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## Connecticut's Lobster Bake: What Planners are Learning on the Road to Climate Protection

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Globally, climate change is widely recognized as the most serious environmental threat facing civilization at the beginning of the new century.

**W**hy should planners be concerned about global warming? After all, the matter has been at the margins of national policy discussions. Moreover, there are still too few tangible manifestations of climate change that bring the issue home to our constituents. That said, allow us to take a few minutes to make a case that climate change should be part of our thinking and that our land use policies (and our decisions) should account for climate protection. In New Haven, we do so in light of recent municipal activities, including Mayor John DeStefano, Jr.'s renewable energy task force, participation in the 20% by 2010 Campaign, and the Cities for Climate Protection Campaign, which is sponsored by the International Council for Local Environmental Initiatives (ICLEI). These, and other measures taken by our Energy Management Committee, earned New Haven a spot on Governor Rowland's Climate Change Stakeholder Dialogue. The Dialogue will help shape the state's climate protection action plan. As the only municipality represented in the dialogue, we have been afforded the opportunity to understand more fully the impacts of climate change and the importance of a near-term action plan.

Globally, climate change is widely recognized as the most serious environmental threat facing civilization at the begin-

ning of the new century. Despite uncertainty about the impacts of greenhouse warming, there is a definitive scientific consensus that the climate is changing as a result of human activity. The principles behind the phenomenon are well understood. The gases that make up our atmosphere trap the sun's energy as it radiates off the surface of the earth and back into space. Without these gases, Earth would be as cold and as uninhabitable as Mars. However, as the result of human activity, primarily fossil fuel combustion and deforestation, more of these gases are accumulating in the upper atmosphere. As the atmospheric concentration of carbon dioxide, methane, nitrogen oxide and particulate matter increases, these greenhouse gases trap more heat near the Earth's surface.

Although not even the world's top climate scientists can predict with certainty precisely how global warming will affect the Earth's climate systems, climate models indicate that the changes may be sweeping. Increases in the frequency and severity of extreme weather events such as storms and droughts, geographic shifts or losses of ecosystems, changes in ocean currents, decline in fisheries, melting polar icecaps and sea level rise, shifting disease vectors and alterations in regional agricultural productivity are some of the predicted repercussions.

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## **CT's Lobster Bake (cont'd)**

The effects are likely to be significant on the local scale as well as the global. Climate models predict that the average annual temperature in New England will increase between 3.1-5.3° C (6-10° F) by 2100.<sup>1</sup> To put this in perspective, adding 6° F to Boston's average temperature results in the average temperature for Richmond, VA. Adding 10° F, Boston's average temperature would be equivalent to Atlanta, GA.<sup>2</sup> In addition to temperature change, climate models predict a sea-level rise between 11 cm and 60 cm by 2050 and a 10% - 30% increase in precipitation. Clearly, these changes will have profound implications for towns all over New England.

Although impacts are uncertain, these climatic changes could significantly impact Connecticut's forests, altering seasonal foliage displays, wildlife habitats and the productivity of forest economies. Low-elevation land, the commercial fishing industry and the integrity of coastal communities are threatened by sea level rise, and changes in precipitation could affect the quality of the region's freshwater supplies. The human population of Connecticut may face a combination of elevated numbers of disease carrying insects such as mosquitoes and ticks, and a growing range of infectious diseases such as encephalitis and malaria. Certainly, we can do without the killer bees.

There is convincing evidence that climate change already is occurring. In Connecticut, for example, the average temperature has increased by approximately 1.4% over the last century, while precipitation has risen by nearly 25%. The last decade was characterized by an unusual number of extreme weather events. The 1998 ice storm was the worst in recorded history in terms of loss of life, power outages and damage to forest ecosystems. The summer of 1999 was one of the hottest, driest summers on record, while the summer of 2000 was one of the coolest and wettest. The winter of 2001-2002 was the warmest winter on record, while the winter of 2002-2003 was the most severe this region has seen in years. Climate models confirm that the coincidence of

these extremes may be explained by the greenhouse effect.

As noted earlier, the driving force behind climate change is the accumulation of greenhouse gas emissions in the upper atmosphere. Sources include power plants, cars, trucks and other vehicles, industrial facilities, and residential heating. In addition to greenhouse gases, these fossil fuel sources also emit pollutants that are dangerous to public health - principally respiratory irritants that cause asthma and other illnesses.

