

ZAMURS AND ASSOCIATES, LLC

Transportation Air Quality Energy Climate Change Sustainability

Environmental Impact Statement - Rapp Road Residential/Western Avenue Mixed Use Redevelopment Projects

Review and Comments

This review of the Draft Environmental Impact Statement (DEIS) for the Rapp Road Residential and Western Avenue Mixed Use Redevelopment Projects focusses on two issues: air quality and climate change/greenhouse gas emissions. For both issues, the DEIS is woefully inadequate.

Air Quality

The air quality discussion in the DEIS and Appendix P is inadequate. Its inadequacy is described in the following five issues: 1) it does not properly apply the New York State Department of Transportation (NYSDOT) air quality analysis procedures, as described in Section 4.4.16 (Chapter 1 Air Quality) of The Environmental Manual (TEM); 2) it does not recognize the importance of minimizing exposure of the public and wildlife to air pollutants that will be generated by this project; 3) it does not address parking lots, which are expected to be the highest source of emissions in the project area; 4) it does not address all air pollutants that will be emitted as a result of this project; and 5) the traffic study is insufficient for a project of this scale and magnitude.

1) Incorrect application of NYSDOT's air quality analysis procedures

The TEM does allow for the exclusion of signalized intersections operating at a Level of Service (LOS) of C or better from an air quality analysis. However, signalized intersections operating at a LOS of D or worse must undergo an examination to determine if there is a need for an air quality analysis using screening capture criteria. The screening capture criteria are:

- 1) a 10 % or more reduction in the source-receptor distance (that is, the straight- line distance between the edge of the travel lane closest to the receptor and that point of the receptor closest to the roadway);
- 2) a 10 % or more increase in traffic volume on affected roadways for ETC, ETC+10 or ETC+20);
- 3) a 10% or more increase in vehicle emissions for ETC, ETC+10 or ETC+20; Increases in vehicle emissions can be due to speed changes, changes in operating conditions (hot/cold starts), changes in vehicle mix, etc. ...
- 4) any increase in the number of queued lanes for ETC, ETC+10 or ETC+20; This criterion applies to intersections. Typical projects that may result in an increase in the number of queued lanes include intersection channelization projects and projects that install turn lanes at intersections.
- 5) a 20% reduction in speed, when build estimated average speed is at 30 mph or less.

(Section 9.A.i of the Air Quality Chapter of the TEM, ETC is Estimated Time of Completion, ETC+10 is 10 years after completion, ETC+20 is 20 years after completion)

Examination of the DEIS and its traffic analysis indicates that three existing signalized intersections will operate at LOS D upon completion of the project (Crossgates Mall Road /I-87 ramps, Washington Avenue Extension/ Springsteen Road/Crossgates Commons Road, and Route 20/Johnston Road). In fact, the Route 20/Johnston Road intersection is shown to degrade to a LOS D as a result of the project. In addition, one intersection to be built (Crossgates Mall Road/ Gabriel Terrace Connector is shown to operate at a LOS of F as an unsignalized intersection and the DEIS contains discussion of needing to signalize this intersection (pages 84-85 of the DEIS).

As a signalized intersection, the Crossgates Mall Road/Gabriel Terrace Connector requires an air quality analysis by screening capture criteria 1 and 4 above.

The three existing signalized intersections that will operate at a LOS of D must be screened using the capture criteria. The Build/No-Build volumes must be examined to determine if there is a 10% increase in traffic volume at these intersections. The traffic study appears inadequate to determine if screening capture criteria 3 and 5 are triggered. The traffic study must be enhanced to allow for evaluation of these intersections against all the screening capture criteria as listed in the TEM.

It is evident that the air quality discussion in the DEIS is inadequate and incorrect and an air quality analysis for this project is triggered.

