell. The Canada Steam Plant sustained $200,000 in siding damage. There were several reports of grain bin, farmstead and vehicle damage.

g. On June 22, 2003, a storm near Aurora, Nebraska produced a hailstone measured by an NWS Storm Survey team. It was determined to be the largest hailstone to fall in the United States, and measured 7.00 inches in diameter and 18.75 inches in circumference.

h. NCDC data indicates that since 1993 when data collection began, that Nebraska has experienced 1,361 hail events, with no deaths, 42 injuries, $276.2 million in property damages, and $497.7 million in crop damages.

i. According to the NWS, lightning is the second deadliest weather killer in the United States, ranking above both hurricanes and tornadoes. NCDC data indicates that from 1996 through the end of 2013, that there have been 188 recorded lightning events, resulting in four deaths, 20 injuries, $10.9 million in property damages, and $500,800 in crop damages. Tables 3.26 and 3.27 summarize NCDC data on lightning events that have occurred in Nebraska, limited by the amount of damages in order to obtain a smaller and more manageable data set.

Table 3.26: Historic Lightning Events in Nebraska

30 LIGHTNING event(s) were reported in **Nebraska** between **01/01/1993** and **10/31/2013** with **at least $100 Thousand in Property Damage**.	**Mag**: Magnitude **Dth**: Deaths **Inj**: Injuries **PrD**: Property Damage **CrD**: Crop Damage

Nebraska								
Location or County	**Date**	**Time**	**Type**	**Mag**	**Dth**	**Inj**	**PrD**	**CrD**
1 Wayne	06/18/1994	0245	Lightning	N/A	0	0	500K	0
2 Dorchester	07/01/1994	1800	Lightning	N/A	0	0	500K	0
3 Beatrice	07/06/1994	0400	Lightning	N/A	0	0	500K	0
4 Clarks	07/13/1994	0100	Lightning	N/A	0	0	500K	0
5 Goehner	06/15/1996	03:00 PM	Lightning	N/A	0	0	250K	0
6 Smithfield	06/21/1996	02:30 AM	Lightning	N/A	0	0	500K	0
7 Crawford	08/02/1996	05:22 PM	Lightning	N/A	0	0	400K	0
8 Nelson	08/22/1996	03:24 AM	Lightning	N/A	0	0	100K	0
9 Plattsmouth	09/11/1996	08:45 AM	Lightning	N/A	0	0	200K	0
10 Eagle	07/23/1997	03:30 AM	Lightning	N/A	0	0	100K	0
11 Irvington	05/20/1998	01:40 AM	Lightning	N/A	0	0	150K	0
12 Hebron	09/19/1998	11:00 PM	Lightning	N/A	0	0	500K	0
13 Central City	05/08/2000	02:00 AM	Lightning	N/A	0	0	100K	0
14 Inland	07/03/2000	11:00 PM	Lightning	N/A	0	0	250K	0
15 Elkhorn	07/06/2000	03:25 AM	Lightning	N/A	0	0	150K	0
16 Lexington	09/05/2000	02:20 AM	Lightning	N/A	0	0	250K	0
17 Elkhorn	04/22/2001	05:30 PM	Lightning	N/A	0	0	165K	0
18 Edgar	06/17/2001	06:30 PM	Lightning	N/A	0	0	100K	0
19 Cheneys	07/26/2002	04:20 PM	Lightning	N/A	0	0	479K	0
20 Bellevue	08/17/2002	02:30 AM	Lightning	N/A	0	0	125K	0
21 Omaha	08/10/2005	07:20 PM	Lightning	N/A	0	0	2.0M	0
22 Oxford	08/21/2005	11:32 PM	Lightning	N/A	0	0	200K	0
23 Lincoln	08/08/2006	06:00 AM	Lightning	N/A	0	0	225K	0
24 Omaha	04/24/2007	04:00 AM	Lightning	N/A	0	0	150K	0K
25 Wahoo	08/22/2007	20:00 PM	Lightning	N/A	0	0	100K	0K
26 Fremont	9/06/2007	16:30 PM	Lightning	N/A	0	0	100K	0K
27 Norfolk	9/30/2007	01:40 AM	Lightning	N/A	0	0	100K	0K

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
28 Omaha	10/13/2007	02:45 AM	Lightning	N/A	0	0	250K	0K
29 IMPERIAL	7/11/2011	22:30	Lightning		0	0	100.0K	0K
30 HAY SPGS	8/29/2012	17:00	Lightning		0	3	1.0M	0K
				TOTALS:	**0**	**0**	**10.044 Million**	**0**

3 LIGHTNING event(s) were reported in **Nebraska** between **01/01/1993** and **10/31/2013** with **at least $100 Thousand in Crop Damage**.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Nebraska

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 Maxwell	08/11/1995	1700	Lightning	N/A	0	0	0	100K
2 LEMOYNE	8/2/2012	18:00	Lightning		0	0	0	100.00K
3 BRULE	8/2/2012	18:00	Lightning		0	0	0	100.00K
				TOTALS:	**0**	**0**	**0**	**300,000**

j. An example of a lightning event causing property damage was in October of 2007. Lightning struck a house in northwest Omaha causing fire damage to the roof and second floor, the basement sustained significant smoke and water damage. The total damage caused by the event was $250,000 to the home. The storm began 6 miles West North West of Omaha and contained frequent lightning.

k. The NCDC Website provided table 3.28 showing heavy rainfalls that caused at least $10,000 in both property and crop damage. This information does not include flooding damages, which are summarized in a previous table.

Table 3.28: Historic Precipitation Events in Nebraska

17 PRECIPITATION event(s) were reported in **Nebraska** between **01/01/1993** and **10/31/2013** with **at least $10 Thousand in Property Damage** or with **at least $10 Thousand in Crop Damage**.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Nebraska

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 Concord	05/27/1995	1700	Heavy Rain	N/A	0	0	0.1M	0.0M
2 Mc Cool Jct	07/10/1997	01:00 AM	Heavy Rain	N/A	0	0	50K	250K
3 Kearney	05/21/1998	09:00 AM	Heavy Rain	N/A	0	0	500K	100K
4 Countywide	06/19/2000	06:00 PM	Heavy Rain	N/A	0	0	20K	2.5M

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
5 Countywide	06/25/2000	06:00 PM	Heavy Rain	N/A	0	0	30K	100K
6 Beaver City	09/14/2001	04:25 PM	Heavy Rain	N/A	0	0	10K	1.0M
7 Ord	06/07/2002	05:00 PM	Heavy Rain	N/A	0	0	50K	250K
8 Countywide	06/10/2002	07:00 PM	Heavy Rain	N/A	0	0	100K	500K
9 Countywide	07/28/2002	02:30 PM	Heavy Rain	N/A	0	0	10K	100K
10 Countywide	07/28/2002	02:30 PM	Heavy Rain	N/A	0	0	10K	100K
11 Deshler	06/22/2003	06:00 PM	Heavy Rain	N/A	0	0	500K	3.0M
12 Strang	06/22/2003	08:00 PM	Heavy Rain	N/A	0	0	100K	1.0M
13 Countywide	05/24/2005	09:00 PM	Heavy Rain	N/A	0	0	10K	150K
14 Macon	06/16/2005	09:00 PM	Heavy Rain	N/A	0	0	25K	1.0M
15 WOLBACH	10/2/2013	14:00	Heavy Rain		0	0	250.0K	0.0K
16 FARWELL	10/2/2013	15:00	Heavy Rain		0	0	250.0K	0.0K
17 JUNIATA	10/2/2013	20:00	Heavy Rain		0	0	400.0K	0.0K
				TOTALS:	**0**	**0**	**2.4 Million**	**10.1 Million**

l. The June 22, 2003 rainstorm listed in the above table was caused by a "heavy precipitation (HP) supercell" that dumped 10 to 15 inches of rain in western and northern Thayer County. At times, rain rates of 3 to 5 inches per hour were detected by Doppler radar. Despite ongoing drought conditions, widespread flooding was reported in Thayer and southern Fillmore Counties caused by extremely heavy rainfall in nearby Kansas. Residents reported nearly five hours of constant, wind-driven rain. Windows were broken and damaging rain poured into homes. Widespread agricultural damage occurred in southern Nebraska.

m. The NCDC data indicated that since 1950 when Nebraska precipitation data collection began, that there have been 118 recorded heavy rain events, resulting in no deaths or injuries, but $2.7 Million in property damages and $11.02 Million in crop damages. The data in table 3.28, above, does not match the total historical costs caused by heavy rain events. This is because in order to obtain a manageable set of data, limitations needed to be included in the search.

2. Probability of Future Events and Vulnerability by Jurisdiction

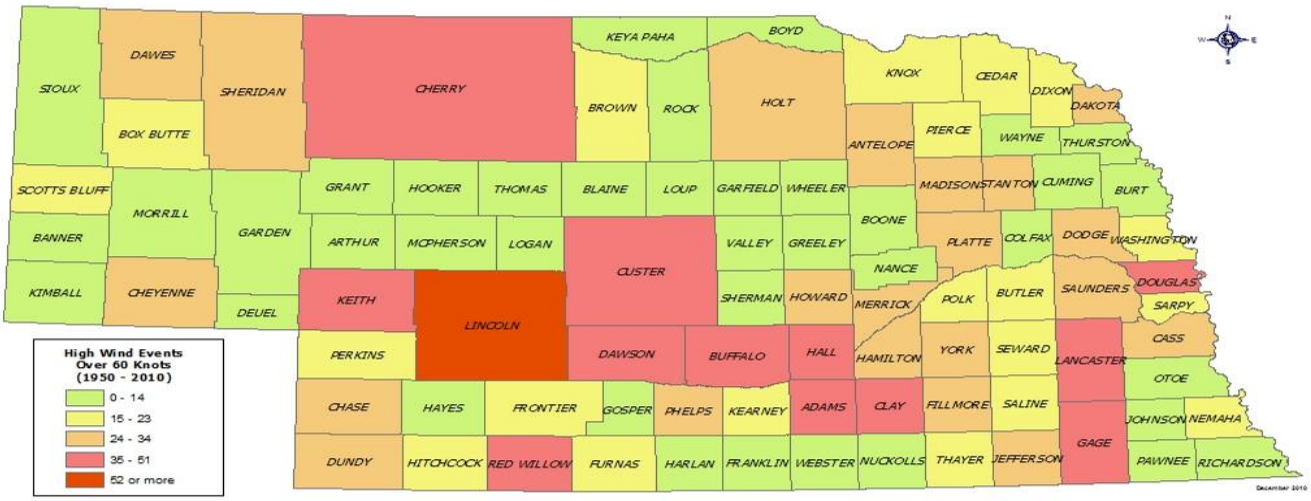
a. Due to the geographic location of the state the probability of future events is very high. The number of thunderstorms expected to affect the state depends on yearly global weather patterns, making long-range prediction difficult.

b. The entire state is susceptible to thunderstorms/high winds/hail/lightning and experiences hazard on a regular basis. As stated by the State Climatologist,

"[B]y investigating occurrences of past disasters, population, and considering locations of critical infrastructure, certain locations can be determined to be at high risk. However, with some disasters such as thunderstorm, high wind, and winter storms, the likelihood of structures being affected is equal across the state."

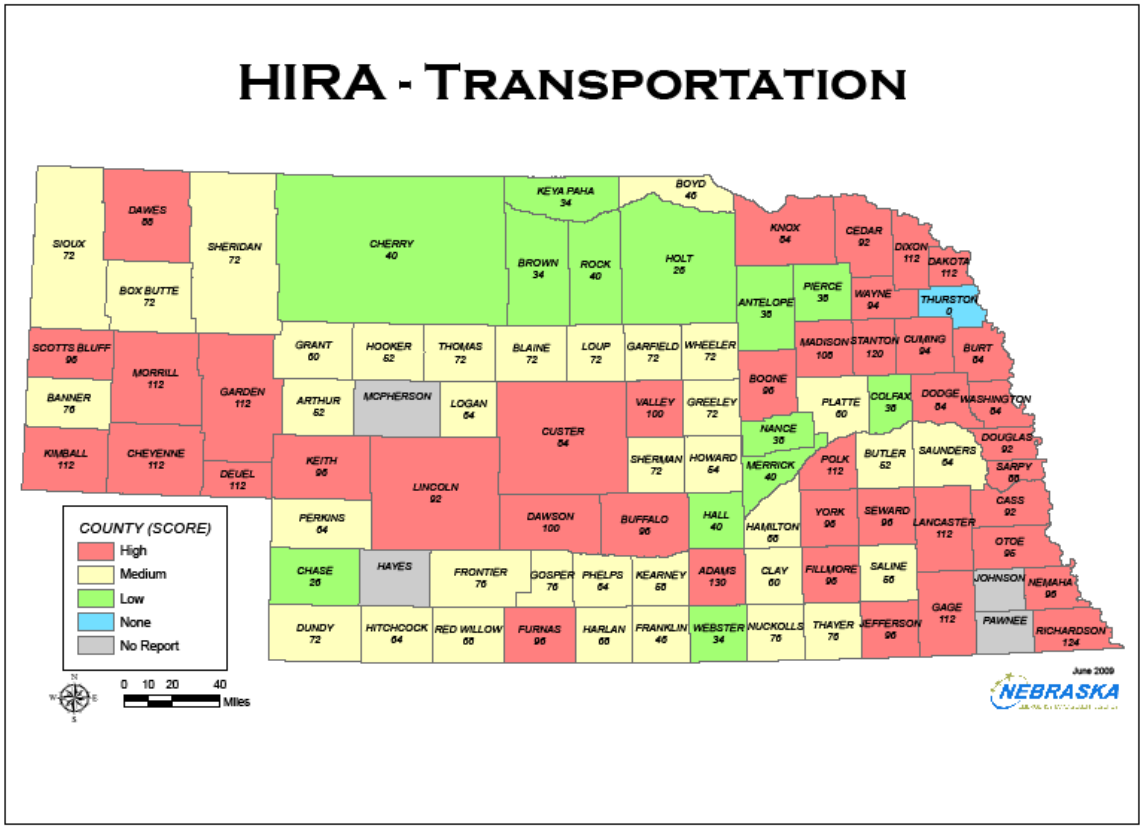
c. Although the probability of thunderstorms/high winds/hail/lightning is equal throughout the state, the incidence of actual occurrence varies from county to county. The random spread of thunderstorms is best illustrated by Figure 3.12.

Figure 3.12: Map of Thunderstorms/Wind Events (Higher than 60 Knots) by County Reported to the NWS from 1950-2010



3. State Owned Buildings at Risk and Potential Dollar Losses to State

The entire state is vulnerable to thunderstorms (see state-owned facility information by county included as Table 3.40 of this section). However, the state owned and operated buildings in the ten most populous counties are shaded in Table 3.40 of this section, are more numerous, as these counties have increased concentrations of infrastructure, buildings, and population. Therefore, these ten counties have higher vulnerability.



Hazard: Impact On:	Transportation
Public: Housing, Causalities, Fatalities, Work, Food, Water	Housing - is dependent on the location of the incident and any hazardous materials involved, especially flammable materials. Causalities/fatalities - potential for a major impact / mass causality or fatality accident with either a rail or commercial aircraft incident. Work- impacts would be localized to scene and long term could be dependant on flammable and hazardous materials. Food & water - localized impact depending on any hazardous materials involved.
Responders: Fire, Police, Medical, Public Works	Need to be aware of potential hazardous materials/flammables on scene. If the incident is a mass casualty / fatality incident agencies will need to schedule critical Incident Stress Management for their staff.
Continuity of Operations	Unless the incident scene directly affects major governmental facilities there should be little to impact on COOP
Property: Destroyed, Major, Isolated	Unless the incident scene directly affects a populated residential or business area, there should be little to impact on property. In the event a commercial air accident scene is residential or business areas, the potential impact could include major damages or destroyed property
Infrastructure: Electricity, water, roads, bridges	Unless the incident scene directly affects specific infrastructure, there should be little impact. If directly part of the scene impact could be high and difficult to repair quickly

Hazard: / Impact On:	Transportation
Environment	If the transportation incident involves hazardous materials there could be an impact on the environment.
Economic Conditions:	Depending on the scene of the incident economy of an area or the state should not be severely impacted by a transportation incident
Public Confidence in the Governance	The ability of the jurisdiction to rapidly clean up, rebuild, and return to normal will be the measure of public confidence.

N. Transportation Incidents

1. Locations and Previous Occurrences

a. In the State of Nebraska individuals are served by multiple forms of transportation including air, rail, road, and water. Primary concerns involving transportation involve issues with the inability to move people or goods to the necessary destinations or to market. With the state having 95% of the land area being devoted to agriculture, it is essential to move the $13.19 billion[1] in products to market. Damage to elements of the transportation system or incidents involving transportation can lead to major disruptions in the agricultural industry. Not to mention the importance of the I-80 corridor and the major rail road lines that cross the state from East to West ensuring nationwide dispersal of goods and services.

b. Individuals rely on various forms of transportation to reach their destinations across the state which includes:

1) Commercial Air Services (see Figure 1)

2) Amtrak Rail Service (see Figure 2)

3) Bus and Van Services (see Figure 3)

4) 10,000 miles of roadways on the state highway system (see Figure 4)

5) General Aviation Airports (see Figure 5)

c. These vital elements to the transportation system are spread across the state and accessible by a large portion of the population. Transportation, of whatever form, therefore affects all of the state's population.

d. These elements of the transportation system in the state are not unique to Nebraska and many agencies regulate their function, design, and use at the State and Federal level.

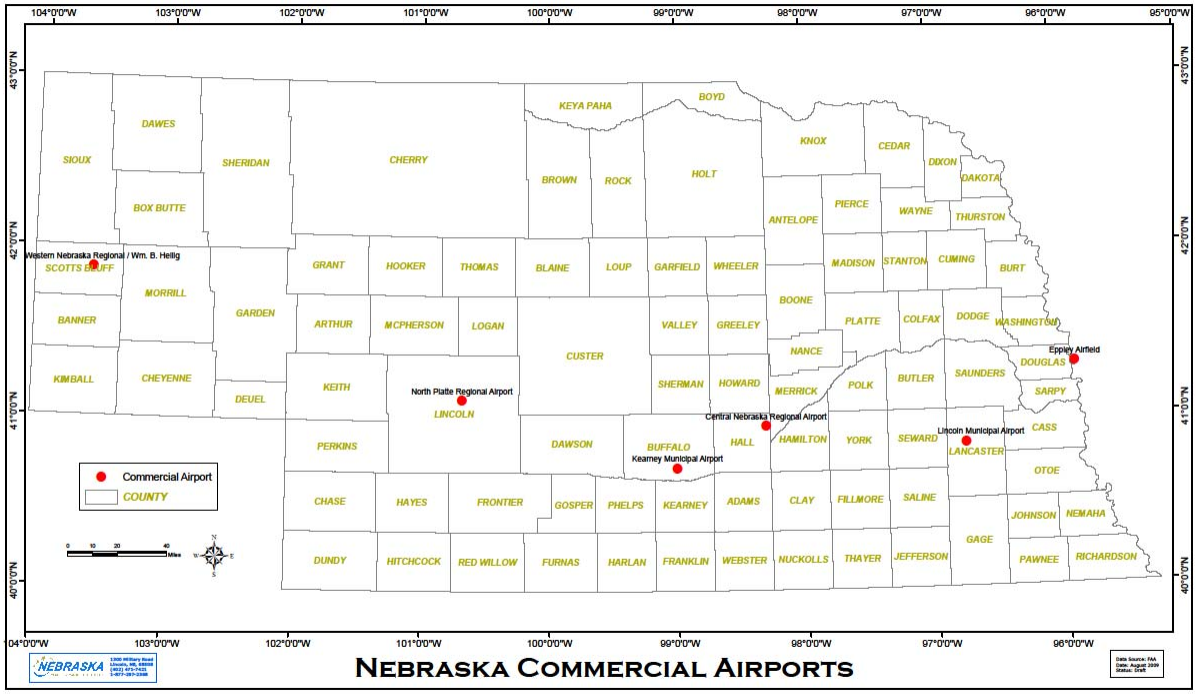


Figure 11 Commercial Air Service

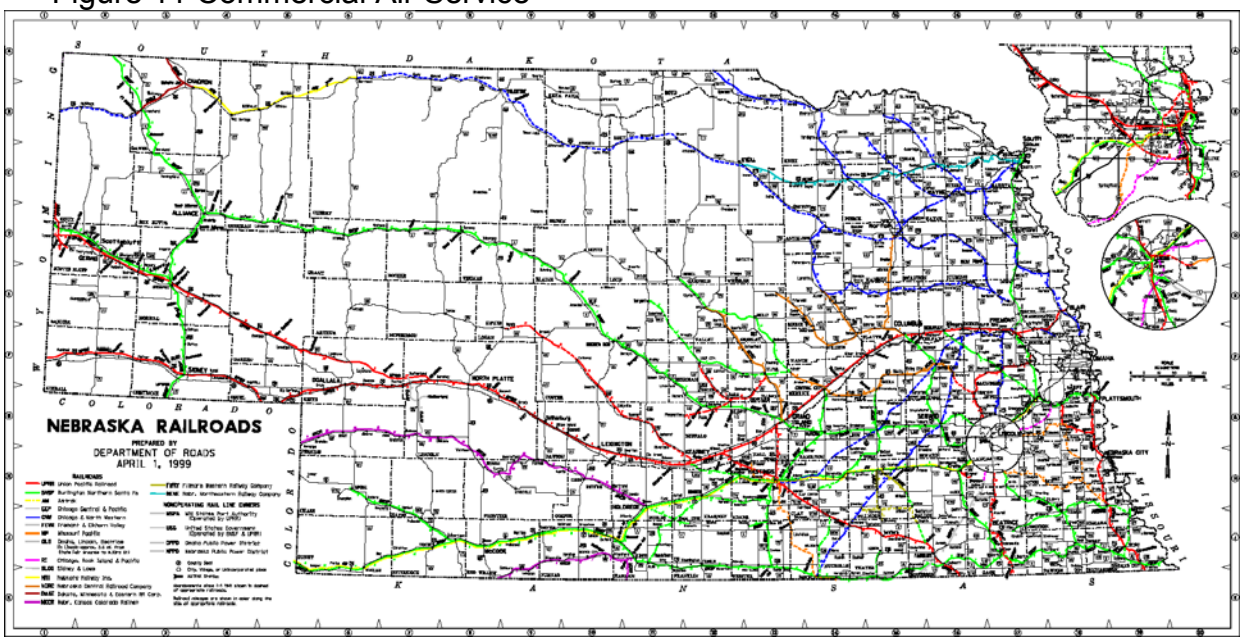


Figure 2 Amtrak Rail Service

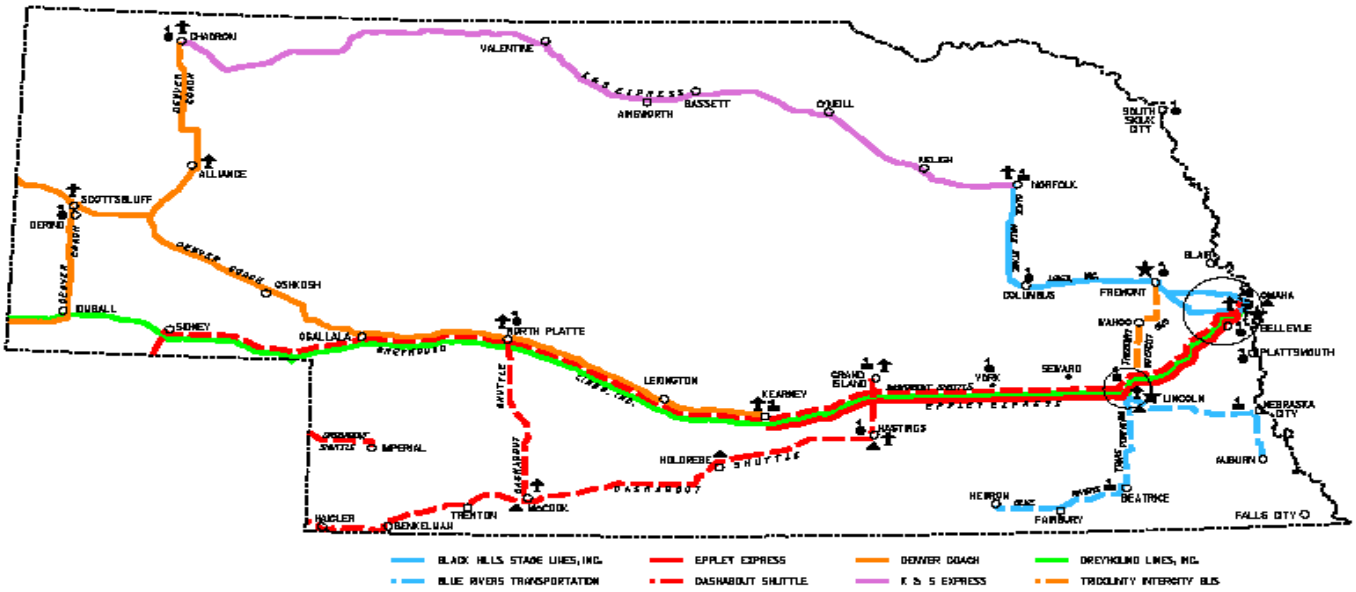


Figure 3 Bus and Van Services

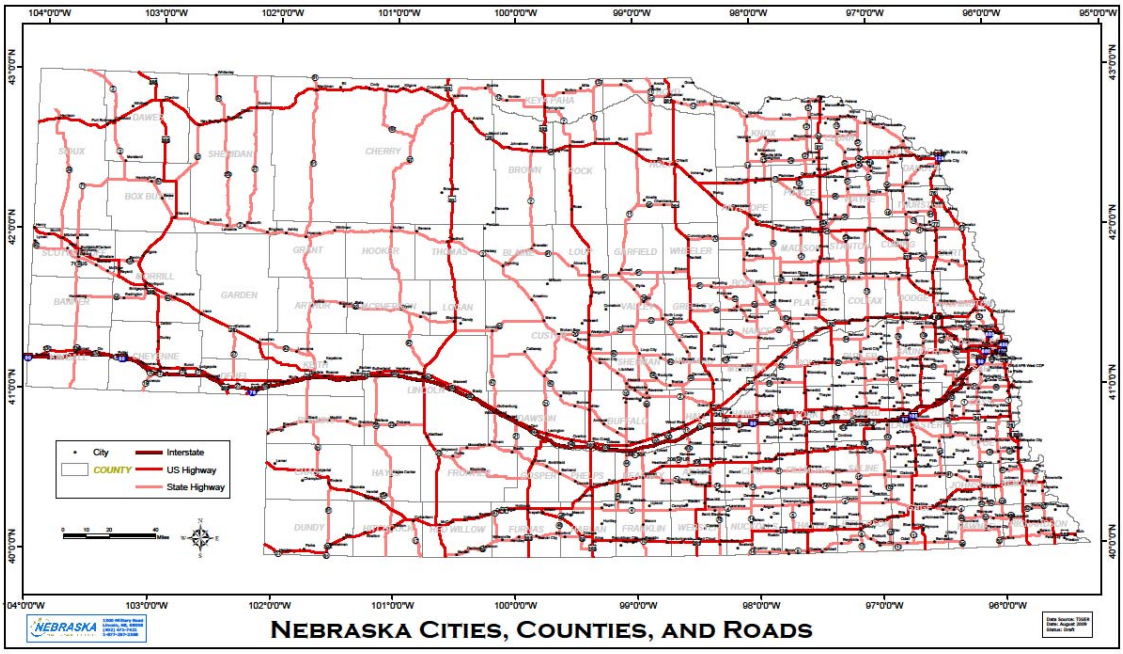


Figure 4 State Roadways

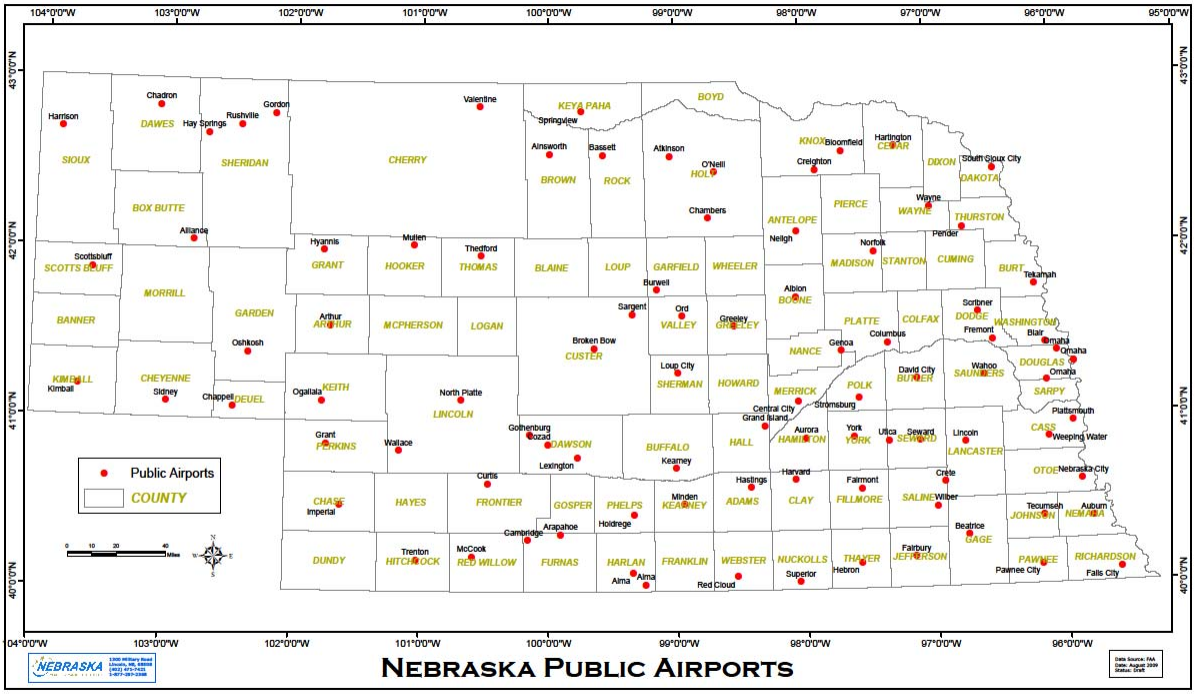


Figure 5 General Aviation Airports

e. Aviation Accidents/Incidents

1) Since January 1, 2005 there have been 74 aviation accidents/incidents in Nebraska reported to the FAA involving General Aviation aircraft. The accidents/incidents resulted in 15 fatalities. This information was obtained from NTSB records.

f. Rail Incidents

1) Based on data available from Federal Railroad Administration Office of Safety Analysis, from January of 2004 to December of 2010 there were 677 accidents in Nebraska. In addition, there were 277 accidents where highways and trains intersect. These accidents resulted in a total of 55 deaths, 46 of which were involving highway-rail accidents.

2) Of the 677 accidents, 483 involved derailments and there were 29 collisions. There were 108 accidents caused by equipment issues, 125 caused by track issues, and 259 caused by human error.

g. Bus Service Incidents

On October 13, 2001 in Omaha a Seward School District bus entered a construction zone on a bridge. The Seward bus struck the guardrail and rolled into the streambed below. The bus carried 27 students and 3 adult chaperons of which 3 students and one adult were killed. The bus had a capacity of 78 individuals.

h. Highway Transportation

1) Traffic accidents occur in the state every day. These are a hazard to the public and the State, however, do not typically affect significant numbers of motorists unless the accident results in the closure of a major highway. In the event of a accident caused highway closure, pre-determined detour routes have been established for the major highways and interstate highways in the state.

2) Weather related issues cause significant delays to those individuals and goods travelling on roads in the State. Weather creates a variety of issues including the closure of the interstate highways due to snow, closure of state and local roads due to flooding, and the destruction of roadway structures caused by weather events.

3) On July 6, 2002 flash flooding caused the I-80 bridge near Ogallala to flood resulting in the approaches being damaged and all I-80 traffic to be re-routed. By July 12, 2002 the interstate was reopened.

4) Several major disasters have been declared in the state by the President. These disasters included significant amounts of damage to roads and bridges due to flash flooding, flooding, and other weather instances. These incidents caused the re-routing of traffic, prevented access to agricultural production areas, and delays to the response of emergency vehicles to residences. The damages to roadways since 2004 total $27,450,948 as listed in Table 1.

i. These weather related issues and Presidentially Declared Disasters span the entire state, encompassing all but two of Nebraska's 93 counties since 2004. Many counties have been declared multiple times.

2. Probability of Future Events and Jurisdictional Vulnerability

a. In the state there are no areas which are without risk when involving transportation incidents. Events will continue to occur and impact the various aspects of the transportation sector.

b. Aviation Accidents/Incidents

Accidents have occurred at a rate of 12.3 incidents per year for the past 6 years. While no known actions can mitigate the risk of an aviation incident, the actions by all parties in the aviation sector is regulated by the Federal Aviation Administration. Safety standards, airport construction and maintenance, and aircraft maintenance is all regulated in order to prevent incidents from occurring.

c. Rail Incidents

Railroad accidents will occur across the state. Accidents involving trains and motor vehicles are continually being evaluated and studied by the Federal Railroad Administration with new safety standards being adopted. The FRA also works to reduce all other rail accidents by setting standards and regulations pertaining to the railroad industry.

d. Bus Service Incidents

The Federal Transit Administration and other agencies regulate the safety of bus services and drives in Nebraska. Accidents will unfortunately occur again and there are a variety of factors involved in incidents involving bus services. These risks are addressed by several agencies including the Nebraska Department of Roads, the Nebraska Department of Motor vehicles, the FTA, the National Highway Safety Administration, and others.

c. Highway Transportation

The probability of incidents involving highway transportation is high. Vehicular crashes and commercial motor vehicles crashes will occur every day across the state.

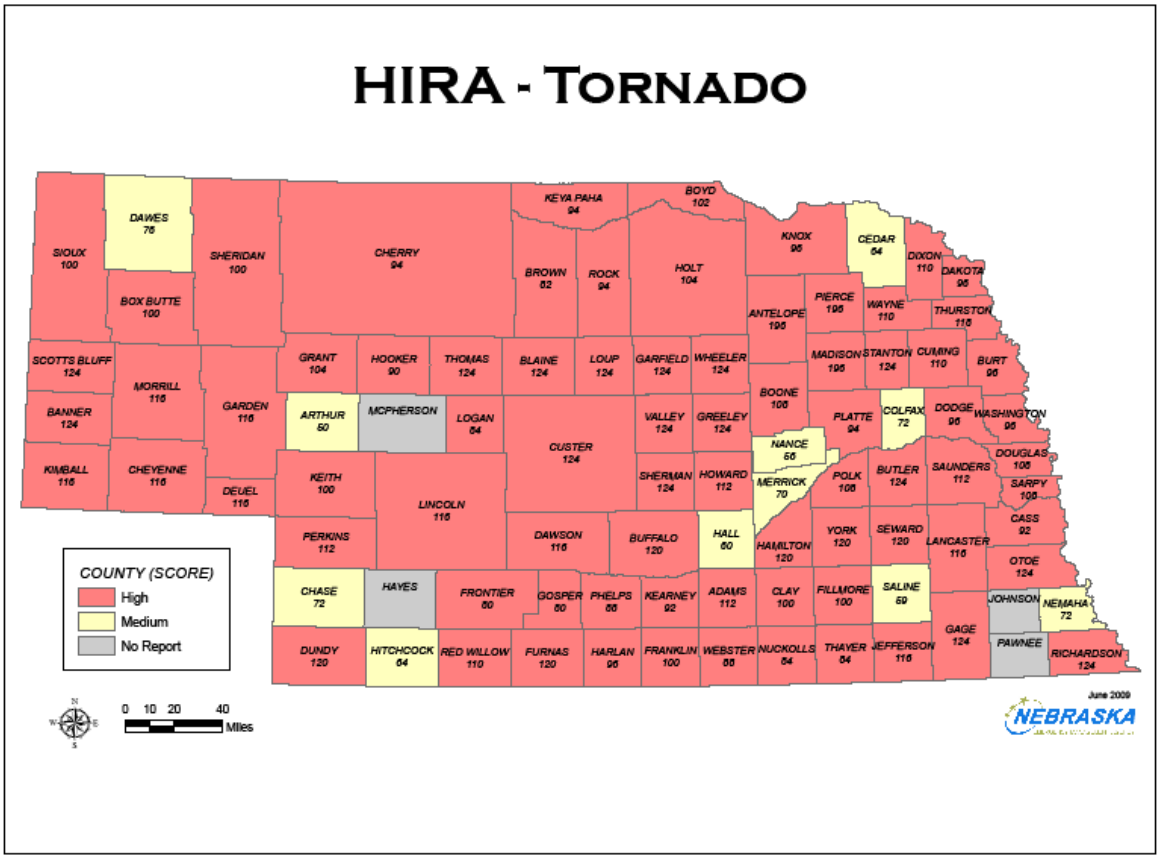
d. Weather Related issues will occur in the state on a regular basis. From the closure of Interstate 80 and other highways due to blowing snow to the closure of highways due to flooding, all weather related incidents are a concern within the state. Weather related incidents impacting roads account for approximately $27 Million or 10% of all the federal disaster dollars in the state since 2004. The impacts of these damages are felt by people living in the affected areas as well as those visiting and conducting business. Road damage can be prevented with a variety of mitigation measures from increasing the size of culverts and bridges to raising the road bed to a higher elevation. These mitigation measures have proven successful in areas of the state, some with minimal funding needed.

3. Vulnerable State Facilities and Potential Dollar Losses

While transportation incidents could occur throughout the state, State owned facilities such as buildings, would not normally be affected. The incidents could impact other state owned property such as vehicles and roads.

