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Cc: Manny Comar; Brian Anderson
Subject: DRAFT - RAI 489 - SRP section 13.3 - Shearon Harris Units 2 and 3 Combined License Application
Attachments: HARRIS Draft RAI 489 - 13.3.doc

Importance: High

Attached is a draft RAI related to SRP section 13.3 for the Shearon Harris Units 2 and 3 Combined License Application. If you would like to schedule a conference call to discuss this RAI, please let me know before 5:00 p.m. on September 17.

Thank you,
Brian

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Shearon Harris
Progress Energy
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QUESTIONS

13.03-***

ETE-1 [RAI 13.3-1]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Population estimates in Section 2, Study Estimates and Assumptions, of the ETE are based on data from the 2000 U. S. census projected to the year 2007. The resident populations presented in the ETE for the year 2000 in Table 3-1, EPZ Permanent Resident Population, differ from those presented in the Harris ER and FSAR (which are consistent). The ETE presents a year 2000 population of 59,285 and the ER/FSAR a population of 55,219. Both numbers are reportedly based on the 2000 census data. There is also a greater difference between the transient populations presented in the ETE on page 3-10 and in the ER/FSAR (14,726 versus 24,365). A portion of this difference is likely because the ETE separates schools and employees from the transient count and the ER/FSAR do not. However, the ER and FSAR also include migrant workers in the transient population but they were not mentioned in the ETE analysis. The peak workforce in the ETE is stated as 3500 on page 3-2 but in the ER it is stated as 3150.

The impacts of population growth beyond the year 2007 apparently were not considered in the ETE other than in Scenario 12, the “special event” scenario. Scenario 12 considers the permanent resident and shadow populations projected to the year 2016, in addition to the peak construction workforce for the two new reactor units. The report does not state if other populations (i.e., transients and employees of other businesses in the EPZ) were considered in Scenario 12, thus allowing for a direct comparison to the 2007 ETE for the other scenarios. The report also does not state if transit-dependent or special facility populations were considered under the 2016 scenario which reflects a larger general population within the EPZ.

a. Clarify the differences in population numbers, including workforce, between the ETE and the ER/FSAR. Explain why there would be a difference in population count if each document used the 2000 census.

b. Clarify if migrant workers were considered in the ETE transient population estimates. If not, explain why.

c. Describe the provisions in the Harris emergency preparedness program for updating theETE to account for population growth and changes in infrastructure in the EPZ over the life of the NPP.

d. Clarify the specific populations that were considered in the 2016 scenario. If populations different from those in the 2007 ETE were used, explain how the use of different populations allows for meaningful comparison of the 2007 and 2016 ETE results.

ETE-2 [RAI 13.3-2]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR

Part50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

In the Executive Summary, Table 7-1C, Time to Clear the Indicated Area of 95% of the Affected Population, and Table 7-1D, Time to Clear the Indicated Area of 100% of the Affected Population, are described as the times needed to clear the indicated regions of 95 and 100 percent of the population. Clarify that these tables, which indicate times of around 4 hours, do not include schools, transit dependents, and special facilities - the latter of which are acknowledged in Section 8.4, Evacuation Time Estimate for Transit-Dependent People, to sometimes exceed the general population in Section 8.4.

ETE-3 [RAI 13.3-3]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Appendix E, Special Facility Data, of the ETE provides tables of population information for special facilities within the EPZ. The lists include schools, children's day care facilities, medical and assisted living facilities, major employers, recreational areas, and commercial lodging. Each of these populations is discussed within the main text of the ETE with the exception of day care facilities. Discuss how the evacuation of day care children was addressed in the ETE analysis.

ETE-4 [RAI 13.3-4]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Appendix 4, section I.A of NUREG 0654 calls for a vicinity map that identifies topographical features, which by definition should include elevations. No information on elevation or land formation, other than water body locations, is provided in the ETE. Provide a detailed map of the 10-mile plume exposure pathway EPZ, which identifies transportation networks, topographical features (including elevations), and political boundaries.

ETE-5 [RAI 13.3-5]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Assumption 3.b in Section 2.3, Study Assumptions, states that 26 percent of households will await the return of a commuter. However, Appendix F, Telephone Survey, page F-7, indicates that 57 percent of households will await the return of other family members. Discuss the basis for using 26 percent for households awaiting the return of a commuter.

ETE-6 [RAI 13.3-6]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Reference is made on page 2-2 to the "keyhole" as specified in NUREG/CR-6863, however the use of the keyhole in the ETE is not clear:

a. Clarify Section 2.2, Study Methodological Assumptions, Assumption 5. Does the keyhole evacuation extend to 10 miles or stop at 5 miles as indicated in the referenced Figure 2-1, Voluntary Evacuation Methodology? Discuss if 100% of the population is considered when calculating the ETEs for the 10-mile EPZ or if 35% is used between the 5- and 10-mile rings as indicated in Figure 2-1.

b. Section 2.3, Study Assumptions, Assumption 2, states that it is assumed that everyone within the group of sub-zones forming an Evacuation Region (the Emergency Response Planning Area or ERPA as defined in NUREG/CR-6863) will evacuate. Evacuation Regions extend to 10 miles from the plant. However, Figure 2-1, Voluntary Evacuation Methodology, indicates that the area to be evacuated 100% extends to 5 miles from the plant. Clarify if 100% of the people out to 10 miles are included in the ETE calculation. If so, Figure 2-1, Voluntary Evacuation Methodology, may need to be modified to be representative of the evacuation assumptions.

