



# Meeting Minutes

Special Meeting to discuss Sustainability at West Elementary and Shawsheen Preschool

Wednesday, March 10, 2021, 7:00 pm

**Link:** <https://andover.webex.com/andover/j.php?MTID=m8110e45628dd23882fcbfc81677e8c15>  
**Meeting number:** 129 810 8298 **Meeting password:** H8jTX7f3viW  
**Join by video system | Dial 1298108298@andover.webex.com**  
**Join by phone 1-408-418-9388**

In Attendance:

Amy Latva-Kokko\*  
Harry Voorhees\*  
Melanie Cutler\*  
Jon Unger\*  
Maria Bartlett\*  
Anil Navkal\*  
Joyce Losick-Yang  
Janet Nicosia  
Paula Colby-Clements, Building Committee  
Martine Dion, SMMA  
Matt Rice, SMMA  
Carolyn Dann  
Sophia Schweizer  
Joel Blumstein  
Brad Weeden  
Andrea Schreck

\* AGAB members

1. Introduction to the project by Paula Colby-Clements
  - a. Two new school buildings will solve multiple issues in the school
  - b. Will include elementary, K, and pre-K, including students with special needs
  - c. Total project cost around \$150 M
  - d. For prop 2 ½ override: 1. Warrant article at Town Meeting to approve the article (June 5, need ⅔ vote); 2. Ballot vote (June 15, need majority vote)
2. Matt Rice and Martine Dion, SMMA (architecture firm):

- a. Reviewed MSBA Sustainability Standards
  - i. Water use has to be 20% better than code
  - ii. LEED Silver certification = additional 2% reimbursement
  - iii. Project goal - net zero energy ready (NZER)
  - iv. Bancroft's EUI= 38 kBty/SF/yr
  - v. Existing West EI building's EUI= 102 kBtu/SF/yr
  - vi. New building goal =
    - 1. Maximize insulation
    - 2. Passive house strategies
    - 3. Air infiltration reduction
    - 4. All electric heating and cooling
    - 5. Plug load controls
    - 6. Life cycle cost factors
    - 7. Commissioning & testing
- b. LEED Score Card
  - i. Pursuing LEED v4 for schools (required by MSBA)
  - ii. To get to Silver, need 50 points (see presentation for details on points)
  - iii. Categories:
    - 1. Location and transportation
      - a. No access to public transportation
      - b. Good for bicycle facilities, EV charging stations
    - 2. Sustainable Sites
      - a. Reduce light pollution outside
    - 3. Water Efficiency
      - a. No irrigation of playing fields
      - b. 30% reduction of indoor water use
    - 4. Materials and Resources
      - a. Building life-cycle impact reduction - LEED requires embodied carbon modeling (use TALLY software, at the end of design and at the end of construction)
      - b. Sourcing of raw materials, tracked through construction, includes recycled materials
      - c. EPD and HPD
    - 5. Energy and Atmosphere
      - a. Enhanced commissioning
      - b. Optimize energy performance (will meet stretch code)
      - c. LEED uses energy costs to measure energy efficiency
      - d. Advanced energy metering
      - e. Demand Response
    - 6. Indoor Environmental Quality

- a. Use low emitting materials (low VOCs)
- b. Construction indoor air quality management plan (control dust, mold, air quality, etc.)
- c. Indoor air quality assessment

7. Innovation

- a. Pursuing 5 innovation points
- b. LED lighting (no mercury)
- c. Exemplary EPD and HPD
- d. Design for fitness (ex, use stairs vs. elevator)
- e. Green educational programs (signage showcasing sustainable design, map of measures, tour)

8. Regional Priority

- a. Bonus points for achieving in other categories
- b. Based on zip code

iv. Building life cycle = 50 years

v. Current design has about 55 points

vi. Y = included in the design, ? = maybe, depends on outcome of construction and design, N = not pursuing those points