2) Why Air Quality Matters

Operating motor vehicles (cars, trucks, busses, motorcycles) emit a myriad number of different substances as a result of combustion of fuel. Some are harmless (e.g. water vapor), while most have serious negative implications for human health and wildlife populations. As a result of these emissions (and from other sources such as smokestacks), the Clean Air Act establishes a process for the USEPA to enact National Ambient Air Quality Standards (NAAQS). Primary NAAQS are promulgated to protect public from adverse health effects of these pollutants. These standards are designed to protect sensitive populations (children, the elderly, people with cardio-vascular and pulmonary conditions) from unhealthful levels of air pollution with an adequate margin of safety. Secondary NAAQS are promulgated to protect wildlife, crops, vegetation, buildings and visibility. For the pollutants of concern for this project, primary and secondary NAAQS are in place for carbon monoxide (CO), Particulate Matter 10 microns in diameter or less (PM₁₀), Particulate Matter 2.5 microns in diameter or less (PM_{2.5}), and Nitrogen dioxide (NO₂). Primary and secondary NAAQS are also in place for ozone, but it is more of a regional pollutant, in that its concentration in the lower atmosphere does not vary substantially over relatively large distances. The other pollutants listed previously are localized (or microscale) pollutants in that their concentrations can vary substantially over short distances. These are the pollutants of most concern for this project and should be analyzed for their impact on public health in general and on sensitive populations such as visitors and shoppers to the project area, pedestrians walking near the project area, nearby current and future residents and businesses, and their impact on the endangered and threatened species and species of special concern in the project area (Karner blue butterfly, frosted elfin, northern long-eared bat, worm snake, eastern spadefoot toad, eastern hog-nosed snake, eastern whip-poor-will).

For those pollutants that USEPA has not established primary or secondary NAAQS, other federal agencies and state health and environmental agencies have established guidelines for safe atmospheric concentration levels. For example, New York State Department of Environmental Conservation has done so (<https://www.dec.ny.gov/chemical/8568.html>). Ambient levels of these pollutants above the guideline concentration levels have been associated with increased risk for cancer, other serious illnesses, birth defects, and immediate death. USEPA has identified 21 hazardous air pollutants associated with gasoline and diesel combustion and listed six of them (benzene, 1,3-butadiene, formaldehyde, acrolein, acetaldehyde, and diesel particulate matter) as having the greatest influence on health. Collectively, these six hazardous air pollutants are known as mobile source air toxics (MSATs). These pollutants are also localized in that their concentration varies significantly over short distances. Due to the emissions from increased traffic and new parking lots from this project and emissions from construction equipment that will be used for this project, a comprehensive study of the impacts of these pollutants from this project is needed also.

The localized nature of these pollutants is of particular concern. Their concentrations will be highest near the source of emissions and decrease fairly rapidly as the distance from the source increases. Figure 1 shows this effect. The Figure shows CO concentrations for three atmospheric stability classes (stability classes A, D, and F)¹ with distance from the source. By 100 meters (~300 feet), the concentration is greatly reduced from what it is a few meters from the source. Appendix P of the DEIS suggest that because NYSDEC air quality monitors show concentrations below the primary and secondary NAAQS that air quality is not, and will not be, a problem at locations in and around the project area. As Appendix P lists, the NYSDEC monitors are in Loudonville, downtown Albany and the Bronx, miles away. The NYSDEC monitors do not reflect the air quality in the project area and their measurements do not reflect the air quality in the project area that will occur with the completion of the project. Figure 1 demonstrates how quickly concentrations can change, and while Figure 1 shows concentration variability for CO, similar trends occur for the other localized pollutants listed above (See Figure S-3, Near-Roadway Air Quality: Synthesizing the Findings from Real-World Data, Karner, Eisinger and Niemeier, Environmental Science and Technology, June, 2010).

