

Energy Efficiency and Housing Advisory Panel Meeting 3  
October 16, 2020

**Attendees**

- Commissioner RuthAnne Visnauskas, NYS Homes and Community Renewal (Chair)
- Janet Joseph, NYS Energy Research and Development Authority
- Peggie Neville, NYS Department of Public Service
- Gina Bocra, Chief Sustainability Officer, New York City Department of Buildings
- Amy Sugimori, Director of Policy and Legislation at 32BJ SEIU
- Dan Egan, Senior Vice President of Energy & Sustainability at Vornado Realty Trust
- Bret Garwood, Chief Executive Officer at Home Leasing, LLC
- Jin Jin Huang, Executive Director at Safari Energy, LLC
- Clarke Gocker, Director of Policy and Strategy at PUSH Buffalo
- Jamal Lewis, Senior Policy & Technical Assistance Specialist at Green & Healthy Homes Initiative
- Sadie McKeown, Exec. Vice President, COO at The Community Preservation Corporation
- Bill Nowak, Executive Director of New York Geothermal Energy Organization
- Molly (Dee) Ramasamy, Head of Deep Carbon Reduction at Jaros, Baum & Bolles
- Daphany Sanchez, Executive Director at Kinetic Communities Consulting
- Laura Vulaj, Senior Vice President & Director of Sustainability at SL Green Realty Corp.
- Elizabeth Jacobs, Acting Executive Director of the Akwesasne Housing Authority

**Not in Attendance**

- Kyle Bragg, President at 32BJ SEIU (represented by Amy Sugimori)

**Public Input Process** (*Commissioner Visnauskas*)

- We encourage public input through the Webex Q&A, these comments will be provided to the subgroups and incorporated into the work we will be doing. Feedback in between the meetings can be submitted through the email address we have set up for the Panel, [eehpanel@nyscrda.ny.gov](mailto:eehpanel@nyscrda.ny.gov).

**Meeting Agenda and Objective** (*Commissioner Visnauskas*)

- Welcome. We're going to talk about the recent Climate Action Council (CAC) meeting and feedback on our panel's work plan, and how that's been incorporated. Then we'll think about how we will approach our recommendations. We'll hear about how subgroups are going. Then we'll spend 20 mins or so talking and whiteboarding out what the cross-cutting themes are between subgroups. NYSERDA is going to go through initial findings from the Carbon Neutral Buildings Roadmap, which is a compilation of a lot of work NYSERDA has been doing as food for thought. And then we'll talk about our next steps as we get towards draft recommendations.

Before we begin, we would like to take a minute of silence for the passing of Cecil Corbin- Mark, a leader in the environmental justice movement (*Janet*)

**CAC and Panel Feedback Incorporated into the Work Plan** (*Janet*)

- I would like to cover the feedback that we heard from the CAC. A significant point is the need to pay attention to cost implications. We got interesting feedback from Dr. Howarth about the need to not just look at energy codes, but how to reduce greenhouse gas emissions through codes.

There was a significant flag at the council meeting at the cross-panel attention needed to address methane leakage in the system.

- In terms of the Advisory Panel scope, what I want to draw your attention to are the items in red. [Slide 8]. We've seen this a few times, but these items reflect input that we've received from the panelists and council members.
- A couple other clarifications; again, these are all noted in red. We've talked about underscoring the importance of enabling policies. The other piece of feedback we received was the importance of getting the metrics right for buildings and we will have to do some work as a team to advance on that.
- Before we move on to the next topic, let's see if there are any final refinements you would like to flag.
  
- Hearing none, let's move on to the guidance on advisory panel recommendations to the CAC. We've gotten some questions from many of you in terms of what the Council is looking for specifically from the panel. Our coordination team is working up a template for recommendations that we will share as soon as that is developed. But I want to hit a couple points about what we will need to deliver to the council.
  
- When we talk about the scope, we're thinking about mitigation strategies that can directly reduce greenhouse gas emissions, and these actions will take various forms. But we also are tasked with identifying enabling initiatives [described on Slide 10]. This includes enhancing climate justice and just transition.
  
