
Sustainability Public Policy Forum:

EMPOWERING MASSACHUSETTS COMMUNITIES

Sponsored by AIA/MA and/USGBC MA

June 19, 2014



Paradigm shifts are philosophical, political, practical. Like a wave there is a gradual swelling, a rolling momentum, followed by a cresting, crashing conclusion that rushes up the shore and sweeps away all that went before. The paradigm shift to sustainable development is gaining momentum in localized areas around the globe, like a wave cresting, with every indication that more change is to come.

In the Commonwealth of Massachusetts a watershed moment for sustainable public policy came about ten years ago with the passing of the Global Warming Solutions Act, followed by the Green Communities Act. Now, a short seven years after the first green communities were designated there is conclusive evidence that the programs implemented as part of this act have had a positive impact on economic growth and job creation. The Green Communities Act has already fulfilled the promise of the “market transformation” economic model, whereby incentives drive changes in market behavior. But these are early days, with much work ahead.

The Massachusetts Chapters of the American Institute of Architects (AIA) and U.S. Green Building Council (USGBC) sought to take a snapshot of the state of sustainability public policy in the Commonwealth, and, to that end, a Forum was held on June 16th at the Boston Society of Architects in Boston. This document summarizes the contents of that event. When global and national inertia on the pressing problems of climate change, quality of life, and equity appears insurmountable, the determined action of communities, local governments, and states to create a sustainable future is an inspiration for us all. The presenters for this forum work to address energy efficiency, sprawl, carbon emissions, transportation efficiency, equity, and resource protection daily and tirelessly. They do this within budgetary and legislative constraints that are no match for the power of corporate interests, often in relative isolation, but increasingly in cooperation with the like-minded.

This summary of the AIA/USGBC/MA Public Policy Forum is offered in appreciation for all who devote themselves to the advancement of the paradigm shift to sustainability, and especially to the presenters who took time out from their overcrowded agendas to share this information with us. This summary is also offered to those communities and individuals seeking information on our current status and breaking trends, in hopes of furthering the groundswell that will sweep us into a new way of being in the world. And finally, this summary will be provided to the candidates for Governor of Massachusetts, one of whom will inherit, and must build upon, the initial efforts described herein.

Commonwealth Sustainable Development Principles

1. Concentrate Development and Mix Uses
2. Advance Equity
3. Make Efficient Decisions
4. Protect Land and Ecosystems
5. Use Natural Resources Wisely
6. Expand Housing Opportunities
7. Provide Transportation Choice
8. Increase Job and Business Opportunities
9. Promote Clean Energy
10. Plan Regionally

(From Eric Hove’s presentation)



Meg Lusardi, Commissioner Massachusetts Department of Energy Resources (DOER)

The policies and programs that have flowed out of the **Green Communities Act** are critical to us meeting our goals for the **Global Warming Solutions Act** and the climate plan that came out of that. And the programs

that have come out of the Green Communities Act have really fed the growth of the clean energy sector here in Massachusetts.

Clean Jobs Report: We have 80,000 workers in Massachusetts working in the clean energy sector, and 5,500 firms working in the clean energy sector. They all interact together, and they have put us at the forefront and set the stage for a future green economy. This presentation will focus on what we’ve been doing in the Green Communities Division.

We have 123 green communities. **48 percent of the population in Massachusetts lives in a green community.** 142 municipalities have adopted the stretch code, nine have yet to secure green communities designation.

Diversity: Our smallest community has a population of less than 400, the town of Rowe in western Mass. Our largest is the city of Boston. You can also see the diversity geographically and socioeconomically. Anybody can become a green community, including Municipal Light and Power communities.

Designation Grants: Once a municipality has met the five criteria of a green community they are guaranteed a designation grant. After they’ve spent that designation grant they can come back for more funding through an annual competitive grant process.

Those grants are capped at \$250,000. They're based on a competitive review of projects. There have been two rounds to date, but before the end of this month we're going to announce the awards for the third round. The grants have ranged anywhere from \$13,000 to \$250,000, and can be applied for and awarded on an annual basis.

Typically grants go to fund core energy efficiency projects, like lighting, weatherization, air sealing, insulation, and HVAC systems in municipal buildings. One requirement is to have an energy reduction plan to reduce consumption by 20 percent in five years. Grants are used for meeting that energy reduction plan.

We've also funded some solar PV projects and incremental costs for hybrid vehicles. One of the things that we require all the municipalities to do is to make sure they leverage utility incentives. These incentives are there to be had and it makes their grant go that much further. That's money that they can save and spend on the grant, spend on their projects.

We are here to serve all 351 cities and towns, not just green communities.

Energy managers' grants. Capacity can be a real issue for municipalities, as well as analysis of their energy consumption and strategies for demand reduction. We allow ten percent of the total grant award to go towards administrative costs. So people would use that towards a position, and then they would work on finding other funding sources out there. And then they learn to be able to sustain a position through the energy savings that they had achieved from the projects that they had implemented.

This is seed funding. It is provided over two years. In May we made 28 awards to 36 municipalities. The grants are ratcheted down in year two, and then after that the municipalities will sustain the positions going forward.

Grants for water and wastewater facilities.

These facilities are the second largest consumers of energy in municipalities. There are a lot of opportunities here for savings.

We also have funded several audits and energy studies. Some municipalities have moved ahead on implementing some of those projects. This was a program for shovel-ready projects. We have awarded \$1.7 million to 22 facilities, and this was just announced in June. We are in the midst of getting those contracts out now.

Funding for municipal light plants to contribute to RGGI. These utilities often talk about how they haven't had access to RGGI funds, like the investor-owned utilities have. This was a program to provide funding to the municipal light plants for energy efficiency programs and projects. And in particular, we required that there be a project included in the application working with the municipality. Because we want to help cultivate the communication between the MLP and the municipality. They both have to be a partner in this application.

One of the things we definitely want the MLPs to do is to be signed on to Mass Energy Insight. We get automatic download from investor-owned utilities into Mass Energy Insight. But for MLPs, we have to do it more on a one-on-one basis. And Mass Energy Insight is our online tool for all municipalities, available at no cost, to be able to track your energy consumption. It tracks cost, consumption, greenhouse gas emissions at the building level, at the department level, and at the town level. And it's a very important tool because you can't really know what you need to do unless you know what your consumption is in the first place.

Owners' agent technical assistance. This is something that we began providing with ARRA funding originally, at the expressed need of the municipalities. They had talked about lacking capacity and technical expertise to be able to implement projects. We hired the consultants and then assigned them to municipalities. And we did it that way primarily because of the ARRA requirements. It just kept it simpler.

But based on the success of that, and all the feedback we got from the municipalities, we've decided to continue it. So we've done two rounds to date, and we provide funding to the municipalities to hire their own consultant. And right now, we have advertised an additional opportunity.

We also help municipalities with solar PV projects on municipal property and energy savings performance contracting.

We include audits for oil-heated buildings, in the application. We include assessments for zero-net-energy buildings. This time we're adding opportunities for assistance with community shared solar. We've heard a lot of municipalities express interest in community shared solar, and so this is where you have a solar installation at a location and different members either own a certain amount of kilowatts or own a share of the LLC that is established for the PV system. And it can be hosted on a roof or on a piece of property. And it comes out of the fact that when we did Solarize Mass, there were a lot of

residences that were not able to put solar on their homes, either due to shading or structural issues with their roofs. This allows them to participate in the incentives for solar.

New model solar zoning documents. Under the Green Communities designation grant program, we had originally created a model bylaw for large-scale ground-mounted solar installations in designated locations, per the Green Communities Act. Now we have developed a model bylaw that addresses all sizes of solar, on rooftop as well as ground-mounted locations.

What we were trying to address is the special provision in Chapter 40a Section 3 that says solar PV cannot be prohibited or unreasonably regulated in Massachusetts. Now, this becomes complicated because there is no definition of what is reasonable, and there is no case law around this statute. So we brought together some consultants and our best minds to put this together, and what we've put out is some guidance materials, as well as a model bylaw. We very much encourage that municipalities do education and outreach whenever they're looking at zoning for solar. If you don't have zoning provisions in place this will unnecessarily delay project approvals that include zoning.

We have site plan review in the residential districts, and it is allowed in the other districts. Site plan review means that you cannot have a discretionary review process. That if a project meets the basic health and safety parameters of the bylaw, then the project needs to be allowed to proceed.

The designation and grant statute is prescriptive in some ways and not so much in other ways, but for example, one of the questions that always comes up is criteria three, which requires that municipalities establish a baseline, and then reduce their energy consumption from that baseline by 20 percent in five years. Well, the question has come up, what happens in five years? What happens if we haven't met 20 percent? What happens if we've met 20 percent? Is there something more, or is that it.

So we did a request for information back in November, and we asked questions related to this and got feedback. And so now we're in the midst of drafting regulations that—it'll cover the entire program, and will basically memorialize the guidance that we've provided previously. But then it's also going to address these other questions that have not been addressed before. And this way, it'll provide predictability for municipalities.

We're also this summer going to be releasing a **progress report for the designation and grant program**. Once again, four years ago was when we first designated green communities, and so we felt that it was important to step back and see how it's going. So we have had a consultant on board, and some of the things that we did are, we conducted a survey of all the green communities, asked them about what was working, what's not working, what could be improved.

We've been requiring annual reporting from municipalities for three years now. And we go through these annual reports, and this year we had 103 communities that had to provide annual reports. After you've been designated a full year, you have to report. And these are a lot of reports for us to go through, and we've gone through them, but being able to pull data and what the trends are out of that, we have not been able to do previously. So that's one of the things that we're also going to be doing with this annual report.

We also see it as a tool amongst the green communities themselves, to be able to know what their fellow green communities are doing and to learn from each other. And then it can also serve as a source for those municipalities who are thinking about becoming green communities.

Webinars. This year we were very active with webinars. We had at least one a month, if not two, and just this week we did one on Home MPG.

But we've had great participation on these, and we would love to hear from folks on what kind of topics would be helpful. We've covered everything under the sun: solar PV, performance contracting, as well as the new SREC program and Home MPG and the energy resiliency grants.

Also, the **community energy resiliency grants**, this is something that is being operated out of our renewable energy division, but working very closely with us. And there's \$40 million available for municipalities to look at hardening their critical facilities to stay up and running with energy whenever there is a natural disaster, whether it be weather or something else.

We have funds available right now for technical assistance as well as project implementation. You can apply in those categories. You can have one facility applying for technical assistance, another facility applying for project implementation. And those receiving technical assistance on this round will be considered for project implementation in a later round.

