SAND2008-2020P

NISAC Overview

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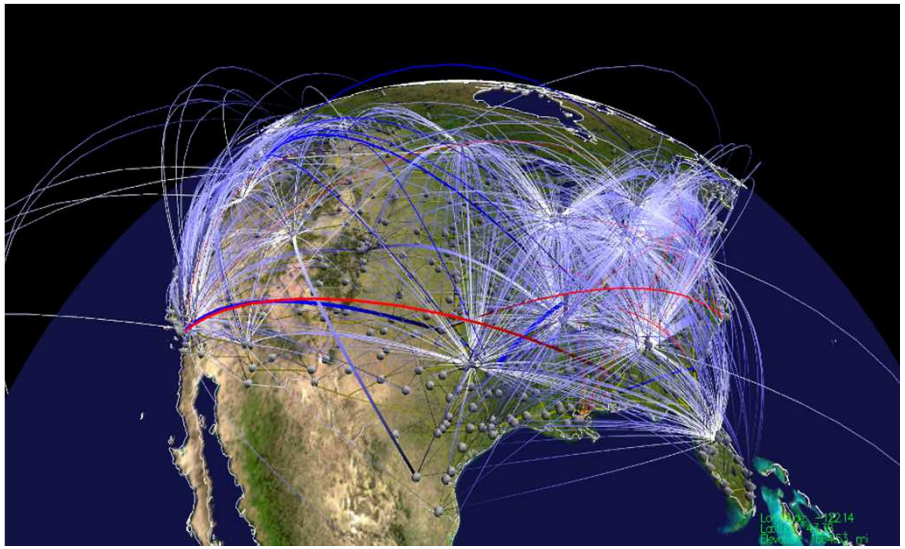
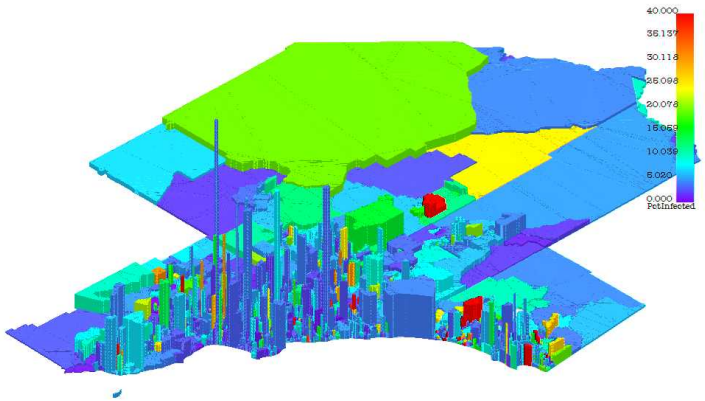
Who We Are and Our Mission