Table 1

Disaster #	Year	Total Damages	Road Damages	% of Total
1517	2004	$ 17,240,004.43	$ 2,199,203.51	13%
1590	2005	$ 2,137,708.15	$ 1,192,744.16	56%
1627	2006	$ 6,972,395.22	$ -	0%
1674	2007	$ 165,852,752.11	$ 1,638,763.84	1%
1706	2007	$ 7,970,998.70	$ 5,611,375.96	70%
1714	2007	$ 3,094,020.60	$ 2,693,264.96	87%
1721	2007	$ 1,576,099.40	$ 1,208,723.10	77%
1739	2008	$ 4,063,118.68	$ -	0%
1765	2008	$ 582,441.03	$ 433,138.24	74%
1770	2008	$ 41,829,112.21	$ 12,138,853.51	29%
1779	2008	$ 18,711,661.00	$ 334,881.00	2%
1853	2009	$ 4,935,420.89	$ 4,597,212	93%
1864	2009	$ 4,151,932.53	$ 439,131	10.6%
1878	2009/2010	$ 12,000,000.00	$ 537,678	4.5%
1902	2010	$ 8,113,642.50	$ 4,657,940	57.4%
1924	2010	$ 66,887,679.03	$ 18,387,257.53	27.49%
1945	2010	$ 2,850,922.68	$ 1,492.30	0.05%
4013	2011	$ 114,480,010.75	$ 2,428,543.17	2.12%
4014	2011	$ 4,598,108.04	$ 420,556.02	9.15%



Hazard:	Tornado
Impact On:	
Public: Housing, Causalities, Fatalities, Work, Food, Water	Impacts on housing directly in the path of a tornado are expected to sustain major damages and/or be destroyed. Causalities/fatalities - Nebraska has experienced very low numbers of injured or dead because storms usually occur during the time people are awake, aware of weather conditions, and hear warning sirens and weather radio. Work - will depend on whether major employing entities are impacted. Food/Water - may need to be brought into a area for the initial response. Food supplies can be replenished with perishables replenished as temperature controlled storage is available. Water systems will have to be inspected to insure health and safety
Responders: Fire, Police, Medical, Public Works	Nebraska responders exercise and have actual experience on these storms. If a mid to small municipality is hit, responding organizations could experience loss of volunteers who are personally impacted by the storm and not available for response duties, so there will be a greater reliance on mutual aid. Responders will also need to be aware of secondary events such as hazardous materials present in the impacted area.
Continuity of Operations	Depending on the extent of damages to governmental facilities and critical infrastructure the impact could be extreme to negligible. If governmental facilities have major damages or are destroyed, the time to return to normal operations may stress there systems. The COOP plans will be severely tested.

Hazard: Impact On:	Tornado
Property: Destroyed, Major, Isolated	For the area immediately in the path of a tornado property will be expected to have major damages or destroyed buildings. Tornados can cause isolated property due to debris covered roads and from flash flooding from the storm that caused the tornado.
Infrastructure: Electricity, water, roads, bridges	Electricity in the path of the storm will suffer damages up to destruction of transmission structures, sub-stations, maintenance yards and buildings. Water - systems may be contaminated due to loss of power and back-flow, structures and building in the system may suffer damages or be destroyed. Roads and bridges - will be covered with debris and may be flooded or washed out by accompanying flash flooding
Environment	A large amount of trees may be destroyed during a tornado; streams and creeks can be clogged with debris and contaminated by secondary spills.
Economic Conditions:	The economy of a municipality severely damaged by a tornado can be debilitating. Destroyed businesses, especially small business may recover slowly or not at all. If the storm causes major damage to one of the larger municipalities the entire state may feel the impact.
Public Confidence in the Governance	The ability of the jurisdiction to rapidly clean up, rebuild, and return to normal will be the measure of public confidence.

O. Tornado

1. Location and Previous Occurrences

a. The NWS defines a tornado as "a violently rotating column of air extending from a thunderstorm to the ground." Tornadoes are the most violent of all atmospheric storms and are capable of tremendous destruction. Wind speeds can exceed 250 miles per hour and damage paths can be more than one mile wide and 50 miles long. In an average year, more than 900 tornadoes are reported in the United States, resulting in approximately 80 deaths and more than 1,500 injuries. High winds not associated with tornadoes were profiled separately in this document in a previous section.

b. Two respected weather scientists in the Midwest have agreed that past history of tornado activity is not necessarily a valid predictor of future tornado activity. Harold Brooks, research meteorologist with the National Severe Storms Laboratory in Norman, Oklahoma, stated that "while meteorologists and climatologists agree weather patterns can increase chances for severe storms over large geographic areas, a specific spot within the area has no greater or lesser chance of being hit." Allan Dutcher, Nebraska's state climatologist, has stated that "some research has identified tornado "hot boxes" – places where twisters occur with great frequency from year to year." He went on to explain that these are "generally regions of several hundred square miles – not a single zip

code." Mr. Dutcher stated that destructive tornadoes, even in a tornado-prone area, are a relatively rare occurrence.

c. Although the prediction of tornado events is an uncertain exercise, history shows that tornadoes occur in Nebraska. Tornadoes hit quickly and violently, and often with little or no warning. Therefore, citizens must be aware of typical tornado seasons, prevailing weather conditions which may create tornadoes, and time periods in which the most tornado activity has occurred. While certain locales historically experience greater tornado activity, the entire state is vulnerable to tornado damage. Emergency response planners, school officials and parents can use this information as well as sheltering methods to better educate the public.

d. Nebraska experiences, on a yearly average, 60 confirmed tornadoes. Nebraska is within the area of one of two defined "tornado alleys" in the United States. The probability of future events is considered high due to the geographic location of the state. Nationally, Nebraska ranks 5th in tornado frequency, 23rd in tornado fatalities, and 24th in tornado-related injuries.

e. Indian tribes and early settlers reported tornadoes, and studies began on tornadoes in the early 1900's. In recent years, several tornadoes have caused extensive damage in Nebraska. In May of 1996, a tornado tore through the southeast portion of Nebraska. More storms occurred in 2002 and 2003, and then in May of 2004 a large tornado system demolished two cities in southeast Nebraska. In May of 2007, a tornado caused extensive damage in Knox County, and was responsible for over $500,000 in damages at Lewis & Clark State Park.

f. After a tornado has passed through an area, an official rating category is determined, which provides a common benchmark that allows comparisons to be made between different tornadoes. The magnitude of tornados has, historically, been measured by intensity on the Fujita-Pearson Tornado Scale, or simply the Fujita Scale, or F-Scale. The Fujita Scale does not measure tornados by their size or width, but rather the amount of damage it causes on human-built structures and trees. The scale ranges from F0 for the weakest, to F6 for the most powerful, although an F6 has never been recorded. The Fujita Scale was updated in 2007 with the Enhanced F-Scale. The enhanced scale classifies F0-F5 damage as determined by engineers and meteorologists across 28 different types of damage indicators, including different types of buildings and trees. In order to establish a rating, engineers and meteorologists examine the damage, analyze the ground-swirl patterns, review damage imagery, collect media reports, and sometimes utilize photogrammetry and videogrammetry. Based on the most severe damage to any well-built frame house, or any comparable damage as determined by engineer, an F-Scale number is assigned to the tornado. The table below summarizes

the new EF Scale, old F-Scale, and typical damage for tornados. Table 3.29 is from the NCDC Website, and summarizes information about tornado damages in the state of Nebraska. The strength of the tornadoes in the table is measured by the Fujita Scale (or F-Scale).

New EF Scale	Old F-Scale	Typical Damage
EF0 (65-85 mph)	F0 (65-73 mph)	**Light damage.** Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF1 (86-110 mph)	F1 (73-112 mph)	**Moderate damage.** Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2(111-135 mph)	F1 (113-157 mph)	**Considerable damage.** Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3 (136-165 mph)	F1 (158-206 mph)	**Severe damage.** Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4 (166-200 mph)	F4 (207-260 mph)	**Devastating damage.** Whole frame houses Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
EF5 (>200 mph)	F5 (261-318 mph)	**Incredible damage.** Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (109 yd); high-rise buildings have significant structural deformation; incredible phenomena will occur.
EF No rating	F6-F12 (319 mph to speed of sound)	**Inconceivable damage.** Should a tornado with the maximum wind speed in excess of F5 occur, the extent and types of damage may not be conceived. A number of missiles such as iceboxes, water heaters, storage tanks, automobiles, etc. will create serious secondary damage on structures.

g. The number of tornadoes listed in the table below is limited by the damages caused in order to create a more meaningful set of data. However, NCDC data indicated that since 1952 when data collection began, there have been 1,194 tornadoes in Nebraska with a rating of F1 or higher.

Table 3.29: Historic Tornado Events in Nebraska

39 TORNADO(s) were reported in **Nebraska** between **01/01/1960** and **10/31/2013** with **at least $5 Million in Property Damage**.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Nebraska

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 HOLT	05/08/1965	1700	Tornado	F3	0	0	25.0M	0
2 HALL	05/08/1965	1730	Tornado	F4	0	0	25.0M	0
3 BOONE	05/08/1965	1830	Tornado	F4	4	53	25.0M	0
4 ANTELOPE	05/08/1965	1900	Tornado	F4	0	0	25.0M	0
5 DOUGLAS	05/06/1975	1535	Tornado	F4	3	118	250.0M	0
6 HAMILTON	04/07/1978	2045	Tornado	F	0	1	25.0M	0

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
7 POLK	04/07/1978	2135	Tornado	F	0	0	25.0M	0
8 HALL	06/03/1980	2005	Tornado	F3	1	40	25.0M	0
9 HALL	06/03/1980	2116	Tornado	F4	3	110	250.0M	0
10 HOWARD	04/25/1984	2019	Tornado	F3	0	18	25.0M	0
11 DIXON	07/28/1986	1730	Tornado	F4	0	0	25.0M	0
12 DAKOTA	07/28/1986	1815	Tornado	F4	0	1	25.0M	0
13 WEBSTER	03/13/1990	1705	Tornado	F4	0	0	25.0M	0
14 NUCKOLLS	03/13/1990	1755	Tornado	F4	0	3	25.0M	0
15 CLAY	03/13/1990	1810	Tornado	F4	0	3	25.0M	0
16 FILLMORE	03/13/1990	1835	Tornado	F4	0	0	25.0M	0
17 YORK	03/13/1990	1900	Tornado	F4	0	2	25.0M	0
18 SEWARD	03/13/1990	1945	Tornado	F4	0	0	25.0M	0
19 BUTLER	03/13/1990	1955	Tornado	F4	0	0	25.0M	0
20 COLFAX	03/13/1990	2045	Tornado	F4	0	0	25.0M	0
21 CHASE	06/01/1990	1830	Tornado	F2	0	0	25.0M	0
22 SEWARD	06/15/1992	2115	Tornado	F3	0	1	25.0M	0
23 Hay Springs	05/05/1993	1908	Tornado	F3	0	0	5.0M	0
24 Ashton To	05/07/1993	1735	Tornado	F1	0	0	5.0M	0
25 Red Cloud	05/07/1993	1750	Tornado	F1	0	0	5.0M	0
26 Upland To	05/07/1993	1752	Tornado	F2	0	0	5.0M	0
27 Prosser	05/07/1993	1825	Tornado	F2	0	0	5.0M	0
28 Blue Hill To	05/07/1993	1850	Tornado	F3	0	0	50.0M	0
29 Liberty	07/01/1994	1845	Tornado	F0	0	0	5.0M	0
30 To 9 Ne	07/06/1994	1500	Tornado	F2	0	1	5.0M	0
31 Beatrice	05/08/1996	07:44 PM	Tornado	F2	0	15	12.0M	0
32 Emmet	06/09/2003	06:30 PM	Tornado	F3	0	0	5.7M	1.3M
33 Deshler	06/22/2003	05:43 PM	Tornado	F2	1	7	10.0M	1.0M
34 Western	05/22/2004	06:38 PM	Tornado	F2	0	8	20.0M	0
35 Claytonia	05/22/2004	07:10 PM	Tornado	F4	0	0	20.0M	0
36 Hallam	05/22/2004	07:30 PM	Tornado	F4	1	30	100.0M	0
37 Palmyra	05/22/2004	08:05 PM	Tornado	F1	0	0	20.0M	0
38 Kearney	05/29/2008	16:26 PM	Tornado	F2	0	0	11.0M	500K
39 ELM CREEK	6/20/2011	15:09	Tornado	EF3	0	0	6.0M	2.0M
					13	**411**	**1.3 Billion**	**4.8 Million**

h. The May 22, 2004 tornado in the table above is often referred to as the Hallam Tornado. It initially touched down in northern Jefferson County, damaging farm outbuildings, grain bins, and trees. From there the tornado crossed into Saline County where it strengthened to F2 intensity. The tornado traveled into Gage County where it grew to F4 intensity. The tornado crossed into Lancaster County near Hallam with a damage path of around 2 1/2 miles. Many well-constructed homes were demolished along with grain bins, farm sheds, and outbuildings. Many trees were uprooted. Although the community of Hallam escaped the strongest winds from the storm, which occurred just south of town, 95 percent of the buildings in town were either destroyed or severely damaged. One fatality from the tornado occurred in Hallam. The storm also toppled a total of 55 railroad cars from a freight train on the west edge of town. From Hallam the tornado traveled east, severely damaging the Firth-Norris High School and a nearby middle school. The tornado finally dissipated one mile southwest of Palmyra. It was on the ground for approximately 54 miles with a maximum intensity of F4. In addition to one fatality, 38 people sustained injuries, 158 homes were leveled, and 57 other homes were seriously damaged. An estimated $160 million in damages occurred, including 60 million in agricultural damages (100 cattle and 50 hogs lost). In addition, 150,000 acres of crop land sustained significant damage. The five counties named above were declared national disaster areas by FEMA. Information about tornadoes resulting in federally declared disaster is summarized in table 3.30 below.

i. On May 29, 2008 an organized and persistent tornado made a 22 mile path through Buffalo County, directly impacting the city of Kearney. The tornado damaged an apartment complex, stacked cars, damaged trees, took roofs of buildings, collapsed parts of the Expo Center building on the Buffalo County Fairgrounds, and moved towards Kearney Airport destroying a hanger and corporate jet hosed inside. The tornado moved out of Kearney and into rural Buffalo County damaging homes, outbuildings, and destroying grain bins. The storm caused multiple power lines to and poles to go down.

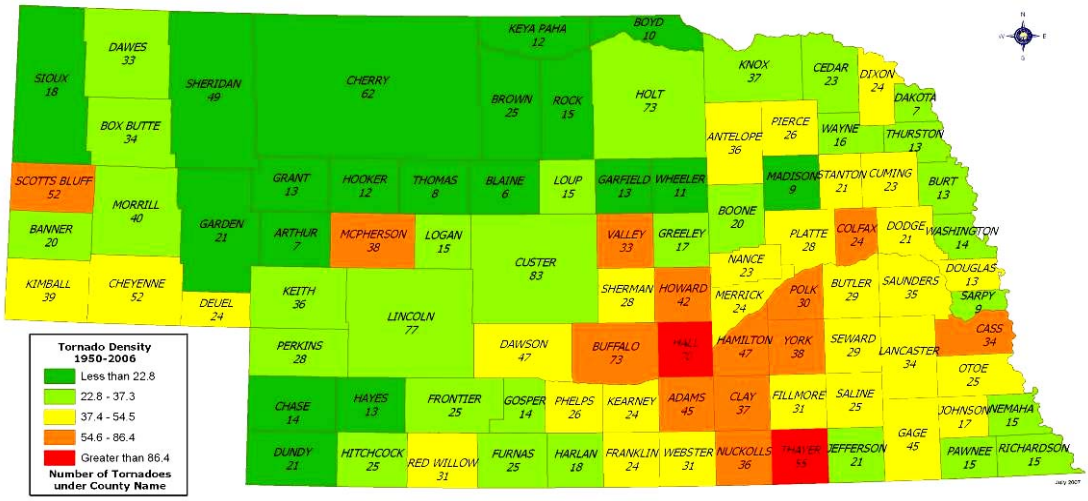
Table 3. 30: Federal Disaster Declarations (Tornado)

Year	Federal Disaster Number	Dates	Public Assistance $ Awarded	Est. Private Structural & Crop Losses/ Public Assistance Damages	Description/ Location
2011	**4014**	6/19/2011 – 6/21/2011	$3,448,581.03	$39,800,000.00	Severe Storms, Tornadoes, Straight-line Winds, and Flooding resulted in 12 declared counties in Nebraska
2010	**1924**	6/1/2010-8/29/2010	$6,201,886.82*	$22,393,000.00**	Severe Storms, Flooding, and Tornadoes resulted in 61 declared counties in Nebraska
2009	**1853**	6/5/09-6/26/09	$6,581,948.57	$30,411,000.00**	Severe Storms, Tornadoes, and Flooding resulted in 17 declared counties in Nebraska

2008	**1770**	5/22/2008-6/24/2008	$47,152,486.50	$68,062,080.00**	Severe Storms, Tornadoes, and Flooding resulted in a disaster declaration in 59 counties for Public Assistance and 16 counties for Individual Assistance in Nebraska.
2008	**1765**	4/23/08-4/26/08	$803,918.72	$2,508,000.00**	Severe Storms, Tornadoes, and Flooding resulted in five declared counties in Nebraska
2007	**1706**	5/4/0707 – 5/19/07	$7,806,649.74 (2007 dollars)	$9,403,125.34 (2007 dollars)	Severe rain, tornados, and flooding resulted in declarations in 19 counties in Southeast and North Central Nebraska.
2004	**1517**	5/20/04 – 5/25/04	$18,763,568.69 (2004 dollars)	$175,006,000.00 (2004 dollars)	Severe rains, tornados, and flooding resulted in declarations in 39 counties for Public Assistance.
2003	**1480**	5/9/03 – 7/14/03	$5,132,774,.78 (2003 dollars)	$24,921,000.00 (2003 dollars)	Tornados, severe storms, and heavy rains in Central and Eastern Nebraska resulted disaster declarations in 19 counties Public Assistance.
1990	**873**	5/5/90 – 5/19/90	$49,828,934.00 (1990 dollars)	$59,311,934.00 (1990 dollars)	Severe weather, tornados, heavy rains, flooding during a series of storms over a 15 day period resulted in disaster declarations for 17 counties.
1984	**718**	Declared: 7/19/84	Unknown	Unknown	Severe Storms & Tornados
1984	**716**	Declared: July 3, 1984	Unknown	Unknown	Tornados, flooding
1980	**625**	Declared: June 4, 1980	Unknown	Unknown	Severe storms, Tornados
1975	**467**	Declared: May 7, 1975	Unknown	Unknown	Severe Storms, Tornados
*The Public Assistance $ Awarded for DR 1924 does not reflect final amounts, as many projects are still under review. **Based on damage estimates from the National Climatic Data Center for flood, hail, lightning, thunderstorm wind, and tornado damages during the incident period.					

j. Figure 3.13 illustrates the wide dispersal of tornadoes in counties across the state of Nebraska. The numbers inside each county's geography indicates the total number of NCDC reported tornadoes. The density is indicated by the color coded in the legend, and represents the number of tornadoes per 1,000 square miles. Refer to Table 3.31 on the following page.

Figure 3.13 Map of Number and Density of Tornadoes by County for 1950-2006



2. Probability of Future Events and Jurisdiction Vulnerability

a. While specific and definite location of tornado activity cannot be predicted, the University of Nebraska High Plains Regional Climate Center has counted tornadoes in Nebraska by county since 1950. This study indicates historic tendencies of tornado activity in Nebraska. The Study compared the ten counties with the highest tornado density in Nebraska to the ten counties with the most tornado activity between 1950 and 2006 (see Tables 3.31 and 3.21 below). Four counties were on both lists: Thayer, Hall and Buffalo in central Nebraska, and Scottsbluff in the western panhandle.

Table 3.31: Top Ten Counties Tornado Frequency 1950 – 2006

County	Tornadoes	Population
Custer	83	11,242
Lincoln	77	35,865
Buffalo	73	43,954
Holt	73	10,610
Hall	70	55,555
Cherry	62	5,934
Thayer	55	5,317
Cheyenne	52	9,865
Scottsbluff	52	36,546
Sheridan	49	5,571

Table 3.32: Top Ten Counties Tornado Density 1950 - 2006

County	Area (sq. mi.)	Number	Tornado Density (per 1000 sq. miles)
Hall	546	68	128.2
Thayer	575	55	95.7
Hamilton	544	47	86.4
Adams	563	45	79.9
Buffalo	968	73	75.4
Howard	570	42	73.7
Scottsbluff	739	52	70.4
Polk	439	30	68.3
Madison	573	38	66.3
York	576	38	66.0

b. Many tornado studies have been conducted by various organizations in Nebraska. Two studies found that certain hours of the day and months of the year have experienced more tornado activity than others. Figures 3.14, 3.15, and 3.16 show tornado frequency and losses.

Figure 3.14: Tornado Frequency by Time of Day

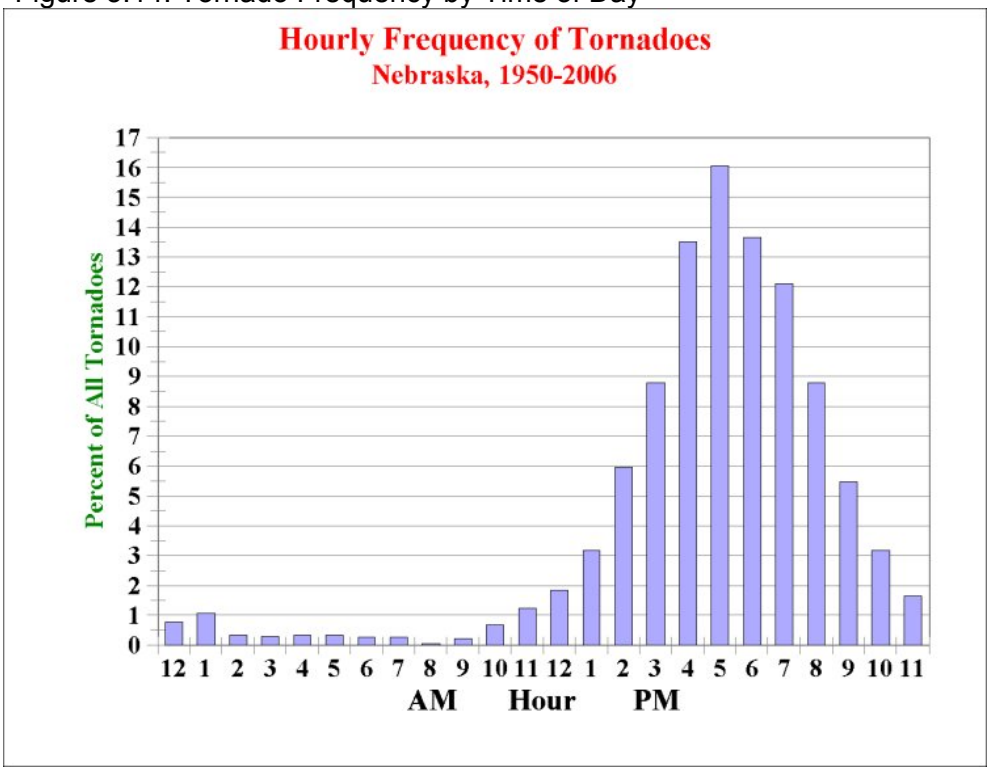


Figure 3.15: Tornado Frequency by Month

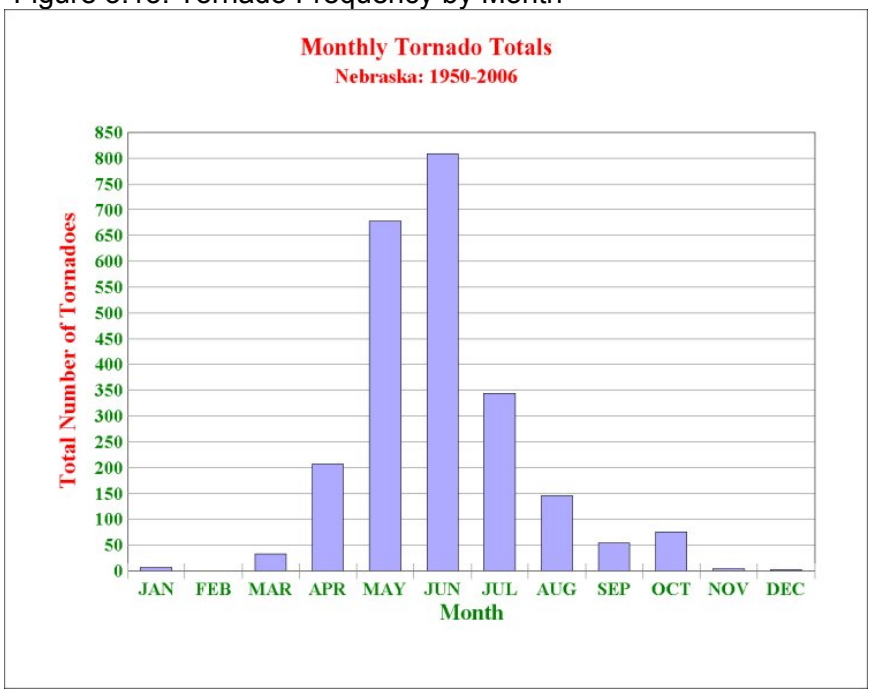
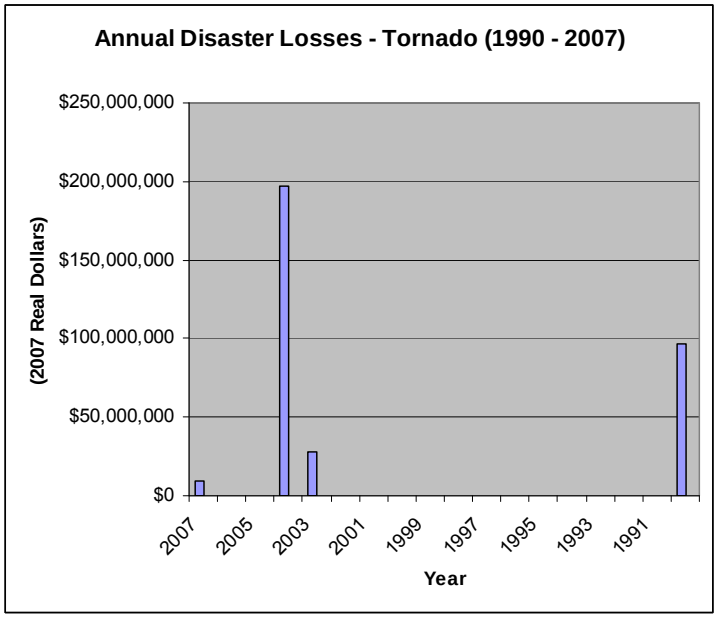


Figure 3.16: Annual Tornado Losses in Nebraska

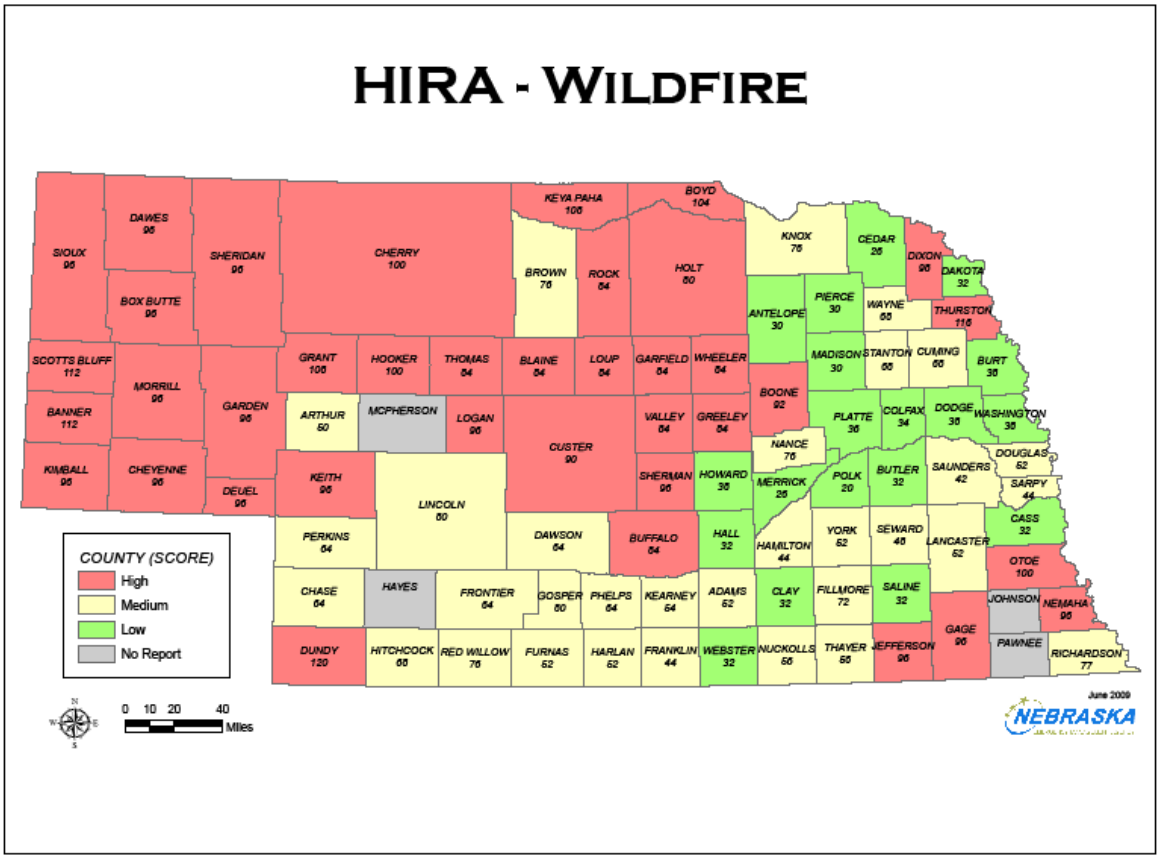


C. Presidential Disaster Declarations in Nebraska from tornados occurring between the years 1990 and 2010 resulted in a total of $349,209,155 (in 2010 real dollars[33]) in public, private, and crop damages. The annual average of this total figure is approximately $17,460,457 in 2010 real dollars. It should be noted, however, that these damage numbers are highly skewed by the Hallam tornado of 2004, which is arguably one of the costliest tornados in Nebraska history with a price tag of $207,969,704 in 2010 dollars. Because the Hallam tornado was such an extreme scenario, if we remove that disaster and those damages from the statistical pool, annual losses resulting from tornados in Nebraska between the years of 1990 and 2010, in 2010 real dollars, was approximately $7,061,172. Past Presidential Disaster Declarations should not be the sole measure to project future losses caused by tornados. The Planning Team will revisit this issue in future plan revisions.

3. <u>State Owned Buildings at Risk and Potential Dollar Losses to State</u>

The entire state is vulnerable to tornadoes (see state-owned facility information by county included as Table 3.40 of this section). However, the state owned and operated buildings in the ten most populous counties listed in Table 3.40 of this section, are more numerous, as these counties have increased concentrations of infrastructure, buildings, and population. Therefore, these ten counties have higher vulnerability. The Planning Team will be collecting more detailed information concerning state owned and operated buildings for inclusion in the next plan update.

[33] http://www.usinflationcalculator.com/



Hazard:	Wildfire
Impact On:	
Public: Housing, Causalities, Fatalities, Work, Food, Water	Housing - If the wildfire spreads to a populated area the impact would be the same as an Urban fire with damages from water and smoke to property being destroyed. Causalities/Fatalities - with good warning and if citizens will evacuate when asked, causalities and/or fatalities will be mitigated. With good adherence to safety and the proper use of PPE responder causalities and fatalities can be minimized. Work - If the fire is contained to the wild area, little to no impact on work. Food/water - there should be no impact on food and water supply. Supplies of food and water will need to be brought in for firefighters.
Responders: Fire, Police, Medical, Public Works	Fighting wildfire is dangerous and extreme caution and strict adherence to safety measures and the use of Incident Management is important to keep responders safe and accounted for.
Continuity of Operations	If the wildfire is contained outside of municipalities, there should be no impact on COOP
Property: Destroyed, Major, Isolated	Wildfire is destructive, moves very quickly. Homes and businesses in an area adjacent to a wilderness area are vulnerable to destruction from fire.

Hazard: Impact On:	Wildfire
Infrastructure: Electricity, water, roads, bridges	Infrastructure in the wilderness area is vulnerable to fire especially electrical structures including transmission and distribution lines, poles and towers. Run off from the suppression activities can pollute stream and rivers that provide drinking water. Roads and bridges may become isolated during the fire and could need to be repaired due to the fire or to the large amounts of heavy equipment used to fight the fire.
Environment	Wildfire is a natural event in wilderness areas, and although not all wildfires start from natural causes forests and grasslands do replenish themselves over time. Streams and rivers can become temporarily polluted from fire but the natural dilution factor helps clean the waterway over time. Wildlife is displaced and lost but also comes back to the area as it returns to normal.
Economic Conditions:	There is not a large logging industry in Nebraska so wildfire does not disrupt the economy of an area. Tourism can be interrupted for the season of the fire but that is a temporary disruption.
Public Confidence in the Governance	Public confidence will depend on proper management of the firefighting operation and the activities taken to return the area to normal.

P. Wildfires

1. Location and Previous Occurrences

a. Wild fires in Nebraska are not uncommon, and often originate in pasture or prairie areas following the ignition of dry grasses, either intentionally or unintentionally. Most wildfires result from dry weather conditions. A wildfire's cost to natural resources, crops, and pastured livestock can be ecologically and economically devastating. In addition to the health and safety concerns to those directly affected by fires, the health of citizens in surrounding areas can decline due to smoke inhalation.

b. Wildfires are frequently associated with lightning and drought conditions, as dry conditions make vegetation more flammable. As new development encroaches into the wildland/urban interface (areas where development occurs within or immediately adjacent to wildlands, near fire-prone trees, brush, and/or other vegetation), more and more structures and people are at risk. On occasion, ranchers and farmers intentionally set fire to vegetation to restore soil nutrients or alter the existing vegetation growth. These fires have the potential to get out of control and turn into wildfires.

c. Wildfires occur more frequently in the central and western portions of the state of Nebraska. These areas are more susceptible because of recent drought conditions. Wildfires can be responsible for extensive damage to crops, the environment and occasionally residential or business facilities. Wildfire causes can be broken down into two groups: those started by natural phenomenon and those started by man-made ignitions. Natural ignition is by lightning. The most common man-made

starters are campfires, debris burning, equipment use, smoking, children, electric fences, and railroads.

d. The number of wildfires each year depends largely on the amounts of rain received and the carelessness of individuals. Intentionally and accidentally set fires cannot be predicted. Table 3.33 below includes information concerning the impact of fires between the years of 1998 and 2013, and is based on information from the Nebraska Forest Service. Information in the table below indicates that between 1998 and 2013 the state averaged 1,135 wild land fires and with 83,997.2 acres burned annually.

Table 3.33: Nebraska Wildfires and Area Burned 1998-2013

Year	Total Fires	Acres Burned
1998	796	34,367.16
1999	1,498	186,044.3
2000	1,784	199,921.5
2001	620	17,230.19
2002	1,835	90,531.63
2003	1,017	19,068.14
2004	1,010	17,654.9
2005	1,375	25,289.3
2006	1,858	120,076.7
2007	801	20,301
2008	751	8,456
2009	901	12,611.2
2010	759	24,161.7
2011	1019	36,582.2
2012	1625	520,326.2
2013	525	11,333.1

e. Table 3.34 below summarizes information on federally declared wildfire disasters.

Table 3.34: Federal Disaster Declarations (Wildfires)

Year	Federal Disaster Number	Dates	Fire Management $ Awarded	Est. Private Structural & Crop Losses/ Public Assistance Damages	Description/ Location
2006	**2655**	7/16/2007 -7/21/2007	$450,000.00	$1,750,000.00	In Cherry County near Valentine lightning caused a wildfire, 3,000 acres charred, 20 homes lost or severely damaged
2006	**2660**	7/27/2007 - 8/7/2007	$3,000,000.00	$3,500,000.00	In Dawes County, near Chadron, lightning caused a wildfire, 40,000 acres charred, 10 homes lost or severely damaged
2006	**2661**	7/28/2007 - 8/8/2007	$2,500,000.00	$3,000,000.00	In Sioux County near the village of Harrison, lightening caused a wildfire, 35,000 acres charred
2011	**2900**	4/22/2011 -4/23/2011	$0 (no eligible costs)	$435,613.80 (estimated)	In Thomas County, near Thedford, a UTV caused a wildfire, 11,500 acres charred
2012	**5009**	8/30/2012 -9/10/2012	TBD	$4,700,000 (estimated)	In Dawes & Sheridan Counties, lightning caused a wildfire complex, 86,201 acres charred, Chadron State Park severely damaged

f. The majority of the information obtained in the above table was from FEMA's Website, former State Hazard Mitigations Plans, NEMIS (National Emergency Management Information System), and general Web-based research.

g. As indicated in Table 3.34 the state was awarded three Fire Management Assistance Grants for the three wildfire events during the summer of 2006. The cause of these fires was dry weather conditions and ignition by lightning. Weather conditions during the period were reported by the NWS as "red flag fire conditions," i.e. average daily highs ranging from 100 – 115 degrees Fahrenheit, and extreme drought. Emergency Managers' prompt notifications to the State Emergency Operations Center, the ordering of aerial surveillance flights to monitor the situation, and solid communication and coordination among all involved entities contributed to a quick response to each of the three fires.

h. To prepare for and combat wildfire destruction, Nebraska has created the Nebraska Wildfire Council. It is comprised of federal, state, and local fire-fighting organizations and meets twice a year. The Council has created an Interagency Cooperative Fire Management Agreement. Signed by the agencies listed below, the Agreement contains information on cooperation, coordination, and reimbursement for the sharing of resources among firefighting agencies. The agreement is currently in effect until March of 2018.

i. Participants in the Interagency Cooperative Fire Management Agreement in Nebraska

1) US Department of Interior

a) National Parks Service, Midwest Region

b) Bureau of Indian Affairs, Great Plains Region

c) Bureau of Reclamation, Great Plains Region

d) Fish and Wildlife Service, Mountain Prairie Region

2) USDA- Forest Service, Rocky Mountain Region

3) Nebraska Emergency Management Agency

4) Nebraska Forest Service

5) Nebraska Department of Game and Parks

6) Nebraska Military Department

7) Nebraska Fire Marshal

8) Rural Fire Protection Districts

j. The annual Wildfire Operating Plan is included in the State Emergency Operations Plan.