We're also collaborating with other states who have programs for municipalities. Our program was the first one up and running in the country. New York has since developed a cleaner, greener, smarter communities program, and we've had several conversations with them. We continue to have conversations and they're up and running.

Maryland created a program that's primarily based on our Criteria 3, that's what their program is. And then Rhode Island has been talking about it, but we've been having lots of conversations with them.

Some other initiatives I wanted to touch on, that aren't necessarily in the green communities division. The **expanded heat allowance**. This is something that was announced more recently, and I hope folks are familiar with our heat loan, zero percent financing for energy conservation measures that are related to weatherization and heating systems.

We are adding biomass thermal into the heat loan program. For an essential biomass heating system you can get a heat loan for over seven years, zero percent interest, deep energy retrofits—those buildings have to be participating in the national grid program or another utility program looking at deep energy retrofits.

And we're also doing **assistance for what we consider to be the barriers to implementing energy conservation measures**. So I believe it's \$3,000 for asbestos removal and \$2,000 for the knob and tube issues.

Home MPG, this is a pilot that we did in western Mass with eight municipalities. It used thermal images, so residences could look at their thermal images. And to help make a decision around whether they wanted to have an audit done, implement measures. They got a score before any measures were implemented. And then after measures were implemented, they got another score. And there was extensive communication and outreach done.

So, this is a pilot that's wrapping up right now. The materials should be up on our website now. And they're still sifting through the data to learn from this. But you'll see more updates on that coming down the road.

We're partnering with Mass CEC (Clean Energy Center) on **funding for renewable thermal** including heat pumps, biomass thermal heating systems, and wood pellet stoves. We also announced **electric vehicle state incentives**. This is a program for all consumers. There's a rebate available for electric, plug-in, hybrid vehicles. You can get \$2,500 and take it to your dealer and get a rebate for those vehicles.

So, what can you do? What we have found to be very successful is having an energy committee. And it doesn't have to be labeled an energy committee. It can be a sustainability committee, a climate committee. A group of people that care about these issues and that are committed to working on this.

And at the municipal level, what we think is important is that it's not just all volunteers. It's really important to have volunteers, definitely, but also a municipal official and an elected official, so that you have that cross-communication and people have the buy-in across the different parties.

And other institutions, whether it be a private sector company or a campus, you would just want that cross-representation. Because communication is really key. We've seen some issues when we've had just purely volunteer energy committees. So we found that to be very effective.

Contact your regional coordinator. Your regional coordinator can help you with just about anything under the sun. There's your traditional questions, but we've got people in the field that are very resourceful and they may not have the answer at their fingertips, but they're going to be able to find the answer for you. And we have great partnerships with other state agencies, so we want to make sure that you have access to them.

Get trained on Mass Energy Insight, this is particular to municipalities. So as I mentioned earlier, this is our free tool available to all 351 cities and towns. And we have more than 240 now that are registered users. And once again, it's knowing how you're performing that's important.

Contact your utility about an audit. I think it's important to just contact your utility, period, to learn about all the programs that they have, the incentives that they have, the audit offerings. On the municipal side we worked really hard with the PAs before the most recent three-year plans, to make sure that they had a separate program of services for municipalities that would be consistent across the different IOUs. And so we've worked really hard for that. So they are required to provide dedicated services to municipalities, so that's important.

Then talk to other municipalities in your region. Your neighbors. We've seen a huge neighborhood effect with everything that we do. Folks find out that two towns over, they adopted the stretch code. That can make a big difference. Or that they had accessed the utility programs. And also, being respectful of your own culture and how things operate in your municipality, that looking at other municipalities that you know have a similar culture and how you can learn and share experiences.

It's important to have a champion. And that champion can come in the form of an individual or a group of individuals, volunteers, somebody in an official capacity. But that really makes a big difference.

With the required annual reporting we want to make sure that communities are complying with the requirements. Criteria 1 and 2 are around siting renewable projects or alternative energy projects. So we want to make sure that they're siting properly on the energy reduction plan. We want to see how they're doing on meeting that 20 percent. Are they having problems? Criterion 4 about vehicles, I'll say that Criterion 4 is the one where we've had some issue with people buying vehicles that didn't meet the requirement. So that's something that we're looking at. Lots of times, what we find out is that it's communication across the different departments within the municipality. They've adopted this policy, but it hasn't been communicated well to all the departments.

And then on the stretch code, once again compliance. Are they meeting the HERS rating. I will say that on the commercial side, what we're collecting I wouldn't say is as robust as it is on the residential side, but what we're looking at is making sure that they comply. But we also want to see what the HERS ranges are.

We're seeing several municipalities, more than 40, that have gone below 55 on HERS ratings for the homes in the community.



Eric Hove, MAPC

I'm the regional plan implementation director for the Metropolitan Area Planning Council, and I will be discussing land use in particular. We do work with DOER and a number of cities and towns on clean energy, policy and implementation. My background is more specifically on the land use side, and I was asked to talk about sustainability and smart growth in particular.

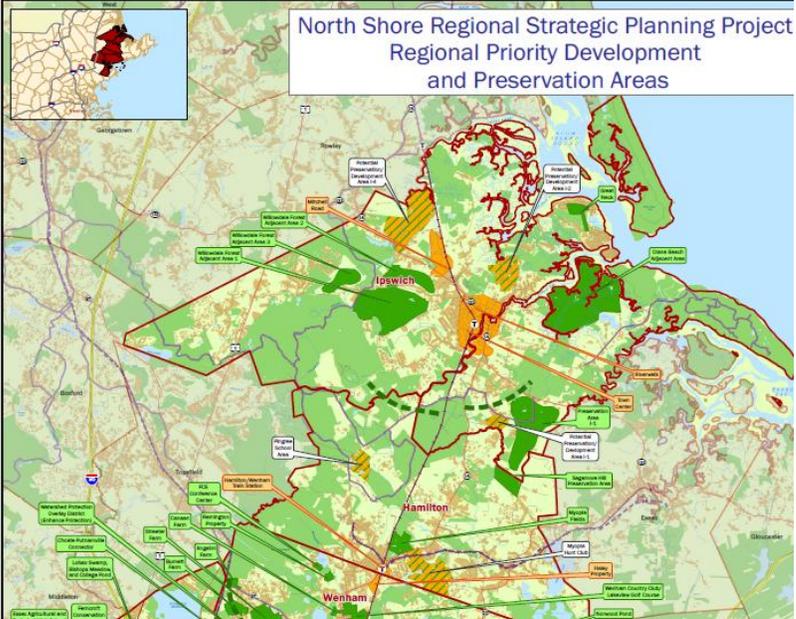
MAPC is the regional planning agency for 101 cities and towns in greater Boston. We have about half of the state's population and roughly two-thirds of the



State Actions

Planning Ahead for Growth

- Plan
- Zone
 - Zoning Reform
- Invest
 - Transportation
 - Housing
 - Infrastructure



Big ? : What will be the next Governor's priorities?

state's employment within the 101 cities and towns.

So our mission is to promote smart growth and regional collaboration. Historically we've focused on transportation, housing, land use, and the environment. In recent years, we've expanded into clean energy, public health, and we do a lot of municipal procurement. We buy fire trucks for cities and towns and save them money in the process.

But I think at our core, our major focus is working as a regional entity across municipal boundaries and really trying to focus on better land use, outcomes and patterns. We are required to do a regional plan. We started this process back in 2008 for Metro Future. This regional plan covers greater Boston.

And unlike in many states, where the regional or county governments actually have regulatory authority, we do not. We work with cities and towns on planning and zoning processes, but only as a technical assistance provider, really solely in an advisory way. At the end of the day we can work with cities and towns on developing zoning proposals, but it comes down to either the city council or town meeting to actually implement those recommendations.

What is smart growth? I prefer a very simple definition that it's really compact development that creates walkable, vibrant neighborhoods. Think downtown Boston, this is kind of the Ground Zero for smart growth. But it really comes in all scales. So town centers, the New England town center is smart growth. Village centers are smart growth. And as you get into more outlying parts of the Commonwealth, small villages with farmland and forests is smart growth.

So it's really a matter of scales. But one of the key components is a mixture of uses, and looking for that high level of quality of life and resource conservation.

We can't really separate the issues of sustainability and of equity. Our work in transportation and housing, that's always been a component, making sure that all people have access to opportunity.

In recent years we've taken a much more proactive approach in looking at equity as central, in terms of everything, from how we're doing as a region economically—are all people better off or are we leaving people behind?—so I think we've really broadened that focus and made those connections between equity and inclusiveness with overall environmental and economic sustainability.

We started talking to people in 2008 about what kind of region people want. We took a look at cur-

rent trends and figured out where things are going if we don't change our policies. And where we'd like to be in terms of what we hear from the people in the region.

Current trends, if they continue, will result in more dispersed development, destruction of natural resources, far from transit stations and an inefficient use of our land.

One-acre zoning, this is a difficult thing. I think right now we have plenty, if that's what you're looking for, there's plenty out there. We don't need a whole lot more. But in terms of natural resource protection, habitat disruption, the very low-density, large-lot zoning is a real issue.

If we continue to develop as is, we're talking about over 150,000 acres that would be converted from working landscapes and open spaces into commercial and residential development. In recent years, that's about 22 acres a day of land conversion.

Traffic congestion is always an issue. And it's become an even bigger issue in terms of access to jobs. Recent studies have looked at the cost of housing and transportation. We've always been a high-cost state and region, but now with transportation costs added to that, it's coming close to 50 percent of many households' budgets. And vehicle ownership is decreasing, both for low-income households and then the whole millennial generation with other options out there are choosing not to use cars. So it's a real issue of how you get to work, if there are other options available. And again, with no change, just more congestion.

Water and other natural resources and issues, even though we live in an area with fairly plentiful rainfall, With the current trends we're looking at almost double the number of cities and towns that exceed their regulatory permits. And I think you know, with even more recent research with the impacts of climate change, I think we'll see even higher levels of water shortages unless we start building another way.

So we came up with this vision by talking with people around the region about what we want to do, how we want to live, what we want to see. And I think the great thing about this vision is that it's not my agency that's responsible for implementing it, although we do as much as we possibly can. But it's all our allies. It's our cities and towns. It's our state policy makers. It's the groups on the ground, in the trenches, day after day, working on a whole set of issues from economic prosperity to affordable housing to housing production, period, that make this happen.

