

January 7, 2014

Mr. Peter Wolfe, Chair
Durham Planning Board
15 Newmarket Road
Durham, NH 03824

Dear Peter:

As a representative of the Durham Energy Committee, I recently had the pleasure of speaking with Adam Wagner of DeStefano Architects of Portsmouth NH about the development combining house-sized and larger mixed-used buildings that Orion proposes for its Main Street site. Adam and others at DeStefano have LEED AP credentials and bring decades of experience designing commercial and residential projects to LEED-like standards. Adam has been working on the Orion project for 20 months; he was extremely knowledgeable and engaged in our discussion.

This letter represents a summary of my conversation with Adam and my opinions, as well as comments and recommendations from the Energy Committee, which reviewed the draft of this letter through email on December 18th and a final draft at its January 7, 2014 meeting. At Adam's request, we will be providing Orion and Michael Behrendt with the first draft so that they may correct any miscommunication or errors of fact in our account of their plans.

Overview and Energy Considerations Checklist

Adam and I reviewed the Energy Checklist, which had also been reviewed by the Energy Committee at its October 2, 2013 meeting. A number of areas of uncertainty remain, because the engineering team has only recently been brought onto the project as the design of this historically sensitive property has settled. For example, two of the buildings are historic properties that will be restored to their original footprints and have largely unknown interior details and mechanical plants. The new construction will include two large mixed-use structures and two additional house-sized buildings, all of which will be built to modern standards.

Energy Committee Recommendations:

1. The Energy Committee and the Planning Board should revisit the checklist and the proposed energy-related systems (e.g., mechanical) once the project has taken a more definite shape.

Despite the aforementioned uncertainties, Adam was able to give compelling testimony to the overall developers' approach to energy efficiency on the site, which I will summarize according to our energy chapter pillars: building practices, transportation, and renewables categories. The Energy Committee makes recommendations below for each of these categories.

Building Envelope and Internal Systems

Durham's adoption of the current printed (today, the 2012) IECC and concurrent Climate Zone 6-reference requires that the building significantly outperform typical construction for the Seacoast region. Simply meeting Durham's building construction code means that ceiling, wall, and slab/basement insulation values are at highly energy efficient levels. Orion has not proposed anything beyond that code. It plans to install dual pane windows of modern energy efficient design, but it is paying no special attention to solar gains, shading, or other passive solar techniques, in part due to the complex standards of design applicable on this parcel, i.e., it is within Durham's Historic District.

HVAC and hot water systems have not yet been specified, but the current favored approach is for individual natural gas hot water heaters, boilers, and air conditioning compressors to be dedicated to each unit and metered separately. Orion suggests that students will thereby have an incentive for carefully managing the energy costs of their heating and cooling energy usage because they will be seeing (and paying for) the related bill.

Electricity will most likely be centrally metered and provided as part of the rent; it will power the ranges and washer/dryer units. There are no plans for monitoring of electrical or natural gas use other than via the meters. Elevators will be Otis Generation 2 system, significantly more energy efficient than previous models, according to Adam.

In conclusion, the Orion development team is making a substantial and commendable investment in energy efficient building envelopes for the properties on this site. Orion's stated intention to remain in the community for the long term is supported by their selection of construction materials and practices whose payoff is sometimes beyond the horizon of short-term build-to-sell developers. While many of the engineering details are still to be determined, the project seems poised to be a quality addition to Durham's long-term building stock and to make a considerable contribution to reducing the town's environmental impact for the life of the buildings.

Energy Committee Recommendations:

2. Install smart thermostats with occupancy sensors and provide educational materials about managing the heating and cooling costs of living in the complex.

3. Install electricity-monitoring devices to provide feedback for student tenants on their energy use with their major electricity uses such as clothes washing and drying.
4. Closely review the technology selected for the individual heating and air conditioning units and encourage cost benefit analysis of Ductless Air-Conditioning and Heating Units based on air source heat pump technology. Committee members recommended exploration of heat pump water heaters as well.
5. The Committee also reminds the Planning Board of the alternative incentive paradigm adopted by another current development, i.e., Madbury Commons, whereby the property owner (not the occupants) will pay for utilities and thus has an incentive to build for energy-efficient future operations and maintenance.

Transportation Planning

The Energy Committee applauds the siting of this residential complex within the downtown area, putting it within easy walking and biking distance from the UNH campus. The Energy Chapter of the Master Plan encourages such energy efficient infilling of our central core. The Committee echoes Orion's hope that the small number of parking places planned for the site will attract residents committed to non-vehicular transportation for most of their daily needs.

