

To: Planning Board, Board of Selectmen, Kristine Trierweiler, Frank Gervasio, Brittney Franklin

Cc: Todd Trehubenko

From: Medfield Energy Committee

Subject: March 20 Planning Board hearing on Medfield State Hospital Infrastructure and Energy Conservation

The purpose of this memo is to provide Trinity Financial with a set of questions and topics on energy-related issues with sufficient lead time so that they can prepare to address them at the March 20 hearing. This memo focuses on factors affecting the energy efficiency of the building and its assemblies. We will provide a separate memo responding to the feasibility study of the geothermal district system.

I also request that MEC be given 15 minutes on the agenda at the beginning of the energy section to provide some context for these comments. Some of these issues get technical in nature and the state-of-the-art in energy efficiency is rapidly advancing so it would be beneficial for the Planning Board to provide the knowledge needed to have the most productive discussion possible.

In Trinity's RFP response, the Sustainability section of the Development Plan Narrative (p. 23) states:

"Team members with building science and historic expertise will work collaboratively to develop a rehabilitation plan for these historic buildings that includes comprehensive insulation and air sealing of the structures, accomplishing both energy load reduction as well as long term comfort and operating cost benefits for future residents."

In reviewing the documents submitted to date it is apparent that this has not occurred yet. While there are some positive details in the plans there are a number of missed opportunities and questionable design details.

As I noted in my comments submitted on 3/7/23, ICON's suggestion at the 3/6 hearing that a ½ inch air gap between exterior and interior walls will serve as a thermal break demonstrated that they do not have sufficient building science knowledge. For added context, here is information from Residential Energy by John Krigger, 6<sup>th</sup> edition, a commonly used building science textbook:

"...air can move around inside building cavities, increasing the rate of heat transmission." P 79

"The thermal performance of batts depends on proper installation. To attain maximum R value, a batt should be in continuous contact with all the surrounding cavity surfaces." P 110

This is not a criticism of ICON – the building science profession has emerged as a separate discipline because it requires specialized knowledge and protocols. It is challenging to bring existing structures to a high level of energy performance which is why building science has increasingly been included on development teams.

Accordingly, the Medfield Energy Committee asks Trinity to address the following questions and topics:

- Will you involve New Ecology in developing plans from their current schematic/25% complete state to full construction plans? If so, when will you begin the engagement?

- At the 3/6/23 hearing, you mentioned you will be pursuing environmental/sustainability certification. Which certification program or programs will you apply to?
- Do you have design targets for the energy consumption and efficiency of the finished buildings, eg, energy use intensity (EUI), air infiltration (cubic feet/hour or air changes per hour at 50 pascals), HERS rating, etc.
- The International Energy Efficiency Code (R501.6 and C501.5) incorporated into the Massachusetts building codes states:
  - *Provisions of this code relating to the construction, repair, alteration , restoration and movement of structures, and change of occupancy shall not be mandatory for historic buildings provided that a report has been submitted to the code official and signed by the owner, a registered design professional , or a representative of the State Historic Preservation Office or the historic preservation authority having jurisdiction, demonstrating that compliance with that provision would threaten, degrade or destroy the historic form, fabric or function of the building*

Do you anticipate applying for these exemptions from energy codes?

- Other than ruling that solar panels on roofs are not acceptable, what other guidance have you received from NPS that would relate to Energy Committee concerns? What is their position on parking canopies? What is their position on double pane and triple pane windows? Have they stated any other limitations on materials or techniques that would otherwise improve the energy efficiency of the buildings?
- Why is the depth of interior walls limited to 4 inches?
- What air sealing strategies will you pursue?
- How will you determine the optimal amount of insulation for the masonry walls? (In previous conversations, MEC has noted that the overall excellent condition of the bricks suggest that a more aggressive insulation strategy than is typically used in brick masonry buildings may be appropriate).
- Cross-sections show some encouraging insulation and air sealing details, but also missed opportunities particularly at the foundations. Have you considered insulation under the new slab to be poured? Exterior vs interior foundation insulation? If these were considered and rejected, please explain.
- At this stage the plans do not include information about hot water heating strategies and equipment, eg, individual units vs central building water heating. What are your current thoughts?
- At this stage, the plans do not include information about ventilation strategies and equipment. Do you anticipate that the buildings will require mechanical ventilation? If so, what are your current thoughts about heat recovery ventilation (HRV) vs energy recovery ventilation (ERV)?
- How will the availability of the 30% tax credit under the Inflation Reduction Act factor into decisions about selecting products and materials for energy efficiency and performance, eg, composite vs aluminum frame windows, double-pane vs triple pane windows, etc.

- In your RFP response you stated “all appliances will be specified Energy Star” (p. 23). Please clarify if you will specify Energy Star Most Efficient where such a designation is available (eg, laundry appliances, refrigerators, dishwashers).

Respectfully submitted,

Jim Nail, Co-chair  
Medfield Energy Committee