And then I think I just want to compare, we saw the current trends, there, but then if we change the way we do things, if we tweak the local zoning, if we change state policy and try to do a better job of steering investments and providing incentives for cities and towns to help meet these overall goals, we're looking at a very different future. So again, residential development is much more strategically targeted in areas that have infrastructure, that have transportation access.

And up in the suburban area, we can see a lot more growth focusing in the town centers. A lot of these places already have infrastructure and capacity and could see new development through infill redevelopment and on previously built areas.

Looking at the housing mix, we are really changing not just our transportation preferences, but our housing preferences are changing as well. We're an aging state. We have many baby boomers who will be retiring by the year 2030, so people are looking for different housing types, different types of communities where you can walk to shops and stores and restaurants. And the same is true for the millennials and the college students that are here. They are looking for a different mix.

Transit potential, biking, walking, promoting these healthy alternatives to the automobile, has become a priority. We have a goal of tripling the number of trips for biking, walking, and public transportation. There needs to be targeted investments at the state level and state infrastructure, such as our transportation system. But also, the local level, when you're redoing the local sidewalk or the local road, there are changes that you can make to that physical infrastructure that can accommodate multiple modes.

We did housing demands for 164 cities and towns in eastern Massachusetts. And looking at the upcoming retirements, we're going to see almost a million baby boomers retiring by 2030. So where are we going to find new workers to replace these workers? We're seeing smaller household sizes. That's constantly been shrinking.

In terms of migration, just in recent years, we're starting to see positive migration instead of the old story of the out-migrations. If we want to continue to grow our economy, there is going to be a serious need for new housing units. Even if we basically keep on our current course of fairly anemic job growth, we'll need 300,000 units by 2040. But if we want to actually see some significant economic growth, with new workers staying here, attracting them and keeping them in the region, we need almost 400,000 new units. That's a big charge, and that's going to be difficult, a town by town and

neighborhood by neighborhood thing. But it really is a critical link if we want to have a competitive economy in the future.

Equity. We've been doing a series of regional indicators reports. I've been rolling them out over the past couple of years. The state equity indicators report took a look at how we're doing as a region on a number of different factors, looking at race, gender, income, and just a couple of findings that I thought were fairly startling, that I want to pull out again.

If you read the papers, you see a lot of these things, but everybody is not succeeding. There is this issue of, you tell somebody your ZIP code and you can make fairly accurate predictions on future earnings and future life success. There are always exceptions, but at the same time it shouldn't be the exception. Everybody should have ample opportunity to get ahead and have a successful life.

The Dukakis Center statistic is really telling. I think compared to a lot of places, we have a pretty good transportation infrastructure. We haven't been keeping it up as well as we should, but there are still areas, even in Boston, that do not have adequate and efficient transportation connections and access.

Other challenges, a lot of it does come down to money. **Transportation**, we along with many partners worked really hard, and last year the legislature, the governor, ended up with \$600 million in new revenue for our transportation system. This is roads, bridges, bus services in the non-MBTA region, and a lot of investments in the MBTA system itself. But that's really only about half of what we needed. So for a transportation system that really serves us all, whether you're in the inner city of Boston or in the Berkshires, you want to get to work and you want to get somewhere, anywhere on a Saturday or Sunday without a car, we need almost \$500 million more.

Water, this includes wastewater. There's been a study that came out probably a year ago now, that almost \$20 billion in investments in our water and wastewater infrastructure are going to be needed, which is pretty staggering.

Brownfields. There has been some additional money found in the legislature to help keep the brownfields program working, but the target is about \$15 million a year to actually meet needs for redeveloping contaminated properties.

Energy, I think Meg did a great job covering all the great work that's happening in her office, but everything from efficiency, renewables, and reliability are going to be key if we're going to meet the Global Warming Solutions Act standards.

And then **climate change adaptation**, this is going to require capital infrastructure investment to protect our communities.

Making all of this happen, moving from the challenges out there to actually making these changes, I like to think of this in terms of three different levels. You have the state that leads the way, setting laws and policies, and investments that really can provide the overall framework and direction. My agency really thinks about this regionally, across lines, and so many of these systems and issues really don't stop at the municipal borders. You do have to think about them regionally. Some cases are New England-wide and even broader when you're talking about climate change.

And finally, and I can't really emphasize this enough, so much of what has to happen has to happen at the local level. When you're talking about zoning, planning, energy limitation, so much of this happens at the municipal and even the neighborhood level.

So state action, I give a lot of credit to the Patrick administration for their leadership on a number of these issues. They've created this framework called the **Planning Ahead for Growth**, that works with cities and towns to identify where they want to grow and where they want to protect. Then they work with the regional planning agencies like where I work, to figure out all of these local priorities, which are raised up to the level of a regional priority, which are really significant opportunities for housing development or critical natural resource protection. And then the state does the final screening of which of these regional issues rise up to the state level of significance.

And I give them a lot of credit because I think they're putting their money where their ideas are, and then after the state-endorsed priorities have been identified, they're actually targeting investments in infrastructure, in housing development, in land preservation, to these areas. It's like an abbreviated version of a master plan, but it's on three different levels that really is thinking about the long term regarding where we spend our limited resources.

Investment in housing. Obviously there is a huge need, as well as the related infrastructure, and it's not just more money needed but it's also a question of where do these investments get made? There are some places where obviously you can leverage state investments with a whole lot more private sector investment to really get the kind of outcomes we're going to need over the next 10 to 20 years.

And finally, the big question is, we have a gubernatorial election coming up. We'll have a new governor. Whatever his or her priorities are, are going to

have a big impact on what the new programs and policies and direction are going to be for these sets of issues.

On regional planning and technical assistance, we work with cities and towns on a range of issues. We were involved in the transportation finance campaign. We're also working on zoning reform, which would basically give cities and towns tools that pretty much every other state has out there, in terms of making a modern zoning code and making it easy to do the right kind of projects and maybe more difficult not to do the right kind of projects.

Planning and zoning analysis, I mentioned the indicators report looking at a series of things, everything from transportation and equity, to sustainable growth patterns. And also clean energy and the regional collaboration across municipal boundaries.

At the end of the day it does come down to local action. These are a small set of the types of local changes that can get to a smarter growth future. We've been doing a lot on transit-oriented development, which basically looks at what do you do around major bus terminals, subway stations, trains and commuter rail stations? Really combining economic development and housing in these areas with transportation choice.

One other thing I wanted to mention on this list is "complete streets". We actually took a page out of the Green Communities program. There's \$50 million in authorization of the transportation bond bill. We're working to make sure that Mass DOT will actually allocate this money. But it's basically an incentive program for cities and towns to come up with policies on multi-modes.

QUESTION:

The complete streets, you told us it's funded by the transportation bond bill and incentive program. I just don't know what it does.

[Someone says, "Spend money."]

Eric Hove

That's the goal. We took a big page out of the Green Communities idea, where we basically ask cities and towns to take a number of street actions, such as adopting a Complete Streets policy. And then for taking these actions, there would be, assuming the money is released, funding to actually help implement the Complete Streets policy. So, money for capital improvements to widening sidewalks, creating bike paths, and just making it basically a better environment overall for all modes.



Ludmila Pavlova, Senior Facilities Planner, UMass Amherst

I work as an architect and campus planner at University of Massachusetts-Amherst. I've been there 15 years and I've taken a bit of an historical approach to talk about how the town and the university

have partnered together because this is a good time to think consciously about where we've been and where we're about to go.

UMass-Amherst has 150 years of environmental awareness. We just celebrated our sesquicentennial last year. So sustainability is embedded in our website, it's embedded in our memory. We believe we've done a lot of good things for 150 years; where do we go next?

I was at a recent meeting of the DOER LBE program with state wide sustainability coordinators at UMass two, three weeks ago, where we signed a memorandum of understanding with our electrical providers WMECo to work on additional energy efficiency efforts. And we received a \$75,000 grant from the LBE for a solar thermal array to preheat boiler water at our central heating plant, to improve the performance of our boilers. So it was pretty marvelous.

Given our topic to day of Community Sustainability, I want to start with **Sustaining Amherst**, because Amherst was an essential kick start for sustainability at the UMass campus. We've been doing environmental conservation and recycling for a long time on the campus, but sustainability as a word actually started in 2000 when the town decided to join the ICLEI Program, which is the International Council for Local and Environmental Initiatives.

So, the town of Amherst signed on to the local communities' challenge. And one of the things they needed to do was a climate action plan, including greenhouse gas emissions reporting. So they worked with University of Massachusetts, which was their highest greenhouse gas emitter to put together the plan in 2005. They have a wonderful website that was developed partly with help from the Landscape Architecture Regional Planning office.

So, at UMass Amherst we have a lot of knowledge capacity and we put it to use locally. The website highlights a number of different efforts and initiatives that the town has, in terms of meeting the climate action plan. I'm going to talk about the top four here. But as you know, in systems there are a lot of things going on, so I'm only going to highlight the

most important pieces.

When I was first hired at UMass Amherst in 1998, I was determined to implement building-integrated photovoltaics on all our buildings. I felt we had to make sure to develop renewable energy because it was the only way to stay green. And everyone said, "Oh, well, go talk to the recycling coordinator." At that time it was really hard to find champions. But there were a handful of us who were really committed, and what is best at the University is that we have committed students. So around 2002, there was an ad-hoc Faculty Senate effort on sustainability. And then budget cuts came, and many of the faculty who were involved lost heart, I think, for the most part.

But we provided guidance on new construction, at least, and Facilities Planning developed a resource conservation policy and green guidelines. And that was followed by a policy document from the *Administration and Finance Bulletin 12* and *Executive Order 484*, which essentially required state agencies to follow the same requirements as the stretch code and to design LEED-plus buildings.

And those policy documents have really changed the way UMass is doing business and the way we're coming together as an institution to think about sustainability in a holistic and systemic way.

We are the largest state agency, in a sense, because we are a public institution, we're the flagship campus, and we do a lot of research. So, laboratory buildings contribute quite a lot to energy consumption. Luckily, after 20 years of planning and hard work, UMass Amherst installed a co-generation Central Heating Plant, which reduced our greenhouse gas emissions by a third the year that it went online. So that's a success story that demonstrates how utility laws really do take a long time, but also have an amazing effect immediately on greenhouse gas emission reductions.

And it's important that, because UMass Amherst has the highest density of the Amherst community, that we also are a source of resiliency, having the central heating plant, having all of our electrical power lines buried. When some of the storms occurred, both with Sandy and with October 2010, the town residents could come to our library to warm up and charge up their cell phones, and to the recreation center to take showers. So we were really a center of the community that was lit up. And the students were fully supported as well, which meant that commuter students could come and find housing on campus.