While cars and furnaces exist everywhere, large stationary sources, traffic congestion and vehicle miles traveled are concentrated in the state's urban centers and transportation hubs. Many smaller communities may not feel the day-to-day impacts of fossil fuel pollution, but for cities like New Haven, Hartford and Bridgeport, the burden is real. Harbor Station, one of the state's "sooty six" power plants, and five smaller power plants all operate in New Haven. Moreover, the Port of New Haven handles 50% of the state's waterborne commerce (including sizeable coal shipments to power plants in Massachusetts). Recent state cutbacks have impacted rail service to the port, thereby moving even more freight traffic back on the local roads and state highways. Diesel exhaust from truck traffic has been linked to cancer, asthma hospitalizations and cardiovascular problems.

The disproportionate concentration of fossil fuel emissions in New Haven raises a number of environmental justice and social equity issues. Although New Haveners are far more likely to walk or bike to work than residents across New England, they are forced to bear the burden of mobile source pollution from the two interstate highways that intersect downtown. Even though the electricity produced in Harbor Station is exported all over the region and on average, New Haven households use far less electricity than their suburban counterparts, the bulk of the plant's emissions remain local. It's no wonder that the asthma rate among New Haven children remains unusually high (estimated at 25%).

In recent weeks, the city has made important strides against the tide of fossil fuel emissions. The Connecticut Depart-

ment of Environmental Protection denied the proposed reopening of English Station, a dormant 100-year old power plant in the middle of a densely populated, predominantly low-income neighborhood. At the city's request, Yale University agreed to use a low-sulfur fuel at its Sterling Power Plant. On the transportation front, the city has converted its entire heavy-duty vehicle fleet to ultra-low sulfur diesel and is working in partnership with the Connecticut DEP to install particulate filters on public school buses.

These efforts are part of a broader discussion between the City of New Haven and several citizen groups that make an effective policy bridge between local air quality issues and international concerns about global warming. Climate protection indeed is a local matter; one of pressing concern when considered in conjunction with the public health impacts of fossil fuel combustion.

Under current state law, municipalities may consider energy-efficient patterns of development, solar and other renewable forms of energy as part of its comprehensive plan (and subsequently in municipal land use regulations). These provisions originated during the energy conscious 1970's but are not widely practiced today. Contemporary national security issues and the core environmental benefits of energy conservation and renewable power compel us to effect meaningful change.

The state's climate protection action plan must be consistent with a memorandum of understanding signed by New England's Governors and the premiers of Eastern Canada. It will address a number of stationary, area and mobile sources of greenhouse emissions. Smart growth is, of course, just one of a number of factors contributing to global warming. But the Center for Clean Air Policy (CCAP), which is coordinating the Governor's Dialogue, believes that statewide discussion on smart growth would be instrumental to statewide policy. There is a similar sentiment among officials at ICLEI, Connecticut Fund for the Environment and Environment Northeast. The latter non-profit advocacy groups have been extremely helpful with the city's air quality planning efforts.

In many ways, smart growth applies across the board. Patterns and styles of land use development affect our transportation system and our power needs. From a land use perspective, we have highlighted the following policies and strategies for your consideration:

(a) **Growth Management.** As clearly shown in *Connecticut Metropatterns* and by the CenterEdge Coalition, urban sprawl is affecting both land use and social conditions in the state. Over the past thirty years, the state's population has increased a modest 12% but the amount of land consumed for urban development has increased by 102%. CenterEdge and other initiatives are bringing to light the need for much needed reform. If recent smart growth legislation at the state capitol is any indication, Connecticut finally is moving in this direction.

The proposed Smart Growth bill made important strides requiring the consideration of the use of cluster development patterns and identification of areas suitable for transit oriented development. Both techniques, if implemented in tandem with development constraints on traditional large lot subdivisions, would be extremely beneficial to the climate change action plan. In the 1990's the Australian state of Victoria prepared a thorough analysis of energy and transportation emissions in various neighborhoods. The results are not surprising; in traditional neighborhood forms, carbon emissions are significantly lower. As compared with a conventional 1980s suburb, traditional neighborhoods achieved a 26% reduction in dwelling unit emissions and a 57% reduction in transportation emissions.<sup>3</sup>

These benefits, however, would only be achieved if there were a regulatory "constraint" on conventional suburban forms. In the next iteration of Smart Growth legislation, it would be helpful to address the constraint side of the equation. As demonstrated by the lack of affordable housing in many communities, private sector development – if unconstrained by statute and regulation – will continue to overrun traditional development efforts.