3. Discussion of Design for Sustainability of West Elementary and Shawsheen Preschool with invited guests from the Design Team, Director of Facilities and Chair of the West El and Shawsheen Preschool Building Committee. Questions are in a spreadsheet in the public folder for this AGAB meeting, link below; the topics to be discussed include:

a. HVAC Systems

- i. Cost analysis and energy usage over lifetime
- ii. Project is about 190 ft<sup>2</sup> building, 450 tons of heating and cooling load, based on schematic design plans
- iii. Modelled both VRF and GSHP (ground source heat pump)
- iv. GSHP would require \$3.4M for bore holes, piping and pumps would cost \$1.8 M, so \$5.5 - 6M for geothermal field system.
- v. Calculations include installation, O&M, cost depreciation, energy costs
- vi. Andover School Building Committee decided to go with air source heat pump.
- vii. VRF = air source heat pump
  - 1. Rationale for this choice - mostly based on installation cost (less than for ground source heat pump)
  - 2. 50 year life cycle cost is also lower for VRF vs. ground source heat pump
  - 3. Includes highly insulated building enclosure

viii. Building LLCA (50 yr) Considerations:

1. Compared different designs (ex. All electric DX heating and cooling, natural gas boilers, chiller, electric VRF, electric geothermal)
2. Used eQUEST 3D Energy Model Simulation with different R values, models annual energy use of the system
3. Ran model for each zone of the project (ex. 1st floor, 2nd floor, etc)
4. Included different hours of use in different seasons
5. Very detailed level of modeling
6. Output - existing operating costs

b. Photovoltaic system

- i. Buildings will be net zero ready
- ii. Modeled preliminary PV array assessment
- iii. Total roof area + parking lot area
  1. Roof alone isn't sufficient to provide enough energy, would provide about 50% of energy needs
  2. SMMA recommends the roof be solar ready (about 50% of energy need) and make the parking lot ready for solar canopy installation in the future. Can happen through a PPA in the future.
- iv. Western Andover is under PPA from solar field in Western, MA. Most of West El is currently under that PPA.
- v. Net zero ready school has a very low energy footprint, so that eventually all of the energy could be covered by renewable energy sources. Another term = "ultra low energy" use
- vi. If solar canopies in parking lot, how much of the parking lot will be wired for that? A: Project scope includes empty electric conduits (trenches) under the parking lot to make the site solar ready.

c. Electrical vehicle charging

- i. Site will be prepared for charging stations
- ii. Would there be any way to add additional EV charging station readiness? That is included in the scope. Working on calculating the finances.

d. Playing fields surface decision making matrix

- i. Natural turf? May not be able to use natural turf based on available area. Only building structure and enclosure counts when accounting for recyclable materials (doesn't include outside or interior furnishings)

- ii. AGAB suggesting decision-making matrix related to choosing field surfacing materials. What are the town's top priorities?
  - iii. Includes some turf area in the front with coconut fiber underneath
- e. Rooftop Garden surface
  - i. Current design includes a variety of surfaces, some natural (planting beds), some concrete pavers, synthetic turf with coconut infill (ease of maintenance). Percentage of each may change as design becomes more detailed. Opportunity for future public input. Suggestion to increase area of natural turf.
- f. Playground surface
- g. Interior flooring selections
  - i. Both vinyl and linoleum flooring can qualify for LEED, depending on testing
- h. Environmental Education opportunities
  - i. Will include signage, map and tour
- i. Carbon footprint analysis
- j. Reference projects- [King Open](#) Cambridge, [Belmont](#) Middle and HS
- k. Project is not pursuing net zero, but is pursuing net zero ready (roof and parking lot would be ready for solar system in the future). Definition of net zero differs depending on certification organization. Comment to encourage project to be net zero on site, excluding credits. Site will be made ready to eventually install energy storage and generators. Discussion about explaining to the public about the difference between the building being net zero and net zero ready.
- l. Jon: What about using more passive methods for energy efficiency? A: A: Project design already includes R60 roof, R40 wall (8 in of insulation), R20 at slab, triple glazing on windows, in line with passive house strategies
- m. Kitchen - all electric, energy efficient appliances
- n. Planned for plug load and controls to handle technology