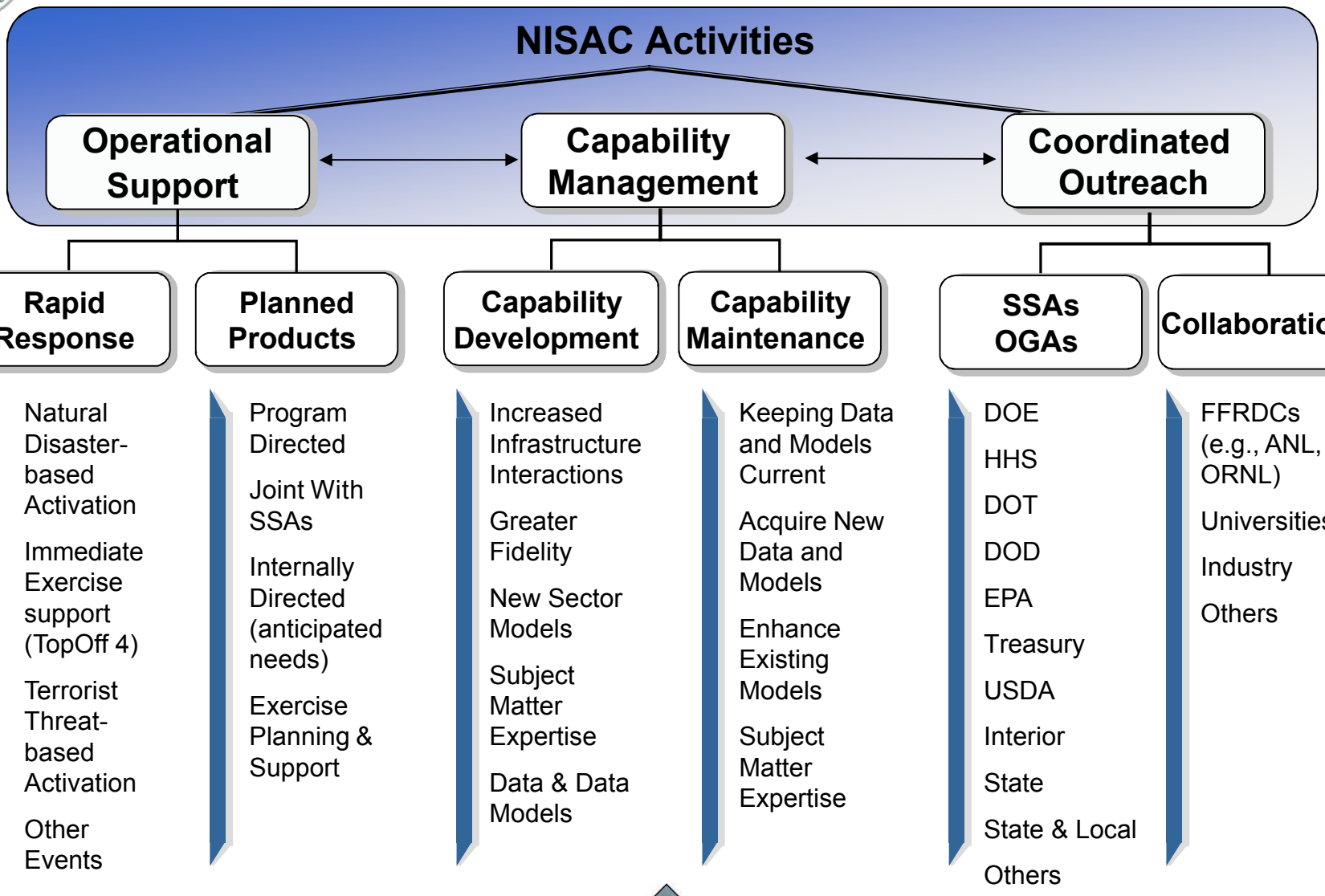
- 90 scientists & researchers from Sandia & Los Alamos National Laboratories; joint project; building on Kirtland AFB, New Mexico
- 2001 Patriot Act formally established NISAC, but around since 90s
- 2007 Homeland Security Approp. Act expanded NISAC mission
  - "**source of national expertise** to address **critical infrastructure protection…"**
  - … **counterterrorism, threat assessment, and risk mitigation**
  - … **natural disaster, act of terrorism, or other manmade disaster**
  - …**modeling, simulation, and analysis** … to **enhance preparedness, protection, response, recovery, and mitigation activities**."
  - Directs NISAC share with Federal agencies with departments with critical infrastructure responsibilities under HSPD-7 – NIPP partners

Goal – improve the understanding, preparation and mitigation of the consequences of infrastructure disruptions

- Provide a common, comprehensive view of U.S. infrastructure in response to disruptions
  - Scale & resolution appropriate to the issues
- Build DHS capability to respond quickly to urgent infrastructure protection issues