2. Probability of Future Events and Jurisdiction Vulnerability

a. The risk of wildfires is a real threat in every county across the state. The NWS monitors the risk factors in the state on a daily basis so that wildfires can be predicted, if not prevented.

b. The risk factors considered are:

1) High temperature

2) High wind speed

3) Fuel moisture (greenness of vegetation)

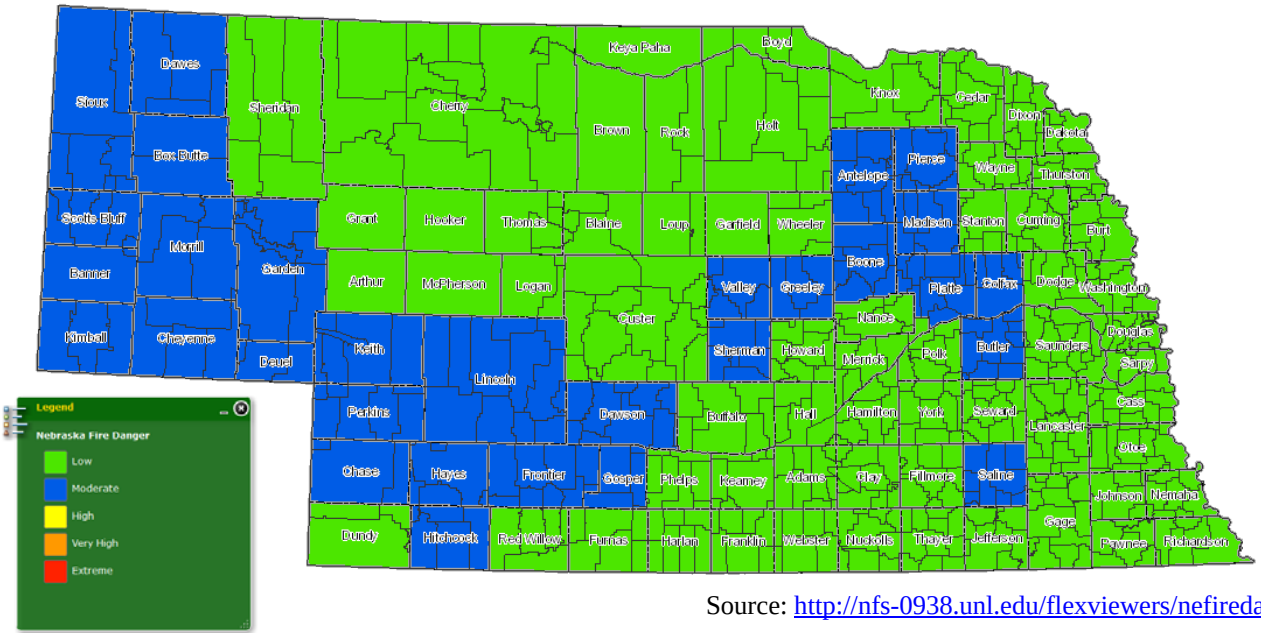
4) Low humidity

5) Small cloud cover

Fire Weather Threat Level	Threat Level Descriptions
Extreme	**"An Extreme Threat to Life and Property from Existing or Potential Wildfires Due to Weather."** • Wildfire weather conditions meet Red Flag criteria with KBDI ≥ 600 and with winds ≥ 15 mph (or wind gusts ≥ 15 mph from nearby lightning storms).
High	**"A High Threat to Life and Property from Existing or Potential Wildfires Due to Weather."** • Wildfire weather conditions meet Red Flag criteria with KBDI ≥ 600 and with winds < 15 mph. • *OR...* Wildfire weather conditions meet Red Flag criteria with KBDI 400 - 599 and with winds ≥ 15 mph (or wind gusts ≥ 15 mph from nearby lightning storms)
Moderate	**"A Moderate Threat to Life and Property from Existing or Potential Wildfires Due to Weather."** • Wildfire weather conditions approaching Red Flag criteria with KBDI ≥ 600. • *OR...* Wildfire weather conditions meet Red Flag criteria with KBDI 400 - 599 and with winds < 15 mph. • *OR...* Wildfire weather conditions meet Red Flag criteria with KBDI 200 - 399 and with winds ≥ 15 mph (or wind gusts ≥ 15 mph from nearby lightning storms).
Low	**"A Low Threat to Life and Property from Existing or Potential Wildfires Due to Weather."** • Wildfire weather conditions below Red Flag criteria with KBDI ≥ 600 with significant existing wildfire(s) • *OR...* Wildfire weather conditions approaching Red Flag criteria with KBDI 400 - 599. • *OR...* Wildfire weather conditions meet Red Flag criteria with KBDI 200 - 399 and with winds < 15 mph. • *OR...* Wildfire weather conditions meet Red Flag criteria with KBDI < 200 and with winds ≥ 15 mph (or wind gusts ≥ 15 mph from nearby lightning storms).
Very Low	**" A Very Low Threat to Life and Property from Existing or Potential Wildfires Due to Weather."** • Wildfire weather conditions below Red Flag criteria with KBDI 400 - 599 and significant existing wildfire(s). • *OR...*Wildfire weather conditions approaching Red Flag criteria with KBDI 200 - 399. • *OR...*Wildfire weather conditions meet Red Flag criteria with KBDI < 200 and with winds < 15 mph.
Non-Threatening	**" No Discernable Threat to Life and Property from Existing or Potential Wildfires Due to Weather."** • Wildfire weather conditions are below Red Flag criteria and non-threatening.

c. The chart above depicts the threat of potential wildfires related to weather for specified areas.[34] In 2008, greenness of vegetation maps was included to show Nebraska's vulnerability to wildfires. Since then, the Nebraska Forest Service website has improved and now shows real-time fire danger maps, by county, updated twice daily. The image below is the fire danger (not just greenness) for 1/31/2013.

Figure 3.17: Fire Danger Map: Nebraska 1/31/2013



Source: http://nfs-0938.unl.edu/flexviewers/nefiredanger/

d. The NFS and NEMA have developed the Wildfire Aerial Suppression and Observation Flight program. This program allows local Incident Commanders to obligate up to $10,000 in aerial suppression and $300 in surveillance flights by notifying NEMA of the need. These expenses are paid out of the Governor's Emergency Fund.

e. The NFS also has an online wildfire risk assessment for individuals living in wildfire prone areas. This service allows citizens to determine if the area and housing in which they live promote the occurrence of wildfire. This online resource also provides tips to homeowners on prevention of property damage from wildfires.

3. <u>State Owned Buildings at Risk and Potential Dollar Losses to State</u>
State facilities most at risk to wildfires are the buildings and improvements in the Chadron State Park in Dawes County and the Ft. Robinson State Park in Dawes County. Tables 3.35 and 3.36 below provide information on the value of the state owned buildings in Dawes and Sioux Counties.

[34] http://www.srh.noaa.gov/mlb/?n=wildfire_threat

Table 3. 35: Value of State Owned Buildings in Dawes County

State Agency	Area (Sq Ft)	Approx. Value 2007
Game & Parks (Chadron State Park)	46,429	$5,154,717
Game & Parks (Box Butte SRA)	480	$35,693
Department of Roads (Chadron)	10,398	$359,734
Military Department (Chadron)	15,187	$1,286,491
Dawes County Total	**$6,836635**	

Table 3. 36: Value of State-Owned Buildings in Sioux County

State Agency	Area (Sq Ft)	Approx Value 2007
Game & Parks (Fort Robinson State Park)	242,645	$43,434,568
Game & Parks (Ponderosa WMA)	8,167	$744,588
State Historical Society (Fort Robinson Museum)	48,552	$5,368,508
Sioux County Total	**$49,547,664**	

III. ANALYSIS OF STATE DEVELOPMENT TRENDS

A. Development, demographic, and land use trends along with building value exposure are important elements to consider in a risk assessment. This sub-section will examine growth, social vulnerability, other demographics, land use and development trends, and exposure of the built environment as inputs to the vulnerability discussions that will take place by hazard in the hazard profiles and Vulnerability.

B. After extensive population and demographic research, the Planning Team determined that population density should be a main indicator of vulnerability in Nebraska. The reasoning was that an increased concentration of population equates to increased potential for loss of life and property. In addition, the population density in Nebraska exhibits a wide disparity across the state, ranging from 1,574 persons per square mile in Douglas County in eastern Nebraska to less than one person per square mile in some of the counties in the western part of the state (2010 census). Roughly 75 percent of the geographic area of the state has a population of less than 11 persons per square mile.

C. State hazard mitigation plans typically identify hazards of a physical nature, such as weather-related hazards like flooding, tornadoes, and drought. For this reason, it is also worthwhile to consider factors beyond raw population to gain a general knowledge and understanding of the vulnerability within the state.

Therefore, location-specific information such as ground water, governmental physical facilities and other information is also included in the individual hazard profiles. In addition, concentrations of special needs populations will be examined.

D. Demographic information is offered in the 2014 Plan Update to identify particularly vulnerable population. Maps depicting the most current population data will remain the same in the 2014 Plan Update. The information is the most accurate, from the U.S. Census Bureau, based on the 2010 census and 2012 estimates.

Figure 3.19: Population of the State of Nebraska by County

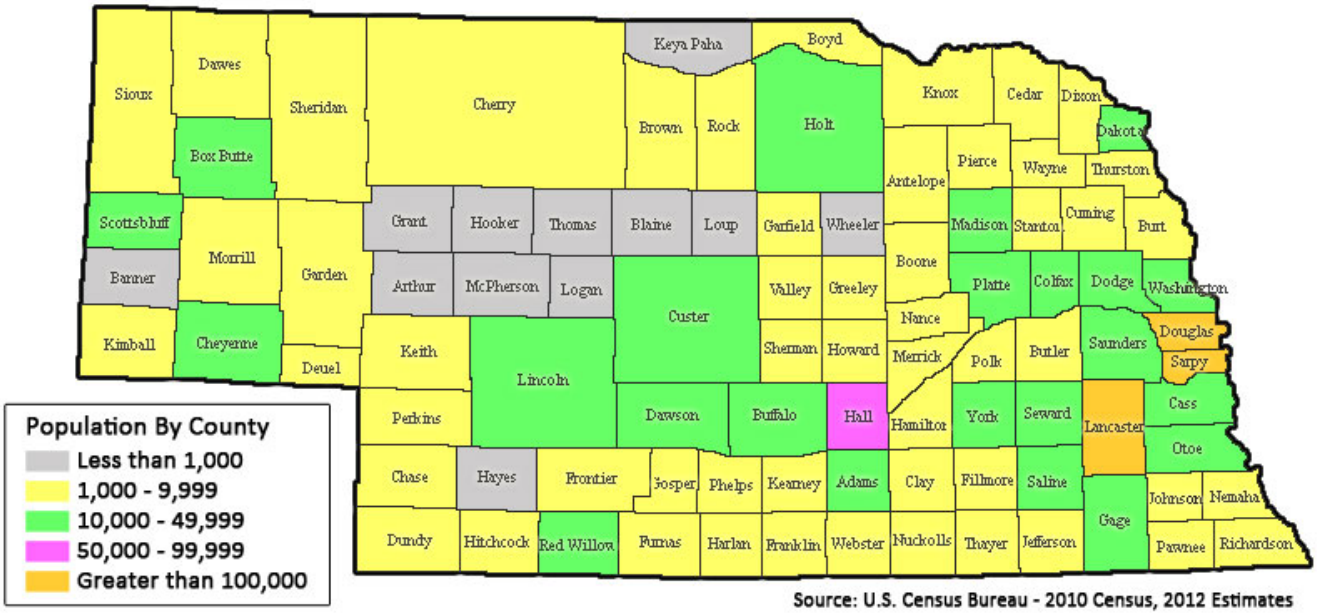
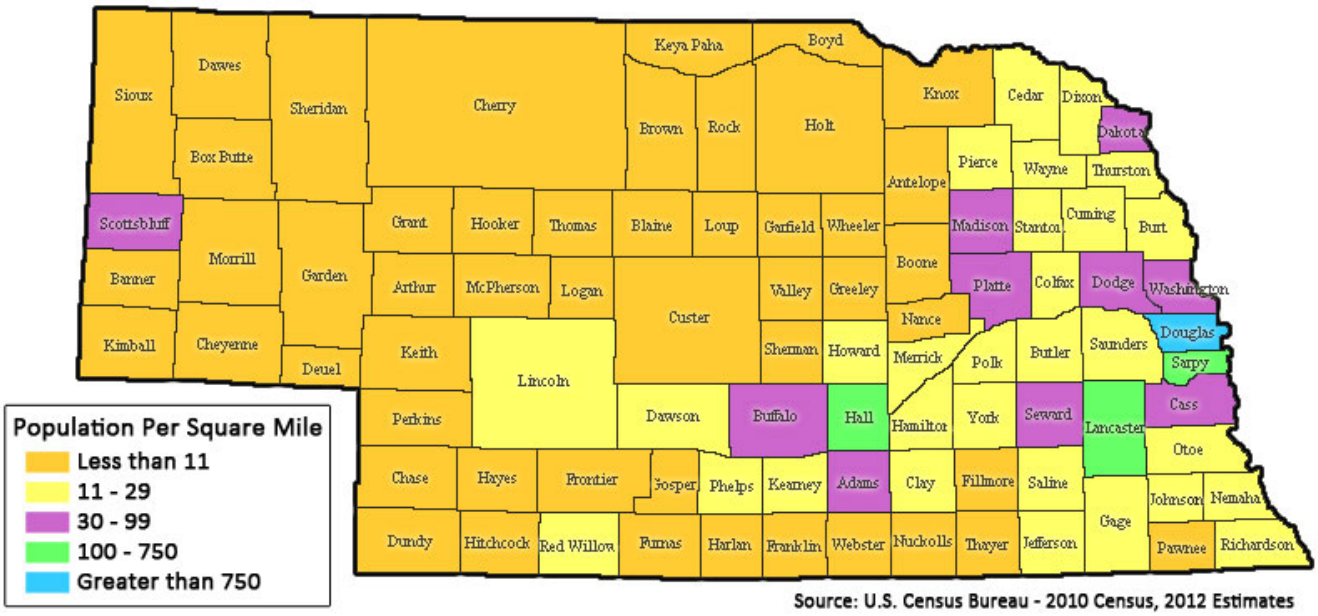


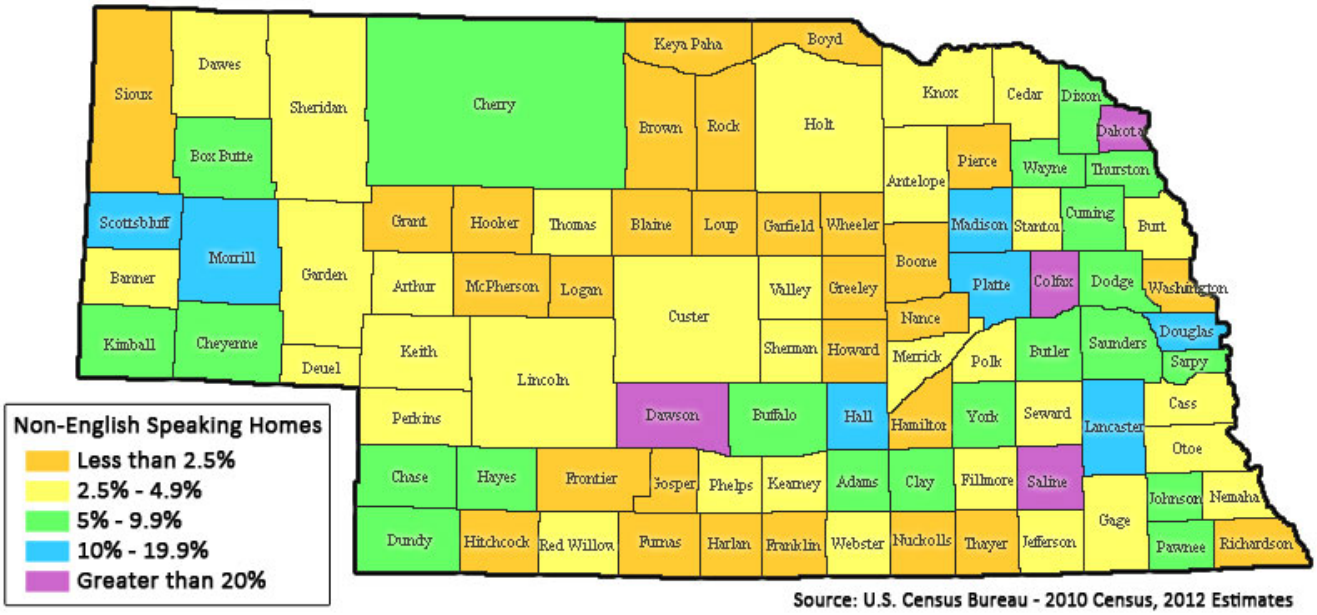
Figure 3.20: Population Per Square Mile by County



E. The figures 3.19 and 3.20 above indicate a concentration of population in the eastern part of the state and along the interstate system. One county in the western panhandle, which includes the community of Scotts Bluff, also has a higher density. The remainder of the state has a very low population density.

F. High-density population areas have experienced land scarcity and higher property values, as well as traffic problems. Governmental entities and relief agencies are, at times, hard pressed to serve the masses. The sparsely populated areas, by contrast, have a scarcity of services due to longer travel distances and lack of monetary and personnel support. Often there is a lack of suitable, affordable housing to rent or purchase.

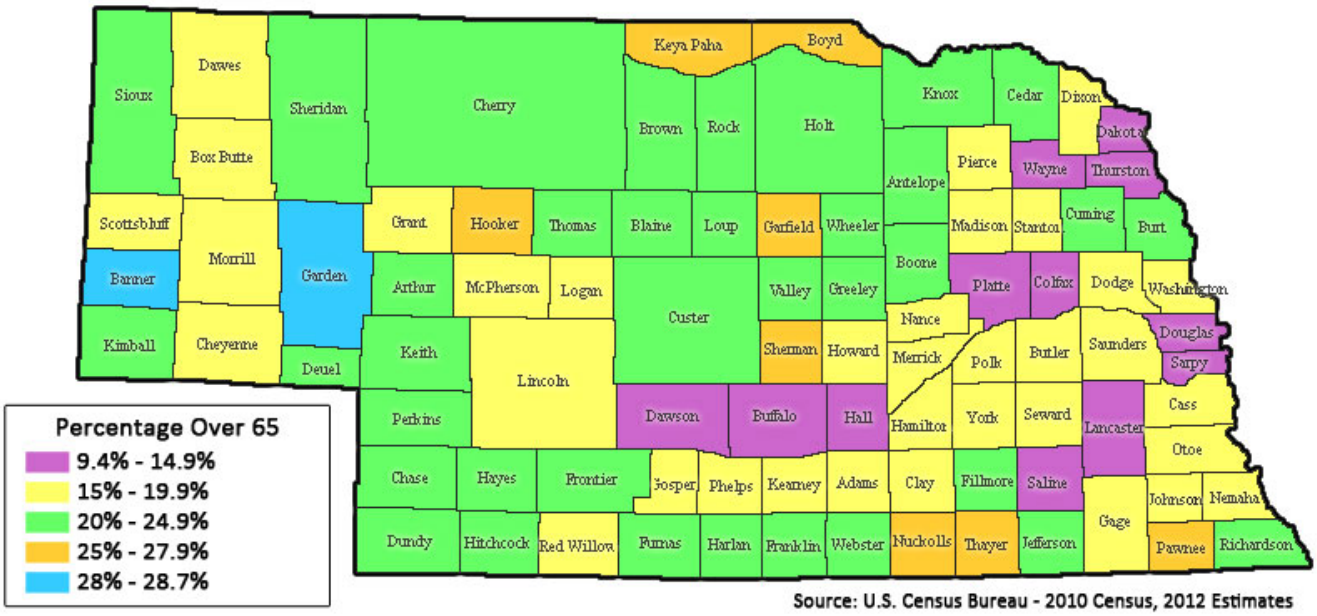
Figure 3.21: Percent of Persons Five Years and Over Whom Speak a Language Other Than English at Home By County[35]



G. Figure 3.21 above illustrates, by county, the percentages of persons five years and older in the home who speak other than English. Those with minimal or limited English-speaking skills also lack reading, writing, and other communication skills in languages other than their own. These populations require special consideration by agencies, including foreign language-specific ballots, signage, interpreters, medical services, education, etc. While Figure 3.22 shows a concentration of "other than English speaking persons" in the eastern part of the state, this vulnerable group can be found in communities across the state. Principally, this population tends to migrate to those areas where employment opportunities exist. Examples are: egg processing in the northeastern Nebraska (Dixon, Wayne and Knox Counties); meat processing in eastern, northeastern, central and western Nebraska (Dawson, Colfax, Madison, Dakota, Cuming, and Platte Counties); and dairy production in two counties of Nebraska (Wayne and Dixon Counties).

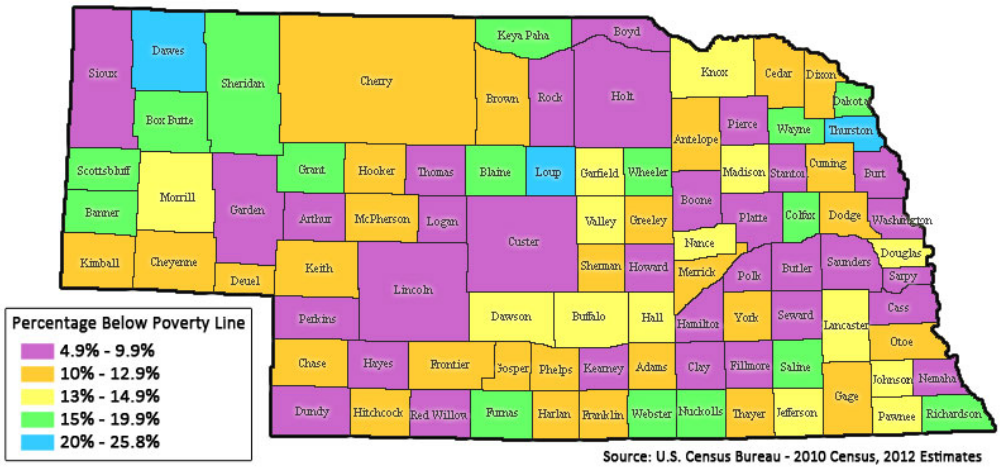
[35] http://factfinder.census.gov.servlet/ThematicMapFramesetServlet

Figure 3.22: Percent of Persons 65 and Older by County



H. Figure 3.22 above shows, by county, the percentages of persons aged 65 years and older. Counties with high concentrations of this group are scattered across the state. Comparing Figure 3.20 to Figure 3.23 shows that the counties with fewer residents per square mile tend to be those with higher percentages of residents 65 years and older. The most populated counties (Lancaster, Douglas, and Sarpy) have the lowest percentage of residents 65 years or older. As previously discussed, the most sparsely populated counties will be handicapped in providing needed services to seniors due to a lower number of service providers and distances to be traveled.

Figure 3.23: Percentage of Families Living Below the Poverty Level by County[36]



[36] www.census.gov

I. Figure 3.23 above shows the percentages of families living below the poverty level by county. Similar to the percentages of persons 65 years and older, the percentages of families below the poverty level are scattered across the state. Again the bulk of that group is found in greatest numbers in the most sparsely populated counties. In addition, there is some relationship between low-income and percent of persons 65 years and older.

J. These figures reveal varying vulnerabilities across the state. Each population group presents its own challenges for the provision of services. Special needs population groups present a greater draw on state, federal and local resources than is required for the remainder of the population. For example, counties with larger percentages of non-English speaking populations may require hazard education in languages other than English. In the hazard profiles that follow, consideration should be made for the locations of special needs populations in the state.

K As previously stated, the Planning Team determined that a principal determinant for vulnerability across the state will be population density. Table 3.37 below offers information about the top ten populated counties in Nebraska.

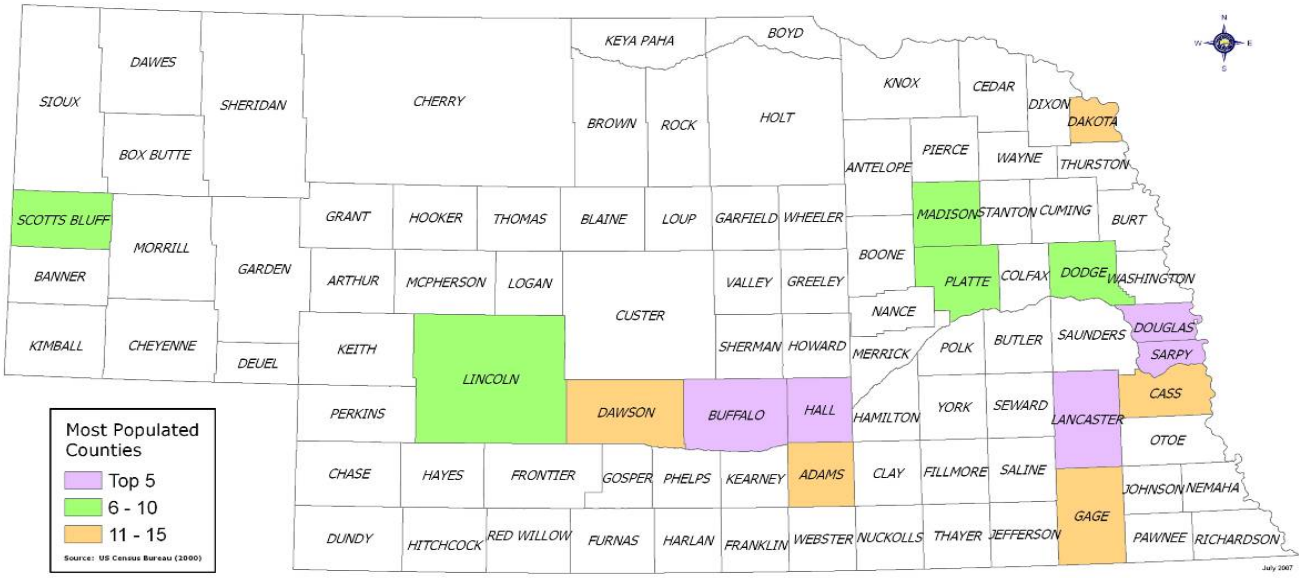
Table 3.37: Top Ten Populated Counties in Nebraska (2012 U.S. Census – Estimates)

County	Population	% of State Population
Douglas	531,265	28.6%
Lancaster	293,407	15.8%
Sarpy	165,853	8.9%
Hall	60,345	3.3%
Buffalo	47,463	2.6%
Scotts Bluff	36,964	2.0%
Dodge	36,427	2.0%
Lincoln	36,099	1.9%
Madison	35,031	1.9%
Platte	32,681	1.8%

L. The top ten counties have a total population of 1,275,535 which is 68.7 percent of the total population of the state. Residents of the ten most populous counties in Nebraska comprise a land area of one-tenth of the land mass of the state. Because of this high concentration of population, the top ten counties are the most vulnerable to damages from natural hazards.

M. The State of Nebraska is geographically large with a heavy population in the three or four urban areas, and sparsely scattered concentration of population throughout the remainder of the state. Figure 3.24 below is a geographic depiction of the population centers in the state.

Figure 3.24: Top Five, Ten, and Fifteen Populated Counties



N. Another indication of vulnerability to hazards in the state is the rate of population change. Tables 3.38 and 3.39 below include information about the top ten population growth and decline counties in the state during the time period between 1990 and 2000.

Table 3.38: Ten Highest Population Growth Counties (between 2000 and 2010)

County	2010 Population	2000 Population	Percent Change	Part of State
Sarpy	158,840	122,595	+29.6%	Eastern
Johnson	5,217	4,488	+16.2%	Southeastern
Lancaster	285,407	250,291	+14.0%	Eastern
Douglas	517,110	463,585	+11.5%	Eastern
Hall	58,607	53,534	+9.5%	Central
Buffalo	46,102	42,259	+9.1%	Central
Washington	20,234	18,780	+7.7%	Eastern
Garfield	20,49	1,902	+7.7%	Central
Saunders	20,780	19,830	+4.8%	Eastern
Lincoln	36,288	34,632	+4.8%	Central

Table 3.39: Ten Lowest Population Growth Counties (between 2)

County	2010 Population	2000 Population	Percent Change	Part of State
Boone	5,505	6,259	-12.0%	Central
Richardson	8,363	9,531	-12.3%	Southeastern
Dundy	2,008	2,292	-12.4%	Southwestern
Rock	1,526	1,756	-13.1%	North Central
Thayer	5,228	6,055	-13.7%	South Central
Boyd	2,099	2,438	-13.9%	North Central
Banner	690	819	-15.8%	West Panhandle
Keya Paha	824	983	-16.2%	North Central
Grant	614	747	-17.8%	Central
Blaine	478	583	-18.0%	Central

O. Land use regulation and planning are the keys to promulgation of mitigation measures by local governments in Nebraska. The authority for local Nebraska jurisdictions to adopt zoning and land subdivision regulations, as well as comprehensive plans, was granted by state statute in 1967. However there is no requirement for either municipalities or counties to adopt zoning, planning or building standards or ordinances.

1. Nebraska Statutes allows cities of the first or second class to adopt zoning and planning. "**19-901. Zoning regulations; power to adopt;.**(1) For the purpose of promoting health, safety, morals, or the general welfare of the community, the legislative bodies in cities of the first and second class and in villages **may** adopt zoning regulations which regulate and restrict the height, number of stories, and size of buildings and other structures, the percentage of lot that may be occupied, the size of yards, courts, and other open spaces, the density of population, and the location and use of buildings, structures, and land for trade, industry, residence, or other purposes."

2. Nebraska statute allows counties to adopt comprehensive planning and zoning but does not mandate it.

   a. **23-114. Zoning regulations; when authorized; powers; manufactured homes; limitation of jurisdiction.**(1) The county board shall have power: (a) To provide for temporary zoning as provided in sections 23-115 to 23-115.02; (b) to create a planning commission with the powers and duties set forth in sections 23-114 to 23-114.05, 23-168.01 to 23-168.04, 23-172 to 23-174, 23-174.02, 23-373, and 23-376; (c) to make, adopt, amend, extend, and implement a county comprehensive development plan; (d) to adopt a zoning resolution, which shall have the force and effect of law; and (e) to cede and transfer jurisdiction pursuant to section 13-327 over land otherwise subject to the authority of the county board pursuant to this section.

   b **13-301. Counties containing city of first class; comprehensive development plan; encouraged to prepare; enforcement.** Since counties containing larger municipalities are typically experiencing population and economic growth which promotes increased urban and rural land-use conflicts, the county government of a county that contains some or all portions of a city of the first class is strongly encouraged to prepare a comprehensive development plan that meets the requirements of section 23-114.02, adopt zoning and subdivision regulations covering all portions of its regulatory jurisdiction, and begin an organized and staffed program to enforce such zoning and subdivision regulations.

3. Below is a listing of the 82 of a possible 93 counties that have adopted zoning ordinances:

Adams	Antelope	Arthur	Boone	Box Butte
Boyd	Brown	Buffalo	Burt	Cedar
Chase	Cherry	Cheyenne	Cuming	Clay
Colfax	Custer	Dakota	Dawes	Dawson
Deuel	Dixon	Dodge	Douglas	Dundy
Fillmore	Franklin	Frontier	Furnas	Gage
Garden	Garfield	Gosper	Grant	Greeley
Hall	Hamilton	Harlan	Hayes	Hitchcock
Holt	Hooker	Howard	Jefferson	Johnson
Kearney	Keith	Keya Paha	Kimball	Knox
Lancaster	Lincoln	Loup	Madison	McPherson
Merrick	Morrill	Nance	Nemaha	Otoe
Pawnee	Perkins	Pierce	Polk	Red Willow
Richardson	Rock	Saline	Sarpy	Saunders
Scotts Bluff	Seward	Sheridan	Sherman	Sioux
Stanton	Thayer	Valley	Washington	Webster
Wheeler	York			

4. In the 2011 Nebraska Legislature Session a bill was introduced (LB546) that adopts the 2009 International Building Code published by the International Code Council as the State Building Code and requires any jurisdiction that has building codes to update them to also meet the 2009 Residential Code with some exceptions. This bill was signed by the governor on April 14, 2011 and amended by AM348 to incorporate portions of the LB437 guidance in May of 2011.

P. Planning tools and strategies in Nebraska need updating to help address economic development, growth and related land-use issues:

1. 78 percent of Nebraska's 93 counties were included on a nationwide list of counties with prime agricultural land most vulnerable to loss from development;

2. 70 percent of the state's native vegetation has been lost or severely damaged;

3. Approximately one-third of the 631 wildlife species and 1,600 plant species in the state are of concern because their populations are rare, declining or at risk;

4. 36 percent of renters in the state pay more than 30 percent of their total annual income in housing costs; and

5. Nebraska's economy is divided between the "most prosperous urban twenty to thirty counties and the struggling rural economy of the sixty to seventy counties."

Q. The negative growth counties and communities are in rural areas of the state where small towns are dying, there are fewer and fewer job opportunities, schools are closing and consolidating, businesses disappearing, and farmsteads have become vacant or destroyed. Many of the smaller communities have become "bedroom" communities with workers commuting to a larger town nearby. Farms are growing larger with fewer farm families per square mile. There is typically no one reason for negative growth. Economic necessity often requires persons to move, as well as motivations such as educational and social opportunities for children and family growth opportunities.

IV. ESTIMATING POTENTIAL LOSSES TO STATE FACILITIES

Requirement §201.4(c)(2)(ii): [The state risk assessment shall include an overview and analysis of the state's vulnerability to the hazards described in this paragraph (c)(2), based on estimates provided in] the state risk assessment. State owned critical or operated facilities located in the identified hazard areas shall also be addressed.
Requirement §201.4(c)(2)(iii): [The state risk assessment shall include an overview and analysis of the state's vulnerability to the hazards described in this paragraph (c)(2), based on estimates provided in] the state risk assessment. State owned critical or operated facilities located in the identified hazard areas shall also be addressed.

A. In order to estimate total potential state facility losses by jurisdiction, Table 3.40 "State Owned – Facility Information by County" lists the number of state owned buildings by county, the total square footage for all buildings in each respective county, and the total replacement cost for these structures in each county. The data used to create the Table was provided by the Nebraska Department of Administrative Services' – Building Division. These buildings are managed and operated by the following state Agencies: Nebraska Department of Administrative Services, Nebraska Department of Aeronautics, Nebraska Department of Agriculture, Nebraska Military Department, Nebraska Department of Roads, Nebraska Game & Parks Commission, Nebraska State Patrol, Nebraska Department of Health & Human Services, Nebraska Department of Corrections, Nebraska Department of Labor, Nebraska Office of the Chief Information Officer, and NDNR.

Table 3.40: State Owned - Facility Information by County

County	# of buildings	Total Square Footage	Total Replacement Cost (in 2007 dollars)
Adams	41	543,068	$61,119,611.00
Antelope	22	43,123	$4,263,534.00
Arthur	3	1,364	$128,751.00
Boone	3	4,575	$339,936.00
Box Butte	9	16,422	$1,266,568.00
Boyd	4	7,788	$342,937.00
Brown	33	39,598	$2,667,674.00
Buffalo	94	320,418	$28,320,898.00
Burt	11	11,420	$868,895.00
Butler	5	12,877	$852,316.00
Cass	105	96,958	$12,907,462.00
Cedar	10	17,868	$1,207,632.00
Chase	33	26,959	$3,627,436.00
Cherry	118	73,995	$8,460,655.00
Cheyenne	10	36,910	$2,929,340.00
Clay	3	12,047	$478,486.00
Colfax	4	6,020	$446,468.00
Cumming	6	11,240	$852,350.00
Custer	131	58,608	$4,562,434.00
Dakota	9	13,800	$768,647.00
Dawes	155	386,787	$57,408,603.00
Dawson	12	52,812	$3,737,074.00
Deuel	7	11,834	$821,088.00
Dixon	76	71,892	$12,233,149.00
Dodge	55	102,369	$9,001,666.00
Douglas	144	1,074,039	$145,993,601.00
Dundy	46	33,399	$3,887,014.00
Fillmore	47	294,494	$16,806,388.00
Franklin	3	4,696	$169,156.00
Frontier	7	12,963	$722,216.00
Furnas	37	23,014	$2,010,572.00
Gage	69	660,100	$66,189,583.00
Garden	15	33,749	$3,565,137.00
Garfield	48	71,617	$8,522,240.00
Gosper	40	20,808	$2,343,947.00
Grant	2	3,280	$307,594.00
Greeley	4	6,074	$336,331.00
Hall	86	472,461	$89,536,589.00
Hamilton	19	94,078	$3,329,042.00
Harlan	5	9,945	$556,200.00
Hayes	2	2,949	$185,189.00
Hitchcock	35	19,558	$2,006,008.00
Holt	20	42,421	$3,208,806.00
Hooker	4	17,692	$1,206,781.00
Howard	4	17,859	$2,261,219.00
Jefferson	36	61,144	$5,343,372.00
Johnson	28	390,038	$94,180,667.00

County	# of buildings	Total Square Footage	Total Replacement Cost (in 2007 dollars)
Kearney	4	9,369	$548,653.00
Keith	88	79,134	$6,995,590.00
Keya Paha	2	3,480	$310,229.00
Kimball	18	18,602	$1,357,202
Knox	110	78,540	$9,002,300.00
Lancaster	427	5,377,932	$566,657,698.00
Lincoln	84	244,199	$23,601,455.00
Logan	1	1,792	$45,558.00
Loop	7	7,999	$399,650.00
Madison	152	684,894	$60,513,037
Merrick	5	9,354	$288,313.00
Morrill	13	40,722	$2,986,584.00
Nance	10	25,395	$2,174,282.00
Nemaha	9	14,073	$893,404.00
Nuckolls	6	5,396	$369,045.00
Otoe	22	175,232.00	$24,651,073.00
Pawnee	8	9,619	$461,358.00
Perkins	3	7,181	$195,100
Phelps	16	26,985	$2,238,428.00
Pierce	23	9,540	$1,128,901.00
Platte	11	36,989	$2,944,011.00
Polk	7	15,815	$614,744.00
Red Willow	49	136,699	$13,564,806.00
Richardson	61	23,505	$3,107,302.00
Rock	4	15,801	$1,865,655.00
Saline	12	62,288	$2,297,473.00
Sarpy	125	273,318	$46,526,277.00
Saunders	26	50,133	$3,341,941.00
Scotts Bluff	79	214,611	$24,828,887.00
Seward	12	39,535	$3,694,972.00
Sheridan	6	12,453	$870,363.00
Sherman	48	19,962	$1,701,205.00
Thayer	14	13,790	$1,061,796.00
Thomas	3	4,868	$526,156.00
Valley	5	10,112	$634,166.00
Washington	5	7,736	$597,435.00
Wayne	10	34,273	$2,867,001.00
Webster	11	20,777	$2,176,215.00
Wheeler	7	6,582	$444,708.00
York	55	182,091	$23,617,763.00
TOTALS	**3,218 buildings**	**13,357,906 sq. ft.**	**$1,514,381,998.00**

B. Table 3.41 below was compiled using information from the National Flood Insurance Program (NFIP).

Table 3.41: Known State Facilities in High Risk Flood Areas (NFIP Zones A, AE, A1-A30, AH, AO, AR, AX, or A99)

County	# of buildings	Total Square Footage	Total Replacement Cost (in 2007 $s)
Adams	20	396,424	$52,985,684.00
Arthur	1	64	$1,822.00
Buffalo	5	15,889	$2,197,835.00
Dodge	2	2,878	$234,348.00
Douglas	24	278,842	$58,899,181.00
Hall	32	256,104	$54,471,843.00
Holt	7	14,537	$500,060.00
Keith	1	6,480	$324,431.00
Lancaster	98	1,234,934	$126,441,888.00
Lincoln	19	108,326	$10,567,444.00
Saunders	11	20,453	$596,904.00
Scottsbluff	1	5,120	$421,097.00
TOTAL	**221 buildings**	**2,340,051 sq. ft.**	**$307,642,537.00**

C. The structural information contained in Table 3.41 above was obtained from data provided by the Nebraska Department of Administrative Services – Building Division. The data includes buildings that are known to be in Zone A with a 1percent annual chance of flooding and a 26 percent chance of flooding over a 30-year period. The table is incomplete because there are some areas in Nebraska with state facilities that have not been mapped by the NFIP.

