K. Air Quality

1. Additional Technical Studies

No additional technical studies or modeling, beyond certain clarifications in the comments below, have been prepared for the FEIS. However, the FEIS has been augmented with a matrix analysis identifying various greenhouse gas reduction measures included in the project. The matrix clearly identifies that the project will incorporate most of the applicable NYSDEC-identified potential mitigation measures, including items such as the use of high efficiency HVAC systems, incorporation of window glazing, gray water reuse, use of rapidly renewable building materials, brownfield redevelopment, incorporation of transit-oriented development principles, and shared parking, among others.

2. Plan Changes and Impact Summary

The modified FEIS plan would not result in any further impacts related to air quality beyond those detailed in the DEIS.

3. Comments and Responses

Comment K.1

The *Greenhouse Gas (GHG) Emission and Carbon Footprint Analysis* (B. Laing Associates, December 2008, revised April 2009) [presented in support of the DEIS presumes that all residences (and a portion of the proposed site commercial development) will utilize natural gas for heating purposes. Natural gas combustion produces lower carbon dioxide emissions than fuel oil combustion in order to produce an equivalent measure of heat. However, as indicated in Section O of the DEIS (Infrastructure and Energy, Subsection 5, *Natural Gas*, page III.O-20), "Natural gas does not currently exist at the project site." Further, it is not certain whether natural gas will eventually be made available to the site, per noted discussions with the New York State Electric &Gas (NYSEG). Therefore, the GHG analysis, the calculated project "carbon footprint," and all EIS discussions and results predicated upon natural gas use must be revised to include a scenario in which natural gas is not available, and that the use of other fuels (such as #2 fuel oil for home heating) is necessary.

(Scott Ballard, Environmental Analyst, New York State Department of Environmental Conservation, Letter, 6/30/09, Pg. 7)

Response K.1

While natural gas does not currently exist at the project site. NYSEG has indicated that, pending their financial analysis on the feasibility of the rate of return on the required investment in development and delivery, natural gas could be made available to the project. 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. In the event that neither of these supplies is available, heating and hot water needs would be served from energy efficient fuel oil fired systems. This would result in similar increased carbon dioxide emissions for each scenario studied in the GHG analysis. The conclusions of the analysis would not change, since the relevant consideration is the relative quantity of emissions between different development patterns.

Natural gas results in substantially less CO_2 emissions than fuel oil on a "per-btu-basis." The Natural Gas Supply Association (in the United States) states that natural gas' CO_2 emissions are 40 percent less than fuel oil on a per-btu-basis; USEPA puts the differential at 27 to 30 percent less than fuel oil on a per-btu-basis. However, the substitution of natural gas for fuel oil is largely limited to heating and/or air conditioning needs and so, is only one factor in calculating this project's GHG emissions. A sample run of emissions calculations performed with the substitution of fuel oil for the natural gas component resulted in an approximately 5.6 percent increase in pounds per year of CO_2 emissions, which is within the level of precision for the overall analysis and generally comparable to the prior results. Since a comparable increase could be expected across each development scenario, there would be no change in their relative ranking in terms of emissions (i.e., even if natural gas does not become available in the area, the Project would still prevail in comparison to other development scenarios because those scenarios would also have to be re-calculated using fossil or fuel oil.)

Comment K.2
If natural gas is eventually made available to the site, every effort should be made by the project sponsor to ensure that natural gas is utilized throughout the site to the maximum practicable extent in order to minimize carbon dioxide (CO_2) emissions throughout the project's lifetime. This may include a commitment on the developer's part to incorporate the most efficient available natural gas fueled furnaces (and boilers) in every home and commercial structure built on site, as well as maximizing window glazing and insulation for all structures. If details or assurances exist that natural gas is being made available in associated with the redevelopment of the property, that information is needed.

(Scott Ballard, Environmental Analyst, New York State Department of Environmental Conservation, Letter, 6/30/09, Pg. 7)

Response K.2
See Response K.1 regarding natural gas availability and Section II.X for discussion of energy saving techniques. The Applicant intends to pursue and utilize natural gas throughout the site. The project buildings will also utilize energy-efficient furnaces, appliances, windows, and insulation.

Comment K.3
We believe the GHG analysis and related sections of the EIS do not adequately explore available mitigation measures: the NYSDEC guidance document for conducting GHG analysis (Section G., Examples of Mitigation Measures) provides over 60 potential

mitigation measures (and is not an exhaustive summary of potential measures), whereas the GHG report discusses only six (6) such measures proposed to be integrated into project design. We believe that the EIS must examine each of the mitigation measures listed in the DEC draft guidance document entitled Guide for Assessing Energy Use and Greenhouse Gas Emissions in Environmental Impact Statements, where applicable. The revised analysis should provide, at as minimum, a brief discussion of how the proposed measure could be implemented, and if the measure is not implemented, an explanation as to why the measure was not selected.