All of those things, I think, have really helped us to lead on sustainability.

I will start with this timeline, would like to highlight the policy documents in red from 2004 that really began to shift our campus culture around sustainability. Around 2008 we hired a part-time sustainability coordinator. So having staff paying exclusive attention to sustainability really helps, whether you're a campus or whether you're a community.

We committed to certifying our buildings to LEED Silver, and we actually have done what the state requires, which is to design to LEED-Plus. And around 2010, we hired a full time sustainability manager, Ezra Small who is an UMass alumnus, and tried to see whether we would have success with the STARS program. STARS is a rating system for higher education. It's a program of the Association for Advancement of Sustainability in Higher Education. STARS stands for the Sustainability Tracking and Assessment Rating System and it applies sustainability metrics to the business model of higher-ed institutions.

Different rating systems support different business models, and for us the focus is on education, planning, operations, as well as investment and community outreach and equity—and these are the main categories within STARS. We had a graduate student, a few undergraduates, one faculty member, and a few staff members who gathered the data to see where we stood. And we reached STARS gold! And I think the moment we reached STARS Gold, everybody else started to pay attention—particularly executive leaders of the University.

At the same time, our horticultural and agricultural roots are very deep, and we have faculty and students that have been amazing in terms of the Permaculture initiative, which won the White House Champions of Change Award in 2012. So, our culture has really shifted toward celebrating the kind of environmental consciousness that is embodied in our practice, acknowledging that we're doing a lot, which we hadn't previously recognized.

Many people were surprised that we could reach STARS Gold, because people were aware only of what individual departments were doing. Achieving this high level of performance made people aware of the accomplishments of the whole campus. We have over 300 courses that focus on environmental sustainability - that's a huge capacity of knowledge that's being passed on to the Commonwealth and our students and faculty are partnering with our local communities.

Last year we applied to STARS again and we're still maintaining our Gold status. We now have the urge to get to Platinum, which is pretty exciting. We're in the top ten institutions in the country in terms of

reaching STARS Gold. We are also on the Princeton Honor Roll.

So there is definitely an institutional effort to look at sustainability, which is very complex. Really, when you think about it, it's very difficult to shift the status quo because there are so many different aspects of sustainability that touch on systems and are entrenched in culture and in ways of thinking and ways of building. And so, I would say over the last ten years we've really seen a multifaceted, systemic change at the institution, where everybody to some extent is learning to be an advocate within their group, where we're developing expertise in planning, building and energy in all staff, physical plant maintainers and facility project managers.

We finally have engaged the attention of our budget and the accounting and financing group on campus, which is really critical as the institution is going through strategic planning. We're looking at how to leverage the financial wealth of the institution in ways that meet multiple purposes and goals. And ultimately we're building leadership and organizational change from the bottom up. I am now part of a regional network of people who continuously discuss sustainability on campus—and the growth of enthusiasm is just amazing.

I'm going to give you a few examples of the social marketing techniques that our young people are learning and practicing on campus and in town. Here is the first example, illustrating how we have changed in terms of having a Chancellor's Sustainability Committee - that is, not an environmental performance advisory committee, which is what it used to be called when we had an interim chancellor. Now we have a Chancellor who supports sustainability, who has a committee of his direct reports that meet quarterly and talk with him about the issues that affect the system as a whole.

And we have subcommittees with people like me who sit on disciplinary or systemic groups, and work within their own expertise to develop recommendations up to the executive committee. And as you can see, we've touched just about every system that is important to our campus and to our business model as a whole.

I think this is similar to what's happening in the corporate world. And certainly the town has approached it in the same way.

Another example of social marketing is the Sustainability Festival in Amherst, which the Town has hosted for the last five years. It's well-defined on their website. Everybody comes on Earth Day and sets up a tent. And this year the UMass Permaculture Group partnered with the town to host a used cloth-

ing Sustainability Fashion show. And they worked with all of the local clothing stores and businesses to bring them all together in one place. They provided food from the permaculture garden at the fashion show, and food also came from local gardeners. And it was really a wonderful and exciting event that everybody loved, and the Amherst Energy coordinator, Stephanie Ciccarello, who is only part-time (we would love to find full-time funding for her) worked with the folks at the permaculture garden to organize this. And everybody was very happy, including -- especially the businesses.

And this is partly happening because we have a large work force that is ready to go and wants to be engaged, and that's our students. There are probably over 50 students now who are part of the Eco-Rep program reporting to the Sustainability Manager, and they organize events on campus that reach out to approximately 25,000 students.

We also have a sustainability fellowship program for students who are doing academic internship projects. This is now growing. They are implementing a Green Office Certificate program in all of our departments on campus that is connecting students with staff and helping them run a "turn off your computer" campaign. Much of the behavior of change, social work that is happening on campus, is actually being led by our students.

The town has, on its website, sustainability tours complete with excellent videos. We haven't graduated to that yet. But in addition to the Town's sustainability tours that are targeted at commercial, business and residential development that the town hosts, we also have green building tours on our campus that are targeting the professionals and the public, as well as on-campus community.

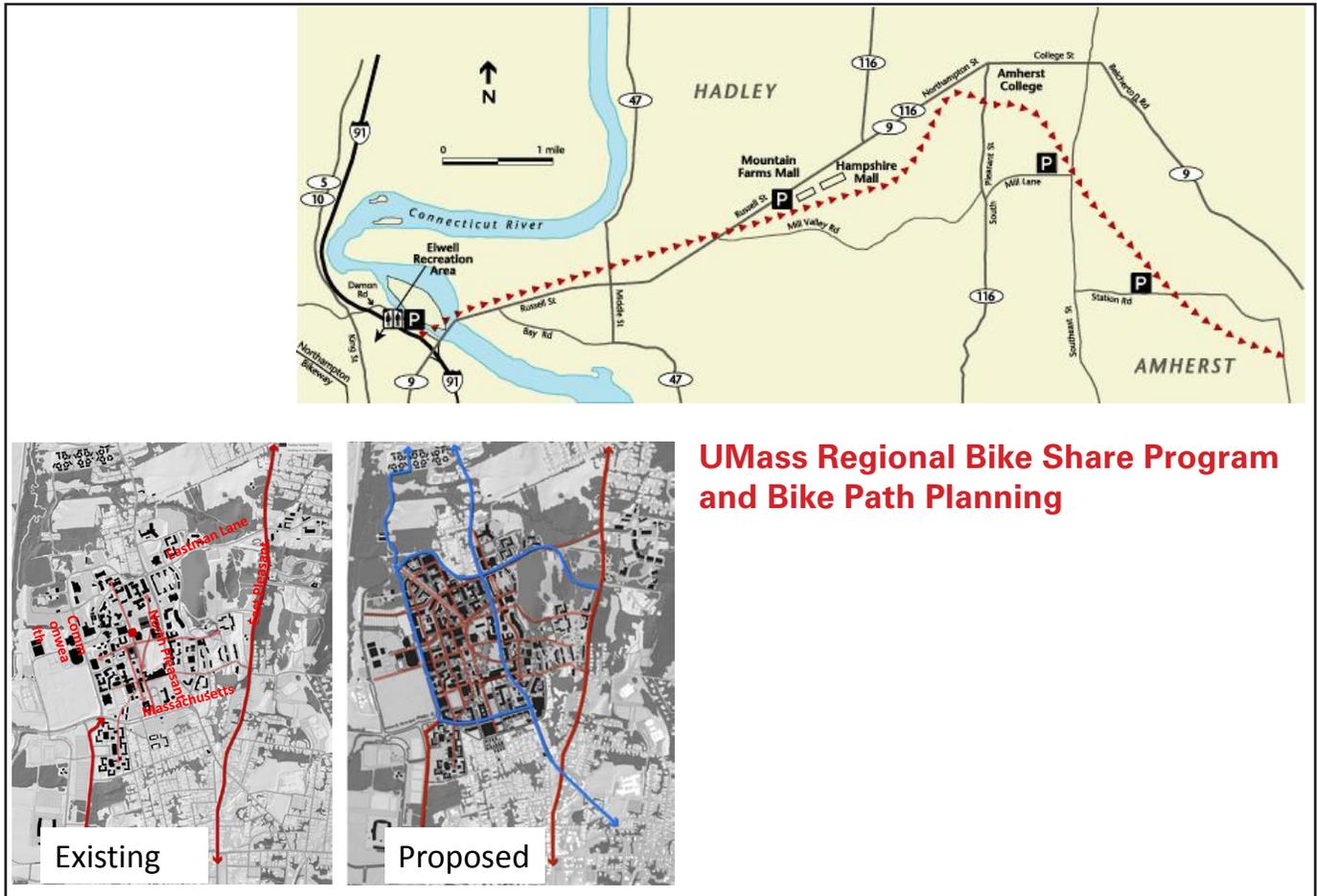
We started out with three buildings that are LEED Gold certified, which make up about 225,000 square feet. These are already certified at LEED Gold; we are very proud of them, and offer public tours to learn about them. But we have another 13 buildings that are in process of certification right now and they make up over a million square feet that's currently in design or construction or planning, which will be LEED Silver certified or better. Some of these are classroom buildings, some are renovation projects and some are laboratory buildings. This effort really constitutes a huge learning process for the entire campus and the state's building design and construction community.

We are also engaging in direct partnership on projects with the Town. One major project for us has been Growth Food Amherst and the Real Food Challenge. We have a very strong community-sustaining agriculture process and many citizens participate in CSAs in the area. But what makes a big difference is that our Chancellor signed the Real Food Charge, which commits to sourcing, by 2020, 20 percent of our campus food from fair trade, humanely raised, community-based, and ecologically sound providers. This commitment is a huge boon to our local food system.

The students leading the Permaculture group are actually embedded within our auxiliary services and dining services. They have four permaculture gardens that support the dining services by growing food on campus. They received a \$485,000 grant from the Kendall Foundation to support food sustainability. They will carefully track where our food is being sourced, categorize the suppliers, and look for ways to develop a resilient and healthy food system in New England that reduces greenhouse gas emissions from transportation and from other supply issues and increases the production and consumption of local, sustainably produced food.

Here is a picture of the students who had worked over two years to get the **Real Food** challenge supported by the Chancellor, and who now have the resources to make this happen—I believe we are at 16 percent real food, so we're actually well on our way to get to the 20 percent goal.