D. It is anticipated that the vulnerability information provided above will satisfy some of the vulnerability analysis requirements for those hazards that are jurisdiction-wide in impact. The information does not address vulnerability in terms of the impact of each hazard, as is required by the Guidance. In addition, it does not include information on building contents or infrastructure. However, it is the best information that is available at this time. The Planning Team anticipates that as the state's GIS systems become more sophisticated, the NFIP flood map coverage increases, and the use of computer models such as HAZUS is financially feasible for states such as Nebraska, that more information will become available.

V. Estimating Losses by Local Jurisdiction:

A. When the Nebraska Hazard Mitigation Plan was initially developed, there existed a lack of approved local hazard mitigation plans. Because of the limited land area of the state covered by approved local hazard mitigation plans at that time, Nebraska did not have the data available to identify vulnerable structures most susceptible to specific hazards or estimating potential losses based on data provided by approved local hazard mitigation plans. As local hazard mitigation plans are approved and updated, data is continually being incorporated into future state hazard mitigation plan updates. Based on information gathered in the

state's risk assessment, the following areas of the state are most vulnerable to the following hazards.

1. Agricultural Incidents – Animals/Livestock (Central, North Central, and Panhandle)

2. Agricultural Incidents – Plants/Crops (South Central, North Central)

3. Dam Failure (Southeast)

4. Drought (Western, Panhandle)

5. Earthquakes (Southeast)

6. Flooding (Eastern, Central, North Central)

7. Levee Failure (Southeast)

8. Severe Winter Storms/Ice Storms (Central)

9. Terrorism (Statewide)

10. Thunderstorms/High Winds/Lightning/Hail (Central)

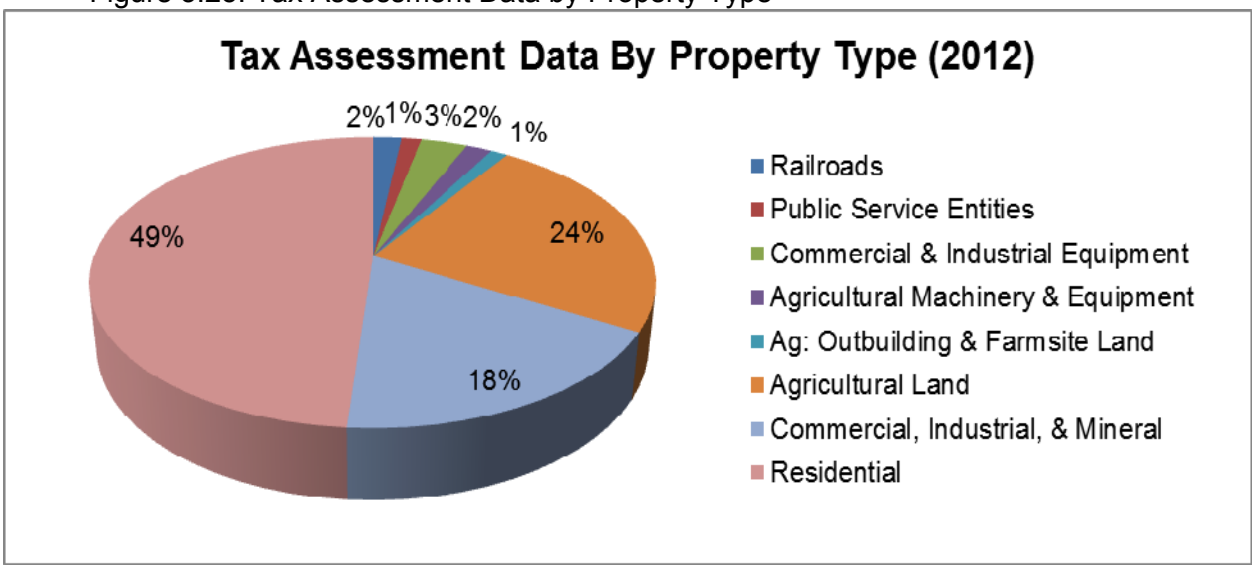
11. Tornadoes (Central)

12. Wildfires (Panhandle)

B. Additional information is available in Attachment 7, which includes information on land values by type, categorized by all 93 counties in the state. This data is from the Nebraska Department of Revenue – Property Assessment Division, which collects it annually from each County Assessor's Office. As local plans are developed, they will include more specific information which will allow more location-specific vulnerability analyses.

C. Figure 3.25 shows the breakdown of assessed state taxes in 2012 by category. The chart indicates that approximately 49 percent of the assessed valuation for the State of Nebraska is comprised of residential structures and property. The second largest category is agricultural property with a total of 25% of the valuation (24% for agricultural real estate and 1% for agricultural personal property).

Figure 3.25: Tax Assessment Data by Property Type



THIS PAGE INTENTIONALLY LEFT BLANK

LONG TERM HAZARD OVERVIEW: CLIMATE CHANGE

I. Introduction

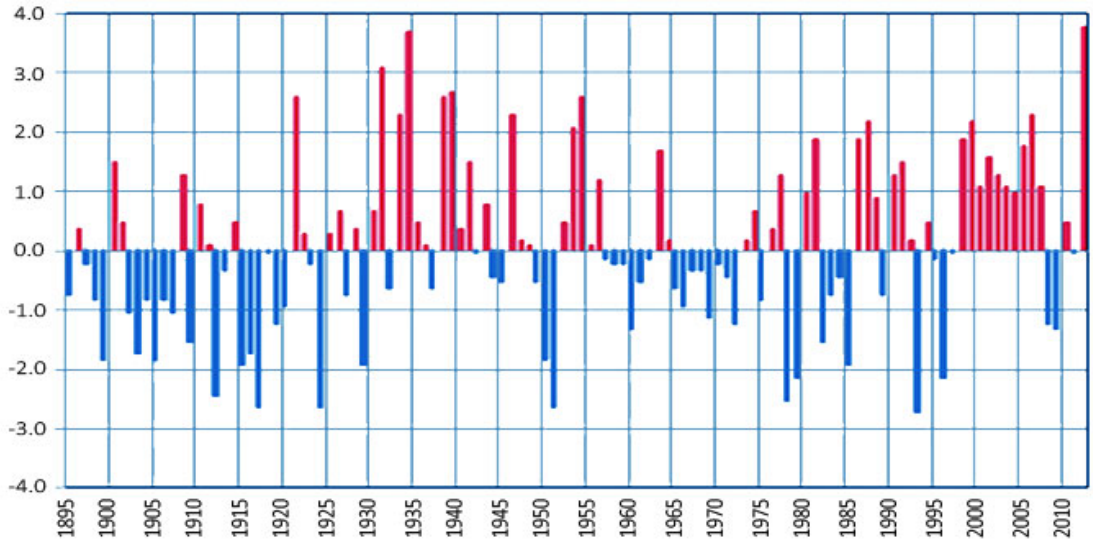
A. In the course of analyzing and understanding the risks posed by the hazards that threaten Nebraska, climate change has become an increasingly important factor for consideration. With over 100 years of systematic weather observations to draw upon for Nebraska, historical trends have been identified. From those, projections can be made, which reflect potential changes that may impact Nebraska.

II. Historical Observations

A. Historical variability of both temperature and precipitation are greater, in effect, than any evident long-term trend for the climate for Nebraska. While short-term causes of climate system variability, such as El Niño and La Niña may have a significant impact on coastal regions, the effect on Nebraska climate—while measurable—is not as strong. This is due to the fact that Nebraska is far inland from large bodies of water. As such, the climate in Nebraska is classified as having a continental climate. It does not receive the moderating influence of the coastal oceans. As a result, temperatures and precipitation can vary widely from day to day and season to season.

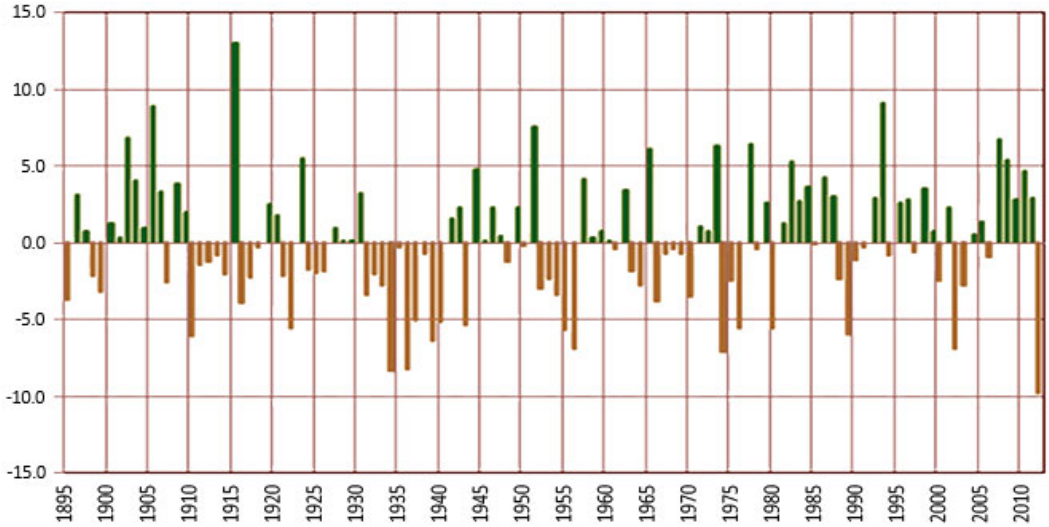
B. Systematic weather observations in Nebraska began around 1895. The records show that the average annual temperatures across the state have increased by about 1ºF. Average annual temperature is categorized into highs and lows, and is defined as the separate sum of all daily high and low temperatures for a calendar year, each divided by the number of days in that year. Thus, by saying that the annual temperature has increased 1ºF, it means that the average high and average low have increased by that value since 1895. Temperatures, however, have varied considerably over that time period. The 1930's, late 1990's, and early 2000's were notable warm periods. Conversely, cooler periods occurred over the early 1900's (through 1921) and the late 1960's. For comparison, the temperature in the contiguous United States has risen by an annual average of 1.3ºF over the last 100 years. Factors such as land use, prevailing winds, storm tracks, and ocean conditions contribute to a lack of uniformity when creating this average.

Figure 3.1.1.: Annual average temperature in Nebraska, shown as a departure (in degrees, Fahrenheit) from the average for the 20th century.



C. Annual precipitation records since 1895 do not indicate a noticeable trend for Nebraska. The 1930's were the driest period in the historical record, with 2012 being the driest single year on record. It was preceded, from 2007 to 2011, with annual precipitation that was above average, for the state. Nationally, within the contiguous United States, annual precipitation has increased 6% over the last 100 years. The overall trend for precipitation, however, is less consistent than it is for temperature.

Figure 3.1.2.: Annual total precipitation in Nebraska, shown as a departure (in inches) from the average for the 20th century.



III. Projected Climate Trends for Nebraska

A. By combining the information available in various climate models, the University of Nebraska Institute of Agriculture and Natural Resources (IANR) projects an annual warming average above the 1% average annual temperature increase observed historically.

B. While precipitation does not demonstrate a discernable annual trend, changes in the frequency and severity of extreme events can be expected. In a warmer climate, these could include heat waves and heavy precipitation. Nebraska is on a dividing line, with regards to the climate models. North and east of that line are projected to have wetter conditions, whereas conditions to the south and west are projected to be dryer. In addition, the Summer season will be generally dryer, with Winter being generally wetter. The higher temperatures will contribute to the dryer conditions by evaporation.

IV. Potential Impact of Climate Change on Nebraska.

A. The increase in annual temperature could have the following effects in Nebraska:

1. Increase in Evapotranspiration – The combination of evaporation and loss of water vapor through plant transpiration will compound the dryer conditions and impact soil moisture.

2. Stress on Human and Animal Comfort – Higher temperatures in Summer will place increased stress on human and animal comfort. Conversely, warmer winters will be less stressful on human/animal comfort, due to less cold conditions.

3. Crop production – The increase in temperatures will decrease soil moisture, creating a greater need for crop irrigation.

4. River flow – Projected decline in Rocky Mountain snowpack is anticipated to change river flow rates, as less snowmelt is received from the source areas for those rivers.

V. Climate Change Initiatives

A. Nebraska Law 1992, LB 274: The Nebraska Legislature created the Climate Assessment and Response Committee (CARC) to coordinate, monitor, and assess information regarding all aspects of drought and other climate-related emergencies. These are further detailed in part VI.

B. Nebraska Revised State Statute 2-4701: This statute outlines the membership of the CARC, establishes leadership, and outlines the frequency with which the committee shall meet.

C. Nebraska Revised State Statute 2-4702: This statute further clarifies the duties of the CARC.

D. Nebraska's CARC Drought Mitigation and Response Plan (Adopted June 26, 2000): This plan establishes the authority of the CARC and outlines its organizational structure. It summarizes drought impacts in Nebraska, specifically economic, environmental, and social. It categorizes specific drought-related mitigative actions taken by states during recent droughts, and defines long-term goals. By agency, it defines responsibility, with regard to the plan. In its appendices, it lists planned mitigation actions and CARC members.

VI. State Efforts to Prepare for Climate Risks

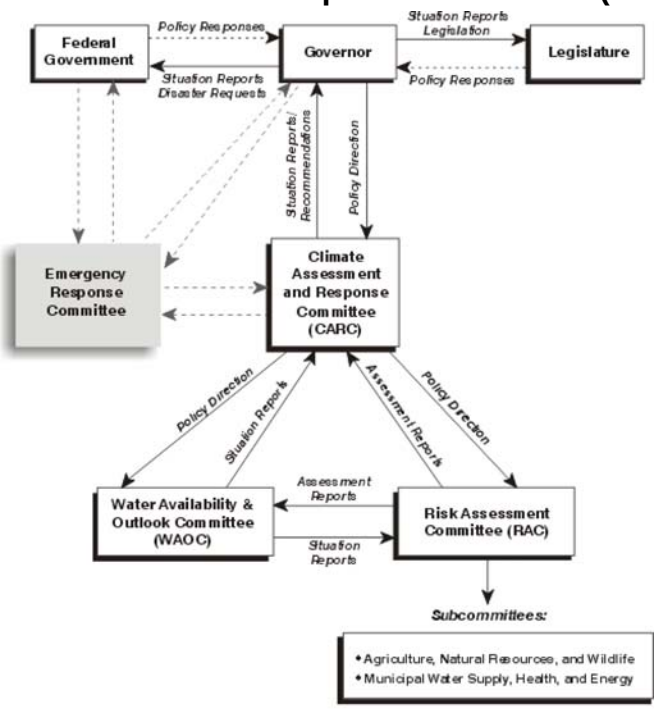
A. Climate Assessment and Response Committee (CARC): In 1991, the Nebraska Legislature established the CARC. The committee membership draws upon nine state agencies, as well as the legislature. Seventeen other state and federal agencies and organizations serve as advisors to this committee. Its duties include systematic data collection, analysis, and dissemination of information about drought and other severe climate occurrences. It is also responsible for providing a mechanism for the improvement of methods impacts of drought on agriculture and industry.

B. Water Availability and Outlook Committee (WAOC): The WAOC meets a minimum of three times annually to monitor current and estimate future water availability and moisture conditions. It is tasked with developing, inventorying, and monitoring an observation network for monitoring climate related information for timely assessment of drought and other climate-related events.

C. Risk Assessment Committee: Since 1998, the Risk Assessment Committee has served to assess the vulnerability to and likely impacts of extreme climatic events on Nebraska's primary economic, environmental, and social sectors. More specifically, it is tasked with conducting a risk analysis of the vulnerability associated with extended periods of water shortage/surplus, to identify mitigation and response actions/programs to reduce drought and extreme climatic event impacts, and to make recommendations to the CARC on the development and implementation of mitigation measures to reduce the impacts of droughts. During droughts or other extreme climatic events, this committee serves to review/evaluate the climate/water situation reports produced by the WAOC, and to estimate probable impacts associated with those periods. They are also to produce impact assessment reports for use by the CARC and develop and

recommend the implementation of mitigation measures and responses to the CARC to reduce the impacts of those events.

Figure 3.1.3.: Organizational Components of Nebraska's Climate Assessment and Response Committee (CARC):



VII. References:

- Nebraska Climate Assessment and Response Committee: Drought Mitigation and Response Plan
- Nebraska Laws, 1992, LB 274
    - Nebraska Revised State Statute 2-4901
    - Nebraska Revised State Statute 2-4902
- University of Nebraska - Climate Change Impact on Air Temperature, Daily Temperature Range, Growing Degree Days, and Spring and Fall Frost Dates In Nebraska, EC715 (2013)
- University of Nebraska - Climate Change: What Does It Mean for Nebraska?, G2208 (October, 2013)

THIS PAGE INTENTIONALLY LEFT BLANK

INTEGRATION OF LOCAL RISK ASSESSMENT THROUGH HAZARD ANALYSIS RISK ASSESSMENT

The Nebraska Emergency Management Agency (NEMA) began the process of completing a Hazard Analysis – Risk Assessment (HIRA) for the State of Nebraska in April of 2009. This process has not been comprehensively done since the mid-80s. NEMA used the HIRA tool from FEMA Planning Guidance CPG-101 with a few modifications as the basis for the HIRA. This tool was emailed to all of the state's County and Regional Emergency Managers along with an instruction manual. All but four of the 93 Counties sent in completed HIRA Tools. Section 3, Attachment 1 is a copy of the instructions sent along with the tool.

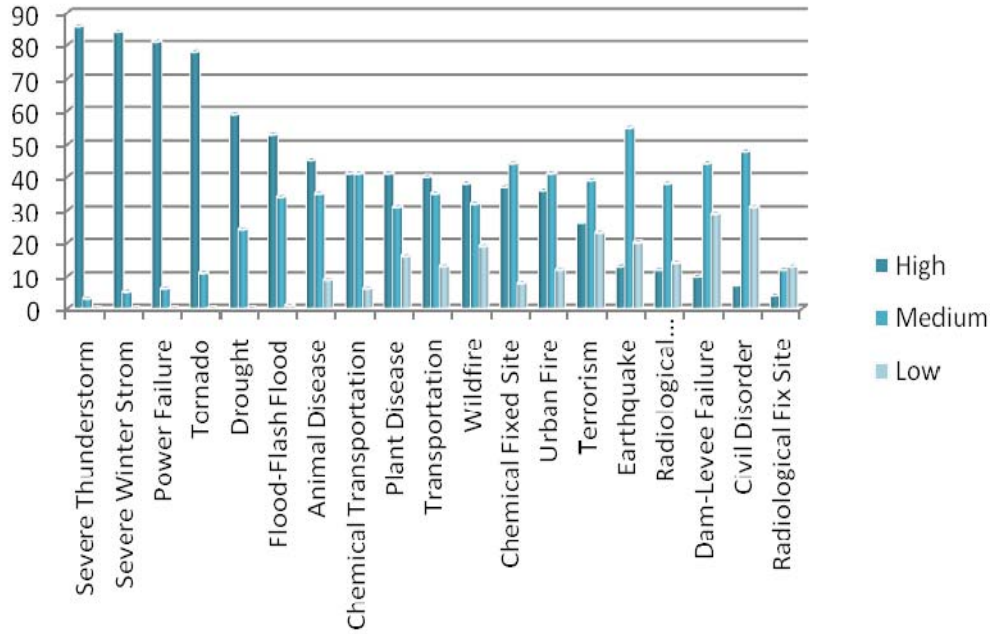
The HIRA process and its extensive local participation were utilized in the development of the Nebraska Hazard Mitigation Plan.

The hazards profiled by the tool were taken from the State Emergency Operations Plan (SEOP) and are listed in alphabetical order below.

1. Animal Disease
2. Chemical Fixed Site
3. Chemical Transportation
4. Civil Disorder
5. Dam/Levee Failure
6. Drought
7. Earthquake
8. Flood/Flash Flood
9. Plant Disease
10. Power Failure
11. Radiological Fixed Site
12. Radiological Transportation
13. Severe Thunderstorm
14. Severe Winter Strom
15. Terrorism
16. Tornado
17. Transportation
18. Urban Fire
19. Wildfire

The terrorism profile is a combination of six of the hazards identified in the SEOP: Terrorism, Nuclear Attack, Conventional Attack; Sabotage, Insurrection, Cyber Attack, and Bio/chemical Attack.

Below are the rankings of the hazards.



The HIRA tool sent to the counties included the ability for the county to identify and profile hazards they felt should be included in their county's HIRA even if they are not in the State's Emergency Operations Plan. Six hazards were identified; Aircraft, High Winds / Dust, Infectious Disease, both on-site and off-site hazards from Offutt Air Force Base, and Structural Collapse. The maps for these hazards are included as an attachment to the HIRA, but are not discussed in that report.

The HIRA is being used as part of an on-going assessment that includes an assessment of Target Capabilities, as they are identified by the Department of Homeland Security, by the State and the Planning, Exercise and Training Regions (PET). The PET regions are using the hazards with the highest rated within the regions as the scenarios to base their assessment of the region's ability to meet the Target Capabilities.

The Hazards

The pages of the HIRA identify the hazards, impacts and resources historically or logically supplied to local governments by the State to support those local entities' response.

A. Hazards that are or will be profiled in the State's Hazard Mitigation Plan have three parts:

1. A map of the scores for each county as they assessed the hazard using the tool developed by FEMA and published in CPG-101. Each county is color coded:

    a. Red for high hazard requiring a score over 80
    b. Yellow for medium hazard requiring a score over 40 but less than 80
    c. Green for a low hazard requiring a score 40 or under.

2. An impact statement identifying the impacts of that hazard on:

    - The public
    - Responders
    - Continuity of Operations
    - Property
    - Infrastructure
    - Environment
    - Economic Conditions
    - Public confidence in the governance

3. Resources that have been or may be requested of the State by local responders/governments.

   a. Identification of needed resources:
      1) The types of assistance that has historically been required of the State or, for those hazards that have to this point not risen to a level requiring State assistance, a logical identification of the types of assistance that may be requested.
      2) The numbers of the identified assets typically or logically requested
      3) State agencies that have the assets.
      4) The location(s) where these assets are stored
      5) The amount of time it could typically take to get the asset to the scene.

   b. In some cases there are not sufficient available State resources to supply expected local requests. In that case resources are obtained through private vendors or requested through the Emergency Management Assistance Compact (EMAC) of which Nebraska is a member.

B. Hazards that are listed in the State Emergency Operations Plans but that will not be profiled in the State Hazard Mitigation Plan have two parts.

   1. A map of the scores for each county as they assessed the hazard using the tool developed by FEMA and published in CPG-101. Each county is color coded:

      a. Red for high hazard requiring a score over 80
      b. Yellow for medium hazard requiring a score over 40 but less than 80
      c. Green for a low hazard requiring a score 40 or under.

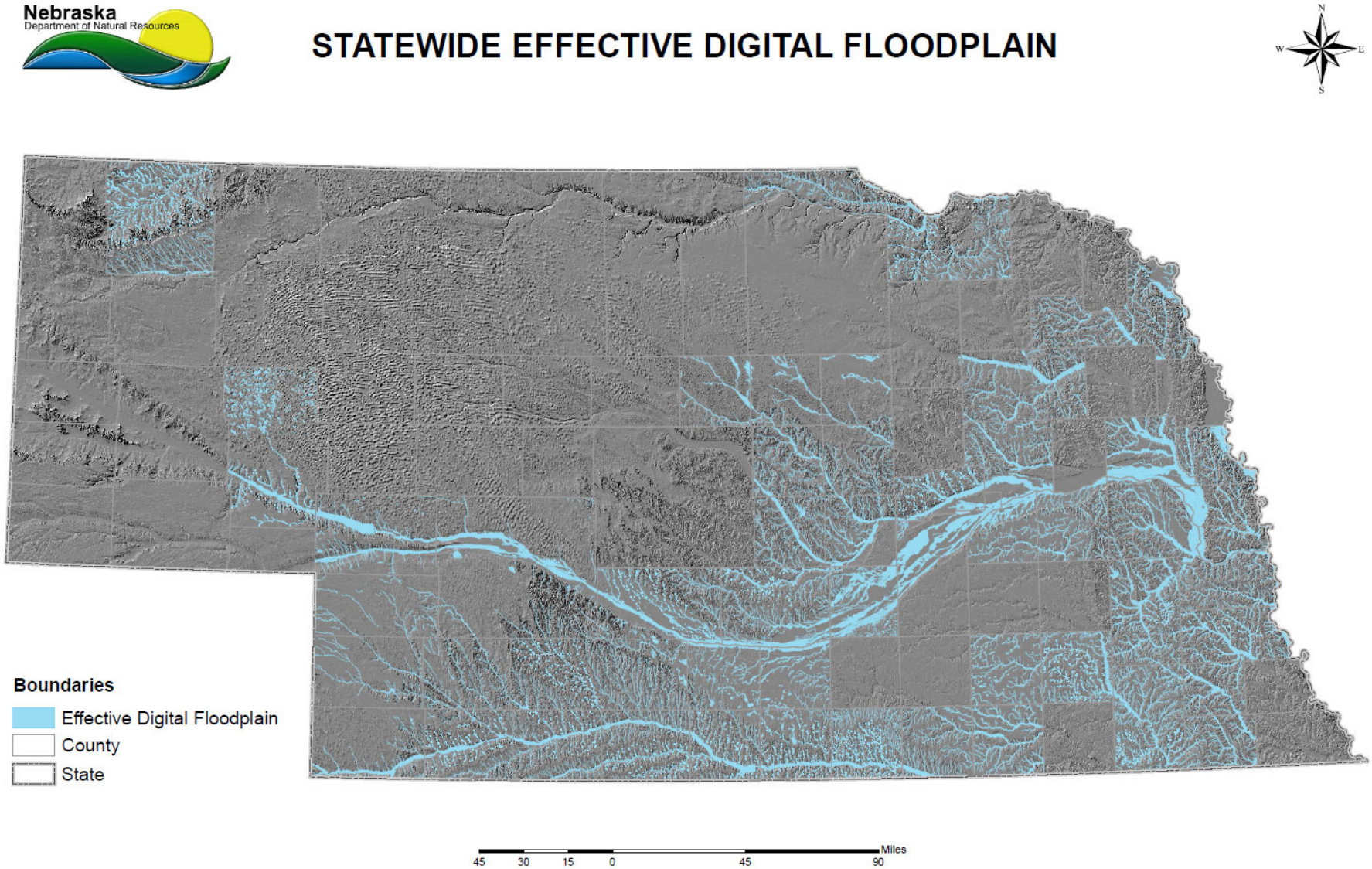
   2. The research that is the basis for the determination not to profile the hazard in the State Hazard Mitigation Plan.

THIS PAGE INTENTIONALLY LEFT BLANK

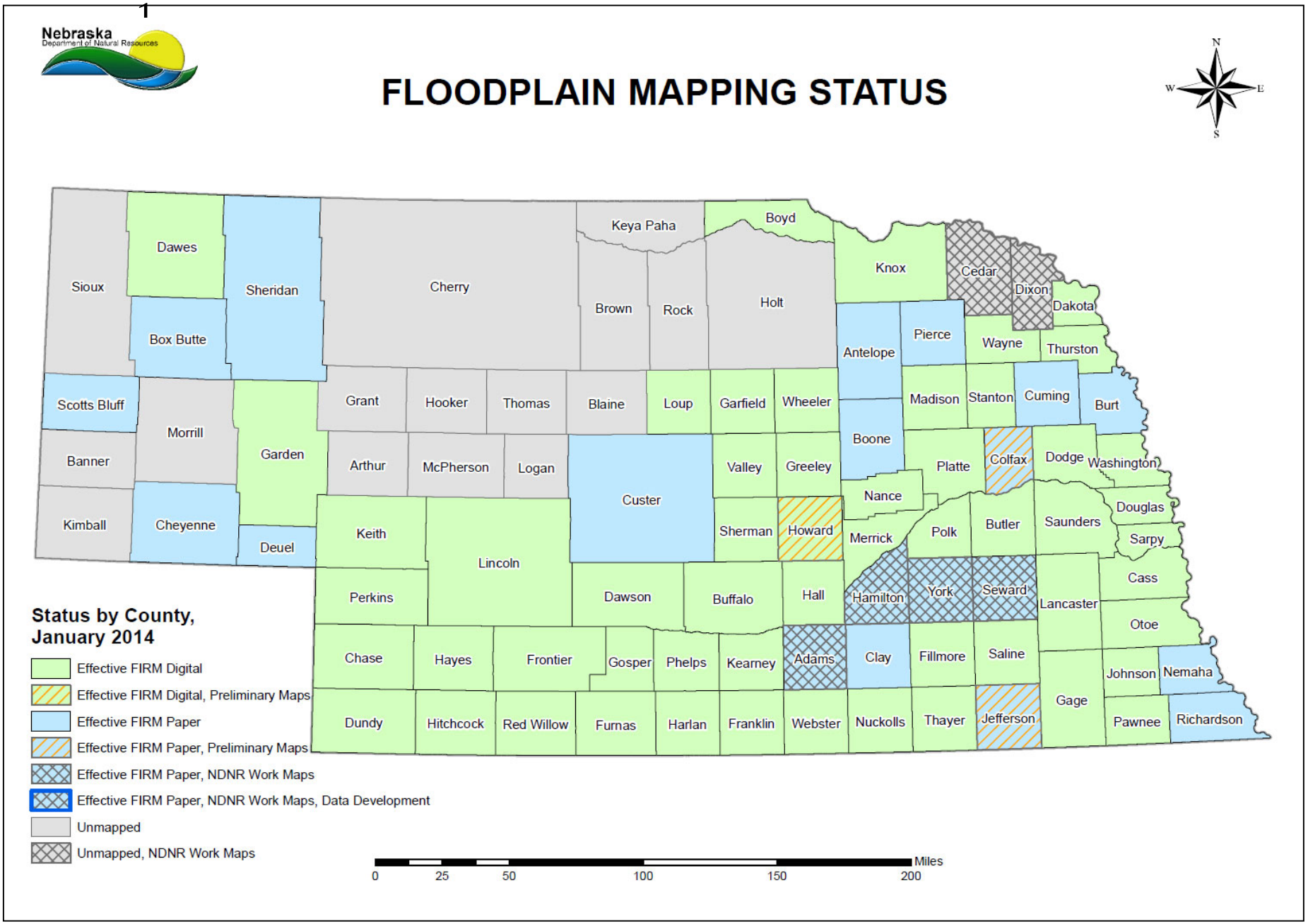
1.

Nebraska
Department of Natural Resources

STATEWIDE EFFECTIVE DIGITAL FLOODPLAIN



THIS PAGE INTENTIONALLY LEFT BLANK


Nebraska
Department of Natural Resources
FLOODPLAIN MAPPING STATUS
N
W
E
S
Sioux
Dawes
Sheridan
Cherry
Keya Paha
Boyd
Knox
Cedar
Dixon
Dakota
Brown
Rock
Holt
Box Butte
Antelope
Pierce
Wayne
Thurston
Scotts Bluff
Morrill
Garden
Grant
Hooker
Thomas
Blaine
Loup
Garfield
Wheeler
Madison
Stanton
Cuming
Burt
Banner
Arthur
McPherson
Logan
Custer
Valley
Greeley
Boone
Platte
Colfax
Dodge
Washington
Kimball
Cheyenne
Deuel
Keith
Lincoln
Sherman
Howard
Nance
Merrick
Polk
Butler
Saunders
Douglas
Sarpy
Perkins
Dawson
Buffalo
Hall
Hamilton
York
Seward
Lancaster
Cass
Otoe
Chase
Hayes
Frontier
Gosper
Phelps
Kearney
Adams
Clay
Fillmore
Saline
Johnson
Nemaha
Dundy
Hitchcock
Red Willow
Furnas
Harlan
Franklin
Webster
Nuckolls
Thayer
Jefferson
Gage
Pawnee
Richardson
Status by County,
January 2014
Effective FIRM Digital
Effective FIRM Digital, Preliminary Maps
Effective FIRM Paper
Effective FIRM Paper, Preliminary Maps
Effective FIRM Paper, NDNR Work Maps
Effective FIRM Paper, NDNR Work Maps, Data Development
Unmapped
Unmapped, NDNR Work Maps
0
25
50
100
150
200
Miles

THIS PAGE INTENTIONALLY LEFT BLANK

MITIGATION STRATEGY

Requirement §201.4(c)(3)(i): [The state mitigation strategy shall include a] description of state goals to guide the selection of activities to mitigate and reduce potential losses. Update §201.4(d): [The] plan must be reviewed and revised to reflect changes in development, progress in statewide mitigation efforts and changes in priorities.

I. INTRODUCTION

A. The purpose of this section is to describe the goals, objectives, and strategies of the Nebraska Hazard Mitigation Plan and the process used to update the goals and objectives in 2014. The state has updated the framework of its mitigation strategy to improve its ability to track progress in meeting plan goals and to improve alignment with local mitigation strategies (goals, objectives, and actions). In order to be effective, the states goals and objectives must be achievable. Results of the mitigation efforts by the state and local governments are important to the well-being of the general public. The goals and objectives in this plan represent the growth of Nebraska's hazard mitigation program and reflect progress in planning efforts since the development of the first mitigation plan. Local governments are encouraged to utilize this plan as a resource in the development or update of local hazard mitigation plans. The framework of the state's mitigation strategy has three parts; goals, objectives, and actions, which are defined as follows:

- The **goals** describe the overall direction that the state will take to reach their mission.
- The **objectives** link the goals and actions and help organize the plan for efficient implementation and evaluation.
- The **actions** describe the activities or projects used to support the accomplishment of the goals and mission.

B. The Nebraska Emergency Management Agency (NEMA) has primary responsibility for coordination, technical and administrative support, education, and provision of oversight of the Governor's Task Force for Disaster Recovery (GTFDR)/Planning Team. These functions are critical to providing a viable mitigation program for the State.

C. NEMA does not undertake mitigation projects as a State agency, but rather promotes and oversees projects sponsored by political subdivisions, agencies, and local governments.

D. State government efforts are best served through cooperative networking with the Natural Resources Districts (NRDs), Public Power Districts (PPDs), state agencies, and local governments in proposing and undertaking mitigation projects within the state. NEMA works closely with

local governments within the state that desire to undertake a mitigation project within their jurisdiction.

E. This concept has worked well within the state since agencies, commissions, districts, and local governments are best suited to know the benefits of a proposed project in their jurisdiction. NEMA and the Nebraska Department of Natural Resources (NDNR) have knowledge of areas where repetitive losses occur and take measures to promote mitigation projects in these areas. NEMA and the NDNR are not regulatory agencies and do not have the legislative authority to prevent, regulate, or preclude development in hazard-prone areas. NEMA and the NDNR have the power to advise and advocate the need for sound hazard mitigation planning and project development. Cities and counties are the entities responsible for the prevention of development in hazard-prone areas.

F. As an ongoing effort to evaluate Nebraska's overall hazard management strategy, state and local capabilities, policies, and procedures will be evaluated for the 2014 Plan Update. The state will evaluate its pre-disaster and post-disaster hazard mitigation activities as a whole, rather than as two separate functions.

II. FORMULATION OF GOALS

A. The goals and objectives of the State of Nebraska Hazard Mitigation Plan, guide the development and implementation of mitigation actions, identified in this plan. The goals and objectives formulated in 2005 represented a long term vision for hazard reduction. Mitigation goals formulated by the Planning Team in 2005 were intended to be applicable over a long period of time. The goals should continue to provide direction to state and local mitigation efforts for many years through future updates and revisions. The Planning Team believed that this approach was more feasible with capability-based goals, rather than hazard-specific goals. It would ensure the statewide applicability of each goal, rather than focus on a specific hazard type that may not be applicable in all regions or communities. It was decided that the goals and objectives would not change in 2011 but would be re-evaluated in 2014. During the interim period of 2011-2014, the goals identified in the 2011 plan were met through a variety of mitigation actions. Interest in the completion of mitigation actions throughout the state arose after the continual occurrence of disasters declared throughout the state. The approval of local mitigation plans, funding received from Federal disaster declarations, and technical assistance from the state, were factors which contributed to local governments' interest in and completion of local mitigation activities. Through the completion of local mitigation activities, the states goals and objectives were met. In order to evaluate the goals from the 2011 Plan

Update, the Planning Team/GTFDR as well as individual agencies and representatives reviewed each goal identified in the plan. The goals were evaluated taking into account the hazards identified in the Hazard Identification Risk Assessment (HIRA), to make sure that the goals directly address the hazards that the state is vulnerable to. In order to be sure that the states goals and objectives coordinated with local goals and objectives, a list of goals and objectives identified in local hazard mitigation plans was compiled and reviewed by the Planning Team/GTFDR. The goals were also evaluated taking into account the occurrences of hazards in Nebraska from 2011-2014. It was necessary to evaluate and re-evaluate the plans goals and objectives in order to determine if any changes or modifications would need to be made to the goals for the 2011 Plan Update. It was determined by the GTFDR/Planning Team that the goals identified in the 2011 plan still achieve the purpose of the 2014 Plan Update identified in Section 1 of this plan.