(Scott Ballard, Environmental Analyst, New York State Department of Environmental Conservation, Letter, 6/30/09, Pg. 7)

Response K.3

Appendix 16 includes a review of each of the mitigation measures outlined in the DEC's policy document and the applicability to the project. As shown in the table, the project includes numerous of the DEC's identified mitigation measures. The DEIS Section noted several efficient mechanical systems that the project would include (using today's technology.) More specific details regarding the building components, fixtures, materials, etc. that will be used cannot be provided at this point in time since the project under review is a conceptual site plan. The reason that specific construction details cannot be provided is not a lack of commitment, but rather the actual building designs and construction documents have not yet been prepared that would allow for the universe of technologies 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. 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.

Comment K.4

The DEIS states at p. III.K-3 that all air quality modeling results were below the one-hour and eight-hour standards for CO. Text and/or a table should be provided to summarize the modeling results as is done on page 12 of the technical report in the Appendix.

(Graham Trelstad, AKRF, Memorandum to Town Board, 7/30/09, Pg. 10)

Response K.4

Analysis results for the modeled receptors are presented in Appendix A of the Mobile Source Air Pollution Modeling Report included in the DEIS. The peak CO result was 4.2 ppm in the one hour scenario and 2.94 ppm in the eight hour scenario for the 2020 PM Build condition along Route 22/55 and Wheeler Road at sidewalk receptor 22. The peak CO result was 3.9 ppm in the one hour scenario and 2.73 ppm in the eight hour scenario for the 2020 PM No Build condition at the intersection of Route 22 and Pleasant Ridge Road at sidewalk receptor 42.[1] Thus, the CO result with the project

[1] Some receptors in the Conversion Table Air Quality CO 1 and 8 Hour Value scenarios have the same result as the peak receptor cited. Peak receptors were chosen as an example of the highest value obtained.

constructed in the one hour scenario was only 0.3 ppm higher than without the project constructed. The CO result with the project constructed in the eight hour scenario was only 0.21 ppm higher than the condition without the project constructed. Since all results are also below their respective one hour standard of 35 ppm and eight hour standard of 9 ppm in the 2020 Build condition, the project will not significantly impact air quality. However, it was determined that the recommended intersection improvements will result in better CO concentrations than the un-improved intersections. Thus, they should be incorporated in the project as a mitigating measure for this impact (if for no other reason).

Two values in the Conversion Table Air Quality CO 1 and 8 Hour Value results were reported incorrectly in the DEIS: (1) the intersection of Route 22/55 and Wheeler Road at receptor 45 and (2) the intersection of Hoags Corner Road and Wheeler Road at receptor 22. Both values were actually lower than initially reported. This was due to a cell-specific malfunction of the excel equations. The revised values do not change the results of the air quality analysis. The affected tables were revised and are presented below (see Table II.K-1).

Table II.K-1
Revised Tables

EAR 2008 EXISTING CONDITIONS CO MODELING RESULTS					
Intersection	*Peak Receptor*	*One hour result*	*One hour CO standard*	*Eight hour result*	*Eight hour CO standard*
Hoags Corner Road and Wheeler Road	41	3.10 ppm	35 ppm	2.17 ppm	9 ppm
Pleasant Ridge Road and Route 22/55	42	4.30 ppm	35 ppm	3.01 ppm	9 ppm
Route 22/55 and Wheeler Road	22	4.10 ppm	35 ppm	2.87 ppm	9 ppm

NO BUILD 2020 SCENARIO CO MODELING RESULTS					
Intersection	*Peak Receptor*	*One hour result*	*One hour CO standard*	*Eight hour result*	*Eight hour CO standard*
Hoags Corner Road and Wheeler Road	36	3.10 ppm	35 ppm	2.17 ppm	9 ppm
Pleasant Ridge Road and Route 22/55	42	3.90 ppm	35 ppm	2.73 ppm	9 ppm
Route 22/55 and Wheeler Road	22	3.80 ppm	35 ppm	2.66 ppm	9 ppm

BUILD 2020 SCENARIO CO MODELING RESULTS					
Intersection	*Peak Receptor*	*One hour result*	*One hour CO standard*	*Eight hour result*	*Eight hour CO standard*
Hoags Corner Road and Wheeler Road	45	3.10 ppm	35 ppm	2.17 ppm	9 ppm
Pleasant Ridge Road and Route 22/55	42	4.20 ppm	35 ppm	2.94 ppm	9 ppm
Route 22/55 and Wheeler Road	22	4.20 ppm	35 ppm	2.94 ppm	9 ppm

CONVERSION TABLE AIR QUALITY CO 1 AND 8 HR VALUES

JOB NO: SNSDVR01 Persistence Factor: 0.70 SCENARIO: RT 22/55 & WHEELER PM NO BLD 2020

Intersection: RT 22/55 & WHEELER

Receptor Number:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Raw Result/ 1 hr	0.6	0.10	0.10	0.10	0.00	0.00	0.00	0.70	0.10	0.10	0.10	0.00	0.00	0.00	0.60	0.50	0.50	0.50	0.50	0.50
1 Hour Ambient	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
1 Hour Result	3.60	3.10	3.10	3.10	3.00	3.00	3.00	3.70	3.10	3.10	3.10	3.00	3.00	3.00	3.60	3.50	3.50	3.50	3.50	3.50
8 Hour Ambient	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
8 Hour Result	2.52	2.17	2.17	2.17	2.10	2.10	2.10	2.59	2.17	2.17	2.17	2.10	2.10	2.10	2.52	2.45	2.45	2.45	2.45	2.45