- A couple other parameters: we expect our recommendations will take a variety of forms and we encourage this group to think broadly in terms of what it will take to reduce emissions. We do need to make sure we consider the CLCPA mandate of delivering no less than 35% of clean energy investments to disadvantaged communities. In terms of some of the quantitative work, we will need to be estimating the scale of an associated policy. To the extent that we can map costs we need to do that, and other benefits and impacts. We will need to dig into what it will take to implement policy and I think that will be a good part of our work. And there is a fair amount of cross-sector coordination, and these are the things we will need to address in the final recommendations we bring to the panel.
  
- This is really helpful to have this sort of framing. I'm thinking about a couple of the goals that aren't always as immediate. As we think about overcoming the obstacles, how do we make sure we're being mindful of how we're thinking about the impacts to disadvantaged communities? Also what are the workforce components of the jobs that will be required or the training? Are we not shortchanging what it will mean to support good jobs, what will this mean in terms of the training? It would be helpful to think about ways in which we remind ourselves to ask those questions. *(Amy)*
  - If we have a policy action, we are asking those exact questions of every policy consideration. That should be a robust part of what we do. *(Janet)*
- Any other suggestions on the form of our work and the issues we need to be grappling with?
- I think this is great, and I think in addition to what Amy mentioned this could be put into a Word document and used as a framework for the workshops that we'll be talking about. *(Daphany)*

## Subgroup Report Outs:

- Residential, Single Family (*Daphany*)
  - Thank you Janet for that moment to reflect. Cecil is a very important leader.
  - I am reporting out on the residential sector, which we are still defining. What does residential look like? Well, there is diversity in building stock, ownership structure, and market rate structure that influences building decision making processes. There are existing market system processes (impact of redlining, flood zones, etc.)
  - We understand our subgroup has a lot of experts, so we want to dive into who's leading. We want to ensure that the CLCPA prioritizes recommendations that prioritize existing ecosystems.
  - Sector overview: [see Slide 15]
  - We spent a good amount of time in our sessions understanding how can we ensure that we utilize creative problem solving through Policy x Practice.
  - We've done a bit of that framework. We really would like to seek external organizations to participate in workshops. We anticipate convening 4 workshops in the following categories:
    - Housing: organizations that have influenced housing in the non-energy sphere like financing.
    - The second is looking at the ecosystem surrounding the built environment and contractors that are influencing and accelerating energy efficiency but are not tethered to utility and state programming.
    - The third is contractors that are in the space and can understand what has been successful and what has not. This would include contractors doing HVAC, weatherization, electrification, and suppliers.
    - Energy & environmental justice organizations, including weatherization assistance. Community service organizations that have done contracting and who understand the market, what are the barriers and opportunities for market transformation.
    - We have health as an asterisk as health organizations can become involved throughout these topics.
    - The reason we divided energy and nonenergy was very intentional, CLCPA is new to some while others have been engaged in this topic for decades.
    - We as a subpanel have begun putting together a list but if there other organizations or individuals you feel should be in this space, please email [eehpanel@nysenda.ny.gov](mailto:eehpanel@nysenda.ny.gov).
  - See slide 17 for list of barriers identified by the subgroup and some of the foundational resources we've begun putting together. If there are other resources, we encourage people to please email them and we will conduct a literature review.
  - Lastly, these are potential [technical] mitigation strategies [slide 18] that have been provided to our team, not what we put together but we will be looking at them and evaluating if they are recommendations we should be moving forward.
- I noticed that you have a lot of data, I was wondering if you guys have started looking at how to take the stats and bucketing them into low hanging fruits vs. stretch efforts. [Also brought up codes] (*Jin Jin*)