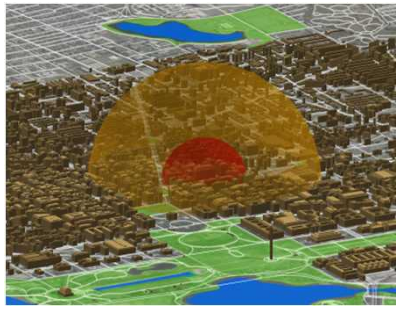




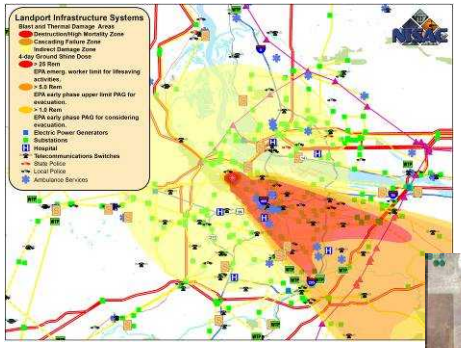

NISAC Activities
Operational Support
Capability Management
Coordinated Outreach
Rapid Response
Planned Products
Capability Development
Capability Maintenance
SSAs OGAs
Collaborations
Natural Disaster-based Activation
Immediate Exercise support (TopOff 4)
Terrorist Threat-based Activation
Other Events
Program Directed
Joint With SSAs
Internally Directed (anticipated needs)
Exercise Planning & Support
Increased Infrastructure Interactions
Greater Fidelity
New Sector Models
Subject Matter Expertise
Data & Data Models
Keeping Data and Models Current
Acquire New Data and Models
Enhance Existing Models
Subject Matter Expertise
DOE
HHS
DOT
DOD
EPA
Treasury
USDA
Interior
State
State & Local
Others
FFRDCs (e.g., ANL, ORNL)
Universities
Industry
Others

Fast-Turn Analysis Examples

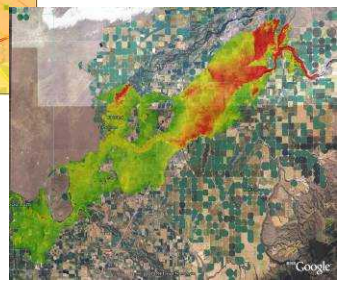
- 2007 California Fires
- 2007 TOPOFF IV Exercise
- 2007 Hurricanes Dean and Flossie
- 2007 Ardent Sentry Exercise Support (NE07, NUDET)
- Pre-Hurricane Scenario Analyses
- 2005 Hurricane Damage and Recovery
- National Hazards
- Avian Influenza CATF Exercise Support
- 2005 Urban Area Security Initiative IV
- Transit tunnel analyses - London bombing
- Hazardous Chemical Transportation Policy
- 2004 Southern California Wildfire Damage
- 2004 Hurricane Damage & Recovery
- Economic Impacts of 2003 BSE discovery
- 2003 Hurricane Damage and Recovery
- 2003 Holiday Threat



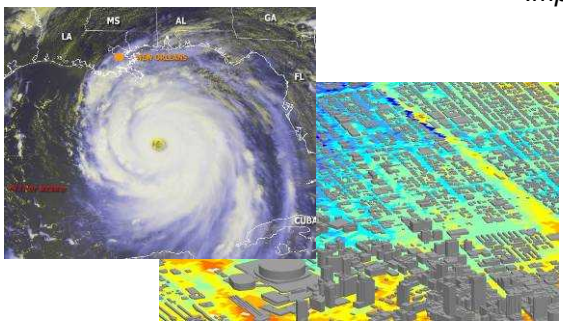
Improvised Nuclear Device



Infrastructure and Population Impacts



Dam Break



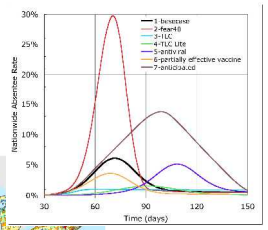
Hurricane

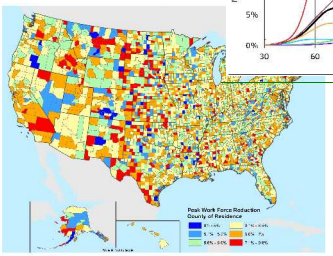
Types of Questions – Planned Modeling and Analysis Products

- Pandemic Influenza Impacts
- New Madrid Seismic Zone Infrastructure Impacts
- Southern California Earthquake Impacts
- Long-term Economic Impacts of Hurricane Katrina
- National Asset Prioritization
- National Hazards Mitigation
- Gulf Coast infrastructure disruption
- Pacific NW port security impacts
- Urban Area Studies (LA, NY, CHI, DC, HOU)
- National rail system asset disruption
- Chlorine transportation disruption

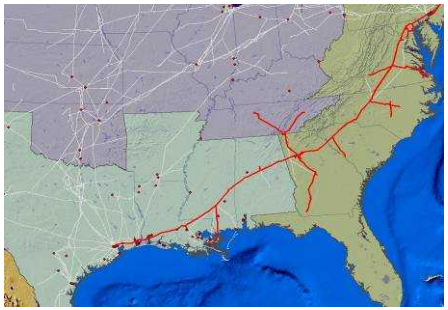
Key Results – Workforce

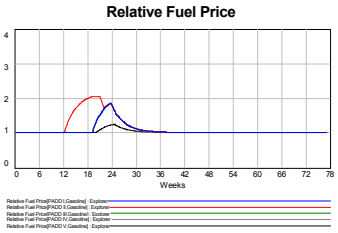
- Analysis quantified absenteeism impacts on infrastructures and economic sectors nationally by county

