

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), Cory Alperstein, Michael Gevelber, Stephen Grody, Philip Hanser, Asa Hopkins, Jonathan Kantar, James Purdy (Vice Chair), Jay Snyder, Ann Berwick, William Ferguson (*ex-officio*)
Advisory Members: Fred Brustman, Beverly Craig, Philip Vergragt

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Minutes of the Meeting of September 28, 2022

The meeting was held on Zoom.

Attending: Halina Brown, Cory Alperstein, Michael Gevelber, Stephen Grody, Philip Hanser, Asa Hopkins, Jon Kantar, Jim Purdy, Jay Snyder; Bill Ferguson; Meira Apsell, Fred Blau, Fred Brustman, Pat Burdick, Cindy Calloway, Marcia Cooper, Sharon Cushing, Andy Danenberg, DiVitto, Mark Dyen, Denise Freed, Ellie Goldberg, Julia LaGuette, Cindy Mapes, Allison Monroe, Eric Olson, Nathan Phillips, Scott Rodman, Lynn Scheller, Philip Vergragt, Leslie Zebrowitz.

Note: the first half of the meeting was a presentation by Audrey Schulman of HEET. The Zoom recording was sent to all attendees. The discussion below is intended to provide highlights.

Nathan Phillips introduced the presentation; the gas distribution system is a huge source of methane leakage. It is expensive to repair – roughly \$2.6 mil per mile. We need block -scale solutions. At that scale, Audrey and Zayneb Magavi have developed a plan.

Audrey provided background. The cost of replacement of gas distribution infrastructure exceeds current value of the system.

Transition to air source heat pumps, has higher operating costs than gas combustion. So, her organization, HEET developed GeoNet, a system with circulating water, and each building's heat pumps use this to withdraw and shed heat. Burohappold Engineering, checked the concept for them.

Wells 500 feet deep at 20 foot spacing (or other configurations) transfer heat to and from the ground. Networked heat pumps have advantages, e.g., send excess heat from large loads to residential units. Colorado Mesa University has done this for 12 years without activating boilers.

An Air source HP flattens the wings of the curve, followed by ground source heat pumps, and then geo nets.

Applied Economics projected that with infrastructure costs amortized, it is much less expensive than methane combustion. GeoNet reduces emissions by 60%

The concept is supported by labor unions.

Test units were finished today in EverSource territory; NGrid will test the concept at 4 sites The first site was selected in Nov 2022.

Several states are doing this.

Massachusetts passed legislation in the last session. Then existing gas infrastructure can go to geothermal, using water as the medium. Work inside buildings is not covered, but it could be. Paid for by cost savings.

ASHPs and GSHP can be used together. RNG/hydrogen can be integrated at major industrial sites.

Phil Hanser asked about load sharing.

Leslie asked about feasibility for homes with radiators; Audrey explained that steam radiator systems don't work well at these temperatures. But water source HPs (hydronic) would work well.

Jon K said he is nervous about huge cost of wells, plus equipment replacement. Audrey responded that the gas utility pays for it - like the utility is doing with yellow pipes, which are estimated to cost \$40B over next 20 years)

Air source heat pumps are 30% more expensive than ground source. Demand peaks drive electricity bills; increase the peaks and bills increase. Geo will be one viable method going forward.

Philip Vergragt asked if is it better to start with large buildings? For his house, he has great uncertainty about what's next. Audrey answered that dense areas are more efficient. Tactical studies are needed on how best to go forward based on costs etc.

Fred Blau asked how GSHP and ASHP costs compare? How many years until payback? What is relative cost of traditional gas heating vs heat pumps. He cited 87 cents/therm in New Jersey. Where are the break points? GSHPs last longer. If utilities are doing the projects, very low energy is needed; the cost is mostly infrastructure.

Julia asked, is there an entity other than gas co to drill the bore holes. A: a gas company is threatened by future costs, so they are able to do it, and it spreads the cost over the whole service area.

Asa said the heat balance is a function of time – as energy is withdrawn, the efficiency changes and gets more costly. He thinks the Burohappold Engineering analysis is faulty.

Stephen said, on May 13 2020 Newton took testimony from Ann Berwick as to gas furnace vs ASHP; the numbers showed that initial costs of ASHP and operating costs are higher than gas combustion.

Bob Persons uses a gas backup under 25 degrees F; now gas is higher and the breakeven will be lower.

Jon Kantar says he hasn't seen an example with a feasible COP.

Philip V said it's very early stage

Michael pointed out that distribution cost must be added to borehole costs.

Philip H said, that in Sweden a 1000 MW heat pump has been demonstrated for district heating. He added that worries about sunk cost (of the gas distribution system is a fallacy – the real issue is what's the

incremental value? And you might not want to lock into a technology when a better one is coming. Also need AMI metering to know what the peak costs are.

2. BERDO

The committee discussed BERDO progress.

Halina said that if utilities are not all enthusiastic about GSHP, it might be a warning. Philip V said since NGrid got DPU approval for system infrastructure under the Hope case – they don't care.

Stephen agreed with Cory that the corporations are acting the way they've been instructed (by "us").

Bill Ferguson assembled an advisory group. Writing the BERDO ordinance is being started by Ann Berwick. Bill told the City Council we have to start scheduling the public meetings.

Halina said Northland has volunteered to be the case study – the currently have two buildings in Boston and one in Newton. Michael and Halina are talking with Northland.

Bill is preparing case studies on Newton North High School and the Auburndale library. Torus Development, which owns the Wells Avenue development said that they would participate.

Michel wants time with Asa to discuss Boston and Cambridge. Asa's company is bidding on a Newton RFP for other projects)

3. Residential Sector

Halina suggested preparing a strategic plan for the res sector; which is most difficult, but it is also crucial.

She suggests it's a puzzle with pieces to assemble. She proposes a short duration conceptual study– not quantitative.

Philip V said 350 is working on legislative priorities for MA .

Jim suggested, lets meet to talk through the issues before we begin to solve them.

Halina agreed, but said to bring the ideas together is already half the work.

Michael said Arlington has done many more heat pumps than Newton; why?

Philip V suggest rerunning the listening project with limited scope. Phil H said we need to segment the situation that people find themselves in.

Jon suggested that we should to invite Endless to our next meeting to discuss these issues as well as their overall approach.

The meeting was adjourned at 9:30 pm.

Respectfully submitted by Jim Purdy