- We're still in lit review stage, assessing the data that we have. Another thing is that the energy professionals will have more input to provide, so we want to continue this at the same time that we're engaging with others. *(Daphany)*
- Codes and the importance of them is something we've talked about. We'll be looking to dive deeper into it during this work. And to your question about whether we've looked into addressing the low hanging fruit: in our first couple meetings, there was acknowledgement that one of the hardest things we're trying to accomplish is that there is a range of needs. *(Jamal)*
- Daphany, awesome job. One omission maybe that points to that 2 million low income unit statistic, is that we're going to have to contemplate nonmarket solutions. One challenge is poverty and economic inequality and the market can't necessarily solve for that. *(Clarke)*
- We have had conversations about behavioral shift efforts and health and incorporating these into our workshops. *(Daphany)*
- Residential, Multifamily *(Sadie)*
  - Reporting out for the multifamily subgroup, there is a lot of crossover with what Daphany presented; it's pretty consistent. We started first on focusing on the barriers and challenges.
  - The first is that the housing stock across NY is very diverse in its style, height, geography, and climate. There's not a one size fits all solution. Across multifamily stock in particular, there is a history of deferred maintenance and building code enforcement is another issue. And there is a history of just replacing with same. Similar to single family stock-- we don't have exact data yet— the stock is very old and a lot of the buildings have been built before 1970. Over time, systems have been replaced primarily with the same systems over and over again. That speaks to the issue of building code, which we've talked a lot about.
  - We talked a lot about contractors and contractor education to choose the right systems.
  - We talked about the challenges around licensing for contractors and having there be consistent education like continuing ed in other professions – so that contractors are pulling from the new code and educating property owners about the kind of system they need to be compliant, save money, gain efficiency, and move towards electrification.
  - The next barrier we talked about was [the need for] funding and financing incentives, and incentives through the financing or incorporation of energy into the existing financing ecosystem of HCR, FHA, and other entities. The inherent challenge is limited resources.
  - The other challenge we talked about was occupant awareness. In multifamily, the occupant is not the owner, so we talked about that connectivity between the supplier, owner, and occupant.
  - We also talked about market signals, and that there needs to be outreach and a broader campaign that really speaks to the why and how of this, that connects the building owners and what the State is trying to do, and that it's a collaborative approach where everyone is doing a part.
  - We talked about the scale of the need and trying to quantify it.
  - This should not be done solely on the backs of affordable housing, which has been the leader, but leading means absorbing the costs.
  - Some of the mitigation strategies we discussed is that clearly building electrification needs to happen.

- We talked about infrastructure advancement.
- We talked a lot about typologies that fall under multifamily because there is not alignment between the financing and energy world about what that is.
- In terms of work plan, topics discussed include: [see Slide 20]
- Outside engagement is going to be very important, so we want to reach out to affordable housing, housing and environmental justice, we shouldn't just reach for energy efficiency alone but for broader health outcomes.
- And we talked about bringing in building owners, trade groups, NYCHA, [see Slide 20 for full list].
- And then finally there were other foundational resources that we intend to reference, and there are others so if people have ideas they should let Vanessa know. [see Slide 21 for list of foundational resources]
- And obviously all of this will feed into recommendations, in what really is a very short time frame as it relates to CLCPA.
- The one thing I wanted to stress and discuss a little more is the notion of market signals. There are a lot of ways to do this, but to my mind the one we need to be putting out at this point is a line in the sand after which fossil heating will not be allowed in NYS. And this could happen on a glide path, with different dates for different sectors, but that is the strongest market signal we could take. I don't think we're going to get to our goals until those kinds of guidelines are set. I've raised this in all the subgroups. *(Bill)*
- Right, and that is the thing that got us off leaded gasoline. *(Sadie)*
- We can probably coordinate the engagement between residential subgroups using the same frameworks since we have the same barriers. *(Daphany)*
- Commercial and Institutional *( Jin Jin)*
  - After 2 weeks of collaborative and lively discussions we've organized our ideas into 4 categories.
  - The first is looking at the foundational resources that may be available to us. [see slide 22]
  - The second category is additional analysis and cross collaborations that we need in order to make policy recommendations. [see slide 22]
  - The panels that we have flagged for cross collaboration are the Power Generation panel, Land Use and Local Government, and Just Transition. We're really looking forward to feedback from the group today about how to do this.
  - The third category is that we need to level set on barriers. [slide 23]
  - The final category is high potential mitigation strategies. [slide 23]
  - As I said, we welcome feedback from everyone, and we made an attempt to further organize our ideas into a schedule. In October we will focus on: Electrification of heating & hot water and related grid impacts, forecasts for the grid , and forecasts for low-carbon fuels.
  - In November we will focus on the topics of Flexible loads, batteries, thermal storage, DERs, RTEM & grid management, Behavioral conservation, O&M, training and workforce development, and impacts of building shell retrofits and weatherization measures .
  - In December we will try to wrap up with the topics of energy efficiency codes and emissions-based code.
  - Even though the topic of policies is slated for the week of Dec 10<sup>th</sup>, forming policies is what we'll be doing throughout the weeks.