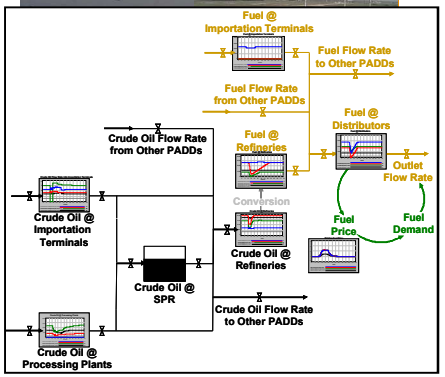




- Counties are impacted by absenteeism differently due to demographic differences (e.g., household size)

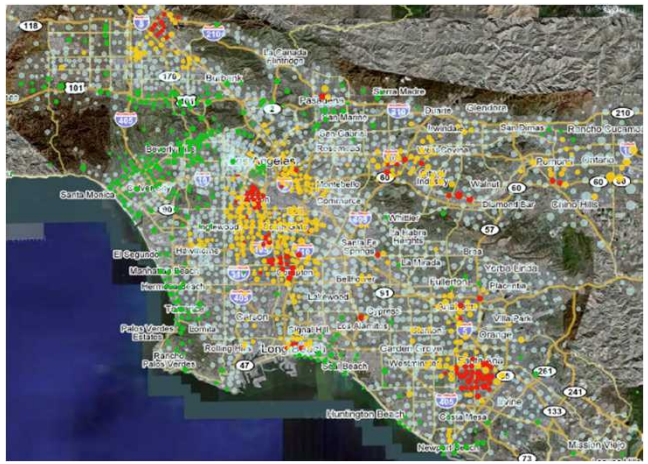




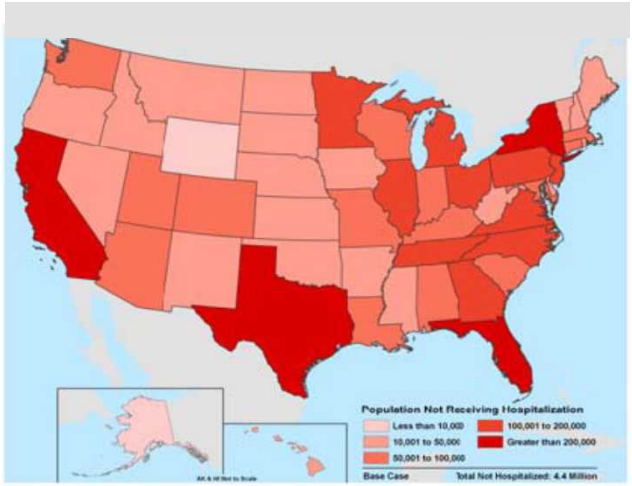


Pandemic Influenza Impact Analysis

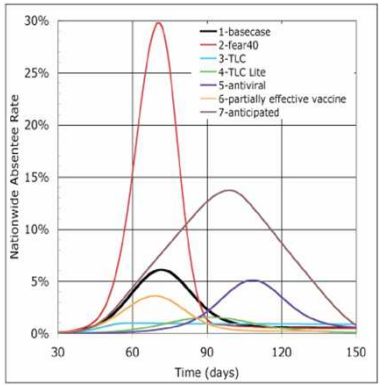
Pandemic Influenza Attack Rate by Census Tract

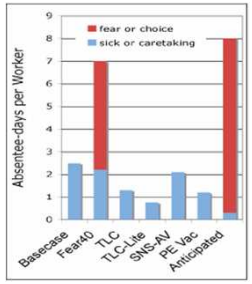


Baseline overflow of symptomatic people



- Absentee-days per worker
  - Pandemic range is 1-10
  - Depends on voluntary isolation
  - Average annual is 8-12
- Peak absenteeism
  - Pandemic range is 1-30%
  - National average is 3-4%
  - Occurs same time in all infrastructures, within a two weeks period