Receptor Number:	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Raw Result/ 1 hr	0.5	0.80	0.60	0.50	0.50	0.50	0.50	0.50	0.50	0.10	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20
1 Hour Ambient	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
1 Hour Result	3.50	3.80	3.60	3.50	3.50	3.50	3.50	3.50	3.50	3.10	3.20	3.20	3.10	3.10	3.10	3.10	3.10	3.10	3.20	3.20
8 Hour Ambient	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
8 Hour Result	2.45	2.66	2.52	2.45	2.45	2.45	2.45	2.45	2.45	2.17	2.24	2.24	2.17	2.17	2.17	2.17	2.17	2.17	2.24	2.24

Receptor Number:	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57
Raw Result/ 1 hr	0.1	0.70	0.60	0.50	0.50	0.60	0.50	0.50	0.50	0.50	0.50	0.50	0.60	0.50	0.50	0.50	0.20
1 Hour Ambient	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
1 Hour Result	3.10	3.70	3.60	3.50	3.50	3.60	3.50	3.50	3.50	3.50	3.50	3.50	3.60	3.50	3.50	3.50	3.20
8 Hour Ambient	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
8 Hour Result	2.17	2.59	2.52	2.45	2.45	2.52	2.45	2.45	2.45	2.45	2.45	2.45	2.52	2.45	2.45	2.45	2.24

***** New York State carbon monoxide standard (CO) 35ppm - 1 Hour.

***** New York State carbon monoxide standard (CO) 9ppm - 8 Hour.

CONVERSION TABLE AIR QUALITY CO 1 AND 8 HR VALUES

JOB NO: SNSDVR01 Persistence Factor: 0.70 SCENARIO: HOAGS CRNR & WHEELER RD PM BLD 2020

Intersection: HOAGS CRNR & WHEELER RD

Receptor Number:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Raw Result/ 1 hr	0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Hour Ambient	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
1 Hour Result	3.10	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
8 Hour Ambient	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
8 Hour Result	2.17	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10

Receptor Number:	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
Raw Result/ 1 hr	0.1	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
1 Hour Ambient	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
1 Hour Result	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10
8 Hour Ambient	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
8 Hour Result	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17

Receptor Number:	**41**	**42**	**43**	**44**	**45**	**46**	**47**
Raw Result/ 1 hr	0	0.10	0.00	0.10	0.10	0.10	0.10
1 Hour Ambient	3.00	3.00	3.00	3.00	3.00	3.00	3.00
1 Hour Result	3.00	3.10	3.00	3.10	3.10	3.10	3.10
8 Hour Ambient	2.10	2.10	2.10	2.10	2.10	2.10	2.10
8 Hour Result	2.10	2.17	2.10	2.17	2.17	2.17	2.17

***** New York State carbon monoxide standard (CO) 35ppm - 1 Hour.

***** New York State carbon monoxide standard (CO) 9ppm - 8 Hour.

Comment K.5
The first full paragraph on page III.K-3 references "five intersections were modeled." We believe this is an error as the technical report only analyzes three intersections. This should be confirmed.

(Graham Trelstad, AKRF, Memorandum to Town Board, 7/30/09, Pg. 10)

Response K.5
Comment noted. Three intersections were modeled.

Comment K.6
In the discussion of CO_2 emissions from transportation, there are several footnote references that appear to have been omitted due to formatting. These references containing sources of data and other modeling assumptions should be provided.

(Graham Trelstad, AKRF, Memorandum to Town Board, 7/30/09, Pg. 10)

Response K.6
Comment noted. The complete footnote references are provided on page 7 of the GHG Appendix in the DEIS.

Comment K.7
The discussion of CO2 emissions would benefit from a summary table comparing emissions from different project components and with different scenarios.

(Graham Trelstad, AKRF, Memorandum to Town Board, 7/30/09, Pg. 10)

Response K.7
See the Summary Table below, which was assembled from data contained in Table 4 of the Greenhouse Gas report in the DEIS Appendix:

Table II.K-2
Summary Tables

CARBON FOOTPRINT TOTALS

Existing Condition

Scenario:
Scenario: Commercial (with Mass Transit)

Hospital- Inpatient	**Tons Per Year**
	216,562.2

Proposed Action and Alternatives

Scenario

Project (without Mass Transit)	**Tons Per Year**
Residential	29,956.1
Commercial	27,446.4
Community	393.1
Scenario Totals:	**57,795.6**

Scenario: Proposed Action

Project (with Mass Transit)	**Tons Per Year**
Residential	28,770.8
Commercial	26,365.4
Community	393.1
Scenario Totals:	**55,529.3**

Scenario:
Single Family Homes (with Mass Transit)

	Tons Per Year
Residential	50,441.0
Commercial	26,365.4
Community	393.1
Scenario Totals:	**77,199.5**