- We would like to hear your thoughts on optimizing cross panel collaborations and engaging with outside experts.
- Just to come back to one of JinJin's comments, we were thinking that if the other panels were planning to cross collaborate or had questions, it might make sense to just get all of our notes onto one page, recognizing that each of these panels are hard at work in their own respective corners. *(Dan)*
- That's a good comment, and I think there is a good amount of work going on in the staff working groups to figure out how to make that happen and make sure that some of those potential siloes are de-siloed, including which panels need to meet and when. *(Commissioner Visnauskas)*
- Something I would like to flag is being mindful of potentially inviting industrial development agencies *(Daphany)*
  
- We'd like to talk about what some of these cross-cutting themes are between subgroups. So if people would like to jump in, let's talk about areas that we need to make sure we're consistently getting our recommendations aligned. [See Slide 25 for full Whiteboard notes] *(Commissioner Visnauskas)*

# Subgroup - Crosscutting themes discussion

## Notes

- > How do we coordinate our approach to codes/standards?
  - Energy codes, on-site emissions
  - Other types of codes (health and safety, etc.) can also impact this
  - Municipalities will need resources to enforce these codes, educate public about them
- > Measuring emissions and providing info to property owners
  - "Can't manage what you can't measure"
  - Get data to relevant actors (not a problem in NYC because of Local Law 84, but may be elsewhere)
    - Needs to be available at different times of year
    - The State needs to ensure good behavior among users of the data being collected, ensure it is put into action
- > Workforce development
  - Must be sufficient to meet all of the needs we're identifying
  - Creating demand for low carbon through mandates? Build into our existing system of environmental regulations on buildings?
- > How is this impacting affordability, building conditions, and stability
  - Applicability of rent regulation
  - This work will increase property values, must not negatively affect low-income communities (includes gentrification prevention, displacement prevention)
- > Where does the money come from? Interest rate reductions? Tax benefits?
  - Will likely be much more than the State can pay for on its own.
    - We need to be able to articulate how much we can get out of our available resources when asking for more resources from the federal government
  - Corporate polluters? Eliminating subsidies for fossil fuels?
  - Existing affordable housing resources and low-income retrofit resources
    - Energy resources always treated as an add-on; affordable housing developers/managers need streamlined timelines/rules for incorporating these into their refinancing
    - Need to make jump from "affordable housing" to "affordable and sustainable housing"
    - Need a Climate Reinvestment Act the same way we have the Community Reinvestment Act
  - Funding must be distributed equitably, must create a market for these programs to be sold to owners
  - Must educate public about the availability of these resources
    - SBC funds from utility providers and connecting it to homeowners etc.