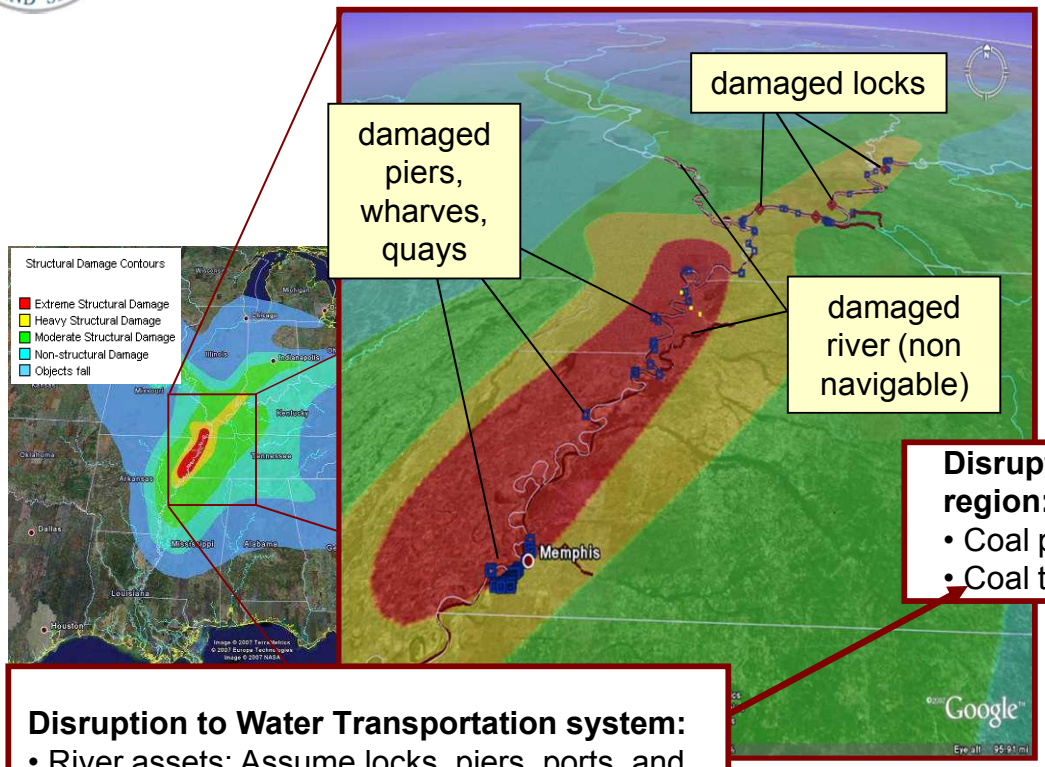


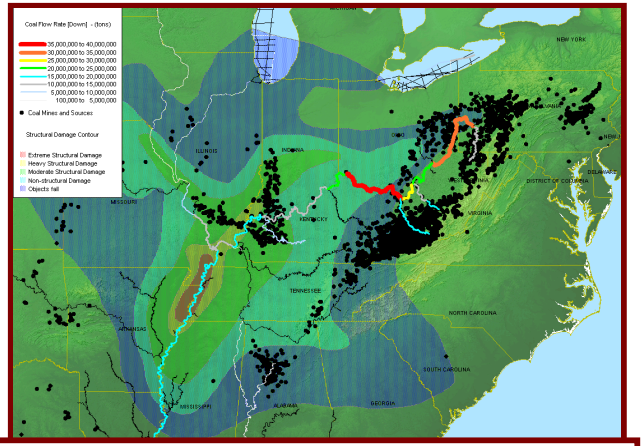
Healthcare System cannot handle severe pandemic

- Patient overflow greater than 4 million people
- At 90% initial occupancy: hospitals overwhelmed in 3-6 weeks

- Hospitals reach full occupancy prior to the peak
- With no intervention overflow for 3-6 weeks
- With interventions overflow limited to a few hospitals

