

**Seventh Annual Regional Sustainable Development Forum:
Being a Part of the Climate Change Solution:
Individual Action for Collective Impact**

January 25, 2008, MIT Sloan School of Management

Session 5: Local Tools for Climate Change Action Planning

Presenters:

Amy Cotter, Senior Program Manager, Metropolitan Area Planning Commission

John Dalzell, Senior Architect, Boston Redevelopment Authority

Michael Stoddard, Deputy Director and Attorney, Environment Northeast

Moderator:

Ed Connelly, President, New Ecology, Inc.

Amy Cotter:

Amy manages the MetroFuture Project at the Metropolitan Area Planning Commission. She presented a power point entitled “Regional Planning for Smart Growth and Climate Protection.”

It is important to draw the connections between land use and climate change. Just beginning to draw these connections while doing long range planning work at MAPC.

Today we’re going to see how our region would look in 2030 if we continue to grow as we have been, and then I’ll present an alternative. I’d like your help to sharpen our relationship between finding and policy tools and addressing climate change.

The study focuses on 164 communities within the region for its regional planning work.

MPAC has developed a typology of 4 different types of communities:

- 1) The inner core, which is Boston. This has been a real economic engine in the past, but then saw a period of disinvestment. Now, however, there is a resurgence in growth.
- 2) Regional urban centers, such as Framingham. There is substantial commercial and residential development in some of these areas but some are still suffering.
- 3) Maturing places, such as Watertown and Belmont. These are relatively small single family homes on single family lots. They are highly desirable but there’s not a lot of room for additional growth because current zoning does not accommodate more growth.
- 4) Developing suburbs.

Boston is growing- a projected 11% by 2030. That’s nearly a ½ million people. Area will need over 300,000 housing units.

Some predicted changes by 2030:

- over 55 population will increase by 75%

- jobs are predicted to grow by 10%
- an increase in population diversity, especially in foreign born/minority populations

The only statewide trend is that lot size has increased.

Average lot size 1970-85 was 0.3 acres; average lot size 1985-2000 was 0.6 acres
This large lot size trend is expected to continue. It will become difficult to recognize urban centers. 70% of suburban development will be on an acre or more.

Natural open space lost by 2030 due to this development, expected 152,000 acres.

Water shortage in 2000. 22 systems exceeded their permit limits annually.
By 2030, it is expected that this number will increase to 50.

As of now, these systems aren't part of MWRA, which draws water from central to eastern Massachusetts. We should be careful in considering expanding MWRA to other systems as it might increase the number that exceed their permit limits. If we don't want to expand the sprawling pattern of development maybe we shouldn't extend our infrastructure.

If current trends continue, it's likely that there will be a worsening regional jobs-skills mismatch; 67,000 lower skill workers may be unable to find work; and there may be a shortage of 186,000 high skill workers (associate, BA, grad degree).

Now to make the connection to Climate Change- what do these predictions mean?
More people will be commuting from the outside; a huge transportation issue. Under the current pattern of development, 2/3 of suburban growth is far from urban areas. Traffic is worsening and we can't build our way out.

We propose a smart growth alternative- MetroFuture.

An alternative pattern has helped us pick out areas such as Woburn, Framingham, etc. on a map. Concentrated dots help put residential growth in cities. This is accomplished with 2-family homes, lofts, condos, and allows us to embrace town centers and leave greenfields undeveloped. It also avoids new infrastructure. A pattern of development that uses low impact development techniques requires less energy demand, water. We also have electric from new renewables as a goal (25%).

The alternative scenario means a decrease in energy and water demand of 20% per person and 25% of electricity will come from renewables. The water shortages mentioned earlier will be cut to 8 systems that exceed their permits.

Labor and prosperity: the alternative would provide worker support services. We'd see a decrease in the number of people that have to commute. 65% of new growth will be near existing train and bus lines.

What would this take? It sounds a bit like social engineering. We have 22 years to tackle these goals.