- We're going to need to coordinate how we approach the codes and standards *(Janet)*
- We need to show people how to manage emissions *(Sadie)*
- That's a great point, and we need to think about how to help people get their energy data. I do think that we should all consider recommending an improvement to the exchange of building energy consumption data frequently, and perhaps at no cost. *(Dan)*
- Behavioral motivations of staff and the end users. How do we turn data into action? *(Jin Jin)*
- I think that comes from mandates. Like for workforce development, jobs are created from demand. I think of tying this to an environmental report. *(Sadie)*
- We can look at where does money come from, and where in those levers can we push or pull to create space to add capital to help provide the solutions; because other than that, it's just let's go to Congress. *(Sadie)*
- I also want to add to the point about codes and standards. If municipalities don't have the resources they need to enforce codes, it will not happen. So, we need to make sure these municipalities have the resources to help all these market actors. *(Gina)*
- One other point that I'll say is how do we address current building conditions that impact the work we're trying to accomplish. *(Jamal)*
- The scale for funding for incentives is huge, it's going to be beyond the scale that NYS can manage. That total need is huge even based on conservative assumptions. We should be prepared to articulate that if we had this much money, we could do x, y, and z with this many units. I'm hopeful that stimulus and attention on climate change is coming, and I'd love to be prepared to say we've already done the work to say exactly what we need and if you give us the money we'll do this in NYS. On the federal level, it's possible if we have substantial stimulus. *(Bret)*
- I just wanted to support that and emphasize the timeliness of getting a number and impact up to the federal level. I know there's been some reference to money available to spend on building retrofits. From a labor perspective, my concern is that aggressive mandates without more money puts an emphasis on cheap labor. *(Amy)*
- Building on Jamal's point about affordability is housing stability and community integrity. I think it's both investments into buildings to make them more efficient, and it's also the construction phase activity that can be disruptive and displace people. On this question about where money comes from, I'm sure this is something that the CAC needs to wrestle with, and I'll plug for corporate polluters and making sure they pay for the harm they've caused. *(Clarke)*
- Really use the existing ecosystem, in affordable housing there are existing structures, so we need to make sure it's an integration, not an addition to a system that's already been operating. *(Daphany)*
- I'm wondering if generating public awareness about this should be on this list. There's a lot of money that's collected through the system benefits charge that's meant to underwrite energy efficiency projects. I wonder how much money ends up funding projects versus not, and what are the opportunities to make people more aware of what these are. Utility bills can be a way to get information to people. *(Dan)*
- The resources need to be distributed equitably as well, we don't want free riders or to have this money going only to people who were going to electrify already. *(Daphany)*
- We have to create a market. Right now, the commercial sector is getting a lot of incentives, so we need to create a similar market for low-income markets because it's daunting for people to figure out this system on their own. *(Jin Jin)*

- I'm actually saying that kind of system has not been successful because of how daunting it is. *(Daphany)*
- Rebrand from affordable housing to something like sustainable housing, electrified housing, etc. Affordable housing is almost exclusively a product of the Community Reinvestment Act and we need something like that, a Climate Reinvestment Act. *(Sadie)*
- While we're moving forward with the CLCPA, we need to make sure we're doing this in a way that is restorative. *(Daphany)*

**Carbon Neutral Buildings Roadmap Presentation** *(Greg Hale, Senior Advisor for Energy Efficient Markets, NYSERDA)*

We are going to switch to Greg Hale from NYSERDA. Part of why we are presenting today is for the subgroups to consider whether they want to take a deeper dive during their meetings into this information. *(Commissioner Visnauskas)*

- Thank you Commissioner. It is nice to talk to everybody and I'm glad to be part of the conversation here.
- Buildings are obviously an important part of the puzzle, and it is so important to expand the value proposition, as energy savings aren't the only benefits here.
- Just in case people have heard of two different roadmaps, at NYSERDA we are working on a Carbon Neutral Buildings Roadmap and a Building Electrification Roadmap, which is a sister document. The Carbon Neutral Buildings Roadmap looks out to 2050 to have a carbon neutral building stock across the state, and also asks what do we need to do in the next 5, 10 years to get actionable recommendations.
- Focused on 4 typologies: single family, multifamily, office, and education.
- Roadmap sees electrification as the backbone, but it is not the only solution.
- We're looking to release both of these roadmaps in the middle of next year. The material I'm presenting today is a work in progress. We want to make sure we can be a resource for the CLCPA efforts.
- Slide 30 is a tiled look at the table of contents of the Roadmap. This panel has really been given a herculean task, so we're here to be a resource, not to do your thinking for you. And when we're looking at this, if there are specific areas that you'd like us to expedite and see what we can get done for you, let us know and we'll do our best to focus on the areas most relevant to you in the near future.
- There's a lot here on the business case and value proposition. We also have a lot of thoughts going on policy options and where we think we might need to land.
- There is a big chapter on technology landscapes, what's available and what needs to change, as well as where are the gaps. We're trying to refine a top 10-ish list of areas that we really need to focus on and convey to the manufacturing sector.
- We also look at what are the limits to electrification and the secondary paths that we need to consider.
- We think of this as a living document, and we will republish it every 5 years or so with the State Energy Plan.
- We've done a lot of work with a great team of consultants including E3, Rocky Mountain Institute, and others who have been doing a fair amount of modeling and thinking about different measures and measure packages.
- Cost compression is an important piece of all of this.