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## CT's Lobster Bake (cont'd)

### (b) Transit Oriented Development.

Given the relationship of vehicle miles traveled to climate change, transit-oriented development is among the most important land use proposals under consideration. It is also among the most difficult. Generally speaking, the success of transit-oriented development is dependent not only on a critical mass of development activities at the site, but also at other nodes along the transportation corridor. Recent housing developments along the Metro-North commuter line in New Haven and Fairfield Counties indicate both local desire and market support for these developments. The proposed West Haven train station as well as the proposed New Haven/Hartford/Springfield commuter line provide new opportunities for compact station-oriented development. From a climate change perspective, this is a much more appropriate statewide policy than highway corridor planning. Highway corridors will tend to promote an auto-dependent and truck-dependent economy which rushes into the undeveloped areas between urban centers. History's guide tells us that this "road map to Durham" would result in increased congestion and continuing urban sprawl.

(c) **Building Code/Green Design Enhancements.** Although somewhat outside of the typical planning review, the need for enhancements to the building code is clear. New development efforts – including dense urban forms in Hamden – are being developed to the Energy Star and even the LEED (Leadership in Energy and Environmental Design) building standards. In the near future, this development approach should be the standard and not the exception. In doing so, the building code would better support affordable housing efforts by reducing the operating and life cycle costs associated with homeownership.

(d) **Transportation Investments.** Recently-signed state legislation in support of the Transportation Strategy Board provides a measure of commitment to public transportation. The law supports invest-

ments in our commuter rail infrastructure and enhancements to the public bus system in eastern Connecticut. Freight rail, however, is notably absent from the Coastal and I-91 corridor recommendations. In turn, the affirmation of trucking logistics presents congestion, air quality and climate change issues (largely derived from the black carbon exhaust from diesel vehicles). In tandem with growth management efforts, there must be a constraint side to the transportation discussion. These constraints could include levies based on the number of vehicle miles traveled or increases to the gasoline consumption tax. Or, from a regulatory perspective, constraints on the use of transportation funding would be appropriate. These efforts would seek to reverse the current policy, which relates certain transportation funds to urbanized areas. In the current scenario, public funding works in a manner similar to retail stores as it follows the movement of households into previously undeveloped areas. If these investments (some derived from the Surface Transportation Fund) were aligned with a climate protection strategy, more resources could be applied to infrastructure supporting cluster and transit-oriented development programs.

(e) **Landscape Design and Preservation.** Environmental design solutions are promising, yet difficult to quantify for carbon reductions. It is within current law to analyze alternative development scenarios in order to optimize microclimate conditions and conserve building energy. Generally, this is achieved through a combination of southern exposure in the winter months and screening – through deciduous vegetation – in the summer months. In one Michigan case study, a townhouse development was 7 degrees C warmer on sunny winter days and 10 degrees C cooler on bright sunny summer days. If this is an agreed strategy, the statutes would need to be updated to require such reviews.

The work of the Governor's Dialogue, Environment Northeast and others are important steps toward meaningful climate protection efforts. The process, of course, faces many challenges. Fundamen-

tal change will require a much broader constituency at a local and even national level. We have called attention – in particular – to the continued reliance on incentives, when it may very well be time to pursue a regulatory approach. Your thoughtful input and recommendations are truly appreciated. There is a role here for the planning community; please consider assisting with the necessary techniques required for implementation at the local level. ■

### Footnotes

<sup>1</sup> U.S. Global Change Research Program, “New England Regional Assessment of the Potential Consequence of Climate Variability and Change” (2001). Available online [www.necci.sr.unh.edu/2001-](http://www.necci.sr.unh.edu/2001-)

[NERA-report.html](http://www.nera-report.html).

<sup>2</sup> Institute for the Study of Earth, Oceans, and Space. “How Will the New England Region be Affected by Climate Change?” University of New Hampshire, (September 2001).

<sup>3</sup> International Council for Local Environmental Initiatives, Connecting Land Use and Energy, Case Study #32.

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