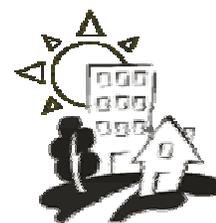




# HIRI NEWS



HEAT ISLAND REDUCTION  
INITIATIVE

## ***Heat Health Watch/Warning Systems; ECA's Cool Homes Program; Heat Island Mitigation in Austin; ICLEI Kicks Off Peer Exchange Initiative; more!***

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### **Heat Health Watch/Warning Systems**

Dr. Larry Kalkstein, of the University of Delaware, joined the

call to present his heat-health watch/warning systems, which have been developed for eight cities both in the US and abroad.

In each locale, a custom-made system is developed to take city-specific meteorology into account. Larry's systems consider other unique information, including urban structure and demographics.

He also said that the systems are based on actual weather-health relationships, as determined by daily variations in human mortality. These systems use a "synoptic climatological approach" that identifies the specific oppressive air masses associated with increased mortality. Two air masses that correlate highly with increased mortality include "moist tropical" and "dry tropical."

Another important aspect of heat-health watch/warning systems is that they do not rely solely on a heat index to predict mortality. Larry's systems take other influential meteorological variables, like cloud cover, into account.

Examining mortality data show that while days with oppressive air masses generally coincide with all cases of heat-induced mortality in a

given city, certain oppressive air-mass days exhibit no deaths. Larry noticed that, for instance, certain weather early in the heat season will kill more people than the same weather later in the season. (It turns out that acclimatization is an important factor in predicting mortality.) The particular day in a sequence of hot days also matters. The algorithms developed by the Delaware team accounts for these, and other influential factors. Based on city-specific need, Larry can predict mortality using either total deaths or the probability of death.

Funding to install heat-health watch/warning systems has come from a number of different sources, including private, government, and international (the WMO) organizations. Utilities have a special interest in preventing heat-related mortality and have been another source of funding. In the event of a heat-health watch/warning, utilities sometimes restore electricity to customers whose service has been cut off. Larry also mentioned that there are economies of scale to installing more than one system.

Interestingly, Larry said that cities in climates that are hot year round, or that do not exhibit much temperature variability, are not particularly prone to high mortality in the presence of oppressive air masses. There are very few related deaths in Miami and Phoenix, for example.

## Energy Coordinating Agency Active in Philly

Liz Robinson, of the Philadelphia Energy Coordinating Agency (ECA), spoke about the organization's work delivering energy services to low-income and elderly residents. She said that with 165,000 low income residents in the city, ECA's energy conservation programs are greatly needed. In fact, they served over 10,000 of these customers last year.

According to Liz, a major motivation for ECA's current work with the

elderly is that summertime heat in Philadelphia can be particularly deadly. A 1989 heat wave over the July 4<sup>th</sup> weekend, for example, killed 52 people. This resulted in a grant from the Department of Health and Human Services to provide emergency cooling equipment and \$100 stipends directly to elderly residents. ECA was responsible for distributing DHHS resources.

ECA is now implementing a passive cooling program for the elderly, which started with small foundation grants. The first phase, called Cool Aid, was designed to provide cooling without raising residential energy costs. 100 homes were targeted in Southwest Philadelphia, the section of town with the highest death rate, and provided with a range of passive cooling measures. As part of Cool Aid, the city sponsored a "cool block" competition in which the winning neighborhood committed to taking steps to lower their energy bills and to preserve their homes. This is the first time in Philadelphia's history that an entire residential block has been switched to white roofs; it is probably the first in the nation to do so.

The competition required participating homes to implement one energy- and cost-saving recommendation from a range of options provided in a free energy audit conducted by ECA. Each home then received (at no cost) a white, acrylic elastomeric roof coating to preserve the roof and reflect sunlight. The energy audit and roof coating were valued at approximately \$1,200 for each household. However, many of the energy-saving tips involved little or no cost. Lowering the thermostat at night during the winter or installing a clock thermostat are examples.

Indoor and outdoor data logging was performed to monitor the temperature changes from reflective roof surfaces. Resulting data is preliminary, especially from the exterior loggers, but suggests that city blocks with reflective rooftops can be slightly cooler in summertime than surrounding areas. Liz said that above a certain threshold temperature, homes with white roofs were about the same temperature indoors as out, while homes with dark roofs were about 3 °F hotter indoors. Data logging will continue to take place next summer. The "cool block" concept will also be expanded upon.

Recently, the city has expanded the Cool Homes Program to cover 400 additional elderly residences. Again, the goals are to reduce indoor temperatures to a comfortable level, minimize health risks, stabilize energy consumption, and provide social interaction and outreach to seniors. Also, during heat waves, the city has instituted a "buddy system" in which participating seniors are contacted by a designated "buddy" to ensure that heat effects do not go unnoticed.

For more information, see: <http://www.ecasavesenergy.org/>

## Austin Takes Action

Fred Blood, the Sustainability Officer for the City of Austin, and Esther Matthews, of Austin Energy – the city's community-owned utility – joined the call to talk about recommendations for heat island mitigation made to the City Council. They also talked about some specific actions the city is taking to save energy and reduce urban temperatures.