B. The Planning Team determined that the main hazard mitigation over-all goals listed in the 2011 Nebraska Hazard Mitigation Plan are still valid for the 2014 Plan Update. Some of the objectives and action steps however, were changed to reflect input from local hazard mitigation plans, lessons learned from recent disaster activity between 2011 and 2014, assessment and analysis of past hazard mitigation projects, stakeholder input, and guidance provided by the Multi-Hazard Mitigation Planning Guidance (January 2008). The goals are as follows:

1. Reduce or eliminate long term risk to human life;

2. Reduce or eliminate long term risk to property and or the environment;

3. Promote public awareness of hazards and associated response.

III. FORMULATION OF OBJECTIVES

A. Objectives are intended to reflect a measurable way of fulfilling the goals identified in the 2014 State of Nebraska Hazard Mitigation Plan. The Planning Team reviewed the objectives and activities listed in the 2011 Nebraska Hazard Mitigation Plan. The Planning Team determined that the 2011 objectives and action steps should be revised and updated to reflect current conditions. Revisions were based on agencies input of the GTFDR members and the goals/objectives/action steps listed in regional and local multi-jurisdictional hazard mitigation plans.

B. The Planning Team intended the objectives to be more specific, providing direction and detailed guidance for each goal and to be more short-term

in nature and evaluated and revised during plan updates. The Planning Team also recognized the importance of ensuring that the objectives address vulnerabilities to the high priority hazards identified in the risk assessment section of this plan. As part of the 2014 plan update, the main goals and objectives from the 2011 plan were assessed to determine if they still addressed current and anticipated future conditions. The assessment was based on the following:

- The Hazard Analysis-Risk Assessment (HIRA) for the State of Nebraska, included in Section 3 of this plan, completed in 2013 and updated for the purposes of the 2014 Plan Update.
- Review of recent disasters, and enhanced vulnerability assessments.
- Assessment of changes and challenges in state and local capabilities since the 2011 Nebraska Hazard Mitigation Plan.
- Evaluation of mitigation actions from the 2011 Nebraska Hazard Mitigation Plan.
- Analysis of the similarities and differences when comparing local mitigation plan goals and objectives to the state-wide mitigation goals and objectives.
- Analysis of mitigation actions completed since 2011 that were not specifically aligned with the goals of the 2011 Nebraska Hazard Mitigation Plan.

C. The following are the objectives, organized by the three goals named above:

Goal 1: Reduce or eliminate long term risk to human life.

- Objective 1.1 – Promote and support the building of safe rooms in areas highly vulnerable to wind damages.
- Objective 1.2 – Promote and support projects that endeavor to protect or exclude human habitation in flood zones or areas prone to other hazards.
- Objective 1.3 – Promote and support projects that protect employees, occupants, patients, and students in public places.
- Objective 1.4 – Improve public warning systems for multiple hazards that may include floods, tornadoes, dam or levee breach/failure, severe storms.

- Objective 1.5 – Reduction or elimination of power outages statewide.

- Objective 1.6 – Promote and support installation of generators or generator connections to provide back-up power for critical facilities.

Goal 2: Reduce or eliminate long term risk to property and or the environment.

- Objective 2.1 – Use data from Climate Assessment and Response Committee (CARC) to predict future areas of concern for drought & climate change ill-effects.

- Objective 2.2 – Collaborate with NDNR to utilize FMA funding to mitigate against flooding hazards.

- Objective 2.3 – Improve transportation infrastructure to ensure safe passage of people, goods and services state wide.

- Objective 2.4 – Provide counties/communities with technical assistance on repetitive loss areas and ways to mitigate future damages.

Goal 3: Promote public awareness and education of all hazards and responses.

IV. FORMULATION OF MITIGATION ACTIONS

A. As previously stated, the Planning Team reviewed the hazard mitigation actions and projects in the 2011 Nebraska Hazard Mitigation Plan. The Hazard and Identified Mitigation Actions from the 2011 Plan Update are included in the 2014 Plan Update as Attachment 3, in a table entitled Hazards and Mitigation Actions. The actions are organized by each hazard addressed, and are divided into two categories:

1. Pre-disaster actions;

2. Mid- and post-disaster actions.

B. In the review for the 2014 Plan Update, actions from the 2011 Plan that were no longer relevant were deleted. The final list of actions and projects are included in Attachment 3 in a table entitled State Mitigation Goals. A summary of the changes that were made in the 2014 Plan Update, i.e. the

actions that were deleted and the actions that were added, are included in the footnotes and the table in the Preface.

C. Attachment 3 – State Mitigation Goals, shows that the Planning Team recommended a different format for the action items that did not include the categorization into pre- and post-disaster categories. However, the 2011 categories are included in the 2014 plan in order to show information on prioritizing hazards, listing sectors at risk, and numbering of each activity. These mitigation objectives and actions include activities that range from planning and public education to measures such as relocation/buyouts, flood proofing, and construction projects. The list of mitigation actions is a work in process and will evolve as priorities change and projects are completed.

D. Of the 30 approved local mitigation plans, many utilized the STAPLEE Process to evaluate mitigation alternatives (action items). The STAPLEE process was created by FEMA to assist in identifying action items. STAPLEE is an acronym meaning, Social, Technical, Administrative, Political, Legal, Economical, and Environmental. These are all of the major factors taken into account when deciding upon implementation of one action item over another. The STAPLEE criteria are identified in FEMA's Multi-Hazard Mitigation Planning Guidance.

V. STATE CAPABILITY ASSESSMENT

Requirement §201.4(c)(3)(ii): [The state mitigation strategy shall include a] discussion of the state's pre-and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including: An evaluation of state laws, regulations, policies, and programs related to hazard mitigation as well as to development in hazard-prone areas; [and] A discussion of state funding capabilities for hazard mitigation projects.

Requirement §201.4(c)(3)(iv): [The state mitigation strategy shall include an] identification of current and potential sources of federal, state, local, or private funding to implement mitigation activities.

A. During the 2014 plan update, the planning team evaluated capabilities of the state by identifying the changes since the 2011 plan. Any challenges that were identified were addressed, and ideas for improvement of the state capabilities were reviewed. 2011-2014 brought challenges and successes to the State of Nebraska and the ability to implement mitigation activities. During this time, many plans were approved and numerous communities submitted applications for mitigation projects. Though the number of hazard mitigation activities

completed through the state since the 2011 update has increased, the Planning Team determined as they evaluated State-wide capabilities, that there is not adequate funding or staffing for State government to participate in Hazard Mitigation activities beyond what is currently in place. The Planning Team will continue to monitor the economic situation and update capabilities in the 2017 plan.

B. The state capability assessment evaluates the existing capabilities of state agencies, organizations, and other entities to implement mitigation-related programs. The capability assessment also is intended to improve mitigation capabilities at the state and local levels. As part of the update process, this section will also highlight the changes in state mitigation capabilities since the development of the 2011 plan. To summarize, the state capability assessment is meant to do all of the following:

- Identify statewide entities that have hazard mitigation capabilities or programs that should be direct participants in the statewide mitigation planning process;
- Incorporate all suitable state agency programs and capabilities into the state's hazard mitigation planning and identify programs with complementary purposes or funding sources, permitting coordinated use to resolve specific mitigation-related problems;
- Identify state statutes, agency regulations, and agency policies that are related to hazard mitigation and land development in hazard-prone areas;
- Assess state funding capabilities for hazard mitigation projects;
- Assess strengths and weaknesses in the state's mitigation capabilities, identifying obstacles to improving state capabilities, and defining possible corrective actions.

C. Many organizations contribute to the hazard mitigation efforts of the State of Nebraska. All organizations need to function as a cohesive body to properly plan for disaster planning, response, and recovery. One organization acting alone would not have the resources to implement the Nebraska Hazard Mitigation Plan. Input and plans from many organizations is required. All the agencies listed below function during pre-,mid-, and post-disaster periods. Several sources of federal funding are available to state organizations. Local cost-share provisions are required for much of the hazard mitigation funds available. For example, the Hazard Mitigation Grant Program requires a 25 percent non-federal match. In general, to avoid a duplication of benefits, the non-federal cost share requirement may not be met with funding from other Federal agencies. Authorizing statutes allow some Federal funds to be used as the cost share requirement; however,

these Federal funds must meet the purpose and eligibility requirements of both the mitigation grant program and the Federal source. Some examples of Federal funds that can be used to meet the non-Federal cost share requirement include: U.S. Department of Housing and Urban Development (HUD); Community Development Block Grant Funds (CDBG); Department of Interior Bureau of Indian Affairs funds; Appalachian Regional Commission funds; Funds derived from Title III of the Secure Rural Community Self-Determination Act of 2000; and Department of Health and Human Services Indian Health Service funds. The U.S. Department of Agriculture (USDA) Farm Agency loans and U.S. Small Business Administration (SBA) loans may also be used to meet the non-Federal match.[1]

- Nebraska Emergency Management Agency (NEMA)

NEMA is charged by state statute to reduce the vulnerabilities of the people and communities of Nebraska from the damage, injury and loss of life and property resulting from natural, technological or man-made disasters and emergencies. NEMA is the lead agency, along with the NDNR, for the agencies in the GTFDR, who work together to pursue appropriate mitigation actions. NEMA serves as the focal point for state mitigation efforts by reviewing and monitoring mitigation projects across the State. Following a federally declared disaster, the state receives assistance for hazard mitigation. Of the total federal share of the disaster, 15 percent is earmarked for mitigation. NEMA is unfortunately not able to provide mitigation funding through the Governor's Emergency Fund in a state declared disaster or a federal declared disaster. The Governor's Emergency Fund can only be used to fund Public Assistance Programs. NEMA also administers both the Pre- and Post-Hazard Mitigation Grant Programs.

- Governor's Disaster Recovery Task Force

Established by Governor's Executive Order 94-3, January 19, 1994 the Task Force is composed of the following State agencies: Nebraska Department of Natural Resources (DNR), NEMA, Department of Health and Human Services, Department of Economic Development (DED), Department of Environmental Quality, Department of Agriculture, Department of Labor, Department of Administrative Services, Game and Parks, Department of Roads and Historical Society. Selected Federal agencies such as US Army Corps of Engineers (USACE), USDA emergency organizations, US Department of Housing and Urban Development, National Weather Service, and the Environmental Protection Agency also support and participate in the activities of the Task Force. Functions are as follows:

[1] FEMA FY 2011 Hazard Mitigation Assistance (HMA) Unified Guidance

- Insure disaster relief and recovery operations are efficiently coordinated between all agencies.

- The Task Force will make a detailed examination of all features of State recovery efforts including hazard mitigation grant projects with emphasis on the efficient utilization of the resources made available by the Federal supplementary appropriations.

- NDNR and NEMA will jointly co-chair the Task Force.

- Nebraska Department of Natural Resources (NDNR)

The NDNR has authority, by Article 10, Section 31 of the Floodplain Management Statute, for all matters pertaining to floodplain management, including the National Flood Insurance Program. The NDNR administers the flood mitigation programs authorized by the National Flood Insurance Reform Act of 1994 and by the Flood Insurance Reform Act of 2004. NDNR contributes to state mitigation efforts by researching past flooding disasters, recognizing areas of high vulnerability, and providing technical assistance to communities on flood hazard mitigation.

The NDNR also works closely with Nebraska's NRDs, the entities that sponsor or assist with the funding of many mitigation projects across the state. NDNR receives federal funding and can help local jurisdictions with mitigation planning and floodplain mapping.

As the administrator of the Flood Mitigation Assistance (FMA) programs, the NDNR receives and approves planning grant applications, recommends projects for FEMA approval, coordinates and participates in all activities concerning flood mitigation plans, and completes all required financial and performance reports for all grants.

The NDNR provides state coordination for the National Flood Insurance Program. In 1999 an agreement was made between the NDNR and FEMA through the Cooperating Technical Partnership (CTP) program. Through this agreement, the NDNR has been able to map unstudied areas in the State of Nebraska, providing flood hazard data that was not available before. As of February 2014, 54 counties have effective digital maps, 18 counties have effective paper maps, 3 counties have preliminary maps, and 6 counties have NDNR Work Maps that are not regulatory floodplain maps. 18 counties remain unmapped. (see Section 3 Attachment 4).

Coordinated Needs Management Strategy (CNMS) data is the basis for facilitation of FEMA's project prioritization.

- Nebraska Department of Economic Development (DED)

Created by legislature in 1967, the DED is the official lead economic development agency for Nebraska. DED administers the Community Development Block Grant (CDBG) program, which provides annual direct grant to states. These grants are awarded to communities for use in revitalizing neighborhoods, expanding affordable housing and economic opportunities, and improving community facilities and service. The CDBG program is designed to benefit low- and moderate-income individuals and families. These funds are available for use in pre-disaster mitigation projects. CDBG funds may also be used to offset the 25% local share match on all FEMA approved Hazard Mitigation Grant Program Projects. The emphasis of DED is growing and diversifying the states "economic base," and bringing new dollars into the state.

- U.S. Army Corps of Engineers (USACE)

The USACE reduces risk to the public, property, and the environment by providing direct and technical assistance to communities. USACE develops and interprets flood and floodplain data. USACE studies all aspects of flooding and provides this information to mitigation planners for the State of Nebraska. NEMA consults the USACE, obtaining clearance before moving forward with mitigation projects in order to comply with Executive Order 11988 (Floodplain Management), The Clean Water Act, Rivers and Harbors Act, and Executive Order 11990 (Protection of Wetlands). The 2009 USACE National Flood Risk Management Program Initial Guidance dated October 9, 2009[2] identifies a Flood Risk Management Cycle. The cycle starts with preparation and training, moves on to response, then to recovery, finally to mitigation activities, and begins again with preparation and training. A cycle such as the one identified, is an example of the ongoing attempts to better improve preparedness, response, recovery, and mitigation. Several funding programs are available through the USACE:

- The Section 22 Program is a study-level program which can be used for the development of flood mitigation plans. The program requires a 50% cost share from a non-federal sponsor.

- Section 205 Flood Damage Reduction Program can be used to study flooding problems in urban areas, towns, and villages. If a federal interest is found during the

[2] http://www.nfrmp.us/docs/USACE_National_Flood_Risk_Management_Guidance_Letter.pdf

initial phase of the study, this program is authorized to design and build flood damage reduction remedies. There is a requirement for non-federal sponsor cost share through the various project phases.

- Nebraska Game and Parks Commission (NGPC)

The NGPC is governed by a board of Commissioners appointed by the Governor of Nebraska. A director is then elected by the commissioners for a six year term. The mission of the Nebraska Game and Parks Commission is "stewardship of the state's fish, wildlife, park, and outdoor recreation resources in the best long-term interests of the people and those resources." In order to accomplish their purpose, the Commission efficiently and objectively plans and implements its policies and programs. The NGPC coordinates all disaster operations, including damage assessment, conducted in state-owned parks, recreation, and wildlife areas. The NGPC also provides lifesaving small boat operations during floods and works as a cost sharing organization for projects that benefit the state. The NGPC also awards and administers the Environmental Trust Grants that can be used by local jurisdictions for mitigation projects. NEMA consults with the NGPC, to obtain environmental clearance, before moving forward with mitigation projects in order to comply with all environmental laws and policies including The Endangered Species Act and The Fish and Wildlife Coordination Act

- Nebraska Department of Roads (NDOR)

The NDOR is in charge of all the roads and bridges in the State of Nebraska, making their role in mitigation planning is crucial. Following disasters, the NDOR aids in debris cleanup and repairs any damaged roads or bridges. Funding for these repair projects comes from the state and federal highway programs. During the planning and construction phases, procedures are implemented to avoid adverse impact to streams, floodplains, or lakes. While the NDOR has no funding programs, meetings are held to ensure these projects will not cause flooding problems in the affected jurisdictions. Since contractors handle road-building projects, any flooding caused by incomplete drainage facilities or channels is the responsibility of the contractor.

- Public Power Districts (PPDs)

The PPDs in Nebraska are political jurisdictions governed by elected boards. The PPDs in Nebraska historically have played a significant role in mitigation projects. PPD projects must revolve around the protection, maintenance, and improvement of electrical generation, transmission, and distribution throughout the state. The Nebraska PPD and other PPDs have hardened hundreds of miles of power

lines using upgraded wire, engineered structures to stop the cascading effect of poles due to wind and ice, and replaced three pole structures with five-poled "dead end" structures in strategic locations. All of these actions reduce the likelihood of power outages to virtually the entire State. The Maintenance Manager for the Nebraska PPD stated that during several past winter storms, where there would have been several miles with 20 to 40 structures down, there were only 3 to 5 structures down, saving millions of dollars in replacement construction. These projects have been highly effective in minimizing power outages and promoting energy transmission safety. More information on PPDs is located in Section 2 of this plan.

- Natural Resources Districts (NRDs)

Like the PPDs, the NRDs are governmental entities, and sponsor or help fund many of the mitigation projects across the state. In 1972, the Nebraska Legislature combined 154 special purpose entities into 23 NRDs. Unique to Nebraska; NRDs protect the state's natural resources. The boundaries of the NRDs are formed by major Nebraska river basins. Since their statutory authority includes flood control, most of the projects are for flood mitigation. The 23 NRDs in Nebraska help respond to natural resource challenges throughout the state and assist in the building of relationships with other agencies and organizations. The NRDs share the same responsibilities to the State of Nebraska, however, priorities are set and programs are developed to best serve the local needs. The NRDs receive some funding from the U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service. In certain cases, the NRDs receive funds from the USDA's Consolidated Farm Services Agency for repair of damaged agricultural lands. NRD flood mitigation and land erosion projects are often done by the individual NRD or in cooperation with local jurisdictions. Since the 2008 plan update, NRDs throughout the state have applied for and been awarded hazard mitigation grant money through both the Hazard Mitigation and Pre-Disaster Mitigation Grant Programs. Of the 23 NRDs, ten have FEMA approved multi-jurisdictional hazard mitigation plans. Currently there are seven NRDs with approved planning applications.

- Nebraska Climate Assessment and Response Committee (CARC)

CARC was created by Nebraska Legislature in 1991 to replace the Drought Assessment and Response Team (DART). In 1998 CARC began the revision of the drought plan in place at the time and on June 26, 2000; the state Drought Mitigation and Response Plan was formally adopted. As part of the Committee's defined duties, CARC researches funding and assistance programs to aid the State in

times of disasters, particularly drought. Subcommittees of this group have produced and disseminated helpful public educational materials to local jurisdictions to aid in the conservation of water. Committees created include the Water Availability and Outlook Committee (WAOC), the Risk Assessment Committee, and the Emergency Response Committee (ERC).

- Nebraska Department of Environmental Quality (NDEQ)

The NDEQ was created in 1971 pursuant to passage of the Nebraska Environmental Protection Act with an ongoing mission of protecting Nebraska's air, land and water resources. In order to carry out this mission, the NDEQ provides assistance to help people understand and comply with state and federal environmental laws and regulations. Assistance is provided through the administration of programs such as: Small Business and Public Assistance; One-Stop Permit Assistance Program, On-Site (Wastewater Treatment Facility Operator) Assistance Program; Wastewater Treatment Facility Operator Assistance Programs; Voluntary Cleanup Program, Brownfields Assistance- Section 128(a) Assessments; Nebraska Environmental Partnerships Program; Nebraska Environmental Partnerships Program and; the Wellhead Protection and Source Water Assistance Programs. The NDEQ's post-disaster activities for natural disasters primarily involve the safe and sanitary disposal of waste and debris generated from an incident. NDEQ, in partnership with the Nebraska Department of Agriculture, has developed a Catastrophic Animal Mortality Management Plan. The purpose of the plan is to provide for the rapid disposal of animals killed from fire, flooding, or an outbreak of a foreign animal disease such as Foot and Mouth Disease. The NDEQ also administers the Waste Reduction and Recycling Incentive Grants Program that provides annual funding for waste reduction and recycling projects and programs. Although the focus of the grant program is for the ongoing management of waste, the equipment purchased and programs established with the grant money may be useful for mitigation by building the local infrastructure for waste management. Examples include the purchase of wood chippers and tub grinders that can be utilized for debris management, and establishing local household hazardous waste programs. The Environmental Quality Council is the rulemaking body for the agency as created by the Legislature. The NDEQ has been active in Homeland Security efforts throughout the state. The Deputy Director of the Program serves as representative of the NDEQ on the Lieutenant Governors Homeland Security Leadership Group.

- Nebraska Forest Service (NFS)[3]

[3] 2009 NFS Annual Report- http://www.nfs.unl.edu/documents/2009%20NFS%20Annual%20Report.pdf

As part of the University of Nebraska, NFS provides education and services covering all aspects of forest and tree resources to Nebraskans. There are 1.3 million acres of forestland in Nebraska and an additional 2 million acres of non-forestland with trees. Nebraska's forest resources contain more than 458 million trees. The NFS administers state and federal grant monies for fuel treatment on private property. Landowners with projects approved by the NFS can receive cost share assistance (50% minimum) for thinning their forested tracts and for using Fire wise management treatments in rural residential areas. Thinned forests and firebreaks can greatly assist fire suppression efforts, especially crown fires. Firefighters are able to safely take effective suppression action on wildfires when they are on the ground as opposed to burning in the forest canopy. Fire wise treatments around rural homes can increase the survivability of the home in the event of a wildfire. NFS foresters can help landowners develop plans for future forest land that more fire-resistant and rural homes that are more defensible. These programs are currently available in the Pine Ridge and the Niobrara River Valleys. On a statewide basis, the NFS provides cost-share assistance to Rural Fire Departments for the purchase of firefighting equipment. In 2009, NFS placed 50 pieces of firefighting equipment with a replacement value of more than $4.2 million on loan to rural fire districts across Nebraska. Also in 2009, NFS directly provided nearly 400 hours of training to over 500 firefighters across the state. Also available to rural fire districts from NFS are all-wheel drive vehicles for use as fire trucks. Rounding out the NFS programs are the Aerial Fire Suppression Program, Fire Planning (including Community Wildfire Protection Plans) and Fire Prevention. In 2010, NFS began offering hands-on engine training to provide valuable hands on training during large wildland fire incidents. The activities of the NFS improve the capabilities of the State of Nebraska on both a state and local level by providing many opportunities for preparedness against wildfires and other dangers to Nebraska's forests.

- Nebraska Public Health Laboratory – UNMC[4]

The Nebraska Public Health Laboratory – UNMC is located at the University of Nebraska Medical Center (UNMC), in Omaha, NE. It is the only state public health laboratory in Nebraska and is responsible for providing clinical (human) laboratory services to NE DHHS. The mission of the NPHL is to protect the health and safety of Nebraskans through diagnostic laboratory science, technology, and education. The NPHL's Biosecurity Section has both a Biological Safety-Level 2 (BSL-2) and a Biological Safety Level-3 (BSL-3) laboratory and was identified by NEMA and subsequently

[4] http://nphl.org/index.html

DHS as a Critical Infrastructure in Nebraska. The NPHL, as a member of the Centers for Disease Control and Prevention (CDC) Laboratory Response Network (LRN) has a mission to provide laboratory diagnostic support to the state as well as to the LRN, if so requested. The NPHL Biosecurity Laboratory Section is designation by the CDC as a Confirmatory Level Laboratory for diagnostic testing of biological agents in clinical specimens as well as environmental samples. It also has a Chemical Terrorism Preparedness Laboratory Level-2 Section for the testing of metabolites/breakdown products of chemical agents in clinical specimens. As such, the NPHL Biosecurity Laboratory Section is uniquely equipped to respond to real or suspected biological or chemical agent attacks. Additionally, the NPHL is also in the process of developing testing capacity and capability for clinical specimens in response to a radiological event. Training on preparedness is offered by the NPHL to organizations such as hospital administration, laboratory managers, and safety coordinators.

- University of Nebraska - School of Natural Resources

As the primary provider of natural resources information and service to the citizens and stakeholders of Nebraska, the School of Natural Resources studies natural resources, ecosystems, and climate and how they relate to people. As a result, projects routinely involve teams of scientists with expertise to determine the interrelationships among water, soils, air, climate, plants, and wildlife; as well as social, economic, and related considerations. Some projects assemble the pieces of natural resource puzzles into knowledge for resolving problems of local, national, and global concern. Linkages with agricultural, health, and social sciences contribute to agribusiness, environmental policy, conservation, and rural/urban communities. Information provided by the School of Natural resources is beneficial because of the natural resource information available to the public. The vision of the School of Natural Resources is to be an international leader in natural resources education, research, and outreach. As part of the vision, the school will also be the primary provider of natural resources information and service to the citizens and stakeholders of Nebraska.[5]

- Nebraska State Historic Preservation Office

The National Historic Preservation Act of 1966 required each State to appoint a State Historic Preservation Officer (SHPO). The responsibility of the SHPO is to oversee preservation efforts mandated by The National Historic Preservation Act. The SHPO plays a major role in mitigation activities in the State of Nebraska. NEMA consults with the SHPO on all mitigation projects making

[5] http://snr.unl.edu/aboutus/why/visionmission.asp

sure that projects comply with the National Historic Preservation Act. Preservation of historical sites is important to state agencies, local agencies, and the community. Maintaining a close relationship with the State Historic Preservation Office is imperative in order to maintain the numerous important landmarks in our state while completing mitigation activities.

- U.S. Fish and Wildlife Service

Working with others to conserve, protect, and enhance fish and wildlife and their habitat for the continuing benefit of the American people is the mission of the U.S. Fish and Wildlife Service (USFWS). NEMA consults with the USFWS in order to oversee that all mitigation projects in Nebraska comply with The Endangered Species Act and The Fish and Wildlife Coordination Act. NEMA also consults with the USFWS if there is the potential for a project to impact any large body of water. Coordination with the USFWS is an integral part of all mitigation activities in Nebraska as all mitigation activities must meet the requirements of the National Environmental Protection Act prior to approval.

- Federal Emergency Management Agency (FEMA)[6]

FEMA administers the National Flood Insurance Program (NFIP) which was created in 1968 by Congress to help protect local property owners financially from flooding by providing flood insurance to businesses, renters, and homeowners if their community is a participant in the NFIP. Rates are dependent on the type of construction of the home as well as the date it was built. Rates are also dependent upon the buildings level of risk to flooding. FEMA makes flood insurance available to those communities that have decided to participate in the NFIP. Those communities that choose to participate much agree to adopt and enforce all regulations and ordinances on floodplain management as required by the program. In order for a community to receive Hazard Mitigation Assistance monies the community must be in good standing with the NFIP. One of the strengths of the program has been keeping people away from flooding rather than keeping the flooding away from people - through historically expensive flood control projects. Currently, Nebraska has nearly 12,500 policies with over $2 billion worth of coverage. The NFIP strengthens Nebraska on both a state and local level.

- Other State Agencies

[6] http://dnr.ne.gov/floodplain/docs/flood_insurance.html

There are a variety of state agencies that may not directly participate in mitigation function on a day to day basis as well as assist the state during a disaster. NEMA recognizes the importance of building interagency relationships

D. Funding Sources: The following is a list of total obligated HMGP funds as of February 1, 2014 beginning with FEMA-DR-1674-NE and ending with FEMA-DR-4014-NE:

FEMA-DR-1674-NE
Number of 5% initiative projects: 0
Number of Regular Projects: 13
Number of Planning Projects: 5
Total amount obligated: $13,805,124.00

FEMA-DR-1706-NE
Number of 5% initiative projects: 0
Number of Regular Projects: 0
Number of Planning Projects: 0
Total amount obligated: $0.00

FEMA-DR-1714-NE
Number of 5% initiative projects: 0
Number of Regular Projects: 0
Number of Planning Projects: 0
Total amount obligated: $0.00

FEMA-DR-1721-NE
Number of 5% initiative projects: 0
Number of Regular Projects: 0
Number of Planning Projects: 0
Total amount obligated: $0.00

FEMA-DR-1739-NE
Number of 5% initiative projects: 0
Number of Regular Projects: 0
Number of Planning Projects: 0
Total amount obligated: $0.00

FEMA-DR-1765-NE
Number of 5% initiative projects: 0
Number of Regular Projects: 0
Number of Planning Projects: 0
Total amount obligated: $0.00

FEMA-DR-1770-NE
Number of 5% initiative projects: 1
Number of Regular Projects: 3
Number of Planning Projects: 2
Total amount obligated: $2,903,852.25

FEMA-DR-1779-NE
Number of 5% initiative projects: 0
Number of Regular Projects: 0
Number of Planning Projects: 0
Total amount obligated: $0.00

FEMA-DR-1853-NE
Number of 5% initiative projects: 0
Number of Regular Projects: 1
Number of Planning Projects: 0
Total amount obligated: $386,480.00

FEMA-DR-1864-NE
Number of 5% initiative projects: 2
Number of Regular Projects: 1
Number of Planning Projects: 0
Total amount obligated: $697,310.00

FEMA-DR-1878-NE
Number of 5% initiative projects: 2
Number of Regular Projects: 0
Number of Planning Projects: 0
Total amount obligated: $54,098.00

FEMA-DR-1902-NE
Number of 5% initiative projects: 1
Number of Regular Projects: 0
Number of Planning Projects: 1
Total amount obligated: $23,471.00

FEMA-DR-1924-NE
Number of 5% initiative projects: 30
Number of Regular Projects: 2
Number of Planning Projects: 0
Total amount obligated: $2,541,353.25

FEMA-DR-1945-NE
Number of 5% initiative projects: 0
Number of Regular Projects: 1
Number of Planning Projects: 0
Total amount obligated: $21,404.00

FEMA-DR-4013-NE
Number of 5% initiative projects: 16
Number of Regular Projects: 5
Number of Planning Projects: 29
Total amount obligated: $6,649,491.25

FEMA-DR-4014-NE
Number of 5% initiative projects: 3
Number of Regular Projects: 2
Number of Planning Projects: 0
Total amount obligated: $182,818.00

FEMA-DR-4156-NE
Number of 5% initiative projects: 0
Number of Regular Projects: 0
Number of Planning Projects: 0
Total amount obligated: $0.00

E. The most recent declared disaster (4156) does not yet have any obligated HMGP funds.

F. The total amount obligated is not the total amount that is available for projects per disaster. The obligated amounts are the federal dollars obligated towards approved HMGP projects. As more projects are approved in the open disasters, a larger amount of federal dollars will be obligated. Obligated funds that are not used for project completion are returned to FEMA during project closeout. The status of the number of projects and dollar amounts obligated under the most recent disasters that have occurred in Nebraska are kept and updated at NEMA. The deadline for applying for the HMGP funds is one year from the date of the disaster declaration. The pre-disaster mitigation grant deadline varies each year and is published by FEMA each summer.

G. The following is a description of all federal Hazard Mitigation Assistance grant monies available in the state. A description of the Public Assistance 406 Mitigation Program is also described below as it is a very important source of FEMA grant money available to disaster impacted communities

- Hazard Mitigation Grant Program

The Hazard Mitigation Grant Program is authorized under part 404 of the Robert T. Stafford Act and 44 CFR Part 206. The Purpose of the HMGP is to provide funds to states, territories, Indian tribal governments, and communities, to significantly reduce or permanently eliminate future risk to lives and property from natural hazards. The HMGP funds projects in accordance with priorities identified in state, tribal, or local hazard mitigation plans, and

enables mitigation measures to be implemented during the recovery from a disaster. In order to receive funding, all sub applicants must have a FEMA-approved hazard mitigation plan. HMGP funds are authorized after a Presidential disaster declaration, and can be requested by the Governor of the declared state to be available in specific jurisdictions or throughout the entire state. After a Presidential disaster declaration, Nebraska is eligible for 15 percent for amounts not more than $2,000,000,000, 10 percent for amounts of more than $2,000,000,000 and not more than $10,000,000,000, and 7.5 percent on amounts of more than $10,000,000,000 and not more than $35,333,000,000. Of the HMGP funds made available, the state may set aside up to seven percent of the funds received to develop FEMA-approved hazard mitigation plans. The state may also set aside up to five percent of the HMGP funds to be used to fund 5% Set-Aside Projects. State agencies, Indian Tribal governments, Local governments/communities, and some Private Non-Profit organizations (PNPs) are eligible to receive HMGP funds. PNPs wanting to act as sub applicants must provide documentation in the submitted sub application including either State certification of non-profit status or an effective letter from the IRS granting tax exemption. The state acts as the grantee for mitigation grants within Nebraska. The state reviews and prioritizes sub applications and submits the grant application with the sub application to FEMA for review and approval within 12 months from the date the disaster was declared. HMGP funds are provided on a 75 percent federal/25 percent nonfederal cost share basis. The nonfederal match does not need to be cash; in-kind services and/or other materials may be used. HMGP funds can be used for projects to protect either public or private property, as long as the project fits within state and local government mitigation strategies to address areas of risk and complies with program guidelines. Examples of projects include acquiring and relocating structures from hazard-prone areas; retrofitting structures to protect them from floods, high winds, earthquakes, or other natural hazards; and constructing safe rooms inside schools or other buildings in tornado prone areas.

- <u>Pre-Disaster Mitigation Program</u>

Authorized by section 203 of the Stafford Act, the Pre-Disaster Mitigation Program is a competitive grant program; providing funds to states, territories, Indian Tribal governments and communities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces the overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. Project Grants are available for voluntary acquisition of real property

(i.e. structures and land, where necessary) for open space conversion; relocation of public or private structures; elevation of existing public or private structures to avoid flooding; structural and nonstructural retrofitting of existing public or private structures to meet/exceed applicable building codes; construction of safe rooms for public and private structures; vegetation management (e.g., for wildfire); protective measures for utilities, water, and sanitary sewer systems, and infrastructure; storm water management projects; and localized flood control projects that are designed specifically to protect critical facilities and that do not constitute a section of a larger flood control system. Planning grants are available for new plan development, plan upgrades, and comprehensive plan reviews and updates. The cost share for PDM is 75-percent Federal and 25-percent non-Federal share however, small and impoverished communities may be eligible for up to 90 percent federal cost-share. Up to $800,000 Federal share may be requested in a sub application for a planning grant to develop a new hazard mitigation plan. Up to $400,000 Federal share may be requested in a sub application for a planning grant to update a hazard mitigation plan. Up to $3 million Federal share may be requested in a sub application to implement a mitigation project. The total amount Federal award during a single application period to one Applicant cannot exceed 15 percent of the total PDM program funds. State level agencies, including state institutions (e.g., state hospital or university); federally recognized Indian Tribal governments; local governments (including state recognized Indian Tribes and authorized Indian Tribal organizations); public colleges and universities, are eligible to apply for assistance as sub applicants. Private nonprofit organizations and private colleges and universities are not eligible to apply to the state, but an eligible, relevant state agency or local government may apply on their behalf. The state reviews and prioritizes sub-applications and submits the grant application with sub-applications to FEMA for review and approval. All sub-applicants that have been identified through the NFIP as having a Special Flood Hazard Area and that have a Flood Hazard Boundary Map or a Flood Insurance Rate Map must be participating and in good standing in the NFIP. For project grants, all sub-applicants must have a FEMA-approved local mitigation plan by the time of the application deadline and at the time of obligation of grant funds. All activities submitted for consideration must be consistent with the local mitigation plan as well as the Nebraska Hazard Mitigation Plan.

- Flood Mitigation Assistance (FMA) Program

The FMA is a program under FEMA's National Flood Insurance Program. The FMA is a FEMA program administered by the

Nebraska Department of Natural Resources. Its purpose is to implement cost-effective measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insured under the NFIP. The FMA grant program now considers projects that were once eligible for the Repetitive Flood Claims and Severe Repetitive Loss grant programs, as these two grant programs have been eliminated.

The FMA provides planning and project grants for eligible projects to apply for. Communities can apply for planning grants to assess their flood risk and identify actions to reduce risk. Planning grants may be used to develop a new or update an existing flood mitigation plan, or the flood hazard portion of a multi-hazard mitigation plan. Project grants are available for acquisition, structure demolition, or structure relocation with the property deed restricted for open space uses in perpetuity; elevation of structures; dry flood-proofing of nonresidential structures; and minor structural flood control activities. Planning grants are available for flood mitigation planning activities.

State-level agencies, federally recognized Indian tribal governments, and local governments including State recognized Indian tribes and authorized Indian tribal organizations are eligible to apply for assistance as sub-applicants. Individuals and private nonprofit organizations are not eligible to apply to the state, but a relevant state agency or local community may apply on their behalf. The state reviews and prioritizes sub-applications and submits the grant application with sub-applications to FEMA for review and approval. All sub-applicants must be participating and in good standing in the NFIP. For project grants, sub-applicants must have a FEMA-approved flood mitigation plan or multi-hazard mitigation plan that meets FMA planning requirements. All activities submitted for consideration must be consistent with the local mitigation plan as well as the Nebraska Hazard Mitigation Plan. FMA funds are provided on a 75 percent federal, 25 percent nonfederal cost share basis. The recipient must provide the 25 percent match, only half of which may be in-kind contributions. For repetitive loss properties, FEMA will contribute up to 90 percent of the total eligible costs, with a 10 percent nonfederal cost share. For severe repetitive loss properties, FEMA will contribute up to 100 percent of the total eligible costs if the state has taken actions to reduce the number of severe repetitive loss properties and has an approved state mitigation plan that specifies how it intends to reduce the number of severe repetitive loss properties. Recipients of FMA planning grants must produce FEMA-approved flood mitigation plans; these plans can be a flood mitigation component within an all hazards HMP.

FMA funds provided cannot exceed $10 million to any State agency or $3.3 million to any community during any 5 year period of time. The state cannot exceed $20 million in FMA funds provided during any 5-year period.

"*On June 30, 2004, the National Flood Insurance Act (42 U.S.C. 4001 et seq.) was amended to introduce a mitigation plan requirement as a condition of receiving a reduced local cost share for activities that mitigate severe repetitive loss properties under the Flood Mitigation Assistance (FMA) and Severe Repetitive Loss (SRL) grant programs. The October 31, 2007, interim final rule established this requirement under 44 CFR §201.4(c)(3)(v) to allow a State to request the reduced cost share under the FMA and SRL programs if it has an approved State Mitigation Plan that also includes an approved Severe Repetitive Loss Strategy."*[7]

NDNR will continue to provide technical assistance to communities, as part of the agency's activities supported in part by FEMA's Community Assistance Program – State Support Services Element (CAP-SSSE). NDNR will provide assistance with floodplain management including repetitive loss definitions, grand availability and eligibility, local mitigation strategies, and repetitive loss property information verification.

NDNR will promote Community Rating System (CRS) to communities across the state, which requires communities to evaluate and analyze repetitive loss and severe repetitive loss properties and potential mitigation alternatives. NDNR will continue to provide technical assistance on CRS Activities 501-505. By completing these activities, communities can then identify potential repetitive loss projects that could be credited in CRS.