New Madrid Seismic Zone Event Impacts

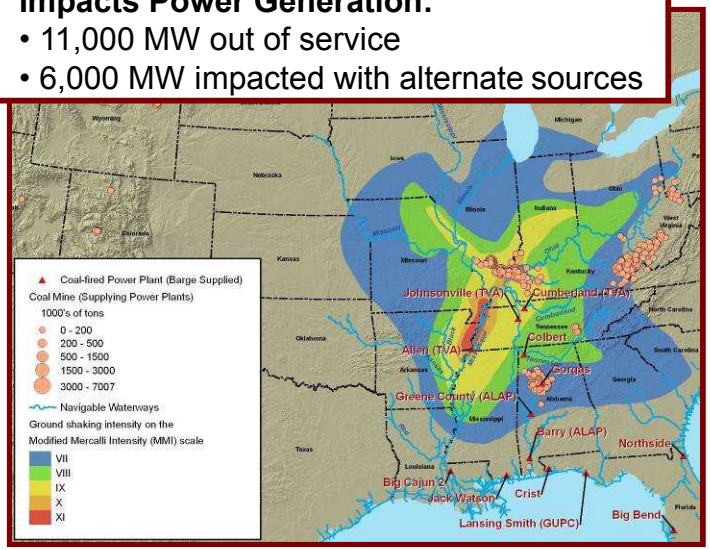




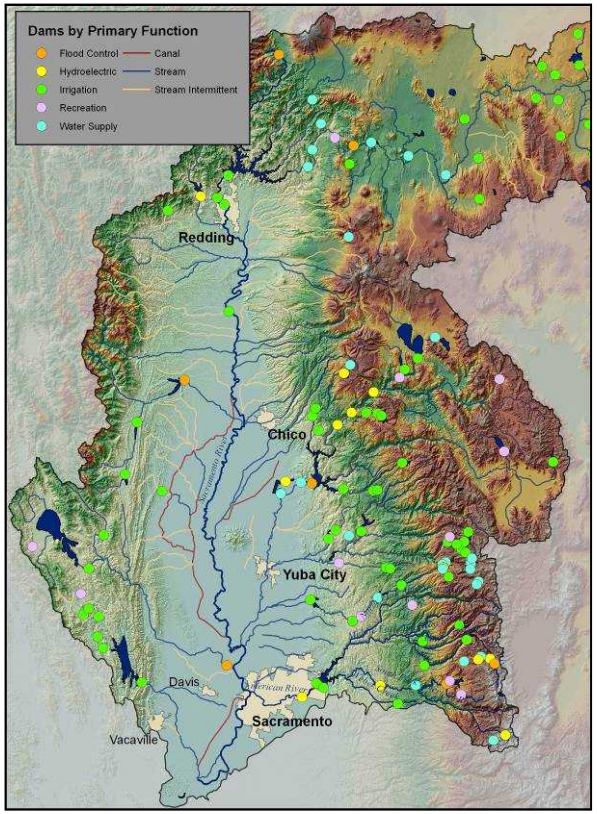
Disruption to coal supply chain throughout Midwest region:
- Coal production in Illinois, Indiana, and Kentucky
- Coal transportation to the lower Mississippi

Disruption to Water Transportation system:
- River assets: Assume locks, piers, ports, and river navigation fail within yellow and higher damage contours.
- River disruption duration: measured in several months for impacted area.

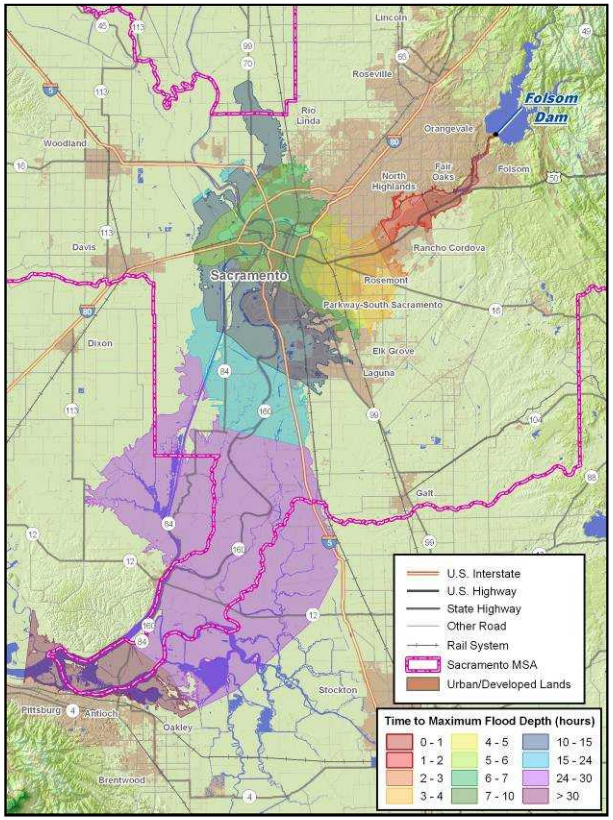
Impacts Power Generation:
- 11,000 MW out of service
- 6,000 MW impacted with alternate sources



Sacramento Flood Control System



Sacramento Basin Dams



Folsom Dam Flood Zones