

## EC. Energy Consumption and Conservation

### *Comment 1*

The DEIS should include a discussion of measures that can be taken within the context of the project (that is, in addition to the project's built-in advantages in terms of density, mixed use, and transit) to reduce energy consumption and the associated emissions, and disclose, to the extent practicable, what measures will be included in the project. Enforceable commitments to energy performance levels can be made without designing all building details, and goals can be set for all project components. Currently, the energy chapter states adherence to the State Energy Code as a minimum requirement; it is well known that the current Energy Code is a low bar and most modern construction exceeds the code, some considerably.

(Graham Trelstad, AKRF, Memorandum to the Town Board, 7/30/09, Pg. 15)

### *Response 1*

*As described in DEIS Section X, the project will contain a number of green building components. The DEIS identifies a number of efficient mechanical systems that the project would include, such as hot water heaters and furnaces with a 92 percent or better efficiency rating; 14 SEER heating, ventilating and air conditioner condensers; Energy Star compliant refrigerators, dishwashers, and clothes washers; high R-value fiberglass insulation; and exterior sill plates caulked to the sub-floor.*

*Since the project is still at the conceptual site plan level, actual building designs and construction documents have not yet been prepared, which would allow for the universe of specific details regarding the building components, fixtures, materials, technologies etc. to be quantified and listed. In addition, the project will be built in a phased manner over a period of years. Green building technologies are evolving rapidly, and available components may be different by the time certain buildings are constructed.*

*At this stage of project development, the development team has not determined the feasibility of applying for any specific certifications for the various buildings. As specific building design advances, the Applicant will explore methods to incorporate the most current (at that time) environmentally responsible techniques to the extent feasible, recognizing that ratings systems such as LEED are dynamic and change over time.*

*In addition to the potential technologies that can be employed on specific buildings, it should be acknowledged that compact, mixed-use, and transit-oriented nature of the project would reduce the amount of vehicle miles traveled and reduce impacts from mobile sources. The project is also composed predominantly of multifamily and attached dwelling units that are smaller than conventional large-lot single family homes and have reduced space heating/cooling needs and electrical demand, resulting in reduced greenhouse gas impacts related to energy generation. These concepts are supported by the recently published "Driving and the Built Environment: The Effects of Compact Development on Motorized Travel, Energy Use, and CO2 Emissions," authored by the National Research Council's Transportation Research Board. The report shows that increasing population and employment densities in metropolitan areas could reduce vehicle miles traveled (VMT), energy use, and*

*carbon dioxide emissions. These components of the project are of primary importance in curbing greenhouse gas emissions and should be recognized as significant mitigation features.*

*In addition, the Energy Consumption and Conservation section of the EIS has since been expanded with additional innovative green development and energy conservation concepts that will be investigated and employed as feasible. (Updated section included in the Appendix). These concepts are described below.*

*The following additional conservation and quality concepts will be explored as options for the base design of the project.*

#### **Potential Infrastructure Options**

*As the project progresses and the infrastructure needs become further refined, the following will be explored by the development team:*

*Natural Gas - The potential exists for natural gas to be extended to the site by the local distribution company. This is generally contingent upon the economics of installing and maintaining the distribution network within the allowable tariff. As an alternative to pipeline gas for the early phases of the project, the Applicant will consider the economics of piping gas from a local propane/air system to the structures. Such a system would remain in place until such time as economics allow the extension of pipeline gas to the site. The benefits of a propane/air system include the ability to utilize natural gas burning appliances and therefore a future conversion to natural gas would be seamless on the part of the homeowners.*

*Cogeneration / Combined Heat and Power (CHP) - Assuming that natural gas is available, the potential exists to provide a CHP plant to service the needs of the infrastructure systems, and Town Center. One possible scenario would be to locate this facility in the Power Plant and to showcase it within a green building education center that could be co-located with the plant.*

*Water leakage mitigation – The Applicant will investigate a system of smart meters throughout the water distribution system in order to determine when and where water leakage may be occurring in order to proactively control even small leaks in the water system.*

*Metering (electric, water, gas) with communication – The Applicant will investigate the installation of a system of smart meters in order to offer residents the ability to participate in utility sponsored demand management programs as well as to be ready for the potential implementation of time-of-day utility rate structures. A further benefit may be that homeowners can control certain elements of their home's operation via the internet.*

*Central back-up power (demand control) – The Applicant will investigate the installation of a system of standby power generation that will be designed to mitigate the effect of the development on the peak power distribution capability of the existing transmission and distribution systems that serve it.*

**Potential in-home conservation technology options**

*As part of a Builders Option Program, each individual home buyer will be offered an opportunity to upgrade their property with advanced energy efficiency and indoor air quality schemes that may include the following:*

*Micro-CHP – Assuming the availability of a natural gas supply, the structures would be designed to allow the integration of a micro-CHP system which would significantly reduce the amount of fuel normally needed for a home, which directly and dramatically impacts the environment by reducing the greenhouse gases associated with global warming.*

*Local grey water recovery/re-use – Utilizing a simple, under-sink device, water can be captured and re-purposed to flush an adjacent low-flow toilet.*

*Ultra low-flow plumbing fixtures – As time progresses, plumbing fixture performance is improving; the latest, most efficient, toilets, shower heads and faucets will be offered.*

*Local Renewable Energy – Building integrated solar energy systems in their various forms (hot water heating (thermal) and electricity production (photovoltaic)) will be thoroughly studied, as well as building integrated wind generators.*

*High efficiency lighting – Lighting technology is continuously improving although, at a minimum, the buildings will be Energy Star compliant. Further energy efficiency improvements using advance lighting systems will be considered.*