UMass Regional Bike Share Program and Bike Path Planning

UMass has a **bike share program** on campus that has been in effect since 2011, I believe. Our region has a wonderful system of bike paths. The images from our Campus Master Plan (above) on the lower left show existing bike paths and projected bicycle connectivity that we plan to develop in the future. On top you can see the Norwottuck Trail bike connector, which links Amherst, Belchertown and Northampton.

I would say many of our students are regular commuters along this bike connector—it takes about half an hour to ride your bike from Northampton to Amherst because the bike connector is so incredibly effective, and there are such good and fast bike paths available. Currently the Amherst Sustainability Coordinator and our Sustainability Manager are working on a regional bike share program. So you can come from another place, park your bike, and use multi-modal systems in more effective ways. And that’s a very exciting development, which engages the Five Colleges in reducing carbon emissions related to transportation.

And UMass also support regional transportation by having the first **Level 3 charging station** on campus. There are some commuters who come as far as Worcester or Boston: one electric car owner from

Worcester comes at lunchtime and charges her electric vehicle in about half an hour while she eats her lunch—her cost of commuting is very low and her greenhouse gas emissions are also very low. So we have level 1, 2 and 3 charging stations with support from state grants and are really excited to have the Level 3.

I have been describing how the University has been evolving in efficiency and it’s really exciting to report to you that the **DOER Leading By Example** program has been a huge success on our campus and our culture. I can show you our data, which just got updated with the help of Eric Friedman at the **Leading By Example** program. This information is available through Mass Energy Insight, in which the campus participates, so I encourage you to use it in your community.

We were doing very well, as you can see, reducing our greenhouse gas emissions, but our energy use kept going up. So even though our energy use went up from 2008 to 2013, because we switched to co-generation and the central heating plant, our carbon emissions were still lower. And as of 2013 UMass is meeting the LBE targets, but in 2020 and beyond, we may not. So our Master plan has been very careful in outlining the projects that we need to do in order to

maintain our edge in terms of being a public research institution and in order to maintain our buildings and supporting their function, especially for science and all the modern research efforts that are going on.

At the same time we have to talk about what we need to do to reduce our greenhouse gas emissions, because as you can see, the curves are no longer meeting the goals.

So, this is something that staff is working on throughout facilities and campus services and we have established a committee last year to discuss **Master Plan Sustainability**. We have members from landscape architecture and regional planning, from physical plant, from across the disciplines that need to come together and talk about all of the issues and how can we systemically address this problem and actually be ready, so that we can continue to perform well. The University is developing an **Energy Master Plan** and in addition to resiliency, we're focusing on greenhouse gas emissions reduction as part of the outcome. We're looking at implementing utility-level renewable energy generation on the campus and we will be evaluating multiple financing options, because sustainable financing is the only way for this to happen. And we also have research programs that have been in place for about a decade and are studying whether agriculture and solar electric generation can coexist.

And as part of our campus development guidelines, we are looking at equity, open space, storm water management and sustainable site elements of the campus. Because, as you learned earlier about complete streets, this is our version of the complete streets on campus. The campus embraced an extensive, community-wide visioning process over the last two-and-a-half years and developed a **Campus Master Plan**. And that effort gathered so many people in the process that we're leveraging that information now to be able to focus in on districts, and to more specifically think about landscape improvement guidelines and to develop a landscape master plan that includes sustainable sites, that actually thinks about utility-level solutions to storm water management, rather than just doing it one building at a time.

I would say communicating or visually engaging the community has been a consistent challenge, and we're getting much better at it, mainly because social marketing is becoming a greater part of our culture and we have knowledgeable young people who are being hired to remain as staff members, which is really delightful. The **Sustainable UMass** website was launched last year and lists multiple events and incorporates information from sustainability efforts across campus. We have a **Campus Sustainability Day** that happens the same week that

the **Amherst Sustainability Festival** takes place, and we have students who are specifically thinking about what are the kind of marketing campaigns that we need to put in place in order to achieve desired behavioral change?

Over the last three years, we've been maintaining data on energy use in our buildings, and we're now starting to develop in-house resources, so that by using GIS and the general purpose viewer that Ezri has provided, we can offer our facility and project managers information about the past energy use of buildings, so that they can think about how to do the kind of renovations that improve on past performance.

In residential life, we just implemented an LED replacement lights program with our local utilities DOER, NSTAR and Phillips Lighting who donated over 1,100 LED light bulbs. Our army of students has been deploying those bulbs in residential life buildings and over 500 have already been installed. We house approximately 60 percent of our students on campus, so that's a pretty major effort on our part.

UMass now has a composting program in all of our retail dining—you won't see a single garbage can anywhere. If you see a garbage can it's recycling only or there are four of them, including composting and we have been successful in documenting an Innovation in Design credit under LEED for our composting program on campus.

We also have a model green residence hall, so whenever we do tours on campus for prospective students, we not only walk them through the wonderful places and labs and academic spaces, but we take them to the dormitories and we show them a model green residence hall, so that they know right from the start what it takes to live in a more sustainable lifestyle.

We have **Green Building Guidelines**, which are now in their second iteration—they help our designers to understand how best to apply the LEED rating requirements on our campus. We determined, for each credit in the rating system, whether it has a high-medium-or low-priority and also if it has a high—medium- or low-feasibility, highlighting particular obstacles that might have to be overcome in order to obtain certain credits. It has been a great help on projects that are doing LEED construction because it means that the University comes to the table ready with information and challenges the designer to help us do better than before. Many of designers use this tool and we just started requiring the measurement and verification credit as part of the guidelines. We have a measurement and verification template that will help our designers to realize that there are resources we bring to the table in order

to reach our goals. And we're looking to develop an in-house commissioning team with multiple funding from different sources.

The campus now has many LEED resources that outline our experience with LEED buildings and provide information that we have gathered. We don't think just meeting LEED Silver is enough, and we really do need to digest what we've done, what has worked, and what hasn't. We have four green building researchers that work in Campus Planning, that pore over LEED documents to extract the more important aspects of the documentation. Currently they are working on energy modeling guidelines, because we want our project managers to be knowledgeable when they supervise the consultants that are developing the energy models for our buildings, and we also hope that our consultants will share with us the energy models, so we can study them and leverage the information that they are providing.

And I think ultimately sustainability is leading to an alignment between teaching, research, operations, and community outreach. The kind of information that we're developing and learning for ourselves, we often share with the town and our community—particularly as our students graduate and enter the workforce. We believe this is the only way that we will achieve sustainability - if we all get together and start thinking and doing our part.

And so far, we've had a lot of support and positive feedback from agencies and having won some really prestigious awards, including the **Climate Leadership Awards** from **Second Nature**, which just became public two weeks ago.

Lastly, the campus is working directly with Amherst on a Town-Gown committee that was established about three, four months ago. The Town completed a Master Plan about four years ago, I think, and our Campus Master Plan was just completed in 2012. So now, this committee is studying the two master plans—how they connect, what are the synergies and what are the conflicts between them, so that they can support economic development, transportation and in particular, housing. The University and the Town hired U3 Advisors consultants out of Philadelphia, to help us with market analysis, and to do this effort in a truly inclusive fashion. We're currently in the middle of the project, which I think is a very positive approach towards how to deal with major town-gown issues.

I'm showing you an image of our **Campus Master Plan** and would like to highlight the area in the south where we have mostly parking lots right now, but we are envisioning looking for ways to build housing in the future as a buffer and creating a town street next to Amherst that will help our students to stay on

campus for activities that are appropriate and don't disturb our neighbors, while also encouraging them to go out into the town to use businesses and to do so responsibly.

Jim Newman

So, you mentioned the M&V credits that you're now



requiring. Have you actually done an M&V credit yet on campus? Because just speaking from the USGBC perspective, the M&V credits are the ones that are least chosen.

Ludmilla Pavlova-Gillham

I'm a member of Society of College and University Plan-

ners, and I've been talking with my colleagues about campus sustainability for at least five years, and today's account is just an update on our status to date, as the landscape is continuously changing. I would recommend that the LEED Measurement and Verification credit become a requirement for any agency that is following a government program, because it's very difficult to know how your building will perform after it is built if you don't build it into your contracts that the designers need to stay for an extra year and measure your operations to make sure that you're actually performing as designed. And to do that you have to allocate funds for an as-built energy model, because without having that model at the end, you really cannot compare design level expectations to post-occupancy operations—you would be comparing apples to oranges. The design model is very different from the as-built model. And to answer your question, we are in the process of trying to get this credit certified on one of our DCAM buildings.

Jim Newman

Jim, did you ask a question about renewable energy on our campus?

Ludmilla Pavlova-Gillham

We have a micro-grid in place right now. So, when our central heating plant is operating fully, it provides 70 percent of our electricity. And we only purchase 30 percent of our electricity. We're actually building an electrical substation on the northeast part of the campus, which will allow us to extend the grid and provide redundancy and resiliency. And we're going to try to become our own utility in order to be able to make the cost aspect of the equation more successful for PV generation at a utility level. We're hoping, with this development along Mass. Avenue, to actually build an underground loop, so that we can have a full loop of electrical service on campus. And with the electrical substation in place, that will allow us then to electrify the parking lots.

Jim Newman

This is part of the energy master plan?

Ludmila Pavlova

That's right. So some time by fall, we will have an energy master plan that will outline a series of alternative scenarios for purchasing a new boiler for our central heating plant, benefits of developing the electrical substation and planning for extending a campus-wide micro-grid on campus, suggestions for further campus energy reduction measures, as well as how best to approach utility-level renewable energy generation.

Jim Newman

The relationship that UMASS and the town of Amherst have is an ideal setup to think about something at the town or district scale. The university and the town are already doing all the work. Why not get the benefit of both planning focus and branding that come with something like an EcoDistrict? There is also a continuing regional development of expertise in Living Buildings. The town now has experience and there is a lot of potential to do some living buildings or to think about action at a larger scale. There's a Living Building Challenge Collaborative in the Boston area, which is also encouraging towns to consider the Living Community Challenge as an opportunity. UMass is placed right in the middle of this potential opportunity. Many towns in Massachusetts are also placed right in the middle of those opportunities, having engaged with the Green Communities Act and started to look carefully into energy use, water use, and transportation within the structure and the community.

I'm going to take a slightly different tack and talk about USGBC's LEED rating systems and municipalities, and what is going on right now, from the USGBC chapter perspective.