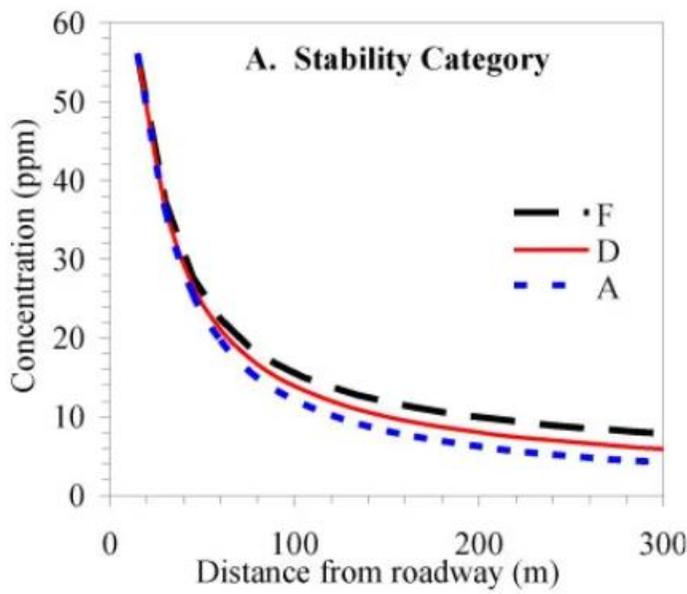


Figure 1. From "Prediction and analysis of near-road concentrations using a reduced-form emission/dispersion model"; Batterman, Zhang and Kononowech; Environmental Health; June 2010

It should be noted that Appendix P does not even list where the nearest NYSDEC monitors for air toxics are located. The nearest monitor for many of these air toxics, including benzene and

¹ Stability class categorizes the atmospheric turbulence. There are six stability classes named A, B, C, D, E and F with class A being the most unstable or most turbulent class, and class F the most stable or least turbulent class. The more turbulent, or less stable, the atmosphere is allows for air pollution to disperse more readily.

formaldehyde, is located in South Albany. This monitor was installed after health complaints by residents of the affected neighborhood of heavy diesel truck traffic and proximity of their residences to the nearby roadway.

Another important consideration is the impact of more traffic congestion in the project area due to the completion of this project. Figure 2 shows the change in emissions for CO as speeds decrease. Emissions quickly increase as vehicle speeds decrease. Although Figure 2 shows the change in emission with speeds for CO, similar trends occur for the other localized pollutants described above (see Figure 23 in “Near-road Dispersion Modeling Of Mobile Source Air Toxics (msats) In Florida”; K. Westerlund, University of Central Florida, 2013 for a similar figure for benzene emissions) . The traffic studies don’t describe what will happen to speeds at affected intersections in the project area. Calculations of LOS are not adequate since each LOS has within that LOS a range of delay and associated speeds. Thus, within one LOS category, speeds, and therefore emissions (as shown in Figure 2) could change substantially. This is especially true for the worse LOS cases (D, E or F). The degrading of the Route 20/Johnston Rd intersection to LOS D will result in an increase in emissions and could result in unacceptable levels of air pollution. An analysis is needed to determine if this will be the case, and, if so, how those levels of air pollution could be mitigated.

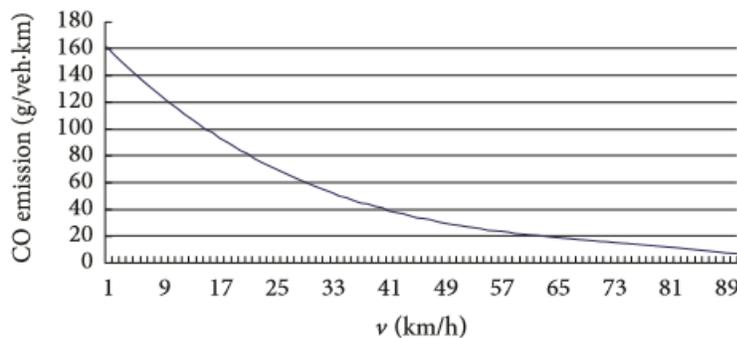


Figure 2. Curve of CO emission factor with speed. From “A study on the model of traffic flow and vehicle exhaust emission”, Xue, Jiang, and Liang; *Mathematical Problems in Engineering*; December, 2013

In addition, by the nature of this project, more heavy-duty vehicles will be operating in the project area and nearby area. These vehicles will be in the project area during construction bringing construction materials, equipment and supplies to the area, as well during the operation of the Costco facility, with the constant need to re-supply the facility. Typically, this re-supply will be with heavy-duty trucks.