The citizen-driven effort to make heat island mitigation a priority for the city resulted in a seminar on heat island reduction in January 2001 sponsored by Council Members Raul Alvarez and Jackie

Goodman. The purpose of the meeting was to get input from various community leaders and experts from the public, private sectors, and non-profit sectors. A volunteer committee, called the Heat Island Working Group, met on four different occasions and drafted 14 recommendations that were all made by consensus. These recommendations were forwarded to the City Council with a request for a complete review of them in order to enact a comprehensive program for heat island mitigation. In September 2001, the City Council awarded \$1 million towards implementing heat island reduction activities. The 14 recommendations, in abbreviated form, were as follows:

1. Light-Colored Roof Strategies
2. Expand Program for Green Commercial Property
3. Light-Colored Pavement Strategies
4. Increased Funding for Commercial Energy Management Program
5. Incentive/Enforcement of City Tree-Saving Ordinance
6. Ordinance Mandating 50% Canopy Coverage Within 15 Years for All New Parking Lots
7. Landscape Ordinance Requiring 30% Shade Cover Within 5 Years for All Hardscape
8. Improve/Enforce the 1% Requirement for Trees in CIP Roadway Ordinance
9. Bus Stops Tree Shade Policy
10. Change Billing Method for Tree Planting Donations
11. Expand City Tree Planting Programs
12. Tree Mapping and Inventory Project
13. Protection of Urban Forest as Part of City Infrastructure
14. Landscape Easement Policy

Fred mentioned that before these recommendations were made, Austin already had an energy code in place to encourage reflective roofs. As a result, the list focused on provisions to increase shade tree planting. Part of Austin's plan also involves a program called "Great Streets," which was conceived to plant mature (10-15

year old) trees in the downtown area. A tree farm in Austin will provide local specimens to the organizations responsible for planting. Call participants stressed that a number of good resources exist to find information on a range of species, as well as regional considerations.

## ICLEI Kick-Off Meeting Takes Place in Chicago

The International Council for Local Environmental Initiatives (ICLEI) held a meeting in Chicago on December 6<sup>th</sup> to initiate its Policy Adoption and Peer Exchange Network. The event was attended by representatives from participating cities, experts in areas related to heat island mitigation, and ICLEI and EPA sponsors.

Among those participating was Jeff Luvall of NASA. He provided a scientific context for heat island mitigation and explained how thermal imagery can steer policy makers to priority areas in their cities. Jeff said that a basic understanding of the principles of surface-to-air heat transfer essential to designing a heat island strategy. Gordon Heisler, of the USDA Forest Service, discussed the temperature reduction and pollution mitigation benefits of trees. In addition, Scot Horst spoke about how blended cement – which incorporates waste and recycled materials that would otherwise be landfilled – is generally of lighter color than traditional cement. City of Chicago representatives attended and informed the group of their local initiatives, including pilot projects and relevant ordinance language. Paul Robbins, an environmental writer from Austin, also talked about how a heat island stakeholder group was established in his city to make recommendations to the city council.

At the meeting, three participants came prepared to discuss a challenge they faced in implementing specific heat island mitigation projects in their cities. Breakout groups were convened to work through the challenges and provide suggestions. Some good points came out of the meeting, including the importance of showcase projects, or "project icons," to demonstrate the effectiveness and public demand for heat island mitigation. Another suggestion for developing project support included implementing a program of "demand-side politics" to pressure local political leaders and sustain interest. It was also proposed that heat island mitigation could be achieved when linked with other policy goals. California's demand for energy conservation projects is relevant here, as it facilitated the passage of legislation that rewarded the installation of cool roofs. Similarly, a meeting participant suggested that the National Pollutant Discharge Elimination System (NPDES) permitting process – which controls water pollution by regulating point sources that discharge pollutants – could be leveraged by local tree planting groups. One more obvious, but important point that was raised, is that it often helps to tailor heat island mitigation projects and programs to the target audience. For example, a water office would be more interested in the runoff benefits of urban trees than their potential to improve air quality.

As part of the day's events, the City of Chicago's Department of Environment (DOE) took meeting participants on tours of several demonstration projects. One of these, the Midwester Center for Green Technology, is a LEED certified "platinum" building. It received this rating because of features such as a green roof, passive solar heating, the use of recycled construction materials, a pervious pavement parking lot, and

numerous energy efficiency measures. DOE staff also took the group on a tour a residential alley that had been reconstructed from asphalt to a permeable and reflective surface. The new alley consists of a fine light-colored gravel in interlocking cups with a stone base undergirded by sand. This construction can accommodate three inches of rain in an hour. Since its completion, the base of the alley no longer floods every time it rains. The group also visited the city's rooftop garden on City Hall, which measures 20,300 square feet and consists of 20,000 plants of over 150 varieties. Most of the plant species are native to the region. Special thanks goes to Deputy Commissioner Alex Holt for arranging these opportunities.

## TAF Heat Island Summit

The Toronto Atmospheric Fund (TAF) and the Clean Air Partnership will be hosting a North American Urban Heat Island Summit in Toronto, Ontario, Canada May 1-4, 2002 with support from the Government of Canada Climate Change Action Fund (CCAF) and the U.S. Environmental Protection Agency.

The Summit will bring together leading researchers and municipal practitioners from the United States and Canada to discuss trends and challenges, best practices, and the latest science on heat island adaptation and mitigation measures.

The Summit will open with a reception and presentation on the evening of May 1st. The sessions on May 2nd will introduce issues of climate change and urban adaptation, followed by a discussion of the latest urban heat island and health research. Presentations on May 3rd will examine applications of heat island research, highlighting solutions and best practices in urban heat island mitigation and adaptation. The Summit will close on the morning of May 4th with site visits and tours of Toronto heat island mitigation projects.

All interested parties are invited to submit proposals for paper and poster presentations.

Submissions on: (1) Climate change, heat and cities; (2) The human health impacts of heat islands and heat stress; (3) Community/public health response to extreme summer heat; (4) Research and practice of urban heat island mitigation and adaptation; and (5) Heat island mitigation measures are encouraged. The deadline for submissions is January 23, 2002.

For more information, see: [http://www.city.toronto.on.ca/taf/urban\\_summit.htm](http://www.city.toronto.on.ca/taf/urban_summit.htm)

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**The next conference call is TBD. Stay tuned for the date, call-in number, and access code.**

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