NDNR administers the Flood Mitigation Assistance (FMA) Grant program in Nebraska and will make projects that reduce the number of repetitive loss and severe repetitive loss properties a priority for funding. NDNR will also promote the availability of the FMA grant program to communities that might be able to benefit from applying for funding.

As NDNR continues to participate in the local Hazard Mitigation Plan planning teams, repetitive loss and severe repetitive loss mitigation

activities will be promoted as part of the mitigation strategies development.

NDNR will continue helping communities verify correct information about the presence and location of repetitive loss and severe repetitive loss properties. NDNR will provide updated lists to communities as the information becomes available.

Additional information regarding the Nebraska repetitive loss mitigation strategy can be found in Appendix A, the Nebraska Flood Mitigation Plan, Section IV.C.

- Public Assistance 406 Mitigation

The Stafford Act establishes the 406 Mitigation Program for the repair, restoration, and replacement of eligible damaged facilities (42 U.S.C 5172) as a result of a presidentially declared disaster. The 406 program is site specific, meaning that it must be used on an area that was directly impacted by disaster damages in a declared county within the state. 406 mitigation funds can only be used on projects that will directly mitigate similar damages to a structure from happening in the future. 406 is a Public Assistance program and follows the cost share requirements established in the Stafford Act. The minimum federal share amount is 75 percent of eligible costs. If damages have occurred on more than one occasion by the same event in a 10 year period or if the owner has failed to address the damages through mitigation actions, the federal share may be lessened to as low as 25 percent of eligible costs. As with projects under the 404 program (HMGP), all projects must be cost effective under the 406 program. As identified in Section 406 of the Stafford Act, mitigation measures will be determined cost effective if they do not exceed 100% of the project cost, are appropriate to the disaster damage, will prevent similar damage in the future, are directly related to the eligible damaged elements, do not increase risks or cause adverse effects to property or elsewhere, are technically feasible for the hazard and location, and meet all other requirements identified in the policy. If the mitigation activity exceeds 100% of project cost, a benefit cost analysis must be performed to prove the project to be cost effective. The availability of funds under Section 406 of the Stafford Act, strengthens the capabilities of the State of Nebraska and its ability to mitigate from future damages. The Nebraska Emergency Management Agency has put an emphasis on the importance of completing 406 mitigation in areas throughout the

state. In 2010, NEMA contracted with an engineering firm to assist the Public Assistance Section at NEMA with 406 mitigation projects.

Additional mitigation funds potentially available:

- FEMA
- U.S. Department of Commerce, Economic Development Administration
- U.S. Small Business Administration
- U.S. Department of Housing and Urban Development
- U.S. Department of Interior
- U.S. Department of Agriculture, Rural Housing Service
- U.S. Department of Agriculture, Rural Utilities Service
- U.S. Department of Agriculture, Natural Resources and Conservation Service
- U.S. Department of Agriculture, Farm Service Administration
- U.S. Environmental Protection Agency
- Nebraska Environmental Trust

H. Opportunities for Private Funding: As made evident in the Risk Assessment (Section 3) the populations of many counties in the state are declining as the years go by. The decline in population is a large factor when looking at the ability of local communities to provide a cost share match in mitigation projects. Many of the local Emergency Management Agencies forgo the opportunity to apply for grants because of the low budget in the community. The participation of private organizations in mitigation projects is one way which local communities might have more opportunities to complete identified mitigation actions. For example, if the addition of a community safe room is high priority for a town but the cost share is not in the range of the budget, a local school could offer to assist in the 25% match required. If this school is not identified in the plan, or if it is a private school, the town would apply on the schools behalf. As with all projects, a match assurances letter stating who will provide the cost-share match is required.

VI. LOCAL CAPABILITY ASSESSMENT

Requirement §201.4(c)(3)(ii): The mitigation strategy shall include a general description and analysis of the effectiveness of local mitigation policies, programs, and capabilities.

A. Since the 2011 Plan Update, there has been growth in the number of mitigation activities in the State of Nebraska due to a period of simultaneously

occurring disasters, numerous approved local mitigation plans, and public education on mitigation opportunities.

B. Local capabilities are expressed in the existing programs and policies through which local governments implement mitigation actions to reduce potential disaster losses. The local capability assessments done in the local mitigation plans provide a general description of mitigation capabilities in Nebraska and their effectiveness for mitigation. The Planning Team will further assess these capabilities and the challenges and opportunities to implement and strengthen local mitigation plans prior to the next State Plan update.

C. Local mitigation projects in Nebraska have proven to be extremely effective. Following the 1993 and 1998 floods several buyout projects were completed by both Hazard Mitigation Grant Program funds and other funding that has moved homes, businesses, and utilities out of hazard-prone areas and some repetitive loss areas. Following the 2011 Missouri and Platte River flooding, an HMGP-funded buyout project is currently underway as well. In July of 2010, FEMA Disaster 1924 was declared in 53 counties for storm and flood damages experienced in the State. A major element of this declaration was the severe flooding of major rivers and tributaries, flooding so severe that records dating back to 1947 were broken. Disaster 1924 gave insight on the unpredictability of nature and emphasized the importance of floodplain management. Flood mitigation projects have shown to be cost-effective by reducing or eliminating flood losses. The city of Norfolk received funding for an acquisition project through the Hazard Mitigation Grant Program funds received after Disaster 1517. The purpose of the project was to remove homes from the floodway of the Elkhorn River which were in need of repair but could not be issued building permits due to their location in the floodway. The completion of this acquisition project proved itself to be cost-effective when the Elkhorn River flooded in June, breaking historic flood records by over three feet. Disaster 1924 has sparked additional interest by local governments in flood mitigation activities. With assistance from local agencies, the state has the ability to address these interests and to mitigate against future damages.

D. The Village of DeWitt, in partnership with NDNR, received a Flood Mitigation Assistance Grant of nearly $125,000 in 2011 to install several flap gates on existing drainage structures along Highway 103. The flap gates will help reduce the potential for back flow flooding into the village when Turkey Creek experiences flooding. DeWitt has four repetitive loss properties that received benefits from this flood mitigation project.

E. Although many mitigation projects have proven successful, the average local capacity for mitigation is low. Local capabilities vary by county depending on their population and economic status. Many of Nebraska's local full-time Emergency Management Agencies (EMAs) either consist of one person or

are a regional office for two to eight counties. Some EMAs are staffed only with part-time personnel. EMA offices have a heavy workload because of Homeland Security requirements for planning, grant writing, and grant management. EMA directors have limited time for duties related to public education and disaster planning. Because of the limited staffing and the heavy workload required local EMAs, the involvement of PPDS and NRDs is crucial in mitigation efforts. Many local EMA offices do not have the manpower or time to be fully attentive to potential mitigation activities within their local area or region. It is essential to reiterate the importance of local hazard mitigation plans in order for local governments to receive funding. The approval of many plans since the 2008 Plan Update has strengthened the capability of local jurisdictions to participate in and receive funding through HMA programs. With the approval of plans, education about programs, and technical assistance from the State; local governments have better opportunities to move forward with their mitigation goals and objectives despite issues of being understaffed and lack of funding.

F. Historically, Nebraska has had 56 federally declared disasters to date. From 2011-2014, three disasters were declared in the State of Nebraska, allocating over $18,333,000 to HMGP for projects. Many of the declared disasters have been relatively small when compared to other multi-billion dollar natural disasters in other states, such as Hurricanes Katrina or Rita (2005); however, some disasters have been fairly large including most recently disaster 1924 (tornados, high winds, and severe flooding), which broke numerous flood records. Many rural jurisdictions in Nebraska often fail to submit an application after a disaster has occurred, leaving their community ineligible to receive Public Assistance Funds. Another issue among rural EMAs is the ability to supply the cost-share match. Many county and local governments lack the time and personnel necessary to carry out hazard mitigation planning or project development activities. The lack of local personnel will continue to be a short-fall for the implementation of mitigation programs in Nebraska. This issue can be addressed through technical assistance from the state to the local communities.

G. Cities and counties in the Nebraska are given the planning and zoning authority to control all aspects of land use development within their jurisdictions. Nebraska State Statutes §19-903; §19-925; §23-114.01; §23.114.02 only requires zoning to be consistent with a municipal or county comprehensive plan. The statutes require that the designated planning agency or board create and adopt a comprehensive plan. Comprehensive plans, however, are not required to address specific hazards, and seldom include hazard mitigation. State Statutes §19-901 to 19-915 list the regulations for comprehensive development plans. The regulations are designed to secure safety from dangers including fire, flood, panic, and overcrowding. Specifically, the statutes are designed to secure safety from flood and to preserve, protect, and enhance historic buildings, places, and

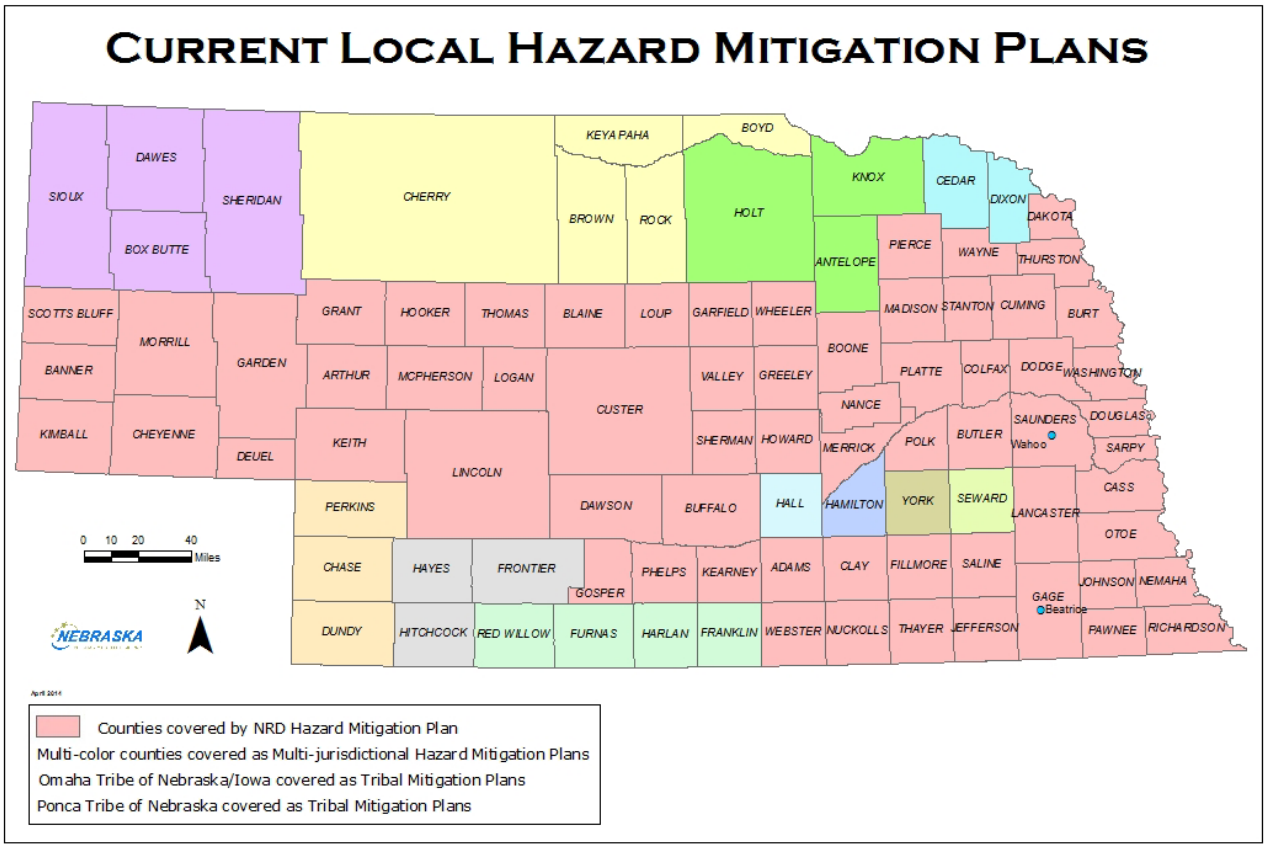
districts. Though comprehensive plans are not hazard specific, it is noted in the state statues that their regulations are designed to promote health and general welfare. No Nebraska State Statutes specifically address development in hazard prone areas but the statutes mentioned in this plan can support restriction of development in said areas. In addition, there is the Nebraska Minimum Standards for Floodplain Management Program, which serves as a guide for NFIP-participating communities and their development. Future improvement in local capabilities could occur if development in hazard prone areas was specifically addressed. The inclusion of these statutes into the state mitigation plan coincides with the states goals and objectives by reducing the risk of loss of human life and property. More information is provided below.

H. The Disaster Mitigation Act of 2000 (DMA 2000) requires all local governments to have FEMA-approved Local Hazard Mitigation Plans in order to be eligible for hazard mitigation grant funding. As of December 2013, six city plans are still on the books (Beatrice, Elmwood, Lexington, Schuyler, Village of South Bend, and Wahoo), and four county plans (Hall, Hamilton, Seward, and York) are being maintained. NEMA's goal is to have all cities adopt the large multi-jurisdictional plan that they reside within. Currently in the state there are 20 multi-jurisdictional plans approved or being revised, they are: Cedar-Dixon Counties, Central Platte NRD, Chase/Dundy/Perkins Counties, Frontier/Hayes/Hitchcock Counties, Little Blue/Lower Big Blue NRD, Lower Elkhorn NRD, Lower Loup NRD, Lower Platte South NRD, Lower Platte North NRD, Nemaha NRD, North Platte NRD, Papio-Missouri River NRD, Region 23, Region 24, South Platte NRD, Tri-Basin NRD, Tri-County(Antelope, Holt & Knox), Twin Platte NRD, Upper Loup NRD, and Quad County(Franklin, Furnas Harlan & Red Willow). NEMA is coordinating with the Natural Resource NRDs, local emergency managers, city and county officials, PPDs, and other stakeholders to increase the number of approved Local Hazard Mitigation Plans across the state. Most local governments lack the necessary personnel, expertise, and time to develop Local Hazard Mitigation Plans on their own, that is why NEMA, the NRDs, the PPDs, and local emergency managers have done the following to promote local Hazard Mitigation planning & development:

- Hold & Attended FEMA workshops on Local Hazard Mitigation Planning and Development,
- Mailings and emails were sent out to notify potential applicants,
- Held meetings and special sessions with stakeholders and policy makers to increase Local Hazard Mitigation Planning awareness,
- Spread the message that there are Hazard Mitigation Grant Program dollars available for local planning efforts.

I. Figure 4.1 is a map showing counties currently covered by hazard mitigation plans. Contiguous counties sharing the same color are covered by a shared multi-jurisdictional plan. The majority of counties in the state are covered by a NRD Hazard Mitigation Plan.

Table 4.1: Local Hazard Mitigation Plans



VIII. EVALUATION OF STATE LAWS, REGULATIONS, AND POLICIES

A. State laws, regulations, policies, and programs related to hazard mitigation are adequate for Nebraska's ongoing hazard mitigation programs as far as the political situation will allow for the foreseeable future. State of Nebraska Authorities in relation to Hazard Mitigation is as follows:

Nebraska RRS §81-829.31 to §81-829.73 (Nebraska Emergency Management Act):

The Nebraska Emergency Management Act is the foundation of the Nebraska Emergency Management Agency. Effective July 19, 1996; the purpose of the Emergency Management Act is to reduce vulnerabilities pertaining to people and the community in the state of life by providing an emergency management system which includes all aspects of preparedness, response, recovery, and mitigation. The Nebraska Emergency Management Act authorizes the coordination of mitigation activities within the state and assistance in mitigation

and prevention of disasters. The Nebraska Emergency Management Act addresses pre-disaster mitigation, post-disaster mitigation, and development in hazard prone areas. For pre-disaster mitigation, "the governor shall consider, on a continuing basis, steps that could be taken to prevent or reduce the harmful consequences of disasters, emergencies, and civil defense emergencies" (§81-0829.43). It also provides the governor with the power to make recommendations for mitigation projects. This Act also gives power to NEMA and other state agencies to study and monitor vulnerable areas and then pursue appropriate mitigation actions. Section 81-0829.42 of the Nebraska Emergency Management Act lists appropriate post-disaster mitigation actions such as clearing debris and provides for "other measures as are customarily necessary to furnish adequate relief in cases of disaster, emergency, or civil defense emergency."

Nebraska statutes governing operation of the Department of Natural Resources RRS §2-1501 through §2-15,106:

The statutes identify the goals, rules, regulations, policies, and procedures pertaining to the protection and conservation of the state's land and water resources. Included within the literature is the assistance provided by the state for soil and water conservation and flood control needs as well as the conditions to the available assistance. The statues of the Nebraska Natural Resources Commission (§2-1504.) list the creation, functions, membership, selection, number of terms, and vacancies of the Commission. The existences of such statues are important to the capabilities of the state to protect its valuable resources that cannot otherwise protect themselves. Protecting these resources in turn leads to the protection of Nebraska's population from disaster damages and the impact they have on communities.

Nebraska statutes governing the State Floodplain Management Program, RRS §31-1001 to §31-1031:

The statutes recognize the damages that can be incurred from the reoccurring flooding within the state of Nebraska as well as the hazards it presents to the people and property of the state within and outside of the impacted area. The concern for the common flooding leads to the awareness of the need for wise use of land that is subject to flooding. The statutes establish the practices of improved floodplain management as well as financial assistance made available to those whose property is damaged during flooding in the state. The existence of such regulations directly relates to the goals and objectives of the State Hazard Mitigation Plan. Increased awareness of floodplain management will prevent future flooding damages.

Nebraska statutes governing operations of the Natural Resources Districts, RRS §2-3201 through §2-3281:

The statutes discuss the essentiality of natural resources protection within the state and therefore created Natural Resource Districts as the most efficient way of managing these resources. There are 23 Natural Resource Districts in

Nebraska and by state statute they are responsible for the conservation, protection, development, and management of the state's natural resources. As mentioned in Section 5 of this plan, the state's NRD's have been taken the lead in creating multi-jurisdictional hazard mitigation plans in their areas of the state; as of December 2013 thirteen plans have been approved. More information on activities of NRD's in the state is described in Section 2 of this plan.

Nebraska Regulation on Municipal Zoning §19-901.Zoning regulations; power to adopt; when; comprehensive development plan; planning commission; reports and hearings; purpose; validity of plan; not applicable; when; and County §23-114.Zoning regulations; when authorized; powers; manufactured homes; limitation of jurisdiction:

§19-901 gives the legislative bodies in cities of the first and second class and in villages the power to adopt zoning regulations. The powers can only be exercised after a planning commission has been established by the municipal legislative body and a recommended comprehensive development plan has been received. The purpose of such is to promote the health, safety, morals, or the general welfare of the community. The zoning regulations adopted by legislative bodies may: regulate and restrict the height, number of storied, and size of buildings and other structures, the percent of a lot that may be occupied, the size of yards, courts, and other open spaces, the density of population, and the location and use of buildings, structures, and land for trade, industry, residence, or other purposes. Again, this can only be done after the planning commission has been created and a comprehensive development plan completed. §19-903 regulates what must be included in said comprehensive development plan. Regulations for the plan are designed to "lessen congestion in the streets; to secure safety from fire, panic and other dangers; promote the health and general welfare; to provide adequate light and air; to prevent the overcrowding of land; to secure safety from flood; to avoid undue concentration of population; to facilitate the adequate provision of transportation, water, sewage, schools, parks, and other public requirements; to protect property against blight and depreciation; to protect tax base; to secure economy in governmental expenditures, and to preserve, protect, and enhance historic buildings, places, and districts[8]." The existence of these statutes enhances the ability of local communities to prevent building in hazardous areas and relates to the goals and objectives of this plan. Unfortunately there is no requirement for the existence of comprehensive development plans, something that if changed would greatly benefit the capabilities of the state. §23-114. Gives the county board powers to create a planning commission and implement a county comprehensive development plan with regulations and restrictions.

Nebraska Administrative Plan for Hazard Mitigation:

The purpose of the Administrative Plan is to document, in writing, the process the state will use to administer the Hazard Mitigation Grant Program (HMGP) for major disaster declarations as mandated by 44 CFR part 206.437. The state is

[8] http://www.nebraskalegislature.gov/laws/laws-index/chap19-full.html

the grantee for HMGP funds and is accountable for the use of funds. Contained within the plan is the application for project funds for the program. In order to be eligible for these funds, the applicant must have a FEMA-approved hazard mitigation plan. The planning application for requesting these funds is also located within the Administrative Plan

State of Nebraska Flood Hazard Mitigation Plan:

The purpose of the Nebraska State Flood Hazard Mitigation Plan is to explain flood mitigation and flood mitigation planning, chronicle previous flood problems of Nebraska, and recommend alternative procedures which might be used to reduce these problems.

Regulation of Land Use in First and Second Class Cities and Villages:

The state law regulating land use zoning in first and second class cities and villages (Revised Statute §19-901) allows local adoption of zoning regulations after the jurisdiction has done the following:

1. Establish a planning commission
2. Hold public meetings
3. Develop a comprehensive development plan
4. The Municipal Planning Commissions shall prepare and adopt implemental means as a Capital Improvement Program, Subdivision Regulations, Building Codes, and a Zoning Ordinance in cooperation with other Municipal departments, and must invite public comment and advice in their preparation. (Revised Statute §19-929)

Powers of the County Board:

A County Board has the power to create a Planning Commission, and adopt zoning resolutions. The County Planning Commission shall prepare and adopt, as its policy statement, a comprehensive development plan as well as a means of implementation such as a capital improvement program. They must advise the public relating to promulgations of implemental programs (Revised Statute §12-114). The County Planning Commission may establish special districts or zones in those areas subject to seasonal or periodic flooding and such regulation may be applied as will minimize danger to life and property. (Revised Statute §23-114(c)(5))

In both of types of regulations, the municipalities and counties may develop zoning regulations but are not required to. According to the Nebraska League of Municipalities, there is no listing of cities and villages that have adopted zoning

regulation. The League did state, however, that most first and second class cities and villages in Nebraska have zoning and building code regulations.

Safe Growth Policy:

The 2008 State Hazard Mitigation Plan included a description of a "Safe Growth"[9] policy designed to promote coordination of land use policy in hazard areas. The Safe Growth Program was designed by the American Planning Association in 2004. The Safe Growth Policy increases safety by requiring collaboration at many levels in the community. Safe Growth enables communities to quickly switch from response to recovery after a natural disaster has occurred. Resiliency is built in communities by incorporating natural hazard mitigation planning into other planning within the community. The consideration of natural hazard mitigation planning by community planners reduces the vulnerability of community to natural hazards and their impact on lives and property. Regulatory community planning mechanisms are still used for the purposes of the Safe Growth Policy, the addition of natural hazard mitigation planning simply expands the already in place community development.

VIII. Assessment of State Capabilities

A. Since the 2011 Plan Update, the mitigation program in the State of Nebraska has progressed. With 30 FEMA approved mitigation plans currently active in Nebraska, local entities have been able to experience the application process and are eligible to receive funds. Project Applications and letters of intent continue to be submitted to NEMA by local jurisdictions across the state. Pending applications already submitted to the SHMO continue to receive the information necessary for FEMA approval.

B. Challenges and Changes of State Capabilities:

- Staffing Issues

The 2008 Hazard Mitigation Plan identified staffing as a major challenge to the states capabilities. The Mitigation section of the Response and Recovery Division at NEMA continues to be understaffed since the 2008 & 2011 plan updates, leaving room for improvement within the states mitigation capabilities. During the interim 2008-2014 the Nebraska Emergency Management Agency saw four different State Hazard Mitigation Officers. The frequent staff changes within the agency served as an obstacle to perform at a complete operational level consistently in the plan update period. The inadequate staffing leaves coordination with other agencies at a state and federal level as the best option for improvement until the

[9] http://www.planning.org/features/2005/whatissafegrowth.htm

staffing issue is resolved. With the assistance from Region VII and coordination with other agencies, mitigation activities will move forward and address improvements that must be made along the way. In order to address needed improvements, the state will conduct regulatory reviews of the mitigation section at the Nebraska Emergency Management Agency as needed to assess the abilities of the state after each federally declared disaster. These reviews will be intended to assure continual success of the states mitigation program (more information on reviews of the plan and mitigation programs can be found in Section 6 of this plan).

- Recent Disasters

The number of disasters declared from 2008-2014(1706, 1714, 1721, 1739, 1765, 1770, 1779, 1853, 1864, 1878, 1902, 1924, 1945, 4013, 4014, and 4156) challenged the state's ability to efficiently respond with the resources available. With the occurrence of each disaster, came more knowledge and experience of best practices at both a state and local level. State agencies worked together during each disaster which proved the effectiveness of interagency coordination. Funding opportunities brought upon by each disaster gave the state opportunities to implement mitigation measures identified in local mitigation plans throughout the state. Typically, one disaster is declared each year in the State of Nebraska. This was not the case during the last update cycle(2008-2011) when 13 disasters were declared, convex with the recent 3-year cycle where three major disasters were declared. Besides the experience gained from these disasters, disaster awareness in the state was also brought to attention. Increased awareness of hazards in the state improves the state's ability to prepare and respond to future disasters.

- Approval of Local Mitigation Plans:

The limited number of approved local mitigation plans was a challenge in 2008 when a small number of plans had been approved by FEMA. This number has changed throughout the past update and with the current update which has allowed for new capabilities since 2008. Currently, there are 30 approved local mitigation plans in the state. The number of approved plans allows for nearly 100% of Nebraska to participate in the Hazard Mitigation Grant Program. The approval of these plans also allows for improvements at a state level bringing to light additional vulnerabilities that may have been missed had they not been identified in a local plan. Coordination between the state plan and local plans is important to the continual success of mitigation activities in the state. More information on coordination between the state and local governments can be found in Section 5 of this plan.

C. Opportunities to Improve State Capabilities:

- Coordination with State, Local, and Federal Agencies:

Coordination is important to improving the state's capabilities. Without further coordination at a federal, state, and local level; the state would be at a standstill as one agency does not have the resources to successfully respond and mitigate against disasters on its own. The Nebraska Emergency Management Agency recognizes the importance of building relationships and coordinating with other agencies prior to a federal disaster. This coordination can occur during planning team meetings, exercises, training, and other venues.

The State Hazard Mitigation Officer works closely with flood mitigation staff at NDNR on projects related to flood hazards. The SHMO seeks advice from NDNR on these projects while NDNR refers multi-hazard projects to the SHMO when they go outside of the typical flood mitigation projects.

- Improvement of States Funding Capabilities:

The state can improve its ability to fund projects by providing information to local governments on all funding opportunities available. As mentioned above, many local communities can often fail to meet the 25% match required for most federal grants. There are several federal grants available to local communities to meet this cost share match. The state can improve its capabilities by educating local communities on these grants available. By doing this, there are more options for locals to complete mitigation projects in the state.

THIS PAGE INTENTIONALLY LEFT BLANK

Nebraska Risk Assessment Committee
Nebraska Agricultural, Natural Resources, and Wildlife Subcommittee
Planned Mitigation Actions

IMPACT	PLANNED ACTIONS	ASSISTANCE AGENCIES	ACTION STATUS
Reduced range and pasture forage and livestock water re suits in poor animal health, soil erosion, and possible economic loss to ranchers	1. Encourage the use of range and pasture management techniques such as reduced stocking rates, reserve pastures, rotational grazing, removing stored feed to improve sustain ability of rangelands under drought	National Grassland Association, Nebraska Cattlemen, UNL Extension, NRCS, NRDs, Sandhills Cattle Association	Ongoing
	2. Prior to and during drought, use public information program s and on- emphasize importance of rangeland management and planning to rates with available forage and the need for permanent water storage systems.	UNL Extension, NRDs, NEDA, DNR, NRCS, NDMs	Ongoing
	3. Monitor forage supplies and conditions around the state and facilitate exchange between interested parties. A) If conditions warrant, a meeting advisory committee will be organized early in the spring to determine availability, forage conditions, and wildlife concerns. B) Also, at that procedure for emergency roadside haying through the Department of discussed to determine need and value of this procedure. C) Also, at that could be determined if a letter to the federal office of FSA is warranted to of drought conditions and impending requests for CRP emergency would pass that recommendation on to CARC, who would then pass the letter on to the Governor and the Director of Agriculture.	UNL Extension, NRDs, NEDA, NRCS, DNR, NDMC, FSA, Nebraska Cattlemen, Farm Bureau, Alfalfa Association, Nebraska Department of Roads	Ongoing
	4. Investigate needs of economically stressed ranchers who now rely on state grazing leases to sustain their herds. Develop a coordinated plan of taken by land management agencies to provide grazing and/or assistance to lessees. Investigate changing federal and state grazing drought.	U.S. Forest Service,, BLM, US Fish and Wildlife, Nature Conservancy	Ongoing
	5. Assist ranchers in obtaining supplemental income by connecting them employment opportunities, and during drought, by holding job fairs and awareness of job opportunities and ranchers' work skills.	Nebraska Department of Labor, NEDA, UNL Extension, NRDs, Center for Rural Development	Ongoing

IMPACT	PLANNED ACTIONS	ASSISTANCE AGENCIES	ACTION STATUS
	6. Explore alternatives for establishing state funded cost-share program for water conservation measures on rangeland.	DNR	Ongoing
	7. Establish and activate a statewide and nationwide hotline system for economical feedstock sources.	NEDA, UNL Extension, Nebraska Cattlemen, National Guard, Farm Bureau, NEMA. NRDs, NRCS, Alfalfa Association	Ongoing
	8. Explore create incentive program for long-term conservation grazing	NEDA, UNL Extension, NE Cattlemen	Ongoing
	9. Develop indemnity plan crop insurance for grazing land/livestock operations	NEDA	Ongoing
Reduced soil moisture on dry cropland poses economic loss to farmers and possible increased soil erosion and blowing dust	1. Evaluate effectiveness of crop insurance and suggest changes.	Crop Insurance Groups	Ongoing
	2. Use public information programs to emphasize installation of soil and systems (i.e., terraces, crop residue use, and contour planting).	NRCS,SARE,DEQ,UNL Extension, NRDs	Ongoing
	3. Emphasize additional measures regarding crop residue management, emergency tillage to control soil blowing.	NRCS,SARE,DEQ,UNL Extension, NRDs	Ongoing
	4. Investigate use of rainfall enhancement projects in targeted areas.	NEDA,DNR,NRDs	Ongoing
	5. Investigate and promote alternative crops and drought-resistant seeds for of the state.	UNL Agronomy	Ongoing
	6. Create incentive program for drought-resistant practices.	NEDA, UNL Extension	Ongoing
	7. Develop insect and plant disease assistance.	NEDA, UNL Extension	Ongoing

IMPACT	PLANNED ACTIONS	ASSISTANCE AGENCIES	ACTION STATUS
Decreased irrigation water from surface water sources prevents achievement of crop harvest potential	1. Emphasize adjustment of irrigated acre age to meet expected water availability	DNR, NRDs, NRCS, Irrigation Districts, UNL Extension, USSR	Ongoing
	2. Emphasize the use of crop insurance programs.	FSA, Crop Insurance Groups	Ongoing
	3. Develop alternatives for increasing available irrigation water supply by use of transfers.	DNR	Ongoing
	4. Develop a funded ban program to encourage installation of on-farm water conservation measures.	USBR,DNR,DEQ,NRDs	Ongoing
Water storage may not be adequate in long-term drought	1. Evaluate water storage necessary for long-term sustainability.	DNR, Attorney General, USSR	Ongoing
	2. Improve monitoring of water levels in state reservoirs.	ONR, USSR, USACE	Ongoing
	3. Investigate drought component within water compacts between Nebraska and adjacent states.	DNR, Attorney General	Ongoing
Increased irrigation pumping from underground water sources may lower water levels and decrease pumping rates resulting in less capacity to meet crop needs and decreasing the profitability of an irrigated cropping system	1. Continue to emphasize irrigation water management techniques and develop emergency ban program to promote installation of on-farm water conservation measures.	NROs, USSR, DEQ, NRCS, UNL Extension, FSA, NEDA	Ongoing
	2. Maintain water-level measurement program to monitor declining aquifer levels.	NRDs, UNL CSD	Ongoing
	3. Maintain ground water metering efforts and establish an emergency	NRDs	Ongoing
	4. Emphasize use of crop insurance program in high-probability drought years.	Crop Insurance Groups	Ongoing
	5. Develop appropriate crop insurance to meet needs of all areas of the state.	NWR, Crop Insurance Groups	Ongoing

IMPACT	PLANN ED ACTIONS	ASSISTANCE AGENCIES	ACTION STATUS
Loss of farmers and ranchers due to drought-induced bankruptcy	1. Encourage existing agricultural finance advisory committees to develop emergency repayment guidelines with banks due to drought-induced conditions.	NEDA	Ongoing
	2. Use Public Service Announcements to advertise emergency repayment insurance programs, hotline numbers, and mediation services.	NEDA, Mediation Service. Farm Crisis Council, UNL Extension	Ongoing
	3. Encourage continuation of federal emergency indemnity plans for crop agriculture.	NEDA,FSA.NRDs	Ongoing
Drought-induced mental anguish of farmers and ranchers resulting in increased suicides, social, and family problems (Also included within the Municipal Water Supply, Health, and Energy Subcommittee plan)	1. Develop working partners hips with local ministerial alliances and local health offices to develop social counseling and support programs.	Local health offices. local ministerial alliances, UNL Extension, N EDA, Center for Rural Affairs, HHS, national public health services, Mediation Service, Farm Crisis Council	Ongoing
	2. Implement and/or maintain farm/crisis hotline(s).		
	3. Use local TV and radio outlets to implement pubic information program drought-induced mental stress and for announcements for hotline numbers services.		
Increased health problems for residents of areas experiencing problems from blowing dust (Also included within the Municipal Water Supply, Health, and Energy Subcommittee plan)	1. Communicate with state medical allergy and asthma experts to develop recommendations	UNMC. UNL Extension, NRDs, NRCS, local health offices, environmental health fund, NEMA, HHS	Ongoing
	2. Establish education programs to increase awareness of dust-related how proper land management can improve air quality.		
	3. Develop funded initiatives to explore mitigation of health effects.		
Damage to cropland and rangeland due to intrusion of wildlife species	1. Develop emergency guidelines for the emergency fee ding and watering of native wildlife in their original habitat.	NEDA, Fish and Wildlife Service, U.S. Forest Service	Ongoing
	2. If needed, implement emergency control guidelines for invasion species and rangeland.	UNL Extension	Ongoing
	3. Make funds available to reimburse farmers who lose crops from invasion of wildlife.	NEDA	Ongoing

IMPACT	PLANNED ACTIONS	ASSISTANCE AGENCES	ACTION STATUS
Decreased income from local dairy and feedlot operations due to drought-induced high cost of feedstocks.	1. Develop statewide and nationwide hotline system for locating feedstock sources.	NEDA, UNL Extension, producer organizations	Ongoing
	2. Investigate possible system of subsidized purchases of replacement stock Resource Producers·.		
Decline in stability of local economy and tax base due to decreased sales of agricultural support equipment	1. Develop statewide and region wide agricultural support services hotline which would emphasize outside area purchases of agricultural services and equipment from local	NEDA, USDA, Nebraska Department of Economic Development	Ongoing
	2. Add agricultural production as recipient of tree assistance programs at the	Game and Parks Commission, Nebraska Forest Service	Ongoing
	3. Provide tax credits to agricultural producers.	NOR	Ongoing
	4. Create some plan 10 decrease property tax or establish payment plans is greatly reduced.	County commissioners, NOR	Ongoing
	5. Provide assistance for emergency feed and water transportation.	NEDA	Ongoing
Reduced tourism due to misperceptions about the effects of drought	1. let potential tourists and travelers know what recreational opportunities exist. eve n in drought. via public relations, marketing, brochures, and the pre-established hotline and	Nebraska Division of Travel and Tourism	Ongoing

BlM	Bureau of Land Management
CSD	Conservation and Survey Division
DEQ	Nebraska Department of Environmental Quality
DNR	Nebraska Department of Natural Resources Farm
FSA	Service Agency
HHS	Nebraska Department of Health and Human Services
NDMC	National Drought Mitigation Center
NOR	Nebraska Department of Revenue
NEDA	Nebraska Department of Agriculture
NEMA	Nebraska Emergency Management Agency
NRCS	Natural Resources Conservation Service
NRDs	Nebraska Natural Resource Districts
SARE	Sustainable Agriculture Research and Education Program
UNl	University of Nebraska-Lincoln
UNMC	University of Nebraska Medical Center
USACE	United States Army Corps of Engineers
USBR	United States Bureau of Reclamation
USDA	United States Department of Agriculture

THIS PAGE INTENTIONALLY LEFT BLANK

Hazards and Potential Activities Chart Definitions:

Risk:
The risks listed are hazards identified by the Governor's Task Force for Disaster Recovery. All identified hazards have been ranked according to their final relative weight scores in Nebraska's Risk Assessment Matrix.

Sectors at Risk:
The identified potential sectors at risk came directly from the Emergency Support Functions (ESF) listed in the Nebraska State Emergency Operations Plan for 2009. In order to conserve space, the ESF numbers are not listed on the "Hazards and Potential Activities Chart 2" beginning on page 14: ESF-1 Transportation, ESF-2 Communication, ESF-3 Public Works, ESF-4 Fire Suppression, ESF-5 Emergency Management, ESF-6 Mass Care, Emergency Assistance, Housing and Human Services, ESF-7 Resource Support, ESF-8 Public Health and Medical Service, ESF-9 Urban Search & Rescue, ESF-10 Environmental Quality, ESF-11 Agriculture & Natural Resources, ESF-12 Energy, ESF-13 Public Safety and Security, ESF-14 Long Term Recovery and Mitigation, and ESF-15 National Guard Support.

Pre-Disaster Activities:
The disaster activities selected are simply listed and not ranked according to their level of importance. The list of identified activities came from Nebraska's 2008 State Hazard Mitigation Plan, FEMA approved local hazard mitigation plans in the State of Nebraska, and other approved State Hazard Mitigation plans from across the nation.

Mid and Post Disaster Activities:
The disaster activities selected are simply listed and not ranked according to their level of importance. The list of identified activities came from Nebraska's 2008 State Hazard Mitigation Plan, FEMA approved local hazard mitigation plans in the State of Nebraska, and other approved State Hazard Mitigation plans from across the nation.