First, there are different LEED rating systems, so we'll start with LEED for neighborhood development. LEED for neighborhood development (LEED-ND) is really about neighborhood design and patterns, infrastructure, street infrastructure and the relationship of buildings to infrastructure and to other types of transportation linkages. There are a number of LEED ND projects around the area that are worth taking a look at.

From the municipal perspective, LEED-ND has begun to be seen as a model for restructuring zoning. It has a structure format for including more of a multi-use perspective, as Eric Hove spoke about. LEED-ND as a model is more focused on how people experience zoning as opposed to the organizational aspects of zoning. And in many ways that's what progressive users are moving toward.

The exemplary case for using LEED-ND to structure zoning is Buffalo, New York, which is just in the process now of implementing their form-based code zoning model, based quite heavily on LEED ND. Buffalo is a very interesting example, but when you talk to the folks in other cities about this, everybody cringes. They are loathe to consider throwing away 150 years of zoning and everybody's desires and concerns that have been built into those negotiations for all that time and all of the compromises with different groups that have been built into zoning regulations. But in the Buffalo experience, they found very quickly that when the planning team started to look at what they really wanted the city to be like, essentially everything that they wanted to do was prohibited it by current zoning. All of the cool things, all of the great streets that they wanted, all of the fabulous mixed-use development is essentially completely prohibited by zoning regulations.

They decided that rather than making each development go through a process of stepping around the zoning restrictions—a process of having special zoning appeals and such, they could just recreate the zoning to actually do what they want it to do.

And so they took about five years of work, and again, based on LEED-ND as a starting place to really develop a whole new form-based zoning model

My understanding is that Northampton is in the process of doing a similar thing, though I don't know how far they are. Clearly, this kind of thinking is spreading through the municipal environment.

I have had some involvement locally, with the Talbot-Norfolk Triangle Eco-Innovation District around Codman Square in Dorchester. This is an area that has been through a LEED ND evaluation as a way to think about how they are doing. What more do they want to do? How do they want to change the community? The community is comprised of about 250 buildings, mostly residential and small scale.

The other way that LEED is being used in municipalities is to use LEED_BD&C, the design and construction LEED rating systems that is focused on single buildings, as basis for high-performance building regulations within towns. I am sure that many municipalities are thinking about this model, if not implementing it.

In the City of Boston, the Article 80 zoning review requires LEED certifiability to a certain level. Anything that goes through the Article 80 review process must be "certifiable". Cambridge has a similar zoning regulation, but I believe that Cambridge requires certification.

The first step for municipalities is to require municipal buildings to be certified. There is a compelling

story to be told about requiring certification of municipal building that talks about conserving public dollars, about enhancing the quality of development, and about enhancing the value of the town to developers.

We are talking about LEED as the basis for this creation of value, but it doesn't have to be LEED, as we see in the Massachusetts School Building Authority approach, which is much more wide open.

Dallas presents an interesting case here. One does not think of Dallas as the most progressive city in the world, but ten years ago, the City initiated phase one of their Green Dallas program. The first part was to make all new municipal buildings certified to the silver level. That was the first step. They now have a large number of certified municipal buildings, including schools and transportation infrastructure.

The second part of phase one was to require increased levels of energy and water conservation within all commercial development. Their definition of required conservation was primarily based on LEED for New Construction, but it did not require the full range of LEED credits, nor certification.

Starting ten years ago, phase one turned out to be relatively successful, setting up a second phase. The second phase was supposed to require actual LEED certification for all projects over 50,000 square feet within the city.

What actually happened was that they stepped away from LEED, and instead, turned toward the International Green Construction Code (IgCC), incorporating IgCC into their building codes. Note that Dallas has control of its building code, while municipalities in Massachusetts do not. However, the move to IgCC has turned out to be quite successful. It was implemented relatively easily within the city, and the code enforcement team in Dallas seems to be able to handle it. It has gone relatively smoothly since it was implemented. The Dallas example is a progressive model of how to require high performance buildings within a city.

There are obviously many different solutions for different types of buildings, as evidenced by the Massachusetts School Building Authority's use of both LEED and MASS-ChiPs. Within most towns, municipal buildings are typically larger and have a bigger reach.

Municipalities should be thinking about which tools are right for dealing with their specific goals, whether they are looking at ecological relationships within those town, water relationships, transportation-oriented development and transportation corridors, or regional priorities. As I am sure that Eric would agree, good data is key to using any of the

tools. The USGBC MA Chapter has been advocating for building energy disclosure because it provides a very rich source of data for communities to understand energy use within the community. So one of the interesting findings out of this work is a study that was just released out of Harvard Business School, called "Government Procurement Spillovers: Evidence from Municipal Building Policies in California." This study looks at communities that have mandated that municipal buildings achieve high-performance ratings; primarily LEED, but there are some other choices in there as well.

The main findings of the study are that the positive spillover effects to the town are quantifiable. Municipalities that require certification of the municipal buildings leads to increase capabilities of firms in the area. Municipal building certification requirements also increase the desirability of the private building certification process, and increases the understanding of that process both within the municipality in code enforcement and zoning regulation, as well as with the service providers in the area. The effect is bigger than the town, they found that the spillover effects are regional.

In the case of Massachusetts, the state requires certification of schools. This requirement affects the whole region, because service providers who are serving the state are also serving other regions, and their capabilities are now enhanced, and the ability of the market to provide materials is enhanced.

There are 50 municipalities in California that have adopted certification of municipal buildings. Many of the municipalities in Massachusetts have moved to the next level by requiring certifiability or certification for all commercial and residential buildings over a certain size. The study suggests that the flow of benefits to the municipality is even greater in this case.



David Strauss

A Better City: I will be describing our work with the commercial real estate sector on the Green Ribbon Commission, our engagement with BERDO and the City of Boston, and a program that we have been operating with the commercial real estate sector in Boston and

Cambridge, called the Challenge for Sustainability and its impacts in helping the city achieve its goals for climate action.

ABC itself has been around for 25 years. We are formerly the Artery Business Committee. Some of you may have worked with us in that phase of our existence. In 2006 we became **A Better City** as the Central Artery Tunnel project was coming to a close.

And we looked at what is the next phase of ABC, and how do we leverage the significant leadership on the private sector side with the building owners, property managers, and major employers to be involved in large-scale civic engagements, city building issues that are out there, taking the lessons we've learned on the Central Artery Tunnel project and bringing them to other areas of transportation, land development, and the environment.

We currently have just over 100 members. We tend to be a very niche organization. We're not like a Chamber of Commerce that's out there trying to bring in everyone they can. We want to have individuals on our board who are very engaged in what the future economic competitiveness and quality of life in the City of Boston are. And so, our board tends to be very hands-on leaders who are really engaged in our committees and are working with us to engage public sector officials, politicians, elected leaders on the work that we're doing to really move these issues forward.

The core areas that I mentioned, are transportation, land development, environment. **Transportation**, we're working on right now issues of the gas tax and trying to come up with sustainable transportation funding sources for the Commonwealth, so that we can invest in infrastructure, South Coast rail projects, Green Line extension, making sure that we're maintaining the existing systems that we have within the Central Artery and the metropolitan highway system, as well as expansion and development and new public transit services for moving folks around.

Land development issues, South Boston waterfront and making sure that as that area develops, that it's developing in a way that is enhancing the urban life and balancing all of the needs of industry, residents and commercial development that's taking place, as well as making sure that things like the Rose Kennedy Greenway are being developed in the most effective way possible.

In **environment**, we have our Challenge for Sustainability. This involves working with building owners on stationary emissions. We also have transportation management associations that are working with employers and buildings on mobile source emissions and trying to develop programs to get folks out of their vehicles and into alternative transportation options.

The Boston Green Ribbon Commission was established in 2010. It was set up as an outcome of the Boston Climate Action Plan, which had a leadership task force that was a part of it to help develop the plan itself. Within the plan it said you need to continue to have private sector leadership engagement

on these issues.

The Barr Foundation's founder and funder, Amos Hofstetter, went to Mayor Menino and said, "I'm going to fund this commission and make sure that we're bringing the private sector leadership to the table to help the city achieve its goals that are laid out in the climate action plan. The green ribbon commission is made up of between 25 and 30 presidents, CEOs of our major institutions, Harvard, MIT, UMass-Boston, Boston Medical Center, Al Leventhal at Bain Capital and Bryan Koop at Boston Properties are all engaged on this commission. Its task is to be there to provide the voice of the private sector and support to the city as they move forward a lot of the groundbreaking policies that the City of Boston is trying to push through within its climate action plan. The Commission also provides a sounding board and resource for the city to develop those initiatives.

The commission was set up with three main working groups. The commercial real estate working group is one that **A Better City** was actually tasked with staffing, and so we had that working group up. There's the health care group, and a universities and colleges group as well.

We really are focused on research and advocacy to advance these issues and programs that were within the city's climate action plan and have now been tasked with the responsibility of helping the city update its climate action plan in 2014, which is a process that's currently underway. If you have ideas and want to contribute, we're open and have all ears.

The commercial real estate working group is putting together a group of 20 to 30 commercial real estate players that cover almost 40 percent of the commercial real estate property in the City of Boston. We're doing research in a variety of areas, and I just want to highlight a few key projects that we're working on right now that I'll tie back to the city's climate action plan and try to move forward, greater adoption of green building practices and energy efficiency efforts within the City of Boston.

A lot of this work is for the City of Boston, but it has a greater potential impact in helping other communities around the Commonwealth, and in some cases hopefully throughout the region.

One of the programs that we're doing right now, that we're just starting up, is a behavior change tenant engagement program. The work that we're doing within our Challenge for Sustainability consists of our efforts working with utilities on the Energy Efficiency Advisory Council. There are a great number of properties that have done the low-hanging items and have achieved some significant reductions and energy efficiency. But as we look at 2020

and, beyond that at 2050 goals, we know there are significant initiatives that we need to take within the behavioral side of how our buildings are being operated and how people are utilizing the systems within the buildings, the plug load pieces.

And so, we are currently working on a behavior change tenant engagement program that's conducting some research on best practices across the country, as well as locally. Pulling that together to develop a few pilot programs that we're going to be trying to implement during the summer, to really identify what works and trying to come up with pilots that allow us to directly identify what energy efficiency reductions can be tied to behavior change. Because as we try and push the utilities to potentially invest in behavior change programs, the biggest roadblock that we have for them to provide financial assistance incentives is the fact that you can't tie back the savings and identify it with the behavior pieces. And that behavior change may be temporary and the utilities need to be invested in more permanent reductions. We're trying to help bridge that disconnect there.