- The consultants have done some outreach themselves, and we've also had a very extensive stakeholder engagement process. We're currently just launching into a policy impact analysis; and for these, some will be quantitative, some will be qualitative.
- Talking to manufacturers, they see NYC Local Law 97 and the CLCPA as strong policy signals that are getting their attention and they're thinking about what they can do to provide the right products.
- The stakeholder process has included 15 different events with targeted experts, engaging over 950 participants across the events; many people on the panel have participated. We also have a Technical Advisory Group with 18 different organizations represented.
- Retrofits: we have an old building stock and over 80% of the buildings that will be here in 2050 will have already been built.
- A carbon neutral building as we think of it is an electrified building where you're not combusting fuel on-site, plus a clean electric grid. Then we really need to think about the impact this is going to have on the grid – so carbon neutral buildings need to be highly efficient and grid-responsive.
- The general solution set is very similar between typologies and new construction and existing buildings; the difference is the difficulty and the cost in getting there. It's comforting that we kind of know the playbook, but as you dive into the details all the differences become more prominent.
- We're still much closer on the new construction path; it's not that far to get to carbon neutral new construction, really at no incremental cost accounting for available incentives. There's further to go for existing buildings.
- [Slide 40] shows the menu of policy options we have been thinking about. They come in different buckets. Mandates may well be required, codes and standards. We also shouldn't take our mind off the power of the market transformation-type policies, because everything there is about building demand and making the economics pencil out better.
- [Slide 41] This is thinking through the co-benefits including health outcomes and increased productivity. There's a lot of testing and research about increasing the productivity in commercial space through improved indoor air quality especially when you look at payroll versus energy budgets. Also getting tenants or residents to understand and recognize these things, and ask their landlords.
- Next steps: We're very happy to engage further with the subgroups and provide any information you'd like.

#### **Next Steps** (*Commissioner Visnauskas*)

- This has been great. Thank you, Greg. I have some questions so I hope everyone has the opportunity to dig into this information.
- Subgroups will continue to meet, and they are on the calendar.
- Upcoming Panel meetings: 10/29/20, 1-3pm; 11/18/20, 3-5pm; 12/09/20, 3-5pm
- Upcoming CAC meetings: 11/24/20; 12/15/20; 1/19/21; 2/17/21; 4/12/21
- The December 15<sup>th</sup> CAC meeting is where Advisory Panels are going to make their initial recommendations, so our Dec 9 meeting is where we will synthesize and compile recommendations.
- On November 18, we hope the subgroups will have initial findings and policy recommendations to share with the Panel.
- 2 weeks from now, our next panel meeting will be a good opportunity to finalize our level-setting work, and if anyone wants to propose a presentation from an expert, let us know.

## Q&A

*Martha Robertson*

Q: Has the panel considered hot water heating as well as space heating? Heat pumps are extremely cost-effective for HWH.

*Martha Robertson*

Q: The "split incentive" between owner and tenant is a huge barrier for retrofits, for commercial and residential buildings. I hope you'll tackle this challenge.

*Jodi Smits Anderson*

Q: Suggest we use the term "well-being" along with health or wellness, to understand the whole person support.