- 1) Make smart and consistent infrastructure investments that are consistent with sustainable growth decisions.
- 2) Reform zoning statutes. MA has some of most antiquated statutes in the country; reform means municipalities have to make plans consistent with state goals and then zone accordingly.
- 3) Allow more municipal revenue options that do not rely exclusively on property tax. This separates land use decisions solely from economic decisions.
- 4) Invest in alternative modes of transportation. Shifts in land use will give real opportunity to take something other than their car.
- 5) Build Transit-oriented neighborhoods by coordination land use and transportation planning.

John Dalzell:

Part of BRA neighborhood development planning. Helped craft city of Boston Green Building Policy.

Leadership is an important local tool- Mayor Menino's leadership role was important. When the Mayor first started the Green building Task Force, his take was a business take in that everyone will profit. Now we're going beyond LEED Platinum and setting a new standard for green high-rise development.

City of Boston Tools- Climate Change Action Items:

- Climate Change Action Plan, purchasing 11.7% renewable energy
- City fleets- ultra low sulfur diesel, biodiesel
- Green building- downtown buildings are not up to par
- LEED by example program (a silver LEED rating) for city supported projects
- LEED zoning amendment- integrate green building into private development
- Green affordable housing program with Massachusetts Technology Collaborative (MTC)
- Solar Boston
- Boston Energy Alliance

Pending City Actions:

- Distributed generation regulations
- Green Business program
- Green information guidelines
- Green streets- city infrastructure
- Green tourism (starting with GreenBuild '08, expected 25,000 attendees in November)
- LEED ND- neighborhood development, for city planning

Boston Green Building Initiative Policy Development:

- June '03- Mayor's Green Building Task Force: industry leaders, green building experts, city staff.
- '03-'04- Task Force convenes over twelve months. Analyze best practices, business case and costs, renewable energy and construction industry trends, barriers to better practice.
- November '04- Mayor receives task force recommendations and announces 3 year implementation plan.

There are other proponents out there that have also helped us lead this transformation, such as hospitals and Community Development Corporations.

A few examples include in the City Green Building George Robert White Environmental Conservation Center at the Audobon Nature Center. Other private LEED buildings include the Manulife Financial headquarters. (They saved about a year in permitting but can't promise an expedited application process.) Green buildings also become attractive to other places Harvard competing for students. Universities making sure they have interesting amenities, including a green dorm. This is not just for big guys; Artists for Humanity has also undertaken green building initiatives. They went with good building envelope, manually operated windows, and no air conditioning.

Green building also has entered the affordable housing market. Erie-Ellington Homes in Dorchester did things meaningful to the occupants. We're also recognizing skyrocketing energy costs can be burdensome to an affordable home. High-efficiency is very valuable.

Boston wasn't alone. There were many cities with lots of programs but most only used their program for city buildings and a lot was voluntary. Over 52 US Cities have green building programs. Eighteen US Cities use LEED in private building permitting. In January 2007 Boston became the first major city to require green building development outcomes. Boston has six LEED Standards currently in use: LEED-NC, EB, CI, CS, H, ND.

We also didn't feel like LEED totally fit us so we introduced other credits such as green building credits, modern grid credit, historic preservation, groundwater recharge, modern mobility credit.

LEED ND is the newest rating system. We have 2 pilot projects: Jackson Square Development and the other is another CDC Bartley Yard Redevelopment in Roxbury; both in transit-rich development. We're excited to have two of these projects in national pilot.

LEED ND is an excellent tool for planners, architects, and cities to evaluate their projects. Building near transit, job centers, density, smartly, compact, complete communities are all principles embodied well here. Having a standard to evaluate plans is a good trend. LEED standards have allowed us to compare projects.

The basic elements of LEED ND are smart locations and linkage. We want to see densities that work well, reduced car usage, good construction and technology. LEED ND is across the spectrum. Whole, parts, fractions of neighborhoods, infill and greenfield are all types of uses included in LEED ND.

So far, the pilot program has been successful and oversubscribed.

Michael Stoddard:

Environment Northeast recognizes climate change targets of 75% reduction in industrialized nations' greenhouse gas emissions from 2000 levels.