These vehicles emit much more pollution than light-duty vehicles (passenger cars). For example, in 2018, the average emission rate for a passenger car was 3.941 grams of CO per mile while heavy duty vehicles emitted 21.252 grams of CO per mile (<https://www.bts.gov/content/estimated-national-average-vehicle-emissions-rates-vehicle-vehicle-type-using-gasoline-and>). Large increases in emission rates for heavy-duty vehicles (trucks), compared to passenger cars, occur also for the other pollutants discussed

above. This expected significant increase in truck traffic in the project area likely triggers a need for an air quality analysis per screening capture criteria 3 of NYSDOT's TEM air quality analysis procedures.

3) Parking lots

This project will create 1700 new parking spaces. This amount of parking spaces will likely have a significant impact on air quality in the project area. In terms of vehicle operation and emissions, parking lots have substantially different operating characteristics compared to highways, intersections and roadways. In parking lots, vehicles drive around slowly looking for parking spots (see Figure 2), they idle while waiting in line to enter or exit the parking lot, pedestrians walking nearby and shoppers entering and leaving the facility are very close by and exposed to air pollution (see Figure 1), and vehicles that have been parked and then start their engines (so-called "cold starts") emit more pollution than vehicles that have warmed up to their normal operating temperature (up to 80% higher emissions for some pollutants ("The problem of cold starts: A closer look at mobile source emissions levels"; Reiter and Kockelman; Transportation Research Part D: Transport and Environment; Volume 43, March 2016). In addition to the typical air quality effects of parking lots, the Costco parking lot will have the added negative effect of vehicles idling in lines at the gas pumps. This will only exacerbate the potential negative air quality impact of the parking lots associated with this project.

The NYSDOT air quality analysis procedures do not address the air quality aspects of parking lots. However, USEPA does recognize the nature of vehicle operation and emissions in parking lots. Their latest version of the emission model, MOTO Vehicle Emission Simulator (MOVES), MOVES2014b, does take into account vehicle emissions from parking lots and generates much higher emissions than from vehicles operating on roadways. This feature, so-called "off-network", captures start, evaporative and extended idle emissions, typical of parking lots. The DEIS for this project should include an air quality analysis of all the new parking lots, especially the Costco parking lot, using the "off-network" approach as if they are all in operation.

4) All Air Pollutants

Relying solely on the NYSDOT air quality analysis procedures will miss other important potential air quality impacts of this project. NYSDOT's procedures were first written in the 1980's and focused on CO, which was the main pollutant of concern back then. While far-reaching at that time, these procedures have become incomplete and outdated. In the interim, USEPA has established NAAQS for three additional pollutants, PM₁₀, PM_{2.5}, and NO₂. MSATs and greenhouse gasses have also become air quality issues of national concern. (See the discussion in the Climate Change section for a discussion of project analysis needs and considerations for greenhouse gasses.)

NYSDOT's current air quality analysis procedures do mention PM₁₀ in a general sense and liken this pollutant to CO. However, previously NYSDOT did have guidance related to PM but it has been rescinded in favor of less rigorous and less protective Federal guidance (see <https://www.dot.ny.gov/divisions/engineering/environmental-analysis/manuals-and-guidance/epm/chapter-1>). The previous guidance triggered an air quality analysis for PM₁₀ based on the environmental classification of a project. Projects classified as an EIS typically required an analysis. Under the previous guidance on PM₁₀, by nature of the EIS classification of this project and its scale and scope, an air quality analysis would likely have been triggered. NYSDOT's guidance is silent on PM_{2.5} and MSATs but it is likely the agency would defer to weaker Federal guidance should an air quality analysis for these pollutants be necessary for one of their projects. The Federal guidance (USEPA and Federal Highway Administration (FHWA)) triggers for PM₁₀, PM_{2.5} and MSATs analyses is based on car and truck volumes on freely flowing highways. They do not address parking lots and congested intersections where traffic is moving slowly, frequently idling, and the public is very close to emission sources (see Figures 1 and 2). The NAAQS for NO₂ was established relatively recently and no guidance on its analysis for projects of this scale and magnitude have been developed by USEPA, FHWA, or NYSDOT. Nevertheless, this pollutant has negative health effects on the population and negative impacts on wildlife and should be part of the air quality analysis for this project.