The site plan that I reviewed (10-25-2013) includes 24 outdoor bike racks of an excellent design and 12 indoor basement bike racks accessible via an elevator, providing some covered storage. Adam has worked on projects in municipalities such as Minneapolis that *require* one indoor covered bike-parking place per bed, but to date Durham lacks any such requirement. For this project, the proposed ratio here is 36 racks (with 2 spaces each) for 72 bike storage spots for 172 beds—or 1 for every 2.3 beds, but only 1 indoor or covered spot per 7-8 beds. While this ratio is much better than other recent developments in town, the planned indoor covered storage promises to be undersized and challenging to access for daily use because it will require an elevator trip for access rather than an easy access ramp or direct exit..

Energy Committee Recommendations:

6. For the project to become a true model of pedestrian and bike zone development, the developer should explore whether areas of the house-like structures, the open spaces (which might accommodate a bicycle shelter), and the commercial spaces inside the mixed use buildings (which may not be entirely occupied at any one time) might support a premier bicycle-parking and easy-access installation. For example, a back porch on one of the smaller structures or a vacant commercial space could be outfitted with wall-mounted hangers that would be easy to access,

- secure, and weatherproof. Such a facility would send a clear message to tenants about the importance of alternative transportation and make the use of bicycles more attractive (e.g., less weather dependent and sensitive to vandalism or theft).
7. While the Committee applauds the proposed widening of the sidewalk along Main Street, it requests that Orion consider road markings, signage, and lanes to direct pedestrian and cycling traffic into the Durham roadways and/or down into the Mill Plaza so that some of the worst aspects of Durham’s “one-way rotary”—aka, the “downtown loop” (which will otherwise discourage biking)—might be circumvented. A premium bike path down to the Mill Plaza might, with planning and coordination among all abutters, provide much better access to campus than our current one-way traffic pattern.

Renewable Energy Systems

The Orion design team has been understandably occupied with arriving at a workable design and has not to date specified any renewable energy systems for the site. Concerns about site lines from the Durham Mill Plaza parking lot, minimal roof area, individual hot water and heating systems, and damage due to vandalism were all factors that Adam mentioned to explain this decision.

I pointed out that, on the other hand, the shared electrical service might provide an incentive and a potential payback for the owner for siting Photovoltaic panels on the appropriate roof of one of the back buildings.

Energy Committee Recommendations:

8. Consult a solar installer to do a site potential analysis and provide advice about possible PPA financing, grants, and rebates to improve payback period.
9. If this analysis is promising, review location of the solar panels with the Historic District Commission and neighbors from the Mill Plaza side who would be affected by such an installation.
10. For roofs with solar potential, install conduit and/or piping to support future installation of electrical or hot water solar systems if and when the payback period becomes more attractive to the developer.

Conclusion

In conclusion, this is an impressive and historically sensitive proposal that has many commendable energy efficiency features. Beyond meeting our relatively stringent building construction code requirements, the developer is making a serious effort to design a pedestrian- and bicycle-friendly complex. *Areas of concern include little evidence of a serious consideration of renewable energy sources, advanced heating and cooling equipment, more complete bicycle storage, and path connectors to campus.*

Among the simplest and most cost effective improvements for Orion would be to take a leadership role in bicycle storage and accommodations, something that seems sensible given the nature of their tenant transportation profile. The Energy Committee cannot state strongly enough that Durham is on the cusp of a pedestrian and biking overhaul to its downtown and campus core. This project would be an ideal high profile example of the kind of first-class amenities for non-drivers we should be seeing from our newest, highest-quality residential complexes.

If some or all of the recommended areas are addressed and improved upon, this strong project proposal could become a model for the kind of development that will allow Durham to meet its 10- and 50-year energy resiliency goals as outlined in the forthcoming Master Plan.

I am grateful to Adam Wagner and to the Orion team for their creativity throughout this long process and for their openness and enthusiasm for discussing the energy aspects of their project. I also want to thank our building inspector, Tom Johnson, who encouraged the adoption of the amendments to the Building Construction Code that created a terrific starting point for all these projects, as well as the Town Planner, Michael Behrendt, and members of the Planning Boards who have encouraged this conversation on energy efficiency and who have carefully reviewed these projects.

While the opinions expressed in this memo are my own, I was authorized by the committee as a representative to speak with Orion and have received helpful feedback and unanimous consent to submit the memorandum.

Charles Forcey
Representative of the Durham Energy Committee