On green leasing, this is something that is specifically identified within the city's climate action plan as a goal. We have just started a project to try and bring this forward and to advance it. We've hosted a small workshop with the Boston Bar Association back in mid-May. We brought up a fellow from Washington, D.C., who is with the Institute for Market Transformation, who's really pushing a national green leasing recognition program in partnership with US DOE, to come and present. And really, it's trying to find what tangible, implementable language can we adopt and put into place on small test facilities in the City of Boston.

And then one of the other keys is the financing piece, one that we haven't really fully started to address at this point. But we'll be working with the City of Boston. They have a fellow from the National Resources Defense Council, a recent grant that they received, where they are going to be spending the next three years really focused on this issue of developing new financing strategies for energy efficiency in the commercial real estate sector.

But in the meantime, it's trying to push through as many tools for the toolbox as possible, one of those being the commercial space legislation that Senator Joyce has filed. The Mass chapter of USGBC has been a prime champion of that, and we've been pushing it within our membership as well, to try and add that mechanism there.

One of the interesting pieces that we've been able to add into that legislation on the financing side is a

piece that ties in with resiliency planning, and trying to enable commercial pace, which is the property asset clean energy bill, where you could do pace financing for resiliency projects to harden your facility from wind and water in addition to energy efficiency improvements.

And then one of the pieces—the one that we had the most success on to date—is our work with BERDO and really trying to push building energy reporting and disclosure back in 2012, I think it was. We had done an initial white paper on best practices from around the country, looking at Washington, D.C. and New York, San Francisco, Seattle, and figuring out how were their roll-outs going? Most of them were still in the process at that time. What lessons learned were there for the City of Boston, and how do we make sure that when the City of Boston goes forward with its own ordinance, that it was met with as much acceptance from the commercial real estate sector as possible?

So, we put together our own recommendations and worked very closely with the City of Boston and their environment staff during the development of the ordinance itself. I have to really hand it to the city. They were very collaborative, working with the private sector. As much as some segments of the private sector might complain that they weren't involved in the process, the City of Boston was making every attempt possible to try and engage them. And we at ABC actually hosted three focus group sessions. I think we had about 35 folks, representatives from the commercial real estate sector, building owners, property managers, and tenants participate in those focus groups and provide some real concerns, questions, and thoughts on that ordinance. Ultimately I think what was adopted by the City of Boston was a very smart ordinance that didn't overburden property owners with anything that was more challenging than 95 percent of what building owners were already doing, tracking their energy through Energy Star, portfolio manager tool.

But ABC, through our work on the commercial real estate working group, really tried to go and perform as much outreach to the private sector as possible. We were hosting training sessions. We actually brought in interns for the summer to call every single building owner that was in the top 200 buildings in the City of Boston, to find out where they stood in their understanding of the ordinance and their use of portfolio manager. We worked with one of the major Class B building owners to bring in their whole portfolio into portfolio manager. They'd never used it prior to that. And they were one of our members who was very concerned about the

overreach of government into their operations and weren't sure how they would fare. Since then, they've been fairly quiet on the issue. It's not a big issue for them.

So I think we did a fairly good job of getting everyone ready. We did have the hiccups with BOMA and some other pushes at the end to delay it. But it's all looking good.

And then lastly, I just want to go over our **Challenge for Sustainability program**. This is a voluntary environmental program that was set up by A Better City in 2010. And it's a program that we're very proud of, that's really out there working with the private sector to get them to benchmark and develop action plans and implement sustainability and energy efficiency initiatives within their work site.

I'm just going to quickly go through it all. It's a program that was funded by the Boston Foundation and the Barr Foundation as our primary funder for this program. And it's one that's been continuing to grow and really kick off some strong numbers for us, as I'll go through.

The goal of the program itself is really, on the highest level, to increase awareness and implementation of sustainability actions and climate change and climate preparedness issues. Working with representatives within our members' buildings and non-member buildings now, actually, within the facilities offices, within property management, human resources, within IT, everyone engaged as possible. We're out there trying to reduce greenhouse gas emissions 25 percent by 2020. This is direct alignment with the City of Boston's Climate Action Plan. Reduce resource consumption costs, all those things, as well as really trying to make Boston a national leader out there on these issues.

Our participation in the program has grown from 18 facilities to 86 facilities this year, 36 million square feet. You'll see a blip in 2013 where we jumped up to 97 facilities. This was a partnership we did with the **Boston Main Streets Program**. Where we were actually bringing our program out, working with I think about 25 Main Streets' companies. These were small Mom and Pop pizza places, a Laundromat, some small nonprofits that owned their buildings. So we had a big spike in participation, but square footage, I think, combined between those 25 facilities was somewhere shy of a million square feet. It was a small number.

And we made a strategic decision this year to really scrap that program and leave them to the direct install programs the utilities offer. That's all they have the time for is someone to come in, give them new thermostats and lights and get out. They just don't have the capacity to do anything long-term.

So we made the decision this year to really target the top building owners and property managers in the City of Boston and really eyeing facilities with over 100,000 square feet of space in their building. So we added nine facilities this year that gave us a total of seven-and-a-half million square feet. This is a big number.

The program itself is fairly basic. We do benchmarking, engagement, implementation, recognition. On the benchmarking side, we have a whole web-based portal where buildings and tenants enter in a scorecard. The scorecard itself asks for kilowatt hours, gallons of oil and therms and tonnage of waste, as well as over 100 different sustainability actions that they tell us what they're doing and the percentage levels of what they're doing.

The number of actions depends on what type of facility you are. If you're a building owner, you're getting questions about HVAC systems and what your tenants are doing. But if you're a tenant, you're not being asked about the HVAC systems because you don't have any control over those things.

We also have them, when they're new they set a baseline year. We try and get to 2009 as our baseline year. And then when they fill out the scorecard, it kicks out a score for them that is based on their actions as well as their greenhouse gas reductions from their baseline year. So it doesn't matter when you start to participate. If you start to participate this year, you have your building energy data from 2009, you're able to capture all the investment improvements that you made between 2009 and now because your greenhouse gas emissions may be lower. And that's a change that we implemented this last year as we start going deep into the program, year-wise, that folks were concerned if they were signing up too close to 2020, that they would have too far to go to try to do a 25 percent reduction.

Engagement is the key piece that we really focus in on. We actually have two fulltime staff that work on this program, and are out there, we like to say, providing a concierge level of service to the building owners. They are there holding their hands, calling them up every couple of weeks to just check on how they're doing with implementing their actions. A lot of times in various programs like these, people sign up. They fill out a scorecard, and it goes a year before anyone actually checks in with them to find out how things were going. We want to try and push as many actions for implementation as possible during the course of the year, and so we really focus in on personal attention.

We have monthly meetings where folks come together. We analyze the scorecards and action

plans at the beginning of the year, identify where are the key areas that folks are really interested in, and we develop our calendar of events and monthly meetings around those needs.

We have a third-party evaluator that looks at our program each year. This is the one thing that folks rated as the number one perk, benefit of the program. Just coming into that meeting on a monthly basis. A guy comes in, every time he comes to a meeting he's got a new product that was mailed to him and he talks about it and how he's been using it, the benefits that he has. And that just spreads from one person to another.

At the beginning I was putting together these 40-page reports, telling people all the things they were doing. I was really proud of them. And they told us they were useless. What they liked was just sitting in the room with each other and talking. It's hard for me to take, but I survived.

We do monthly communications. Newsletters. We have a toolkit on our website. It's free and open to all individuals. Basically every item on the scorecard has a corresponding toolkit page that lists out details about what is an energy-efficient exit sign or something. What the benefits are, if there are subsidies available for it, where do you find the information to get those subsidies, incentives, and local examples of different firms. [Someone asks, "What's your website?"] If you went to **ChallengeForSustainability.org**, I think it is, you would get to it. It would forward you over to it. We actually just got a grant to overhaul our whole website and make it much more user-friendly.

On the implementation side, we've had in the five years 1500 different sustainability actions implemented, in all categories. And pretty much almost all of the different actions that we've had, at least one person has implemented in some way, shape, or form. So we're really getting a lot of action being taken on a regular basis.

What's interesting, we also have a big piece of it, it's within the scorecard, that's on policies and people. And the engagement with your employees and tenants and how you're educating them about the importance of the work that you're doing.

And then recognition. Just keeping people excited, involved, and recognizing the investment that they're making and their time to participate in the program like this is very important. We have annual awards that we do every year. We had it at the Aquarium this year. We've got our five main award category areas of large greenhouse gas reductions, energy reduction high score, most improved, and the one that is actually favored by everyone is the peer award. It's one where our participants actually vote on it. So

at the end of the year, they actually—we give them a box, write in who do you think deserves the peer award this year.

And it's fascinating. We usually have an overwhelming kind of result. There's one individual who's just committed so much during the last year, whether it's sharing ideas or being available to their peers for phone calls or emails, whatever it is. There's always someone that sticks out. This year it was Fred O'Grady with CB Richard Ellis over at One Beacon Street, who's been just fabulous in everything he does.

But we do as well press releases, advertising, social media to plug participants and what they're achieving during the year as well.

And so impact-wise, since 2009 we've actually seen an 18 percent reduction in greenhouse gas emissions amongst our participants in the challenge. This was huge. We were trying to shoot for a two, two-and-a-half percent reduction per year, which would get us to 25 percent over ten years. But we're at 18 percent and we've got six years to go.

Now granted, a good portion of this is the fact that our energy supply has gotten cleaner, and so they are taking benefit in the fact that coal has disappeared from our grid system. But what's interesting is next year and the years ahead, as the percentage of natural gas and especially when the nuclear power plant closes down, we may start to see upticks, or downticks in that savings number there. That's something that we're starting to talk to people about, is a lot of this is just from the fact that the energy you're using has been cleaner. But for us to really get further, you're not going to be able to rely on that to get you your savings.

But the kilowatt hours reduced, 88 million, seven million dollars in direct energy savings that we estimate for our participants in the program there. And so that's kind of our program.

One of the things we did last year was to start looking at, what other programs are out there? We noticed that there's been a lot of interest in cities around the country to really work with the private sector and get them involved in taking a more proactive, voluntary step toward helping cities achieve their climate goals. And so we actually coordinated and hosted a national gathering or summit in this room, actually, last year, where we brought in representatives from 25 programs from across the country, to really come in and talk about how were these programs developed, how they're getting funded, what relationships they have with their cities, their utilities. And just even over the last year, as we continue to coordinate, work with this group,

we're seeing new programs developing in large cities, in small towns. They take all different shapes and sizes.