Imagine growing the way we want but also reducing our emissions by 75%. Keep that in the back of your head. It's easy to dismiss those as being too hard, it's too much of a pain to build new rail and it's too disruptive.

A few years ago we sat down and spent almost 2 years looking at policy tools that we could find that could apply for New England and Eastern Canada. We came up with the Climate Change Roadmap. There are 28 recommendations to meet GHG reduction targets. Out of these, the ones that seem most relevant to local municipal governments are buildings, transportation, and sequestration.

Local Policy Tools:

1. Buildings: codes, energy performance standards, operations

- Adopt international energy conservation code
- Establish consumer protection reforms to ensure compliance (only ½ new homes built are actually inspected regarding the energy code).
- Promote energy performance standards- financial incentive to get people to build better than the codes. Municipalities have the opportunity to save tax payers money and to reduce emissions.
- Provide operations and maintenance training to facility managers.

2. Transportation Vehicle Miles Traveled (VMT)

Massachusetts MEPA will now require large projects to look at their carbon impact in the environmental impact assessment process. This includes indirect and direct impacts- estimate new traffic.

3. Sequestration- carbon storage.

Get a better understanding of the net carbon impact of land use change and conversion. California is moving toward required accounting of carbon impacts in comprehensive plans.

A good example of carbon sequestration and land use effects is Plum Creek. This is the name of a proposed development in Maine. Many years ago a timber company purchased this land near a pristine lake. Now the timber company wants to put in resorts

near this lake. They put forward concept plan and they need to get a zoning change. We joined some other environmental groups and said we'd like to discuss what the CO2 impacts will be for this development. We told them that we were trying to meet our pledge of carbon reduction targets; that we want economic growth but we also want it done thoughtfully.

News outlets picked it up and it turns out that this was the first time anyone was actually willing to do the math in terms of what effect cutting down the trees, direct and indirect emissions from energy and tailpipes, would have for this area. So we did some math and estimated land use conversion, development of units, etc.

We came up with a number for CO2 emissions. Right now forests in U.S. soak up and store between 25-45% of all of our emissions every year. Forests are a valuable resource and we need to take care of them. The result was that just from clearing land and trees (both short and long term); between 387,378 and 501,081 metric tons of CO2 would be emitted into the atmosphere.

If there was mitigation, which was a quantification of Smart Growth Principles, they could reduce carbon emissions by 41% hypothetically.

We ran through analysis for buildings and determined that the use of advanced building design could cost-effectively improve the energy efficiency of newly constructed buildings by as much as 50%.

On the transportation side, it was smart growth 101: locate resorts and residences closer to the town (Greenville); cluster development units closer together; and design the project so people can walk or bike as much.

Our staff presented this in December, did a couple more weeks of hearings that just ended last week. We don't yet know the final outcome.

Measuring CO2 impact is an emerging area, especially if these MEPA projects start getting scrutinized.

Q&A:

Q: So, what happened (in Plum Creek)?

A: Expert testimony was given in December and into January; we're still waiting.

Q: It sounds like the impact of just developing land produces many times more carbon than its use.

A: (Michael) Yes, but energy emissions and transportation emissions are annual- every year until forever, we just ran 50 years. That lost storage is forever.

Comment from audience: Impacts of development in rural areas- loss of forest is equally damaging as development itself (not even counting other environmental impacts).

Amy Cotter: See 'Growing Cooler' report available on the Smart Growth America website.

Q: Is MAPC taking policy positions; density sounds great until we start talking about school and roads. Does it come down to policy decisions to enable communities to derive some financial benefit?

A: (Amy) We're building an implementation strategy. Why not build compactly? There are some skewed incentives around roads.

Q: (for John) re: LEED certification process- is it necessary to require certification or could LEED be used without it?

A Boston is not requiring certification; our standards are to meet "certifiable." We require a letter of certification from a registered architect and/or engineer. This brings in a degree of certainty. Must have some documentation, a check list with narrative of what was done. This avoids paperwork, bureaucracy.

Comment from audience: Actual certification adds significant cost to project- could be used for better lighting, etc.