Hazards and Identified Mitigation Actions Chart 1			
Risk (Rank)[1]	**Sectors at Risk**	**Pre-Disaster Mitigation Actions**	**Mid and Post Disaster Mitigation Actions**
Flooding (1)	Transportation, Communication, Public Health & Safety, Natural – Resources, Energy, Public Works and Engineering	(1) Flood Mapping, (2) National Flood Insurance Program, (Participation in and Remaining in good standing) (3) Property Acquisition, (4) Pre-Flood Debris Removal, (5) Education, (6) Enforcement, (7) Land-use management and control, with special attention to floodplains, (8) Building construction and codes (9) Control and protective works (10) (flood proofing, dams, reservoirs, levees, dikes, and drainage systems) (11) Critical facility flood proofing, (12) Preparedness, response, relief, and rehabilitation measures including effective warning capability, (13) Tests and exercises	(1) Relocation, (2) Insurance, (3) Warning System, (4) Bank Stabilization, (5) Demolition, (6) Federal flood insurance, (7) Rescue and lifesaving, (8) Evacuation routes and facilities, (9) Livestock waste lagoons, (10) Rebuild vulnerable transmission river crossing (11) Human waste lagoons[2]
Tornado (2)	Communication, Public Health & Safety,	(1) Early Warning Systems, (2) Wind-Proofing/Reinforcement, (3) Building Codes,	(1) Debris Removal/Disposal Plan (2) Volunteer coordination (3) Warning systems to include indoor and

[1] Based on Nebraska Risk Matrix, based on probability and potential impact
[2] Additions to the Risk "Flooding" section, based on recommendations provided by Nebraska Department of Environmental Quality – (Member of the State Hazard Mitigation Planning Team) at the August 28, 2007 Planning Meeting.

	Natural – Resources, Energy, Public Works & Engineering	(4) Tie Downs, (5) Hazardous Tree Removal Program, (6) Windproof Workshop & Pilot Projects, (7) Mobile home evacuation and anchoring requirements, (8) Storm spotter systems and organization (9) Provide loop distribution service or other redundancies in the electrical service to critical customers (10) Redundant communication for electric operations (11) Tornado Safe Rooms (12) Reverse 911	outdoor warning (4) In-house shelters (5) Public shelters for congested areas
Wildfires (3)	Communication, Public Health & Safety, Natural – Resources, Energy, Public Works & Engineering	(1) Timber Thinning Around Facilities, (2) Upgrade Wildfire Equipment, (3) Recruitment Training, Increase Work with Railroads, (4) Public Burning Education, (5) Asphalt shingles rather than wood, (6) Proper vegetative planting (7) Wild Fire Protection Plan (8) Firewise Community (9) Nebraska Forest Service- Fuels Reduction Grant	(1)Zoning/Building Codes (2) Protecting Livestock, (3)(Enact ordinances and planning procedures to insure development in fire prone areas are done wisely. Provisions for multiple access routes, firebreaks, wide roads and adequate water sources should be included. Standards for homes should be enforced that require defensible space and fire wise building materials and design.)
Severe Winter Storms (4)	Communication, Public Health & Safety, Natural – Resources, Energy, Public	(1) Strengthen Power Structures • Install T2 Conductor • Design Changes to Structure, (2) Burying Cable/Power Lines, (3) Geometry,	(1) Ice Dusting, (2) Roads Message boards (3) Flexible scheduling of public events and activities, (4) Alternative energy supply system to include emergency power for critical facilities,

	Works & Engineering	(4) Hazardous Tree Removal Program, (5) Arbor Day Foundation – Urban, (6) Forest Guidelines, (7) Specific Equipment (8) Prediction and warning systems (9) Response plans specially adapted to such events, (10) Preparedness and increased readiness, (11) Tests and Exercises (12) Tree Inventory List (13)) Provide loop distribution service or other redundancies in the electrical service to critical customers (14) Redundant communication for electric operations (15) Living Snow Fence (16) Reverse 911	(5) Mutual aid arrangements, (6) Rescue and lifesaving, (7) Energy Conservation, (8) Emergency shelters, (9) Volunteer Coordination, (10) Emergency Energy Generation in Critical Facilities (11) Tub Grinders for Debris Removal
Drought (5)	Agriculture, Natural - Resources, Energy, Public Health	(1) Community Planning- source storage, (2) (Preventative Mode- Deeper wells, analyze aquifer, well affiance, plumbing codes, metering wells, identifying water competition and negotiating), (3) Land-use regulation- especially in high risk areas, (4) Improved drought prediction and forecasting, (5) Stimulation of rainfall by weather modification,	(1) Alternate water sources, (2) Reuse of waste water equipment, (3) Local water use ordinances, (4) System leak detection, (5) Upgrade irrigation systems to preserve water level, (6) Soil erosion controls, (7) Improved agricultural cultivation practices, (8) Regulated irrigation practices, (9) Water supply protection and conservation, (10) Emergency water purification and transport, (11) Energy conservation, (12) Animal Disposal

		(6) Resources conservation plans and practices, (7) Tests and exercises	
High Winds/ Thunder Storms (6)	Communication, Public Health & Safety, Natural – Resources, Energy, Public Works & Engineering	(1) Early Warning Systems, (2) Wind-Proofing/Reinforcement, (3) Building Codes, (4) Tie Downs, (5) Hazardous Tree Removal Program, (6) Windproof Workshop & Pilot Projects, (7) Mobile home evacuation and anchoring requirements, (8) Storm spotter systems and organization, (9) Lightening Detection Equipment, (10) Building codes, (11) Mobile home tie-downs (12) Tree-Shelter Belts, (13) Public Information Programs (14) Tornado Safe Rooms	(1) Debris Removal/Disposal Plan (2) Volunteer coordination (3) Warning systems to include indoor and outdoor warning (4) In-house shelters (5) Public shelters for congested areas
Dam/ Levee Failure (7)	Transportation, Communication, Public Health & Safety, Natural – Resources, Energy, Public Works & Engineering	(1) Prioritization of Dam Failure (2) Mitigation Strategies, (3) Dam Failure Cost Benefit Review, (4) Dam Failure Mitigation, (5) Implementation public alert notification system	(1) Develop or implement stream or river, (2) Maintenance Plan, Develop dam failure maps
Earthquake	Transportation, Communication,	(1) Retro-fit buildings & Infrastructure,	(1) Debris, (2) Reduction of associated hazards, with

(7)	Public Health & Safety, Natural – Resources, Energy, Public Works and Engineering	(2) Dam Inspection- Retro-fit, (3) Public Education, (4) Building Codes, (5) Pipeline Safety, (6) Improved delineation of seismic risk areas, (7) Earthquake-resistant new construction, (8) Land-use management, (9) Earthquake insurance, (10) Seismic risk disclosure in property transactions, (11) Advanced earthquake prediction technology, (12) Tests and exercises	special attention to lifelines engineering and critical facilities,
Livestock/ Animal Contagious Disease – (Agriculture) (9)	Transportation, Communication, Public Health, Agriculture, Natural – Resources, Environmental	(1) Set up decontamination stations, (2) Public Information System, (3) Diagnostics/Laboratory Testing	(1) Disposal – Animal, (2) Containment – Animal, (3) Quarantine, Traffic Control, (4) Embargo, (5) Disinfection/Decontamination – Animal, (6) Temporary Housing/Feeding, (7) Activation of LEDRS[3]
Plant Disease – Agriculture (9)	Transportation, Communication, Public Health, Agriculture, Natural – Resources, Environmental	(1) Set up decontamination areas, (2) Public Information System, (3) Diagnostics/Laboratory Testing	(1) Disposal – Crops, (2) Containment - Crops, (3) Quarantine/ Traffic Control, (4) Embargo, (5) Disinfection/Decontamination – Crops

[3] Additions to the Risk "Agricultural" section, based on recommendations provided by Nebraska Department of Environmental Quality – (Member of the State Hazard Mitigation Planning Team) at the August 28, 2007 Planning Meeting.

Terrorism (11)	Communication, Public Health & Safety, Natural – Resources, Energy, Public Works & Engineering	(1) Planning, Mobilization, Training, (2) Exercise Equipment- Detection & Communication, (3) Operations Center, (4) Security Doors- Courthouses, (5) Surveillance Equipment, (6) (Critical Asset Identification- Bridges, Power Grid System, Government Buildings, Public Utilities) (7) Early Warning- Record Keeping, (8) Tracking & Monitoring Record, (9) Commercial Transportation, (10) Record Keeping- Hazmat Carriers, (11) Secure Facilities- Storage of CBRNE, (12) Public Information	

THIS PAGE INTENTIONALLY LEFT BLANK

STATE MITIGATION GOALS and OBJECTIVES
and
Prioritization Criteria

I. Project Criteria

A. The following chart of goals and objectives involve some actions and activities that are not eligible as projects under either the Pre or Post disaster programs. Nevertheless the State believes that these activities and actions are important for local governments to participate in such as zoning enforcement, public awareness campaigns and family and business planning. As such the agencies that participate in the Governor's Taskforce will continue to encourage these on-going activities through presentations, training and attendance at meetings of associations involved with these issues. This list simply provides examples of what the State agencies and local districts are continually doing to mitigate against circumstances and situations that pose issues with the safety of the population and the protection of resources & property.

B. For the objectives that identify possible projects that are eligible for funding under either the pre- or post-disaster programs the Governor's Task Force for Disaster Recovery (GTFDR) uses the following criteria to determine the designation of High, Medium, or Low priority.

1. The extent and nature of the hazard to be mitigated.

2 The extent to which the action/project will reduce damages in future natural disasters.

3. The extent to which the action/project is cost-effective and produces meaningful and definable outcomes that have been clearly identified by the jurisdiction.

4. The extent to which the action/project optimizes the net benefits to communities as a whole.

5. The extent to which the action/project funds mitigation activities in small and impoverished communities.

6. The extent to which the action/project will have a beneficial impact on the state as whole, whether or not the project is located in a designated disaster area.

7. The extent to which the action/project addresses a problem that has been repetitive in nature or a problem that poses a significant risk if left unsolved.

8. The extent the action/project will not cost more than the anticipated value of the reduction in direct damages and subsequent negative impacts to the area in the event of a disaster.

9. The extent to which the action/project is the most practical, effective and environmentally sound alternative after considering a range of options.

10. The extent to which the action/ project contributes, to the largest extent practicable, to a long-term solution to the problem the project is intending to address.

STATE MITIGATION GOALS				
Goal #1 **Reduce or Eliminate Long Term Risk to Human Life**				
Objective	**Implementing Steps**	**Responsible Agency**	**Priority**	**Timeline**
1.1- Promote and support the development of wind shelters in areas highly vulnerable to wind damages to protect inhabitants	1.1.1- Encourage the use of Hazard Mitigation funds for these projects	NEMA NWS	High	Completion of Columbus's ECHD Safe Room and LB/LBB NRD residential safe-rooms, 2014-2015-ongoing
	1.1.2 Participate in Public Awareness campaigns	NEMA NWS	Medium	NDOR, NEMA, & NWS attend or conduct, Weather Symposiums and Severe Weather Seminars[1] Ongoing
1.2- Promote and support projects that protect or exclude human habitation in flood zones or areas prone to other known hazards	1.2.1- Encourage enforcement of existing zoning by each local emergency manager, city administrators or planners	NDNR NEMA	High	Ongoing
	1.2.2 – Pursue projects that advocate county or city municipal improvements to overall drainage and storm water management programs or progressive efforts in terms	NDNR NEMA	High	Ongoing

[1] Changes made to Objective 1.1 and Implementing Steps 1.1.1/1.1.2 are based on recommendations provided by FEMA-approved projects and Local Hazard Mitigation Plans, and recommendations made State Mitigation Planning Team.

	of long-term growth and future development			
	1.2.3- Pursue acquisition/ demolition projects that remove homes and businesses from dangerous flood zones.[3]	NDNR NEMA	High	Current Property Acquisition Projects are being undertaken by Papio-Missouri NRD (2010-2011), Ongoing[2]
	1.2.4 – Pursue & advocate flood control projects such as flood retention reservoirs, small dam or levee structures, floodwall systems to protect critical facilities, ring levee systems, and other flood control structures that can be proven cost effective after conducting a benefit cost analysis.[3]	NDNR NEMA	High	Ongoing
	1.2.5 – Pursue projects that help identify population centers at-risk to dam or levee failure through mapping & other initiatives.	NDNR NEMA	High	Ongoing
	1.2.6 Promote events that increase public awareness concerning flood insurance for homeowners and flood awareness education.	NDNR NEMA	High	Ongoing

[2] Additions made to Objective 1.2 and Implementing Steps 1.2.1/1.2.2/1.2.3 are based on recommendations provided by FEMA-approved projects and Local Hazard Mitigation Plans.
[3] The additions made to Objective 1.2 and Implementing steps 1.2.2 and 1.2.3 are based on recommendations provided by the Papio-Missouri NRD Multijurisdictional Plan, pgs. 51-54.

STATE MITIGATION GOALS				
Goal #1 continued **Reduce or Eliminate Long Term Risk to Human Life**				
1.3- Promote and support projects that protect employees, occupants, patients, and students	1.3.1- Increase mitigation and COOP planning for Public Buildings and Agencies	NEMA HHSS University of Nebraska System DOR NDR NDEQ	Medium	Ongoing, Currently NEMA, DOR, DAS, and DOI all have COOP plans in place or are in the process of developing COOP plans.
	1.3.2- Target students and patients during severe weather campaigns at least three times a year.	NEMA HHSS University of Nebraska System NWS	High	Ongoing, Currently DOR, NEMA, & NWS attend and conduct, Weather Symposiums and Severe Weather Seminars[4]
1.4- Improve public warning system for floods, tornados, eminent dam or levee breech/failure, severe winter storms, etc.	1.4.1- Increase NOAA weather radio transmitters and radio coverage (MIR3-Emergency Notification System)	NEMA	High	Ongoing [5]
	1.4.2- Pursue warning system procedures in State parks and buildings	NEMA & NGPC	Medium	Ongoing

[4] Changes made to Objective 1.3 and Implementing Steps 1.3.1/1.3.2 are based on recommendations provided by FEMA-approved projects and Local Hazard Mitigation Plans, and recommendations made State Mitigation Planning Team.

[5] Changes made to Objective 1.4 and Implementing Steps 1.4.1 are based on recommendations provided by State Hazard Mitigation Planning Team.

STATE MITIGATION GOALS				
Goal #1 Continued **Reduce or Eliminate Long Term Risk to Human Life**				
1.5- Reduction or elimination of Power outages	1.5.1 Erection of storm-resistant structures	Nebraska Public Power District, Nebraska's 32 - Rural/Urban Public Power Districts (statewide), Nebraska's city/village municipal energy providers (statewide)	High	McCook PPD overhead to underground lines, (Ongoing)
	1.5.2 Increasing redundant Fiber Optic Switching equipment	Nebraska Public Power District, Nebraska's 32 - Rural/Urban Public Power Districts (statewide), Nebraska's city/village municipal energy providers (statewide)	High	Ongoing

	1.5.3 Increase coverage of mobile transformers and generators	Nebraska's 32 - Rural/Urban Public Power Districts (statewide), Nebraska's city/village municipal energy providers (statewide)	Medium	Ongoing
	1.5.4 Increase Communication, System control, and data center backup systems	Nebraska Public Power District, Nebraska's 32 - Rural/Urban Public Power Districts (statewide), Nebraska's city/village municipal energy providers (statewide)	High	Ongoing
	1.5.5 Increase Single point crossing structure replacement	Nebraska Public Power District, Nebraska's 32 - Rural/Urban Public Power Districts (statewide), Nebraska's city/village	High	Ongoing

		municipal energy providers (statewide)		
	1.5.6 Add to existing double circuit replacement	Nebraska Public Power District, Nebraska's 32 - Rural/Urban Public Power Districts (statewide), Nebraska's city/village municipal energy providers (statewide)	High	Ongoing
	1.5.7 Revise & Implement Drought Recovery Strategy for Power Plant Cooling Systems	Nebraska Public Power District, Nebraska's 32 - Rural/Urban Public Power Districts (statewide), Nebraska's city/village municipal energy providers (statewide)	Medium	Ongoing
	1.5.8 Decrease Chemical Spill Exposure	Nebraska Public Power District,	Low	Ongoing

		Nebraska's 32 - Rural/Urban Public Power Districts (statewide), Nebraska's city/village municipal energy providers (statewide)		
	1.5.9 Continual Installation of T2 Conductor on vulnerable corridors	Nebraska Public Power District, Nebraska's 32 - Rural/Urban Public Power Districts (statewide), Nebraska's city/village municipal energy providers (statewide)	High	North Central PPD, Upgraded transmission lines with T2 1/0 ACSR conductors, (Ongoing)
	1.5.10 Increase burying of power lines in areas highly vulnerable to outages[6]	Nebraska Public Power District, Nebraska's 32 - Rural/Urban Public Power Districts	High	Ongoing

[6] Changes made to Objective 1.5.1 & 1.5.9 are based on recommendations provided by FEMA-approved projects and Public Power District Hazard Mitigation Plans, and recommendations made by the Governor's Task Force as a direct result of disasters FEMA-1706-DR-NE and FEMA-1779-DR-NE.

		(statewide), Nebraska's city/village municipal energy providers (statewide)		
	1.5.11 Continue to provide redundant 69 kV source of electrical service to critical customers	NPPD, OPPD, Nebraska's 32 - Rural/Urban Public Power Districts (statewide), Nebraska's city/village municipal energy providers (statewide)	High	Ongoing
	1.5.12 Provide redundant communications for electric operations	OPPD, Nebraska's 32 - Rural/Urban Public Power Districts (statewide), Nebraska's city/village municipal energy providers (statewide)	High	Ongoing
	1.5.13 Install transmission storm structures	NPPD, OPPD, Nebraska's 32 - Rural/Urban	High	Ongoing

		Public Power Districts (statewide), Nebraska's city/village municipal energy providers (statewide)		
	1.5.14 Continue to rebuild 69 kV river crossings	OPPD, Nebraska's 32 - Rural/Urban Public Power Districts (statewide), Nebraska's city/village municipal energy providers (statewide)	High	Ongoing
	1.5.15 Continue to re-conductor/ rebuild distribution facilities	OPPD, Nebraska's 32 - Rural/Urban Public Power Districts (statewide), Nebraska's city/village municipal energy providers (statewide)	High	Ongoing

	1.5.16 Increase pandemic shelter-in-place resources	OPPD, Nebraska's 32 - Rural/Urban Public Power Districts (statewide), Nebraska's city/village municipal energy providers (statewide)	High	Ongoing
	1.5.17 Rebuild critical customer substations & 69 kV transmission systems reinforcement	OPPD, Nebraska's 32 - Rural/Urban Public Power Districts (statewide), Nebraska's city/village municipal energy providers (statewide)	High	Ongoing
1.6 Promote and support the installation of generators or generator hook-ups to provide redundancy power for local or state critical facilities.	1.6.1 Purchase back-up generators or generator hook-ups for facilities that are deemed critical to provide for the health & safety, and public welfare for the state's residents.	NEMA, UNMC, NSP, Nebraska's 93 Counties, Nebraska's 555 cities and villages		

Goal #2 Reduce or Eliminate Long Term Risk to Property/Environment				
Objectives	**Implementation Steps**	**Responsible Agency**	**Priority**	**Timeline**
2.1 Continue actions of CARC subcommittee	See CARC objectives and implantation steps			
2.2 Flood Mitigation	2.2.1 Continue digital Mapping Needs	NDNR FEMA	High	Ongoing(NDNR –focus)
	2.2.2 Update and keep current Nebraska Repetitive Loss Information	NDNR FEMA NEMA	High	Ongoing
	2.2.3 Coordination with Dept of Roads to determine roadway projects which could also contain a flood reduction component	DOR NEMA	Medium	Ongoing
	2.2.4 Host Community Outreach Events related to Flooding & High Water marks	NDNR FEMA NEMA	Medium	Silver Jackets- High Water mark initiative(CRS too) Ongoing
2.3 Transportation Infrastructure	2.3 Lead coordination efforts with major transportation groups in prioritizing modes of travel	NEMA & transportation corporations	Medium	Ongoing

2.4 Provide counties/communities with information on repetitive loss areas	2.4.1 Validate Rep Loss facilities and send letters to Communities	NDNR	Medium	Ongoing
	2.4.2 All hazard Planning efforts	NEMA NDNR	High	Ongoing

Goal #3 **Promote Public Awareness of Hazards and Response**				
Objectives	**Implementing Steps**	**Responsible Agencies**	**Priority**	**Timeline**
3.1- Summer severe storms	3.1.1- Participate Heat and Asthma awareness program- Health concerns	NEMA DNR CARC HHSS NWS	Medium	Ongoing
	3.1.2- Participate & publicize Water conservation awareness programs	CARC HHSS NWS	High	Ongoing
3.2 Winter severe storms	3.2.1- Participate & Encourage communities Winter Storm awareness campaigns	NWS NEMA NWS	Low	Ongoing
	3.2.2- Publicize Home/Car Kits brochures and public awareness	NWS NEMA	Low	Ongoing

	3.2.3- Support all on-going Health Concerns public awareness	NEMA HHSS	Low	Ongoing
3.3- Spring severe storms	3.3.1- Encourage and participate in School awareness programs	NEMA NWS	Medium	Annual Severe Summer Weather Contest- Ongoing
	3.3.2 Provide materials on Home mitigation actions public information	NEMA FEMA	Medium	Ongoing
	3.3.3 Update &Distribute materials on Wind shelter / Safe Room awareness	NEMA FEMA	Medium	Ongoing
	3.3.4 Promote Flash Flood public awareness	NEMA NEW NDNR	Medium	Ongoing
	3.3.5 Publicize NOAA Weather Alert Radio campaign	NEMA NWS	High	Ongoing
3.4 – Wild Fires Awareness	3.4.1 Promote and encourage Forest Fuels Reduction Program	NEMA NFS	High	Ongoing[7]

[7] Additions made to Objective 3.4 and Implementing Steps 3.4.1 are based on recommendations provided by FEMA-approved projects and Local Hazard Mitigation Plans, and the Nebraska Forest Service.

THIS PAGE INTENTIONALLY LEFT BLANK

COORDINATION OF LOCAL MITIGATION PLANNING

I. INTRODUCTION

A. Improved coordination among the state, federal and local agencies participating in the 2014 Plan Update was a direct result of the 2008 & 2011 planning processes. This included coordination among state agencies and other non-state entities that participated on the Planning Team. It is required by Federal Law that each local community have a FEMA approved hazard mitigation plan in order to receive funding from HMGP, PDM, or FMA. This regulation makes mitigation planning a priority for the State of Nebraska. Technical assistance is provided to local communities, by NEMA & FEMA for the development of mitigation plans. The focus on mitigation plan completion & coverage is an important part of the State mitigation plan, as the integration of local plans into the state plan provides much needed and required information to make the plan a success. In 2008, local community plans were scarce and it was a challenge to link information into the State mitigation plan. In the 2011 update information was markedly improved but integration of the information into the state plan remains a challenge. The approval of additional local plans has impacted and improved state-wide coverage and has given NEMA a better overall picture for the next State plan update.

B. The State offers extensive hazard mitigation technical support to local jurisdictions and agencies through a variety of venues. State funding of hazard mitigation planning and projects have been from either the Hazard Mitigation Grant Program (HMGP) or the Pre-Disaster Hazard Mitigation programs. The State Hazard Mitigation Officer (SHMO) oversees both funding programs and coordinates state mitigation planning efforts. Limited funds for planning are also available through the Flood Mitigation Assistance Program administered by the NDNR.

C. Several agencies have mitigation plans for specific disasters in the State. As previously stated, the NDNR most recently updated the State Flood Mitigation Plan in 2013, and CARC developed the latest draft of the State Drought Mitigation Plan in 1999.

II. INTEGRATION WITH OTHER PLANNING EFFORTS, PROGRAMS, AND INITIATIVES

Requirement §201.4(b): [The state mitigation planning process] should be integrated to the extent possible with other ongoing state planning efforts as well as other FEMA mitigation programs and initiatives.

A. The State of Nebraska is committed to the multi-agency mitigation strategy outlined in this plan. Section 4 provides additional detail on activities designed to improve coordination and integration efforts on all levels by describing Nebraska's updated mitigation goals, objectives, and actions. The Hazard Mitigation Grant Program and Pre-Disaster Mitigation Program are primary sources of funding for planning applications. The Flood Mitigation Assistance Program is administered through NDNR and can be used for flood mitigation plans. Specifications for funding available through HMA grant programs are listed in Section 4 of this plan.

B. NEMA has supplied and will continue to supply technical support to state and local jurisdictions. This is accomplished by presentations to private non-profits, state agencies, and local officials on hazard mitigation programs available. The presentations have emphasized the importance of mitigation for the reduction of losses from disaster situations. NEMA actively encourages local jurisdictions to develop hazard mitigation plans. In April of 2014 the FEMA G-318, Mitigation Planning Workshop for Local Governments was held for those interested in completing a local mitigation plan or those preparing for their update. The course was taught by three FEMA plan reviewers for the purpose of answering questions about the local mitigation planning process. Technical assistance has been available to local jurisdictions in the planning process from both a state and federal level. Technical assistance has been provided either by conference call or face-to-face interaction between NEMA, FEMA, and the Sub grantee. NEMA provides each community with information on which HMA Unified Guidance to refer to in their planning project, the link to the current FEMA *HMA Unified Guidance* is on the FEMA website and local communities are encouraged to utilize this tool. Another resource that NEMA directs applicants to is the *Local Mitigation Plan Review Guide*, released by FEMA in 2011, this guidance is also on the FEMA website. NEMA staff has been and will continue to be available to provide clarification on FEMA guidance's. NEMA's Mitigation Section provides program specific information related to federal and state mitigation policies, state mitigation priorities, program administration, funding sources, and project eligibility requirements. NEMA will continue to focus on providing technical assistance to local governments that are interested in developing or currently are in the process of developing their local mitigation plans.

C. Assistance Offered by Other State Agencies:

- Nebraska Department of Natural Resources:
  The NDNR has continued to be a key advocate for the development of multi-hazard local hazard mitigation plans. Historically, NDNR created hazard mitigation plans for local entities and continues to be a member of each HMP planning team. NDNR continues to provide technical assistance on flood hazard and mitigation alternatives for HMPs. By state law, specially §2-1501 through §2-15106, and §2-3201 through §2-3281, the NDNR has authority for all matters pertaining to floodplain management, including the National Flood Insurance Program (NFIP). The NDNR has provided technical assistance through outreach by publishing handouts and newsletters for public use.

- Climate Assessment and Response Committee (CARC)
  Member agencies of the Climate Assessment and Response Committee (CARC), previously described in this document, have provided timely and systematic data analyses, research results, and dissemination of information concerning drought and other severe climate occurrences to the governor and public at large. Member agencies include the NDNR, Nebraska Department of Agriculture, NEMA, Nebraska Department of Roads, Nebraska Department of Environmental Quality, Nebraska Forest Service, University of Nebraska, Nebraska livestock producers, and Nebraska crop producers. The CARC continues to provide information useful for mitigation planning purposes.

- Nebraska Forest Service (NFS)
  The Nebraska Forest Service (NFS) administers state and federal grant monies for fuel treatment on private property. Landowners with projects approved by the NFS can receive cost-share assistance (50% 75% or 100% depending upon ownership and location) for thinning forested tracts and for applying fire wise principals to properties. On a statewide basis, the NFS provides cost-share assistance to Rural Fire Departments for the purchase of firefighting equipment. Also available to Rural Fire Districts from NFS are all wheel drive vehicles for use as fire trucks. Rounding out the programs of the NFS are the Aerial Fire Suppression Program, Fire Planning, Community Wildfire Protection Plans, and Fire Prevention support. Fire Danger maps (by county) on the NFS website (www.nfs.unl.edu) are updated twice daily.

III. LOCAL PLAN INTEGRATION

Requirement §201.4(c)(4)(ii): [The section on the coordination of local mitigation planning must include a] description of the state process and timeframe by which the local plans will be reviewed, coordinated, and linked to the state mitigation plan. Update §201.4(d): [The] plan must be reviewed and revised to reflect changes in development, progress in statewide mitigation efforts, and changes in priorities.

A. Local Hazard Mitigation Plan Development: Since 2005, one of Nebraska's strategies has been to encourage the state's twenty-three Natural Resources Districts (NRDs) to lead the way with developing local/regional hazard mitigation plans. The Little Blue/Lower Big Blue Natural Resource District Hazard Mitigation Plan, for example, was approved in January of 2011 and covers the majority of Adams, Clay, Fillmore, Gage, Jefferson, Nuckolls, Saline, Thayer & Webster Counties; currently the LB/LBB NRD is beginning the revision process of their five year plan update. As previously explained in the State plan, the NRDs in Nebraska have unique statutory authority and are able to develop hazard mitigation plans and projects located within their jurisdictional boundaries. Currently 65 of the State's 93 counties are covered by an NRD developed plan. Reasons for assigning responsibility to the NRDs include:

- There are ninety-three counties in Nebraska and only twenty-three NRDs. The Regional approach of the NRD's makes for easier training and a more cost-effective way to create local hazard mitigation plans. The twenty-three NRD jurisdictional boundary lines, however, generally do not match with the county boundary lines. Nonetheless, NEMA & the NRD staff already have established working relationships with their community stakeholders in each jurisdiction.

- Many of the counties in Nebraska have a very low population density. The county emergency management offices that would normally take the lead in development of a county plan are often one-person offices, part-time managers, or one manager might be responsible for more than one county. By combining counties into larger jurisdictions, the emergency managers are able to efficiently assist in the process rather than acting as the lead.

- NRD staff has past knowledge of hazard mitigation planning principals due to previously accomplished flood mitigation efforts. There are now 14 NRD's with approved multi-jurisdictional hazard mitigation plans which has proven this strategy successful.

B. Natural Resource Districts throughout the state have been able to make mitigation planning a reality since the 2011 Plan Update. The biggest hurdle

for several communities, especially in rural areas, is providing the 25 percent local cost share for planning and project grants. The NRDs and NEMA have long recognized that multi-jurisdictional planning and project development has the potential to reduce the overall costs inherent in single jurisdictions plan development. In multi-jurisdictional plan development, the 25 percent cost-share can be apportioned among multiple jurisdictions thereby reducing the out of pocket cost for smaller communities.

C. Mitigation planning efforts in Nebraska continue to move forward. As of December 2013, nearly 100% of Nebraska's population is included in a Hazard Mitigation Plan. Though the state emphasizes the usefulness of multi-jurisdictional plans within the boundaries of the state's Natural Resource Districts, many local jurisdictions have developed or are developing plans independently from the NRD's. Currently there are 10 approved local-mitigation plans for individual counties or groups of counties within the state and six cities/villages local plans. Many jurisdictions have also decided to complete a multi-jurisdictional plan between counties rather than within an NRD. Currently there are seven multi-county plans that have been approved by FEMA or are currently being revised into one local approved planning effort. An example of a multi-jurisdictional mitigation plan independent from a Natural Resource District is the combination of the Counties of Perkins, Chase & Dundy into one local multi-hazard plan. Once all plans under development & revision are approved, nearly 100% of the population will be covered under a hazard mitigation plan. Below are a listing of FEMA approved plans, approved planning applications, and planning applications:

- Counties with current plans & revision in progress:
    - Chase, Dundy & Perkins Counties
    - Frontier, Hayes & Hitchcock Counties
    - Cedar-Dixon Counties
    - Hall County
    - Hamilton County
    - Seward County
    - York County
    - Quad County Multi-Jurisdictional Mitigation Plan; includes the counties of Franklin, Furnas, Harlan, and Red Willow
    - Region 23 Multi-Jurisdictional Mitigation Plan; includes the counties of Box Butte, Dawes, Sheridan, and Sioux
    - Region 24 Multi-Jurisdictional Mitigation Plan; Includes the counties of Cherry, Brown, Boyd, Rock, and Keya Paha.
    - Tri- County Multi-Jurisdictional Mitigation Plan; includes the counties of Knox, Holt, and Antelope

- Cities with approved plans
    - Beatrice
    - Elmwood

- Lexington
- Schuyler
- South Bend
- Wahoo

- Natural Resource Districts with approved plans
  - Lower Elkhorn NRD; includes the counties of Burt, Colfax, Cuming, Madison, Pierce, Stanton & Wayne
  - Central Platte NRD; includes the counties of Buffalo, Dawson, Merrick & Polk
  - Little Blue/Lower Big Blue NRD; includes the counties of Adams, Clay, Fillmore, Gage, Jefferson, Nucholls, Saline, Thayer & Webster
  - Lower Platte North NRD; includes the counties of Butler, Dodge, and parts of Saunders
  - Lower Platte South NRD; includes the counties of Cass, Lancaster, and parts of Saunders
  - Nemaha NRD; includes the counties of Johnson, Nemaha, Otoe, Pawnee, and Richardson
  - North Platte NRD; includes the counties of Banner, Garden, Morrill & Scottsbluff
  - South Platte NRD; includes counties of Cheyenne, Deuel & Kimball
  - Papio-Missouri River NRD; includes the counties of Burt, Dakota, Douglas, Sarpy, Thurston and Washington
  - Lower Loup NRD; includes the counties of Custer, Loup, Garfield, Wheeler, Greeley, Valley, Sherman, Howard, Boone, & Platte
  - Tri-Basin NRD; includes the counties of Gosper, Phelps & Kearney
  - Twin Platte NRD; includes the counties of Arthur, Keith, Lincoln, & McPherson
  - Upper Loup NRD; includes the counties of Hooker, Blaine, Logan, & Thomas

- Indian Tribal Governments with approved planning applications

  - Omaha Tribe of Nebraska & Iowa; includes the counties of Thurston (cities of Macy, Walthill and Pender), Burt, Wayne, and Cuming of the Omaha Indian Reservation.
  - Ponca Tribe of Nebraska; includes the counties of Knox; Village of Niobrara, Madison; City of Norfolk, Douglas; City of Omaha, Lancaster; City of Lincoln, Pottawattamie County; City of Carter Lake.

Requirement §201.4(c)(4)(iii): [The section on the coordination of local mitigation planning must include] criteria for prioritizing communities and local jurisdictions that would receive planning and project grants under available funding programs which should include consideration for communities with the highest risks, repetitive loss properties, and most intense development pressures. Further that for non-planning grants, a principal criterion for prioritizing grants shall be the extent to which benefits are maximized according to a cost benefit review of proposed projects and their associated costs. Update §201.4(d): [The] plan must be reviewed and revised to reflect changes in development, progress in statewide mitigation efforts, and changes in priorities.

A. NEMA and the Planning Team have determined criteria for selection of future planning grant recipients. Grants will first be awarded to high risk communities that are most susceptible to natural and manmade disasters. Susceptibility will be determined by looking at past impact of disasters on the community and infrastructure. Susceptibility will also be determined by looking at the population protected by the creation of a hazard mitigation plan. Plans that protect the largest number of people, such as multi-jurisdictional plans, will be a priority for the State. Plans which protect a larger amount of people are considered high risk and high priority for the state because of the number of lives protected. Grants will then be awarded to applicants submitting multi-jurisdictional plans with the highest total assessed property values within their identified planning areas. Grants will then be awarded to applicants proposing plan development by single county as the smallest multi-jurisdictional area. The state discourages single cities from having a stand-alone hazard mitigation plan, but does acknowledge the need for all communities to be addressed on an individual basis when assessing risk and risk strategies. Project selection will follow the same criterion as planning grants. A multi-jurisdictional project in a high population area with several vulnerable structures will have priority over a single jurisdiction project in a low population density area with few known vulnerable structures. Plan revisions will also be weighted in importance based on their plan expiration date and will be given a priority in the grant selection process if they are within 18-months of their plan expiration date.

B. The State Hazard Mitigation Plan is a living document and will change as the local hazard mitigation plans are approved and subsequently updated. NEMA will review proposed projects, seek recommendations and approval from the Governor's Task Force for Disaster Recovery (GTFDR), and take the appropriate measures to justify/legitimize their inclusion into the next update of the Nebraska Hazard Mitigation Plan. NEMA will take the lead in facilitating the identification of jurisdictions eligible for Hazard Mitigation Projects that enhance State goals and objectives.

C. Assisting communities with their mitigation projects will help to achieve the states goals and objectives listed in Section 4 of this plan. Before receiving

federal hazard mitigation grants, the applicant must have a FEMA approved local hazard mitigation plan. Assisting communities with their hazard mitigation plans brings to life the states goals of reducing or eliminating long term risk to human life, reducing or eliminating long term risk to property and or the environment, and promoting public awareness of hazards and responses. Once their plan has been approved, local communities may submit other applications for mitigation projects. NEMA will assist communities in their mitigation projects in order to continue moving forward towards the states goals and objectives.

D. NEMA Strategy for Grant Selection**:**

- The SHMO will request grant applications from every County Emergency Manager, Natural Resource District (NRD) and Public Power District (PPD) in the state. The application process for local hazard mitigation plans is the same as described in Section 4 of this plan for the Hazard Mitigation Grant Program and Pre-Disaster Mitigation Program.

- NEMA's Response and Recovery Section and members of the GTFDR will review the applications submitted for completeness, cost/benefit analysis accuracy, and for project and jurisdiction eligibility. Based on availability of resources, technical assistance will be provided by the following state agencies.

- The Nebraska Department of Roads engineers will complete environmental studies for building and demolition projects. The engineers provide wetlands, habitat studies, and mitigation information.

- The Nebraska State Historical Society will perform historic preservation studies based on records of Nebraska's historic buildings. For all construction projects, the State Historic Preservation Officer will be consulted prior to approval.

- The NDNR has eight Certified Floodplain Managers and three Professional Certified Engineers. The NDNR has and will continue to perform benefit/cost analyses for projects pertaining to floodplain management.

- NEMA staff reviews each application for compliance with FEMA regulations, as well as for eligibility and completeness.

- Only jurisdictions with FEMA approved hazard mitigation plans will be eligible for project grants. Ideally each proposed project should be identified in the jurisdiction's hazard mitigation plan and be reflective of the goals and objectives listed in the Nebraska Hazard Mitigation Plan.

Proposed hazard mitigation projects not covered in the local jurisdiction's plan will require submittal of documentation substantiating and justifying the project. Priority will be given to projects in communities with the highest risk, most repetitive loss properties, and future land development pressures.