But they're all proving to be extremely effective in really bringing together the private sector in partnership with their cities or their regions in achieving greenhouse gas emission reductions. And in some cases really taking an advanced look at climate preparedness issues and trying to move things forward within the private sector. This is just a little bit on the summit.

Jim Newman

I'm going to ask a question, which is that—ABC was very engaged in the interaction with commercial real estate in Boston, which in the big scheme of things is a relatively tight world. But around both energy disclosure and sustainability issues, that's really primarily your focus. And I'd just like to get a sense from you about, as a municipality, one of the things to do in that sense, in working with your commercial development world. And what are the things to avoid in working with your commercial development world?

David Strauss

The most important is to have an open dialogue with the private sector. They're the ones that are going to be delivering the largest savings, especially in an urban environment, the commercial real estate sector. And having a collaborative working relationship with them in developing goals for your municipalities is key.

Whenever the private sector is brought in too late in the conversation, they start to feel very slighted and it can be very hard to overcome that perceived slight. Thankfully within the City of Boston, we've built a very strong rapport, ABC has, in bringing the private sector voice to the table with the city. And the city understands that coming to us in the very early stages of an idea that impacts the commercial sector is a better guarantee that that policy will be a success than coming in late. It's just that open communication that is key.

The interesting thing is, at ABC we see ourselves as a very progressive organization and the city realizes that.

Jim Newman

I think that that's a situation that a lot of different cities face, a lot of municipalities face in different ways. Here we're talking about the commercial development world. If you are, say, Northampton or one of the smaller communities around the state, the residential development world may not have similar qualities and relationships.

David Strauss

Even in the smaller towns, you're typically dealing with smaller landowners, older buildings. It's even more important in those cases, because a lot of times they don't know the issue. Even in Boston, we have the Class A building stock and these owners, they're far and away ahead of what the city is doing. But we have a significant number of Class B buildings in the City of Boston and there are three or four large owners of the Class B building stock. But there's a whole swath out there. It's a family trust that's kicking off retirement savings for the people down in Florida. They're not paying attention. They don't know what's going on. They can raise problems if you don't really try as hard as you can to go out and work with them.

QUESTION:

I think it's great, all these initiatives. It's essential. I don't mean to minimize this at all. But I'm also looking at leadership, and the kind of leadership that has to be much more expansive. We need to go deeper and broader. Eric brought up in his information that everybody works independently. Everybody can do what they want to do or not do. What forces those kinds of changes? He brought up water. I don't see a lot of people talking about water. This is a really scary thing. And I didn't even know how bad it was around here. I know about other places. What do we do about this? We're basically saying give us more regulation and change those policies. Make it tougher but make it so everybody's doing this together.

David Strauss

I think on the commercial side and private side, I think the group that's going to play the biggest role in this is the insurance companies. When they start to look at risk with the buildings that they're insuring and the companies that they're insuring their products and programs, I think that's when companies are really going to start to take a more active look at how they're operating and doing things. We're starting to see that conversation taking place, and it's one that the Green Ribbon Commission Group is trying to help facilitate. We're lucky here in Boston. There are really world leaders on this issue. We're trying to figure out a way of pushing that discussion on the private sector side of risk to your business and future operations and how we do things. I don't know if this fully answers your question.

Jim Newman

I'll take it a little further, which is municipalities really taking a leadership role, potentially regulation but also in leading by example. And the example I'm going to use is the Cambridge Net Zero Initiative, which if you were to walk into an ABC board meeting and

say, “All right, guys, we’re going to require every building that goes through Article 80 and through the Cambridge zoning thing to be net zero.” You’d probably get shot.

David Strauss

Not shot. There wouldn’t be clapping.

Jim Newman

They might take you outside first. However, that process is moving forward. Cambridge will do something around that, and the commercial real estate world is very much participating. So it’s not happening in isolation from the lab development world. And the people who are going to struggle to have to deal with this are in the large-scale office-building world. This is happening right out in the open as part of a potential city regulation process. If Cambridge can even get close to that, that will have a huge effect across the country. And cities around the US are going to be looking at that, saying, “Wow, you can do that? And it worked?”

So I think that those kinds of actions—again, we’re kind of lucky. Boston has a pretty progressive political climate. Cambridge is pretty progressive, Somerville’s pretty progressive. Our little world, Massachusetts, is pretty progressive. UMass-Amherst, Amherst itself, has done really amazing things. But that leadership has to come from us. It’s not coming from national leadership. And state-level leadership, we have great state-level leadership. Other states aren’t so lucky.

Questioner

I don’t disagree, but I think we’re missing the point that people don’t get it, and messages are not coming down to small towns that are thinking like, “I don’t want to talk about this. I need a job or I need this.” And there’s no potential of everything coming together. I don’t think we should hold up Cambridge as an example—they are not representative. I worked for 35 towns in New Hampshire and it’s a mess. They’re just not invested in this. They haven’t got the word down, and there are a lot of these places. So I’m really talking about that. I hear what you’re saying. I don’t disagree with you. But it’s not happening like he says. It can’t be just about saving energy. It has to be really going out there and standing for something bigger, right? And really getting that message across. So that’s what I want to see. Let’s look at ourselves and see what we can do.

Jim Newman

I think that’s a good point, and I’ll make one more little pitch, which is that that is exactly, that perspective of, “Look, we’re all doing these little things and

we’ve got to have a stronger view.” That’s exactly what David’s doing at ABC and their mandate is to reach across municipal boundaries. They’re not aimed directly at reaching across those boundaries, but their members reach across municipal boundaries. And in many ways, it’s really about building large-scale awareness, so that as organizations and municipalities start to engage with it, there is an opportunity to spread this information around. Not a lot of choices. There’s only so much one organization can do, but boy is there a lot of effort going into building a better vision, that’s for sure. Much like the work that’s going on in Jamaica Plain.

Ludmila Pavlova

We can’t do it alone. We cannot come up with an answer here, or even just at our institutions. We need a lot of people to be thinking about this problem and we really take small actions to actually make it otherwise. I’m really encouraged, because USGBC was not, or LEED, was not a common word a few years ago. It was amazing to watch how for the longest time you were talking into a void, and then around 2005, 2006, there was just a sound raised, a sort of confidence and knowledge, this LEED thing isn’t so bad, we can do it. Let’s try it. And LEED buildings just became a common word.

So we should make these systems. We should think of green communities as a common concept for everybody and try to get every home and every municipality and every DPW. I mean, the Department of Public Works in every town is struggling with lack of funds and deteriorating infrastructure, so we should be talking about what are the best ways for them to leverage the buildings they have to improve the future of the infrastructure of their town? Sustainability is one of the topics that effects everybody. It’s just trying to think who you’re talking to. ABC is amazing. I loved hearing about what you do with your partners and just having people face to face continuously support each other through the process of thinking about how to do something better every month. Because it’s the every month part that’s really hard. You have to invest the time along with other people willing to go to board meetings every month in order to help others and yourself.

QUESTION:

What you were asking is, how do you get the general public to focus and see our side? And you are much more involved than I am. Is it a question of reaching out to the media to spread the word by talking about the same thing from different levels while trying to come up with answers?

David Strauss

And another piece is, it's the economic issue that's really going to drive people's interest in this. By next winter, we're looking at huge increases in energy costs that our members are already talking about. They're very concerned that they are starting to see a potential tripling and quadrupling of energy costs for them this next winter. That is the only way—we can talk about renewables and we can talk about pipelines. None of those things are going to help them in the short term. It's going to come down to making real choices about energy use and controlling demand within those facilities in the short term. It's the only way. And then once they start to see gas prices, their energy costs go from seven or eight cents a kilowatt to 20, 25 cents a kilowatt, then they're really going to start to pay attention. And that's when it doesn't matter how much a climate denier you are. The fact when energy prices go up, you're really going to start to pay attention to it. And that will move the conversation forward.

QUESTION:

"It'll drive up gasoline, too."

I would love it.

The other side of what I do is transportation management work. It used to be three dollars was the magic number. That's when we would see people shift. And then it was four dollars would be the magic. It has to jump. It has to jump really high, really quick, because we're kind of frogs in a pot when it goes up really slowly. We just adjust.

Jim Newman

I'm going to—first, thank you—a round of applause for David—and wrap up a little bit by summarizing some of the ideas that we've talked about. And we can have a little bit more discussion if we like on these topics.

Starting with Meg Lusardi from DOER, talking about the Governor's commitment to making these moves. One of the interesting things about the various parts of this, especially the Green Communities Act, is how much it was aimed at that very issue of getting communities to see what other communities are doing and take on that opportunity and recognize that they, too, can do things. In many ways it's been wildly successful.

I don't think I've said this to Meg, but you can sort of relate the Green Communities Act to LEED and USGBC in the model of, you know, we're not going to tell everybody to do this. We're going to provide a way for you to take it on yourself. And here are the things you have to do and we'll help you do it. That turns out to be pretty powerful in this country,

oddly enough. Doesn't work everywhere else in the world, but it works well here.

And then Eric's discussion about sustainability goals and how they really relate to how we live our lives, how everyone lives their lives, and how they're affected in living their lives. I think that that actually is a key part of the Green Communities Act vision. If we can remember that we're really talking about people and how the things we do, the actions we take, the policies we set, effect actual people and make their lives better. That's a heavy paraphrasing of your great presentation, Eric.

Similarly with Ludmila, talking about how the University has done just that. Now, Ludmila didn't necessarily talk about it in terms of affecting people's lives, but when you look at each step of their process it's really driven on analyzing the effects and then moving forward. In many ways, academic researchers, scientific researchers are people, too. And they have dreams that they're trying to achieve. And they're trying to do things that have a big goal and a big purpose in our world. And we want to support that process.

But it turns out they need a lot of resources. So, how do we as a community think about that? And that, I think, is one of the most interesting parts of the whole Cambridge Net Zero process, the recognition that we want those researchers doing that work. They use a lot of energy. So how do we as a community support that while reducing our energy use? And that I think is really the big question.

Looking at **A Better City**, and the work that **A Better City** is doing and that the **Green Ribbon Commission** is doing, it is just so impressive. What we're seeing again and again is that there are real actions that can have real lasting effects and deep effects. Some of those actions are working with the city or the municipality. Some of them are directly from the municipality. And some of them are things that are outside of the municipal purview. But by working together, we can have huge effects on greenhouse gas emissions, on water use as an issue, on overall environmental health. These are things that we can very clearly effect, and we've seen in today's discussions what those effects look like.

