

# Newton Citizens Commission on Energy

City of Newton

<https://www.newtonma.gov/government/climate-and-sustainability/citizens-commission-on-energy>



Mayor Ruthanne Fuller

Halina Brown (Chair), Michael Gevelber, Stephen Grody, Philip Hanser, Asa Hopkins,  
Jonathan Kantar, Jon Klein, James Purdy (Vice Chair), Puja Vohra,  
Ann Berwick, William Ferguson (*ex-officio*)  
Advisory Members: Cory Alperstein, Fred Brustman, Edward Craddock, Ira Krepchin

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## Minutes of the Meeting of December 15, 2021

The meeting was held on Zoom.

Attending: Halina Brown, Michael Gevelber, Stephen Grody, Philip Hanser, Jon Kantar, Jim Purdy;  
Cory Alperstein, Fred Brustman, Peter Barrer, Philip Vergragt

Agenda:

1. EUI as predictor of home energy efficiency status....Michael Gevelber
2. Sustainable construction of lab buildings.....Peter Barrer
3. Update on *Before2050* pilot.....Jonathan Kantar and Stephen Grody

Halina said she presented , the idea of reporting EUI to the City's Sustainability implementation working group. At least one member, John Sloat, was skeptical.

### **EUI as predictor of home energy efficiency status.**

Michael Gevelber presented an analysis from the Fraunhofer Institute manufacturing innovation center. Kurt Roth PhD is leader. The analysis examined how to identify residential retrofit opportunities? in the northeast, there are two main actions: (1) increase R values, and (2) air sealing. They estimated that in the Northeast 20-25 percent of houses have poor or no insulation. About 1/3 of Home Energy Assessments lead to action.

The actions are increasing R value, and providing air sealing. Need to get two degrees of data; EUI is one, thermostat record is second. When the R values are plotted versus EUI, no pattern is discernible; the same is true for ACH (air changes per hour) versus EUI. The same analysis of Newton houses would probably be worse.

But EUI doesn't appear to correlate with the actions. The study developed a formula combining R-value and ACH improvements, and this combination did correlate strongly with EUI. Hence, either action alone is insufficient, but combined, they can have an effect on EUI.

Phil Hanser commented that behavioral factors aren't really significant, but "PISM" high res data does correlate with R value and ACH.

Michael said the conclusion is that we need two measurements to determine conduction and infiltration heat losses.

Stephen suggested that there are some longitudinal opportunities to look at different houses; EUI doesn't tell what the problem is, only that there is a problem.

Jon Kantar commented in chat: *might want to talk with Michael Blasnik, senior building scientist at NEST; he lives in Roslindale. 617.323.1225. He might be able to help on this and provide Nest data for homes with Nest thermostats.*

Phil commented that the electrical signature of the building systems shows what is going on.

Michael also presented new data on EVs. They comprise 3.1% of cars registered in Newton. This data is based on actual registrations from the RMV; we had been trying to determine the share of EVs by tracking rebates, which gives the incorrect figure of 1.7%.

Stephen requested copies of the slides; Michael will provide.

Stephen commented that he gives less credence to studies with sample size around  $n=150$  as opposed to big sample size, which could be gotten from a city disclosure process using the Before 2050 app.

Jon Kantar in chat: *A fellow I met recently I think from MIT is developing a modified iPhone that can take infrared photos. The homeowner would then self survey their home and the resulting infrared photos would automatically upload and be used to develop heat loss and air infiltration metrics. He is Grant Gunnison [grant@retrofitzero.ai](mailto:grant@retrofitzero.ai)*

Phil suggested that a nearest neighbor regression would be useful technique.

Halina said when we get the EUIs from the Before 2050 app, we can determine how big the problem is, but that by itself does not indicate the cause.

Phil said appliance saturation surveys provide a model for this kind of investigation. The City could send out such a survey

Stephen noted that the app has always allowed that kind of information to be input.

Michael said if you can estimate the size of heating system need, then you'll know the cost; MA HeatSmart Alliance would have data.

## 2. 2. Sustainable construction of lab buildings

Peter Barrer presented his analysis of the lab space at 275 Grove St which was given a special permit to go ahead; the Council order asked only to provide a study of a heat pump. The project is the conversion of a quarter of the 500 ksf office building to lab space. One can expect later phases to extend the use.

Peter's presentation "Sustainable Labs/Good for Newton" made the following points:

Low carbon labs are possible by limiting gas heating.

Labs are more energy intensive than other building types because of the need to provide 6-12 air changes per hour.. The Grove Street SP will be equivalent to 250 homes; (that is half the goal of the Heat Smart heat pump promotion.

The problem with the Grove Street lab is that to provide the zone heat needed for the lab, the existing gas boiler would run all year long, including the summer. The alternative of using a heat pump allows the boiler to be turned off in summer and it can reduce gas use by incorporating heat recovery.

Halina said, we need to define the problem. Peter said, the City Council wants to see bio labs in Newton; he wants to demonstrate to them that great performance is possible with a heat pump system. The lab space at Riverside would have a small fraction of the emissions of the much smaller space just permitted for Grove Street.

Cory in chat:

*If we pass building electrification or meet the requirements of new legislation we will be getting off of fossil fuels. Tax base advantages do not outweigh carbon emissions reductions. We need more specific requirements for the special permits.*

Phil said, the Planning Dept needs to provide an advice memorandum for these permitting situations, but the technical capability for dealing with these HVAC issues is lacking.

Jim suggested that this is analogous to traffic reviews, which are similarly technical and are provided by a technical consultant hired by the City.

Cory said we need to make the special permit process more specific on these issues and include a process to consider them, which is now lacking.

Philip V said we also need to articulate the process with a timeline.

Halina said the developer needs to be required to build to the standard of their best building.

Stephen said, there are two ways to modify the current practice – a process definition and also a management definition. As a management solution, the heads of the Planning and the Inspectional Services Departments report directly to the Mayor, who can see to it that they have the capability to apply the standard to be evaluated.

Cory said, it's not an either/or; should do both.

Phil Hanser said you should include a section on how the process is broken, and emphasize that the developer has the capability to use the appropriate technology.

Cory in chat:

*1. Special permit process can go further and 2. Planning dept has to be directed to apply CAP and sustainability criteria. And they will be required to do so in the future based on state law; so Newton should require it now.*

Peter Barrer will develop answers to some specific questions and determine who to work with in the city.

Michael and Jon volunteered to help Peter.

Halina suggested that an ad hoc committee in City Council is needed to address these issues.

Jon said, instead of a new subcommittee, maybe we should have a group within the Planning Dept to prepare an advice memo. And this group would request hiring technical consultant. The Planning Department manager could be given this problem to solve.

Phil Hanser said that we could use a general review of City Council processes and propose suggestions for improvements to the process. It could be done by an ad hoc committee or otherwise.

Jon said, we do have a sustainability department/group, but they need help and more technical capability

The meeting was adjourned 9:25 pm.

Respectfully submitted by Jim Purdy