Maine Climate and Health: Preparing for Extreme Heat Events in Maine (You’ve Got to be Kidding!)

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Maine Center for Disease Control and Prevention
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Extreme weather in Maine ....

Ice Storms

Floods
Maine’s Climate and Health Project

- Build capacity for responding to extreme heat events
- Develop Public Health Response Plan
Early Warning System

Broad Heat-illness Syndrome

Narrow Heat-illness Syndrome
Early Warning System - Evaluation

Heat Illness Cases by Event by Source

- July 3-8, 2010
- Aug 30-Sep 3, 2010
- July 21-23, 2011

Legend:
- SSS Narrow
- ED Cases
- SSS/ED Matches
Threshold for Heat Advisories

Heat Index Advisory Criteria

Eastern Region
100 to 104 Degrees
105 to 109 Degrees
105 to 114 Degrees
Kalkstein Procedures

http://www.erh.noaa.gov/msd/Resources/Heat/resource.htm
For New York City, a Heat Advisory is now issued when the heat index is forecast to reach 95 to 99° F for at least 2 consecutive days or 100 to 104° F for any length of time.
Threshold for Heat Advisories

Hot days and Heat Illness ED Visits

- ED Visits
- Days HI 95 - < 100
- Days HI >= 100

Heat illness ED visits vs. Days > Heat Index from 2001 to 2009.
Air Conditioning

In Maine –

- 53% population has AC
- Big differences by county (27 – 68%)
- 92% window units
- Only 6% central AC

Figure 1. Steady rise in air conditioned homes in all regions of the U.S.

Source: U.S. Energy Information Administration, 2009 Residential Energy Consumption Survey
Vulnerable Populations

County Level Population 65 Years and Older versus Air Conditioning Prevalence

ME-CDC – Unpublished data.
Maine’s Climate Future

**Heat Index >= 95°F**

WRF-CCSM4 24 km
2006-2010

WRF-CCSM4 24 km
2056-2060

Number of Days

<table>
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<th>2</th>
<th>6</th>
<th>10</th>
<th>14</th>
<th>18</th>
<th>22</th>
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University of Maine – Climate Change Institute: WRF Predictions using IPCC AR5 RCP 8.5 Forcing
Maine’s Climate Future

Projected Increase in Number if High Heat Days Per Year by 2056-2060

- York
- Waterville
- Sanford
- Presque Isle
- Portland
- Millinocket
- Lewiston
- Eastport
- Biddeford
- Bethel
- Bar Harbor
- Bangor
- Augusta

Number of Days with HI at or Above 95 Degrees F

2056-2060
2006-2010
Heat Response Plan: Partnerships

- National Weather Service
- Maine Center for Disease Control and Prevention
- University of Maine Climate Change Institute
- Maine Department of Environmental Protection
- Maine Emergency Management Agency
- Local Emergency Managers & Partners
- Local Public Health
Progress

- Developed, tested, and evaluated an early warning system for heat illness
- Assessed air conditioner prevalence
- Documented morbidity associated with past heat events
- Obtained future climate projections for increase heat events in 2055-2060
- Examining protectiveness of current heat advisory threshold
- Identifying vulnerable populations (e.g. 65 and older and low AC prevalence)
- Building new partnerships
- Working on a heat response plan for Maine
Research Questions

- What is an appropriate heat advisory threshold for Maine?
- What is an appropriate indoor air temperature threshold for closing public buildings without AC?
- How protective are window AC units as compared to central AC?
- How reliable are current predictions of Maine’s future climate?
- In addition to seeing more high heat days, will we also see heat events that are longer in duration?
- What are the economic costs associated with Maine’s current and future heat-related morbidity and mortality?
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