*-Daphany Sanchez*

A: Thank you Jodi and Martha for those suggestions.

*VALERIE STRAUSS*

Q: Weatherization Assistance Program providers (many of which are embedded in broader community service orgs) should be included in the workshops.

*Jodi Smits Anderson*

Q: Is there any plan for behavior-shift efforts? Education, "nudge" approaches, etc?

*Jodi Smits Anderson*

Q: It's fascinating that energy code doesn't affect existing building unless something is updated, then it kicks in. If the intent is to push updates, the code that would do it would be the property maintenance code. Calling for an energy use assessment...

*Jodi Smits Anderson*

Q: and then for the improvement when a quick ROI, would be useful...

*Jay Best*

Q: I think a lot of the scale will require better economics that will need higher gas/oil prices. Financing and savings all will drive the market if homeowners will save money.

*Jodi Smits Anderson*

Q: Yes. No fossil fuel investment at all...No fossil fuel use in buildings after a certain date. I totally agree.

*Martha Robertson*

Q: Have you considered Industrial Development Agencies as a way to deliver incentives? In Tompkins County we've used an "enhanced energy" incentive to get large multi-family buildings to use heat pumps, even where gas is available.

*Jodi Smits Anderson*

Q: One code idea is to replicate what NYC did for new buildings - allow poorer envelopes if better systems BUT institute a backstop to ensure envelopes don't drop in performance past a certain point.

*Jodi Smits Anderson*

Q: One of the most successful approaches in Europe is to rate the energy use at point of sale to inform the sale. Maybe point of sale is a good trigger for must get off fossil fuel (currently it is "must get rid of the asbestos").

*Jodi Smits Anderson*

Q: DO we need to address the vast inequity in the current pay scale for contractors in this work? In NY state the wage is around 13\$ an hour, with \$7,500 made a year on overtime. this speaks to a need for more contractors, and a need to pay them more...

*Jodi Smits Anderson*

Q: I think we need to measure AND we need to create the storytelling that ties the investment to the created value - building longevity, fewer tenant complaints, greater productivity, better well-being of occupants, and reduced carbon. Granite countertops were MARKETED. Carbon also needs to be marketed.

*Jay Best*

Q: We create demand by making carbon expensive

*Esther Toporovsky*

Q: Another cross-cutting team topic would be Capital (incentives/financing/etc.) how to pay for these measures. What pots are set aside for highest risk category/how is the capital being deployed/by who/partnerships with CDFI's, innovative solutions, etc. Cross Cutting theme that couples with Capital is Technical Assistance and predevelopment dollars to help meet these goals.

## **Chat**

*Richard Fennelly:* Regarding Jin's area in particular: better maintenance of cooling equipment, both refrigeration and AC, across all buildings. Using a global 2018 study by The Carbon Trust we've estimated that poorly maintained cooling in NYC might be causing from ~20% to ~25% of the city's stationary energy emissions. The global value is 500,000,000 mt/yr and we used a simple GDP extrapolation to get a ballpark value. Refrigeration & AC cuts across all silos too.

Follow up: A 6.2% cut in commercial building electrification: cooling consumes ~31% of the electric demand; better cleaning/servicing of such equipment = ~20% savings (a 2018 study by The Carbon Trust) ----> the potential for ~6.2% reduction. You've got to get Con Edison on board for this.

*Richard Fennelly:* What about the Internet of Things ---- sensors to detect even plug load electric consumption on larger energy vampires?

*Martha Robertson:* Wouldn't a tax on carbon move the incentives in the right direction?

*Amy Sugimori:* I want to make sure that we are being thoughtful about not creating incentives to cut corners on labor costs - we want to make sure that the policies we advance are supporting good jobs

*Sadie McKeown:* There is a movement to "green" the Community Reinvestment Act – I am a fan of a whole new Act - the Climate Reinvestment Act which can focus on the bad actors but also on the financial "infrastructure" in this country and using capital to attach climate goals and have everyone who uses capital figure out how to address climate.