The air quality analysis for this project must consider concentrations of these pollutants (CO, PM₁₀, PM_{2.5}, NO₂ and MSATs) near parking lots and near congested existing and to be built intersections (at least LOS D or worse) to fully assess the potential air quality impacts of the project on visitors to and residents of the area. Should the analysis uncover any primary or secondary NAAQS violations or unhealthful levels of hazardous air toxics, mitigation measures must be implemented to eliminate or reduce these negative impacts.

5) Traffic Study

Page 32 of the DEIS states "Given the lack of Costco locations in the middle of this radius, it is likely that the Costco to be developed at Site 2 will capture the market of Costco brand-loyal customers that exist between the site and halfway between these other locations, roughly a radius of a one-hour drive from Site 2." Given this impact on regional travel, the current traffic study, which is focused on intersections in the immediate project area, is insufficient for a project of this scale and magnitude.

The traffic study must look at impacts to the regional transportation network. It should use a transportation demand model to examine the impacts on roadways of, at least, the one-hour drive upstream from the project area. The Capital District Transportation Committee, the local Metropolitan Planning Organization, has such a model that may be available for use, or the project sponsor could choose to use a different, technically-sound model. In either case, the

number of additional trips must be identified and the roadway network extending out at least one hour's drive must be modeled. Roadways expected to experience a 10% increase (using one of NYSDOT's screening capture criteria) in traffic, or trigger one of the other capture criteria must be identified. The emissions impact from all these affected upstream roadways must be accounted for and documented, and other potential sites (neighborhoods, schools, nursing homes, etc.) must be examined to make sure that those locations do not suffer the same air quality impacts that will likely occur in the immediate project area with the completion of the project.

An important element that is missing from the traffic study is the prediction of traffic levels and speeds in the project area during the winter holiday season. This time of year attracts many more visitors to shopping centers in general and will likely also do so in the project area as well if this project is completed. There will also be extra diesel truck trips to re-supply the Costco facility. This time of year is also of particular concern for air quality. The cold, stable atmosphere makes it more difficult to disperse some air pollutants. Thus, concentrations of these pollutants will likely be higher than other times of year with warmer temperatures and less congested traffic and will be more likely to cause a negative air quality impact.

Finally, an unsystematic spot check of the traffic study found some odd results. For example,

- At the intersection of Route 20 and Johnston Road, the traffic study concludes that there will only be 5 additional vehicles with the project completed, compared to the No-Build case, on one of the approach legs of the intersection during one of the peak hours. This seems unrealistically low. What will likely happen at this intersection is that additional cars and trucks will be queueing on Johnston Road (as well as the other approaches), with the queues (and emissions) moving closer to Westmere Elementary School.
- The traffic study indicates that at the intersection of Washington Ave Extension/Springsteen Road/Crossgates Common Road during one of the peak hours analyzed, the LOS will improve from LOS D to LOS C between 2022 and 2025. This is unrealistic unless there is some physical improvement at this intersection to account for this "improvement" is LOS.

These incongruities suggest that the traffic study be revisited.

Climate Change

The DEIS hardly mentions greenhouse gas emissions or climate change. It is completely inconceivable that a project of this scale and scope would not consider its impact on

greenhouse gas emissions and the issue of climate change. The vast majority of scientists and government leaders recognize the threat of climate change and the need to reduce greenhouse gas emissions.