**Comments from the Chat:**

from Maria Bartlett to everyone: 7:41 PM

What is the benchmark EUI for K-5 schools and/or pre-schools? I know this will be much better than the current West EI but I wonder what the highest standard Benchmark is?

from Amy Latva-Kokko to everyone: 7:43 PM

For AIA 2030, we use ~ 80kBtu is the benchmark for k-12 schools from the CBECS benchmark from 2003.

from Amy Latva-Kokko to everyone: 7:46 PM

Martine mentioned when Bancroft was designed, the MA code was about 65-70 kBtu/sf/yr.

from Carolyn Dann to everyone: 7:52 PM

I would also like to ask about the calculation of the 50 cost. If they discounted the future cost in a "Net Present Value" calculation, what % increase did they assume for the cost of electricity? If no inflation of cost is assumed, then it isn't appropriate to use a discount rate.

from Carolyn Dann to everyone: 7:53 PM

Q: 50 year cost. Is energy cost increased over time in model? Would rather see the annual cost not discounted. Why can't we bond for PV and put it into a long term bond for funding?

from Matt Rice, SMMA to everyone: 8:00 PM

Here is the link to the Schematic Design Report to the MSBA that contains the data that Martine has been referring to:

[https://smma365-my.sharepoint.com/:b:/g/personal/pmail\\_smma\\_com/EbPSJjTYDwFBtTsOcnIEFxYB\\_Gg1eOR7ASwar2c3adbo2w?e=dO5rrV](https://smma365-my.sharepoint.com/:b:/g/personal/pmail_smma_com/EbPSJjTYDwFBtTsOcnIEFxYB_Gg1eOR7ASwar2c3adbo2w?e=dO5rrV)

from Matt Rice, SMMA to everyone: 8:06 PM

Page 156 of the document is where the Life Cycle Cost Assessment begins  
It's page 156 of the overall PDF document ... if you are referencing the page numbers in the report, it is page 71 of Section 4.1.2 ... let me know if you're still not seeing it.

from Carolyn Dann to everyone: 8:13 PM

But shouldn't NZEReady really mean using onsite renewable energy rather than imported energy? If that's the case, we need to really have all the pieces in place and be committed to a PPA.

from Carolyn Dann to everyone: 8:15 PM

What is the least cost way to get solar? Wouldn't the long-term bonding of a school be an inexpensive way to fund PV?

from Amy Latva-Kokko to everyone: 8:18 PM

The [1400-page] MSBA document is uploading to this meeting's public folder.

from Anil to everyone: 8:48 PM

SMMA team: Can you share your slides with us? Also would like to see the energy models used to rule out GSHP

from Anil to everyone: 8:48 PM

SMMA team: Can you share your slides with us? Also would like to see the energy models used to rule out GSHP

from Martine Dion - SMMA to everyone: 8:52 PM

AIA 2030 uses CBECS, which is based on a limited database of existing bldgs. The MA Code is more stringent than the CBECS as a benchmark. The current MA Code has typical school in the 40-55 predicted EUIs (pEUI) range. This is in response to some of the earlier chat discussions posted.

from Martine Dion - SMMA to everyone: 8:54 PM

Anil, we are able to share the energy modeling inputs and outputs. These are also located in the MSBA report and appendix (all output annual/monthly end uses reports out of the energy modeling soft

Public folder for this AGAB meeting: [link](#)

*Pursuant to Governor Baker's March 12, 2020 Order Suspending Certain Provisions of the Open Meeting Law, and the Governor's March 15, 2020 Order imposing strict limitation on the number of people that may gather in one place, this meeting of the Andover Green Advisory Board will be conducted via remote participation. For this meeting, the attendees will be able to access the video conference or join by phone, as well as ask questions by texting the moderator. Additionally, the meeting will be recorded, and the materials will be made publicly available at a later date.*