*High efficiency AC, Boiler and Furnace options - HVAC technology is continuously improving although, at a minimum, the buildings will be Energy Star compliant. Further energy efficiency improvements using advance systems and technologies will be considered.*

*Smart-Home Controls – The buildings will be engineered to be “smart home ready” to facilitate the installation of advance home control and energy management systems as may be desired.*

**Potential in-home quality of life technology options**

*Homes that achieve the Energy Star rating can be enhanced to include the Indoor AirPlus qualification; this may include enhanced air filtration, continuous ventilation with energy recovery as well as various measures related to enhanced general construction. Enhanced air filtration and humidity control will be investigated as independent offerings.*

*Whole-house water filtration and local enhanced water filtration will be offered to eliminate the need for bottled water.*

**Potential retail/office conservation technology options**

*It is envisioned that the retail area will be served from a central heating and cooling plant that will be of the highest efficiency. Chilled water for cooling and hot water for heating will be distributed to each individual retail space and will be provided with a meter for future distribution by each tenant to his systems. Further the tenants will be required to install only*

*high efficiency, Energy Star rated lighting. The building wiring systems will be upgradeable to allow for a building management system with energy management and remote access capabilities.*

*The use of geothermal systems will be explored as will the use of building integrated photovoltaic and wind power generation equipment.*

*Comment 2*

The energy chapter also includes a discussion of LEED certification and the LEED for Neighborhood Development (LEED-ND) system. A more specific discussion of how the proposed project could achieve points within the LEED-ND system should be provided. It is suggested that the LEED-ND worksheet be used as the outline for this discussion and where the project is able and not able to achieve certain criteria, it should be noted.

(Graham Trelstad, AKRF, Memorandum to the Town Board, 7/30/09, Pg. 15)

*Response 2*

*The LEED Neighborhood Development (“ND”) Rating System is still in the process of being developed by the United States Green Building Council. As such, there is not yet a worksheet available upon which the Applicant can assess point by point what credits it could earn under this system. Based upon a review of the current draft of the LEED ND Rating System (i.e., the 2<sup>nd</sup> Public Comment Draft), however, the Applicant believes that the Project will substantially conform to the intent of the LEED ND System.*

*By way of background, the LEED-ND System that is now under development is intended: (i) to encourage healthy living, such as through the creation of walkable, vibrant, mixed use communities; (ii) reduce sprawl, including by channeling development to previously developed sites with good transit access, and; (iii) protect threatened species, including by working with a qualified biologist to create an appropriate conservation plan. Notably, the LEED-ND Rating System is specifically intended to encourage new urbanist best practices, of the sort the project embodies, which promote the location and design of neighborhoods that reduce vehicle miles traveled and communities where jobs and services are accessible by foot or public transit.*

*The Applicant believes that, at such time as this Rating System is completed, it will be able to show that it substantially conforms with the intent of each category in LEED-ND. The LEED-ND Rating System being developed would consist of three essential categories: (1) Smart Location and Linkage; (2) Neighborhood Pattern and Design; and (3) Green Infrastructure and Buildings.*

*The project would conform with the intent of the Smart Location and Linkage category because it would, as contemplated by the draft LEED ND Ratings System Guide, “encourage development within and near existing communities and public transit” and “reduce the risk of obesity, heart disease, and hypertension by encouraging daily physical activity associated with walking and bicycling,” and “conserve imperiled species and ecological communities,” including by working with a qualified biologist to create an appropriate conservation plan.*

*In the Neighborhood Pattern and Design category, the project would “cluster diverse land uses in accessible neighborhood and regional centers,” “promote walking by providing safe, appealing and*

*comfortable street environment,” “improve physical and mental health and social capital by providing a variety of open spaces close to work and home,” and otherwise “[p]romote livability, walkability, and transportation efficiency including reduced vehicle miles traveled.”*

*Finally, consistent with the intent of the Green Infrastructure and Buildings category, the project would “encourage the design and construction of energy efficient buildings that reduce air, water, and land pollution and adverse environmental impacts from energy production and consumption, “reduce pollution from construction activities by controlling soil erosion, waterway sedimentation and airborne dust generation*

*Comment 3*

Ultimately, NYSDEC appears to be concerned with commitments to energy reduction and offsets. There should be a discussion of how each of the mitigation measures outlined in DEC’s policy would or would not apply to the proposed project.

(Graham Trelstad, AKRF, Memorandum to the Town Board, 7/30/09, Pg. 15)

*Response 3*

*The Greenhouse Gas Matrix located in the Appendix includes a review of each of the mitigation measures outlined in the DEC’s policy document and the applicability to the project. See Response 1 for additional discussion of potential energy reduction measures.*

*Comment 4*

The project should commit to specific achievable and practicable energy design goals, regardless of potential LEED certification. This should be mentioned in the GHG section and, if possible, included in the quantification. Energy conserving construction and infrastructure should be considered in all phases of the project construction and should not be saved until the end.

(Graham Trelstad, AKRF, Memorandum to the Town Board, 7/30/09, Pg. 15)

*Response 4*

*As detailed in Response 1, energy conserving construction and infrastructure techniques and products are being considered for all components and phases of the project. Since the project is still at the conceptual site plan level, actual building designs and construction documents have not yet been prepared that would allow for the universe of specific details regarding the building components, fixtures, materials, technologies etc. to be quantified and listed. In addition, the project will be built in a phased manner over a period of years. Green building technologies are evolving rapidly and available components may be different by the time certain buildings are constructed.*

*Energy Star program single-family homes use approximately 30 percent less energy than conventionally built homes. Energy Star multi-family units can be anticipated to consume at least 20 percent less energy than those buildings constructed to the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) standards. These are significant reductions and are benchmark design goals for the project. These energy usage reductions would further decrease the quantity of greenhouse gas generation from this project compared to conventional development.*