New York State adopted highly ambitious greenhouse gas emission reduction targets of 40% of 1990 emissions by 2030 and 85% reduction of 1990 emissions by 2050 in the New York State Climate Leadership and Community Protection Act. Furthermore, Section 75-0119, Paragraph 7 of the Act states; “In considering and issuing permits, licenses, and other administrative approvals and decisions, including but not limited to the execution of grants, loans, and contracts, all state agencies, offices, authorities, and divisions shall consider whether such decisions are inconsistent with or will interfere with the attainment of the statewide greenhouse gas emissions limits established in article 75 of the environmental conservation law. Where such decisions are deemed to be inconsistent with or will interfere with the attainment of the statewide greenhouse gas emissions limits, each agency, office, authority, or division shall provide a detailed statement of justification as to why such limits/criteria may not be met, and identify alternatives or greenhouse gas mitigation measures to be required where such project is located. 3. In considering and issuing permits, licenses, and other administrative approvals and decisions, including but not limited to the execution of grants, loans, and contracts, pursuant to article 75 of the environmental conservation law, all state agencies, offices, authorities, and divisions shall not disproportionately burden disadvantaged communities as identified pursuant to subdivision 5 of section 75-0101 of the environmental conservation law. All state agencies, offices, authorities, and divisions shall also prioritize reductions of greenhouse gas emissions and co-pollutants in disadvantaged communities as identified pursuant to such subdivision 5 of section 75-0101 of the environmental conservation law.”

The DEIS indicates that at least one New York State permit will be required, a NYSDEC SPDES permit. Since the DEIS does not address greenhouse gas emissions and climate change, NYSDEC is unable to determine “whether such decisions are inconsistent with or will interfere with the attainment of the statewide greenhouse gas emissions limits” and is unable to grant the permit.

This section of the Act applies to New York State agencies. However, it is hoped that the Town of Guilderland, recognizing the threat of climate change, adopt similar requirements as a matter of good policy and good government. The Town should consider the impact of this project on climate change and greenhouse gas emissions before it issues any approvals or permits for this project. Since the DEIS does not address greenhouse gas emissions and climate change, the Town of Guilderland should not issue any permits or approvals until the project sponsors are able to document the impact of the project on greenhouse gas emissions and identify and commit to measures to reduce or eliminate that impact.

It is clear that the project, as currently designed and planned, will cause an increase in greenhouse gas emissions and make it harder for the State to reach its greenhouse gas emission targets. It will generate greenhouse gas emissions (both direct and indirect emissions) by:

- Attracting new vehicle trips (cars and trucks) to the project area
- Increasing congestion on nearby and upstream roadways
- Using diesel-powered construction equipment during project staging and construction
- Using building materials, fixtures, interior materials, etc. that were not sustainably sourced.

The Town should require the project sponsor, as a condition of approval or permit, to commit to all reasonable and practicable measures to reduce the project's greenhouse gas emissions and to assist the State in meeting its greenhouse gas emission reduction targets. Some reasonable and practicable measures could include:

- Require sufficient electric vehicle charging stations and ensure sufficient charging capacity for all in-use stations
- Enhance transit service to the project area
- Facilitate ride-sharing and taxi service drop-off and pick-up areas
- Require use of renewable fuels in construction and staging equipment
- Require electric powered construction and staging equipment
- Require Leadership in Energy and Environmental Design (LEED) certification for building design and construction, interior design and construction, and building operations and maintenance
- Require building fixtures, furnishings, merchandise etc. to be sustainably produced.

In summary, the DEIS is flawed and incomplete. As prepared, it cannot proceed to the Final EIS stage until it is re-done to address the issues described above. At that point, it should undergo another round of public review and comment before continuing to the FEIS stage.

The DEIS is flawed because:

1. The NYSDOT air quality analysis procedures were incorrectly applied, and

2. The requirements of the New York State Climate Leadership and Community Protection Act are not met.

The DEIS is incomplete because:

1. Likely air quality impacts from parking lots and from all other localized air pollutants are not addressed, and
2. The traffic study does not address regional impacts to the transportation network and to local roads and streets upstream from the project area.

There should be no cost to the Town of Guilderland to correct the DEIS and address the air quality and greenhouse gas issues. Those costs would be borne by the project sponsor.

Assistance can be provided to the Town of Guilderland to review and advise on the proper: inputs into the air quality modeling process; the outputs of the air quality modeling process; and the results from, and implications of, the findings of the study, if desired.