- Nebraska's basic project criteria will mirror that of the Disaster Mitigation Act of 2000, which are as follows:

  1. The extent and nature of the hazard to be mitigated.

  2. The degree of commitment demonstrated by the applicant to reduce damages due to future natural disasters.

  3. The degree of commitment by the applying jurisdiction to support ongoing non-federal hazard mitigation measures.

  4. The extent to which the jurisdiction's technical and financial support is consistent with other assistance provided under the Disaster Mitigation Act of 2000.

  5. The extent to which prioritized and cost-effective mitigation activities producing meaningful and definable outcomes have been clearly identified by the jurisdiction.

  6. The existence of an approved hazard mitigation plan for the jurisdiction.

  7. The opportunity to fund activities that optimize the net benefits to society as a whole.

  8. The extent to which assistance will fund mitigation activities in small and impoverished communities.

- In addition, projects will be analyzed using the following parameters established by NEMA:

  1. Be in conformance with the State Mitigation Plan and local mitigation plan approved under 44 CFR Part 201;

2. The project must have a beneficial impact on the state as whole, whether or not the project is located in a designated disaster area.

3. Be in conformance with 44 CFR Part 9 floodplain management and protection of wetlands, and 44 CFR Part 10 environmental considerations;

4. Solve a problem independently or constitute a functional portion of a solution where there is assurance that the project as a whole will be completed. Projects that merely identify or analyze hazards or problems are not eligible. This does not preclude funding a study or analysis, as long as mitigation measure(s) actually result from the study or analysis and are part of the total project. The study and project can be done in phases.

5. Be cost-effective and substantially reduce the risk of future damage, hardship, loss, or suffering resulting from a major disaster. The grantee must demonstrate this by documenting that the project: addresses a problem that has been repetitive or a problem that poses a significant risk to public health and safety if left unsolved.

6. Will not cost more than the anticipated value of the reduction in both direct damages and subsequent negative impacts to the area if future disasters were to occur. Both costs and benefits will be computed on a net present value basis.

7. Has been determined to be the most practical, effective and environmentally sound alternative after consideration of a range of options. If possible, applicants should conduct or arrange for environmental and floodplain management reviews.

8. Contributes, to the extent practicable, to a long-term solution to the problem it is intended to address.

9. Considers long term changes to the areas and entities it protects, and has manageable future maintenance and modification requirements. (The maintenance costs may not be included in the cost of the grant application; the applicant shall assure that it can/will provide maintenance, as appropriate, following completion of the project).

10. Applicant participates in the NFIP. Federal grants cannot be given for acquisition or construction purposes if the site is located in a designated special flood hazard area which has been identified by the director for at least one year and the community is not participating in the NFIP. However; if a community qualifies for and enters the NFIP during the six month period following the major disaster declaration, a grant application may be considered by the State.

E. The Governor's Disaster Recovery Task Force will prioritize submitted project applications based on state goals and objectives. Applications designated as top priority projects will be submitted to the grant agency for approval.

IV. REVIEW OF LOCAL HAZARD MITIGATION PLANS

A. Once a local plan is submitted to the NEMA, it will be reviewed by the State Response & Recovery Program Specialist, State Hazard Mitigation Officer, or the Response and Recovery Section Manager using the local HM Plan Review Tool. The plan will either be returned to the author for revisions or the plan will be forwarded to FEMA Region VII for their initial review. The state review will be completed as soon as possible and no later than thirty days following the receipt of the plan. If the review will take longer than thirty days, NEMA will notify the submitting jurisdiction in writing of the delay and the reason for the delay. The following is the current process used to review and approve both new and updated plans, this process must be completed by the timeframe approved in the initial planning application unless granted an extension by FEMA:

- Draft of plan is submitted to NEMA for review;
- NEMA mitigation staff complete a formal review of the submitted plan;
- After inclusion of required plan elements, NEMA sends plan to FEMA Region VII for approval pending adoption;
- FEMA notifies NEMA of approval pending adoption of the plan by participating jurisdictions;
- NEMA notifies the submitting jurisdiction of pending approval;
- Participating jurisdictions adopt the plan and resolutions are sent to NEMA;
- NEMA sends adopted plan with resolutions to Region VII;

- FEMA grants final approval of plan and sends a notification letter to NEMA with date of approval on the letter;
- NEMA notifies the jurisdictions of approval;
- Plan Updates must be approved no later than five years after the initial approval date.

B. The planning process may begin after the application is approved and the grant is awarded by FEMA Region VII. The award allocations under the Hazard Mitigation Grant Program and Pre-Disaster Mitigation are 75% Federal and 25% Non-Federal (75/25); a more detailed description of these programs can be found in section 4 of this plan. The match sources for the non-federal share must be documented before the application is approved. As the planning activities are completed by the Sub grantee, reimbursements may be requested. Included in the request for reimbursement must be supporting documentation of the amount requested; these requests are processed by NEMA staff. Before the payment is made, NEMA staff verifies that all documentation has been received and there has been no duplication of benefits. The Sub grantee must send a report each quarter of the Federal Fiscal Year to the SHMO which reflects the current and ongoing progress of the project. If a time extension is necessary in order to complete the plan before the deadline, an extension request should be sent to the SHMO who will then request the extension from FEMA. When the project is complete and the final reimbursements have been made, the Sub grantee may request the project be closed out. Once the closeout request letter has been received, the state then puts together a closeout package. The closeout package from NEMA to FEMA consists of final inspection pictures and reports, financial record of the project, amount to be de-obligated, and a letter to FEMA requesting the project to be closed out. After the project has been closed out, financial records of the project must remain on file for three years per 44 CFR 13.42. During 2008-2011 HMGP dollars from federally declared Disasters 1674, 1739, 1770, and 1779, in the amount of $1,914,590, were awarded for the creation of hazard mitigation plans throughout the state. No PDM funds were awarded to the state of Nebraska during 2008-2011. Table 5.1 lists the 7% amount allocated for mitigation planning from disasters declared between 2008 and 2014.

C. Public Power District plans are submitted to NEMA and reviewed by the SHMO and HMP staff for completeness and sent to FEMA for review. The PPD's as annexes to the State Plan do not follow the same review tool as they are not considered local mitigation plans but addendums to the State plan and are therefore reviewed accordingly.

Table 5.1 HMGP Funds Obligated for use in Local Planning from disasters declared 2008-2013 (No projects have been approved for Federal Disaster 4156 as of February 2014. Accurate numbers will be included in the 2017 Plan Update)

Year of Federal Declaration	Disaster Number	7% Planning
2007	1674	$324,070
2007	1706	$0
2007	1714	$26,844
2007	1721	$0
2008	1739	$31,523
2008	1765	$0
2008	1770	$303,670
2008	1779	$124,125
2009	1853	$0
2009	1864	$0
2010	1878	$0
2010	1902	$11,250
2010	1924	$0
2010	1945	$0
2011	4013	$1,036,021
2011	4014	$0
2013	4156	$0

D. Local jurisdictions will continue to play a critical role in the creation & maintenance of multi-jurisdictional local hazard mitigation plans. In the case of multi-jurisdictional plans, local jurisdictions must be able to show direct public involvement and direct contribution to the plan's development. Community participation must involve input on potential hazards and project selection, fulfilling public participation requirements. There must be community representation at planning or task force meetings and letter campaigns encouraging key stakeholder attendance. Meeting times and locations must be advertised to the public in a local or regional newspaper to increase public awareness.

E. Assisting local jurisdictions with the development of hazard mitigation plans directly correlates to the goals and objectives of the 2014 Plan Update. As reiterated through this plan, in order for any local entity to receive funding from any HMA program, they must have a FEMA-approved local mitigation plan. The existence of the local hazard mitigation plan is the first step in reducing the loss of life; and damages to property.

V. LINKING LOCAL PLANS WITH THE STATE PLAN

A. With a larger number of counties having approved hazard mitigation plans, it is easier to integrate the state plan with the local plans than it was at the time of the

2011 Plan Update. Integration of local mitigation plans with the state plan works towards the common goal of reducing future disasters. The State of Nebraska encourages local communities to utilize the most current version of the State of Nebraska Hazard Mitigation Plan as a resource when developing their own plans. It is important for local jurisdictions to consider the states goals and objectives when developing certain parts of their own plan. Integration of local plans with the state plan is important for successfully mitigating against future hazards. Information on how local planning efforts have been linked to the state plan can be found below. NEMA also recognizes the importance of using data developed through local planning processes in the state plan. Local data is more relevant to community needs, desires, and capabilities. For each future state plan update, the state will review available local plans and consider the following for incorporation into the state plan:

- Identification of hazards and risk assessments
- Compilation of property value and populations at risk from the different hazards
- Identification of locally important critical facilities and their vulnerability
- Identification of rapidly developing communities
- Evaluation of local mitigation goals, programs, policies, regulations, and authorities, such as land use regulations, comprehensive plans, zoning controls, etc.
- Compilation of the local costs of disasters and the demonstrated value of preexisting mitigation initiatives
- Identification of local proposals for mitigation initiatives
- Implementation status of local mitigation initiatives

B. This information will be used to update the statewide mitigation strategy, support the statewide risk assessment process, and create a comprehensive, statewide inventory of state and local critical facilities. Identification of jurisdictions with development pressures and assessment of the hazard mitigation plans in those jurisdictions will be an important process.

C. Nebraska must provide a basis for ongoing documentation and assessment of local mitigation strategies and actions. This will facilitate the efforts of NEMA to prioritize and select local mitigation actions for funding.

D. The Planning Team was able to incorporate local plans into state hazard mitigation goals by providing a list of potential and ongoing projects. A table stating actions for the 2014 Hazard Mitigation Plan can be found in Section 4: Attachment 2. All projects listed, further the goals, objectives, and strategies identified in the 2014 Nebraska Hazard Mitigation Plan. Attachment 1 of this section provides a listing of examples of current projects funded by FEMA grant money that conform to the goals and objectives of the State of Nebraska Hazard Mitigation Plan as well as Action items from FEMA approved local mitigation plans throughout the state. The goals, objectives, and actions identified in this attachment are examples of how local mitigation plans can be linked to the State Plan.

E. As of December 2013, all 93 Nebraska counties are covered by some type of local hazard mitigation plan. The majority are multi-jurisdictional, multi-hazard plans that are shared with neighboring communities and counties. All attempts are being made to link the hazards identified in the state plan to the local plans, as well as correlating local and state objectives. Approximately 30 local plans are in effect for the state and many are in the five year review cycle. In addition, the public power district plans follow the three year cycle with the state plan and are added as annexes according.

VI. CHALLENGES TO INTEGRATION

A. Staffing on the state level remains a challenge to plan integration in the 2014 Plan Update. Many state staff members have divergent responsibilities. Nebraska staffing capabilities have been hindered by financial constraints. Thus, a thorough integration of local plan opportunities may have been missed in this update during this time period.

THIS PAGE INTENTIONALLY LEFT BLANK

Goal 1: Reduce or eliminate long term risk to human life	State Action Item	Current Project/Potential Action item
Objective 1.1: Promote and support the development of safe rooms in areas highly vulnerable to wind damages		Lower Big Blue NRD is working a residential safe room project for over 40 residents in Jefferson, Saline & Gage Counties; as an action item in the Lower Big Blue NRD Multi-Jurisdictional Hazard Mitigation Plan. The safe rooms would reduce the risk of death or injury in areas vulnerable to tornadoes, severe thunderstorms, and other hazard. Construction of safe rooms directly conforms to Goal 1, Objective 1.1; of the State of Nebraska Hazard Mitigation Plan.
Objective 1.4: Improve public warning system for floods, tornadoes, dam or levee breach/failure, severe storms, etc.		Cedar County & Lancaster County have been approved for HMGP funds to replace old sirens or add new sirens to communities within their jurisdictions. The installation of sirens in these communities directly conforms to Goal 1, Objective 1.4; of the State Hazard Mitigation Plan by providing adequate warning in the event of a hazard.
Objective 1.5: Reduction or elimination of power outages		Completion and approval of Public Power District mitigation plans as appendices to the state plan allowed for PPDs throughout Nebraska to apply for FEMA mitigation grant money. Once all projects are approved and completed, the risk of power outages during severe weather will decrease. Completion of these projects directly conforms to Goal 1, Objective 1.5; of the State Hazard Mitigation Plan.
Objective 1.6: Promote and support installation of generators or generator hookups to provide redundancy for critical facilities		Using funds from FEMA-DR-1924, the Nebraska City Utilities installed three new generators as back-up for the Waste & Water treatment plants and Power plant. All three facilities are critical for the sustainment of life in this city located right beside the Missouri River. Completion of the project assures continuity of operation for the waste, water & power for Utility company and the city residents during any future hazards. The completion of this project directly conforms to Goal 1, Objective 1.6; of the State of Nebraska Hazard Mitigation Plan.

Goal 2: Reduce or eliminate long term risk to property and or the environment	State Action Item	Current Project/Potential Action item
Objective 2.1: Continue actions of Climate Assessment and Response Committee (CARC)		Establishing a plan to reduce total consumption of groundwater resources by irrigators of agricultural land, District wide, and identifying water saving irrigation projects or improvements such as sprinkler or soul moisture monitoring; is listed as an action item in the Hayes County Hazard Mitigation Plan. The hazard addressed by the action is drought. The Climate Assessment and Response Committee (CARC) is further discussed in Section 4 of the State of Nebraska Hazard Mitigation Plan. Irrigation/Groundwater Management Plan and Practices conforms to Goal 2, Objective 2.1; of the State of Nebraska Hazard Mitigation Plan.
Objective 2.2: Flood Hazard Mitigation		The City of Valentine in Cherry County was awarded a FEMA grant using funds from FEMA-DR-4013. The project entails five segments that will address the localized flooding during severe storms that cause drainage and run-off issues. Once complete the City will have less potential for ponding of storm waters in the city and on private property, and meet the NDOR recommended requirements for 10 year storm conveyance. The City is under the Region 24 Multi-Hazard Multi-Jurisdictional Mitigation Plan. The project also conforms to Goal 2, Objective 2.2; of the State of Nebraska Hazard Mitigation Plan.
Objective 2.3: Transportation infrastructure improvement		The City of Blair identified transportation drainage improvements to raise and widen the main road to the City's Water & Waste Treatment Plant along the Missouri River. The purpose of the projects would be to improve the main roadway and drainage to prevent damage to the facility and continued access despite any flooding or disaster related hazard. Completion of the project conforms with the goals and objectives of the Papio MO NRD

		Multi-Hazard Mitigation Plan as well as Goal 2, Objective 2.3; of the State of Nebraska Hazard Mitigation Plan.
Goal 3: Promote public awareness on hazards and responses	**State Action Item**	**Current Project/Potential Action item**
Objective 3.4: Promote public awareness of wildfire issues		The Region 23 & 24 Multi-Hazard Multi-Jurisdictional Hazard Mitigation Plan have identified working to become a Firewise Community/USA participant through the Nebraska Forest Service and US Forest Service as one of their ongoing actions. The purpose of this is to educate homeowners, community leaders, planners, developers, and others in the effort to protect people, property, and natural resources from the risk of wildfire land. The Firewise Communities approach emphasizes community responsibility for planning in the design of a safe community as well as an effective emergency response, and individual responsibility for safer home construction and design, landscaping, and maintenance. This action when completed directly conforms to Goal 3, Objective 3.4; of the State of Nebraska Hazard Mitigation Plan.
Objective 3.1: Promote public awareness of drought issues; Objective 3.2: Promote public awareness of severe winter storm/ice issues; Objective 3.3: Promote public awareness of severe thunderstorm issues; Objective 3.4: Promote public awareness of wildfire issues.		Public awareness/education is identified as an action item several of the State's Multi-Jurisdictional Hazard Mitigation plans. This goal will be accomplished through activities such as outreach projects, distribution of maps and environmental education, increasing public awareness of natural hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. In addition, educate citizens on erosion control and water conservation methods and educate residents on response and rescue plans for all hazard types. Completion of this action item increases knowledge to new comers to the area as well as the elderly in how to react when an

		event is going to occur or is occurring. Education will reduce or prevent damage to property or prevent loss of life or serious injury. Providing public awareness to the county directly conforms to Goal 3, Objectives 3.1,3.2,3.3,3.4; of the State of Nebraska Hazard Mitigation Plan.
Objective 3.2: Promote public awareness of severe winter storm/ice issues; Objective 3.3: Promote public awareness of severe thunderstorm issues; Objective 3.4: Promote public awareness of wildfire issues.		Public awareness/education is identified as an action item several of the State's Multi-Jurisdictional Hazard Mitigation plans. This goal will be accomplished through activities such as outreach projects, distribution of maps and environmental education, increasing public awareness of natural hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. This action item coincides with Goal 3, Objective 3.2, 3.3, 3.4; of the State of Nebraska Hazard Mitigation Plan.

**Action items identified in this attachment were taken directly from FEMA approved local mitigation plans in the State of Nebraska.

PLAN MONITORING

Requirement §201.4(c)(5)(i): [The standard state plan maintenance process must include an] established method and schedule for monitoring, evaluating, and updating the plan.

I. CHANGES IN THE PROCESS SINCE THE 2008 PLAN

A. Improved coordination among the state, federal and local agencies participating in the 2014 Plan Update was a direct result of the 2011 planning process. This included coordination among state agencies and other non-state entities that participated on the Planning Team. This section discusses how monitoring process of the State Plan has changed since the 2008 & 2011 plan updates. The state partially followed the process outlined for monitoring, evaluating, and updating the plan recommended in 2008. During much of the time between 2008 and 2014, the State Hazard Mitigation Officer (SHMO) and the Nebraska Emergency Management Agency (NEMA) have been involved in responding to 11 federally declared disasters. This factor significantly inhibited the state's ability to coordinate regular meetings of Planning Team or actively monitor the implementation of hazard mitigation strategies as outlined in the 2008 plan. Although formal monitoring activity might not have occurred on a regular basis, disasters during this time did bring together state agency staff as well as the GTFDR. NEMA continued to be active between 2011 and 2014 with three disasters declared for the State with 4013 being the catastrophic flooding of the Missouri River. The Response and Recovery Section at the Nebraska Emergency Management Agency facilitated the 2014 Plan Update.

B. The Planning Team determined that the 2014 Nebraska Hazard Mitigation Plan would benefit from increased detail, analysis of additional hazards in the HIRA risk assessment, integration of local plans into the state plan, and more specific monitoring activity. A specific schedule for plan monitoring was not possible from 2011-2014 due again to the number of disasters declared, including the non-declared disasters (wild fires of 2012), staff changeover, and the limited staff available in the HMP Unit.

II. PLAN MONITORING, EVALUATION, AND UPDATING

A. The Nebraska State Hazard Mitigation Plan is a living document and will be reviewed and updated on a regularly scheduled basis, as outlined below. A more specific schedule for monitoring the plan has been created for the 2014-2017 Plan Update. Meetings will be held to review and update the plan on different occasions. The need for meetings will be dependent on the current happenings in the state. The following lists when meetings will be held and who will be requested to attend them. The details of the meetings are described more below:

- Meetings will be held at minimum on an annual basis each June; attendants of the annual meeting include the Planning Team/GTFDR as well as any respective agencies as determined by the planning team.

- Meetings will be held within three months after the declaration of a Federal disaster in the State of Nebraska; attendants of meetings after disaster declarations will include the Planning Team/GTFDR as well as any respective agencies considered necessary to assess the needs and vulnerabilities of the state.

- Meetings will be held as seen fit by the SHMO & NDNR planner; attendants of these meetings will be specific agencies or organizations needed to fulfill the goals, objectives, and actions of the State of Nebraska Hazard Mitigation Plan. The SHMO will conduct reviews of the plan within the NEMA mitigation section to determine the need for these meetings.

- Meetings will be held when required or needed due to changes in Federal or State Legislature and/or Regulations that impact the hazard mitigation program within the State of Nebraska. The GTFDR, other NEMA sections, and/or state agencies and departments may be asked to review the plan based on legislative changes, FEMA policy changes, or state priorities that might directly impact the continuity of the hazard mitigation program.

B. The state maintains responsibility for accountability of programs affecting the citizens of Nebraska. As a continuing and ongoing process, NEMA is the lead agency for the development and the review of the State Hazard Mitigation Plan. Changes in hazard mitigation programs, funding availability, or a major disaster might prompt future modifications to this plan.

C. This section describes the actions that will be taken by NEMA, the Planning Team/GTFDR, and participating agencies to monitor implementation of the Nebraska Hazard Mitigation Plan and to evaluate its effectiveness in reducing the vulnerability of Nebraska to future disasters. In addition, the plan will be updated to reflect changing conditions in the state and if necessary the goals, objectives, and actions will be reprioritized. The plan monitoring, evaluation, and updating process assesses progress made in plan implementation, emphasizing the state's efforts to achieve the plan's mitigation goals, objectives, and actions. Monitoring, evaluation, and updating the state plan will occur through regularly scheduled meetings of the Planning Team/GTFDR. They will meet at least annually in June, with flexibility, and following major disasters. The meeting will be for the purpose of reviewing implemented actions (e.g., status, successes, and challenges), coordinating activities, addressing new business or opportunities, and reviewing the progress of local plan development. Nebraska's SHMO will be responsible for directing the annual plan reviews to examine the state's mitigation programming more comprehensively.

D. Annual reviews will involve plan evaluation in the context of the state's current hazard environment, vulnerabilities, funding availability and needs, and federal and state

policy changes. The Planning Team/GTFDR will be responsible for the annual plan review, focusing on the following questions (criteria) to evaluate the plan:

- Does the state have the resources it needs to continue implementing the plan as written (e.g., funding, technical, and staffing resources)?
- Are there new hazards that threaten the state or new vulnerabilities that require a shift in hazard priorities?
- Are the goals and objectives still relevant?
- Have there been any changes in state capabilities (gained or lost)?
- Are the actions being implemented as planned?
- Are the actions helping to meet goals and objectives?
- Can action effectiveness be documented?
- Has the process to monitor and evaluate the plan been effective?

E. Information from annual meetings will be collected for incorporation into the three-year plan update. Changes or amendments to the plan may be made prior to the official plan update as necessary to address significant changes in priorities or federal and state regulations, statutes, or policies. Records of each annual meeting will be kept on file at NEMA. Documentation from these meetings will include the meeting agenda, sign-in sheets, minutes, documents that were handed out at the meeting, as well as recommendations of how to keep the plan up to date. Records will be kept to ensure a complete review on the status of the plan. Changes made after each annual review will be submitted to FEMA as part of the official three-year plan update or as required by FEMA.

F. The 2017 Plan Update will build on the vision and foundation established in the 2005 Nebraska Hazard Mitigation Plan and the 2008, 2011, and 2014 Plan Updates. Each section will be assessed, revised as necessary, and reviewed. During updates, respective state agencies will conduct a series of reviews on different parts of the plan. Agencies involved in the 2014 Plan Update will be welcome to input ideas and suggest changes to the 2017 Plan Update based upon mitigation initiatives undertaken during the planning period. During plan updates, state

agencies will do the following in order to thoroughly review each section and revise if necessary:

- Review the risk assessment;
  - Compare hazards identified in local plans with the hazards identified in the state plan. Assess hazards eliminated from state plan for reasons to include them in the next plan update. Record new occurrences of hazards throughout the state and any other information relevant to the risk assessment.
- Review the vulnerability assessment and loss estimates;
  - Asses any new vulnerability to hazards identified in the risk assessment as well as an updated estimation of potential losses.
- Review the States goals and objectives;
  - Compare the state goals and objectives with the goals and objectives in local mitigation plans. Evaluate the goals and objectives from the most recently approves State of Nebraska Hazard Mitigation Plan and make necessary changes to meet the needs of the State.
- Review the hazard mitigation projects and initiatives;
  - Review completed mitigation actions for examples of the projects proving to be cost effective. Review identified action items and mark completed, ongoing, deferred, or deleted. Identify new action items as necessary.
  - Review existing state and federal programs to ensure that the state is taking full advantage of possible funding sources in its implementation of the State hazard mitigation program;

G. An analysis of completed projects shall be performed to determine the effectiveness of past hazard mitigation efforts. Specifically, this analysis will be done after each Presidential Disaster Declaration. Mitigation actions will be labeled completed, ongoing, or deferred. As the plan is reviewed in years between updates, mitigation strategies no longer effective will be changed or removed as necessary and replaced with strategies pertinent to the current happenings. Any actions that respective agencies decide will not be implemented for any reason will be classified as deleted. Conducting an analysis of completed projects after each declaration is beneficial in seeing the effectiveness of the states mitigation strategies. This information as well as information from local mitigation plans will be used in conjunction with each plan update.

H. Plan maintenance and monitoring is an ongoing effort involving updates to the plan, successes and challenges of plan implementation, and changes in policies and procedures. Progress in the ongoing effort to implement all aspects of mitigation programs within the State will only occur if a clear-cut schedule for monitoring the plan and mitigation activity is in place.

III. SCHEDULE FOR MONITORING ACTIVITY

A. The SHMO will lead the annual review/update of the Nebraska Hazard Mitigation Plan. Annual meetings of the Planning Team/GTFDR will continue to be held each June to discuss the effectiveness of the Nebraska Hazard Mitigation Plan currently in effect. The meetings will address project accomplishments and deficiencies and any strategies that can be used to strengthen the plan. Past goals and objectives will be analyzed and assessed. The Planning Team/GTFDR will make recommendations for amendments based on agency and stakeholder input.

B. Once the plan is approved by FEMA in 2014, a meeting will be held the following June. As a part of the subsequent annual review, the SHMO will identify sections needing revised and ensure that completed revisions are drafted in time for final approval by the Planning Team/GTFDR. If changes are warranted, FEMA - Region VII will be notified of the changes and sent copies.

C. The SHMO will also be responsible for directing post-disaster review to consider if the current goals, objectives, and action items in the plan still address the current needs of the state. Staffing issues and simultaneously occurring disasters made it a challenge to submit Post-disaster updates during the 2011-2014 planning period. Future post-disaster updates will be written as annexes to the current HMPG plan and later forwarded onto the GTFDR for final comments and approval. Amendments will be forwarded to FEMA Region VII.

D. The agencies of the GTFDR/Planning Team will participate in the revision of the plan each June or as necessary in order to ensure the following:

- That the Nebraska Hazard Mitigation Plan includes no conflicts with the participating agencies' on-going activities and goals;
- That proposed projects included in newly submitted local plans complement the state's strategy as stated in the 2014 Plan Update;
- That projects and initiatives being undertaken by each participating agency are reflected in the Nebraska Hazard Mitigation Plan; and
- That participating agencies are ensured input in the planning and the assessment process by annually reviewing the state hazard mitigation goals and objectives.

E. In addition, each participating agency of the GTFDR/Planning Team will fulfill their responsibilities for updating and maintaining the Nebraska Hazard Mitigation Plan by doing the following:

- Cooperate with requests from the GTFDR/Planning Team for updated or new technical data relevant to the hazard mitigation plan;

- Assign staff, as indicated or on request, to attend meetings of the GTFDR/Planning Team;

- Propose mitigation actions to reduce vulnerabilities to future disasters and endeavor to implement the proposed mitigation actions as the resources and/or opportunities to do so become available;

- Cooperate with efforts for program coordination or consolidation when appropriate; and

- Serve as a technical resource for local mitigation planning groups, if needed.

F. Development of the 2017 Nebraska Hazard Mitigation Plan and all future plan updates will be based on evaluation of the effectiveness of the 2014 Nebraska Hazard Mitigation Plan. The planning team determined that original efforts to monitor the plan were effective but needed to be more specific. As listed above, the plan will be reviewed each June at minimum. As necessary, meetings will be held more frequently based on the determination of the SHMO. Other public agencies will also be encouraged to attend the annual meeting in order to provide input on the current status of the plan. There was minimal public involvement for the 2014 Plan Update. NEMA realizes the importance of public involvement for mitigation planning and developing mitigation priorities, this will be taken into account in the next plan update. Aside from the annual meeting, planning meetings will be conducted if needed after a Presidential Disaster Declaration, every three years as required, and when changes are warranted. In addition to the yearly meeting, NEMA staff will review and asses the plan on a more regular basis to determine the need for updates.

Requirement §201.4(c)(5)(ii) and (iii): [The standard state plan maintenance process must include a] system for monitoring implementation of mitigation measures and project closeouts. [The standard state plan maintenance process must include a] system for reviewing progress on achieving goals as well as activities and projects in the mitigation strategy.

IV. MONITORING PROGRESS OF MITIGATION ACTIVITIES

A. This sub-section describes the state's system for monitoring implementation of mitigation actions and reviewing progress toward meeting plan goals. It also describes changes in the system since the Nebraska Hazard Mitigation Plan was approved in 2011. The system described below is similar in many ways to the previous one. It still relies on annual meetings with annual plan reviews, and the lines of responsibility are similar to those in the previous plan. It also uses a structured mitigation strategy to review overall progress toward meeting goals. The Planning Team decided that despite problems with using the system during the last plan cycle, these were important elements to keep. These elements will result in improved resource funding and staffing. Heightened awareness of disaster impacts will help to keep the Planning Team on track and on schedule. The primary changes in the updated system include the methodology for tracking progress of mitigation actions.

B. NEMA will serve as the grantee for project management and accountability of funds in accordance with 44 CFR Part 13. Sub-grantees will be held accountable to the grantee for funds that have been awarded to them. Because most mitigation projects across the state will be funded by the HMGP or the Pre-Disaster Mitigation Grant Programs, the SHMO and NEMA staff will track mitigation projects; monitoring costs, progress, project modifications, and track project timelines. The State of Nebraska ensures all Hazard Mitigation Assistance (HMA) grants are implemented in accordance with the 44 CFR and the current FEMA guidance. The current FEMA guidance is *Hazard Mitigation Assistance Unified Guidance: Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, Flood Mitigation Assistance Program* dated July 12, 2013. The SHMO will oversee the following activities:

- Quarterly Reports:

  Require quarterly progress reports containing information on the general project progress, fiscal expenditures, project modifications, project timelines, and any other data deemed necessary in order to maintain an understanding of the project. Quarterly reports must be turned in by the sub-grantee within 30 days of the end of each quarter of the Federal Fiscal Year. All sub grantees are required to submit a quarterly status report to the SHMO on all approved projects that have not had final (Federal or other share) payment made. The SHMO will notify sub grantees when the first report is due. Reports are due the 15th day of the month following the end of the quarter on the following schedule until the project is completed. The sub grantee will provide all the information contained in the report, such as any change in authorized agent, status of the project, change in

cost status, percentage of project completion and the anticipated completion date for the project using the progress report provided by NEMA. The following are the dates which sub grantees are expected to submit project quarterly reports to NEMA:

2nd Qtr. January - March Due April 15th to NEMA Due April 30th to FEMA
3rd Qtr. April – June Due July 15th to NEMA Due July 30th to FEMA
4th Qtr. July – September Due October 15th to NEMA Due October 30th to FEMA
1st Qtr. October – December Due January 15th to NEMA Due January 30th to FEMA

- Audits:

Request an audit if the project has significant changes or does not stay within the projected budget. Audits of NEMA and sub grantees will be conducted in accordance with 44 CFR Part 14, (Circular A-133). Audits will be organization wide and may be conducted annually or biannually. The audit of NEMA will be conducted by the Nebraska Auditor of Public Accounts. Audits of sub grantees will be conducted as specified in 44 CFR Part 14. NEMA will determine whether sub grantees have met the audit requirements by: Maintaining records of all sub grantees provided $500,000 or more in disaster assistance funds. Notifying those named sub grantees, in writing, that certification is required to show either that $500,000 or more was, or was not received by the sub grantee, during the fiscal year of the sub grantee. NEMA will review, or contract for a review, the audits of sub grantees as they are submitted. Discrepancies involving State and/or FEMA funds will be resolved by NEMA. NEMA is required to determine whether the sub grantee spent Federal Assistance Funds in accordance with applicable laws and regulations. This determination will be made by a review of the claims, vouchers and other documentation submitted by the sub grantee to NEMA as well as the review of the audit report.

- Benefit Cost Analysis (BCA):

Require a review of the cost-benefit analysis of the project if new or up-dated material indicates that initial cost-benefit analysis figures may not be accurate.

- Complete Project Management:

Review requests for partial payment, time extensions, changes in the scope of work (SOW), and request for cost overruns. After work has been completed on the approved project, the sub-grantee can then submit a payment request to the SHMO. Payments can be reimbursed as long as they are submitted with the proper documentation. If a project is delayed for any reason, the sub-grantee must request a time extension. The SHMO then submits a request for this time extension to FEMA with proper justification. It is important for the sub-grantee to acknowledge that FEMA does not have to approve all requests for extension; this should be taken into consideration when completing the initial project application and timeframe. Time extensions will be evaluated and forwarded to FEMA no later than 60 days prior to the end of activity completion timeframe and will be considered on a project-by-project basis. If a change in the SOW is necessary, the request must be submitted in writing and approved before the change can be

implemented. The SHMO will require justification of costs that exceed the cost estimates of the original project. Costs that exceed the original cost estimate amount will be considered a cost overrun. Cost overruns may be due to a change in the Scope of Work (SOW) or a change in activities within the scope of work. PDM and RFC will not provide additional funding for cost overruns. For HMGP, FMA, and SRL federal funds may be used for cost overruns. FEMA must approve any cost overruns before implementation; the project must also still meet project eligibility requirements.

- Closeout Process:

Request close-out of completed projects and, working with the project point-of-contact and NEMA Fiscal Officer; complete all necessary paperwork to close out projects. Close-outs for HMA grant projects were previously a challenge because of staff changes and the abundance of projects needing to be closed out. Experience closing out projects as well as technical assistance from FEMA, has enabled NEMA mitigation staff to formulate a close-out procedure, adding a sense of efficiency to the process. The sub grantee (applicant) shall notify the State in writing once a project has been completed. In addition; the State requires that all applicants submit a detailed final closeout report. This report shall include, but is not limited to; date of disaster declared, application and grant approval dates, any amendment information as it applies, local match information. Timeline of key milestones, all pertinent financial information and a copy of the applicant's checkbook as it applies to the life of the grant. This will cause a review of the documentation for all expenditures and reimbursements. The SHMO will ensure that all claims and costs were eligible and that work performed was in compliance with the approved project application; that all eligible funds have been paid to the sub grantee; that all work was completed according to FEMA requirements; that all costs were incurred as the result of eligible work; that all work was completed in accordance with provisions of the FEMA-State and State local agreements; that all payments were made according to Federal and State legal and regulatory requirements; that no bills are outstanding; and that no further requests for funding will be made for the project. Final site visits will be made to project area by the Response and Recovery inspector or photographs may be furnished by applicant during close out if NEMA is unable to do a site inspection. Inspections are required to ensure completion of project is in conformance with the project scope of work. Acceptance of photographs in lieu of site visits will be made at the discretion of the SHMO. In the case of buy-outs of floodway and floodplain property, the recording of the required restrictive covenants in the property documents are required to be submitted to FEMA and will be checked for accuracy. After the review is completed a close-out letter will be sent to FEMA Region VII recommending the project be closed. This process must occur within 90 days from the project completion. Official close-out by FEMA Region VII will terminate the process.

- Record Retention:

Maintain an individual file on each project that contains records concerning project financials, timelines, completion dates, and milestones. In compliance with State of Nebraska law and procedures and with §13.42, Grantee must retain records, including source documentation to support expenditures/costs incurred for management costs, for three (3) years from the date of submission of the final HMGP Financial Status Report to FEMA. The Grantee is responsible for resolving questioned costs that may result from audit findings during the 3 year record retention period and returning any disallowed costs from ineligible activities

C. The majority of new local hazard mitigation plans and plan updates being developed within the state will be funded through HMGP or the PDM-C grant funding. Therefore, the SHMO will maintain oversight of NEMA staff in the following activities:

- Review submitted hazard mitigation planning applications and Local/Regional Hazard Mitigation Plans.

- Assist local/regional jurisdictions and contractors with the development of their hazard mitigation plans.

- Act as a liaison between FEMA and the local/regional jurisdictions during the review process.

- Be responsible for conducting on-site visits and monitoring the progress of projects to ensure applicants are implementing their hazard mitigation plans and project development is being implemented as planned.

- Hazard Mitigation planning staff will assist the SHMO in the performance of all required state and federal hazard mitigation duties.

- Hazard Mitigation Planning staff will work with the SHMO and NEMA's Response & Recovery Section to determine if changes will be required to each section of the Nebraska Hazard Mitigation Plan.

V. SUCCESSES AND CHALLENGES TO MONITORING

A. For the 2014 Plan Update, information on the progress in implementation of the 2011 Plan's action strategies was informally solicited from the lead agency representative associated with each. Continued regular meetings of the Planning Team should facilitate the gathering of this information in the future.

B. As the occurrences of the hazards identified in this plan are unpredictable, the plan itself will continue to evolve and be evaluated. With this, the mitigation strategies and maintenance process will be labeled as ongoing. The mitigation strategies and maintenance of the plan provide direction for the future of mitigation activities within the state and the process will continue until changed for any valid reason.

C. At the time of the 2011 Plan Update, NEMA staffing limitations prevented a specific monitoring and evaluation schedule. As staffing limitations are still an issue, they have again been addressed in the 2014 Plan Update. Staffing limitations are controlled funding and the HMP staff size has not increased for NEMA, so this will still be a challenge moving forward.

D. The interim 2011-2014 was successful for many local governments across the State of Nebraska. During this time, the number of FEMA approved local hazard mitigation plans increased substantially from the number of plans approved by the 2011 Plan Update. Disasters in 2011-2014 occurred simultaneously. Because of these approved local-mitigation plans, many local governments which had not been eligible prior to the 2011 plan update, are now eligible to receive post-disaster mitigation funding. The frequent occurrences of federally declared disasters across the State of Nebraska continue to maximize post-disaster funding available to aid the completion of these plans during the 2014-2017 time period. Finally, continuing disaster declarations and manpower issues have had an impact on the ability of NEMA's office to efficiently expedite normal operations.

E. The state has made progress on completing and implementing mitigation actions, despite staff limitations. Many of the completed actions were those that could be implemented within existing state agency programs and budgets, which will remain a focus in identifying effective and achievable mitigation actions in the future. Completed actions are summarized in the 2014 Goals, Objectives, and Actions (Attachment 2 to Section 4).

F. Tracking future progress should be improved by more active participation by participating agencies in the plan monitoring process. This participation should improve with the more specific schedule of monitoring described in this section. It would be beneficial for participating agencies to notify the other participating agencies of any staff changes that directly affect the planning process in order to maintain successful interagency communication.

THIS PAGE INTENTIONALLY LEFT BLANK