ETE-7 [RAI 13.3-7]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Section 2.3, Assumption 3.a, states "schools may be evacuated prior to notification of the general public." If notification is to take place in 10 minutes and mobilization of buses takes 90 minutes, it is not clear how this assumption can be valid.

a. Explain the use of this assumption.

b. Information on the "experience" used to establish the mobilization time of 90 minutes for buses is also not provided. For Section 8 (page 8-1), include a reference or more information on 'experience' used to establish the mobilization time of 90 minutes.

ETE-8 [RAI 13.3-8]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and

E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Section 2.3, Study Assumptions, Assumption 11 states that rain and ice are used for the adverse weather scenarios and the table on page 2-5 indicates that "No Effect" is included for mobilization time. However, Section 8, Transit-Dependent and Special Facility Evacuation Time Estimates, frequently indicates that time is increased for activities during mobilization – such as in Section 8.4, page 8-5, Activity: Mobilize Drivers, where it states that "Mobilization time is slightly longer, 100 minutes, when raining". Discuss the meaning of the term 'No Effect' as used in the assumption.

ETE-9 [RAI 13.3-9]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

While the algorithm for intersections and a description of variables is provided in Section 4, Estimation of Highway Capacity, a description of how the values for each variable were derived is not provided. Address the following questions:

a. Only a few underlying algorithms of the system have been included. Provide a general description of other important algorithms used in the PC-DYNEV traffic simulation model, in particular, routines describing traffic control and vehicle routing.

b. For the Section 4 equation for capacity of an approach to intersections on page 4-1, provide the values of the parameters in the equations, where applicable, including Mean Duration of Green Time and Mean Queue Discharge. Were these values estimated or field verified? Discuss if this equation is applicable for manned intersections.

c. Explain how the Capacity Estimate on Approaches to Intersections equation on page 4-1 is affected by traffic control at intersections. Discuss if the modeling addresses traffic through intersections considering traffic control or the equation presented.

d. Discuss the assumptions and inputs for the nodes and segments with respect to the field survey.

e. The definition of "F" on page 4-2 is defined as various known factors influencing "hm". Identify the important "F" factors for the turn movement "hm".

f. Section 1.1, Item 7, states (on page 1-3) that the traffic management strategy is represented in the modeling. Discuss the level of detail to which the traffic management strategy is represented in the modeling.

ETE-10 [RAI 13.3-10]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Table 6.4, Vehicle Estimates by Scenario, presents the number of vehicles modeled for each scenario; however, it is not clear what this table actually represents. Is this the total number of vehicles for a full EPZ evacuation?

ETE-11 [RAI 13.3-11]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

The routes for individuals requiring public transit are identified in Section 8, Transit-Dependent and Special Facility Time Estimates.

a. Discuss if the ETE developed for school evacuation in Tables 8-5A and 8-5B includes consideration that the same buses will be used to evacuate transit dependent individuals.

b. If the same buses are used, explain the effect on the ETE for the transit dependent residents under this scenario.

c. Unloading the bus in 5 minutes as shown in Tables 8-7A and 8-7B and discussed in Section 8.4 seems optimistic for individuals who are likely carrying belongings.

d. Page 7-4 says summer implies school is not in session, but Tables 6-3 and 6-4 show 10% of school buses evacuating in Scenarios 1 and 2. Discuss why 10% of the school buses are planned for use in Scenarios 1 and 2.

e. Discuss the basis for the 75% value used for "Residents with Commuters in Household" as shown in Table 6-3.

ETE-12 [RAI 13.3-12]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

In Table 8-7A, Transit Dependent Evacuation Time Estimates – Good Weather, the initial route travel time of 45 minutes would occur during the period when Figure 7-4, Congestion Patterns at 2 Hours after the Evacuation Advisory, indicates many of these roadways would have Level of Service F, which is very congested. This is also described as the peak congestion period in Section 7.2, Patterns of Traffic Congestion During Evacuation. Buses would be traveling through traffic control points, such as TCP E11A, that would be established to discourage thru traffic.

a. Explain how the route travel times in Table 8-7A were derived considering distance and speed.

b. Discuss if passing through TCPs was considered in the travel speed. Discuss the basis for using 45 minutes for route 1 and 30-minute route times for the remaining routes.

c. Provide a basis for using 10 minutes for pick up time in Table 8-7A. How many stops does this include along each route? These same questions are applicable to Table 8-7B, Transit Dependent Evacuation time Estimates – Rain. The 10 minutes conflicts with Section 8.4, page 8-5, Activity: Board Passengers (C→D), that indicates 15 minutes for normal weather and 20 minutes for adverse weather.

ETE-13 [RAI 13.3-13]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

In Figure 3-2, Permanent Residents by Sector, and Figure 3-3, Permanent Resident Vehicles by Sector, explain the note: "3 Miles to EPZ Boundary". It is not evident to what the note applies. This note also appears on Figures 3-4, 3-5, 3-6, and 3-7.

ETE-14 [RAI 13.3-14]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Discuss why the employee values in Table 6-3, Percent of Population Groups for Various scenarios, are reduced for the summer scenarios considering the large number of campsites and recreational areas identified in Section 3. Table 6-3 indicates 96% of employees are considered in the ETE calculation for summer midweek scenarios and as few as 10% of employees are considered for summer weekend evening scenarios. The table identifies 100% of employees considered for winter midweek scenarios.

ETE-15 [RAI 13.3-15]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

In Table 8-1, Transit Dependent Population Estimates, the transit dependent population definition does not include any individuals with special needs. The State of North Carolina Radiological Emergency Response Plan, Section IV.H.4.i (page NC-32), states that mobility impaired persons will be identified and provided specialized transportation. According to the plan, these individuals will be identified primarily through the registration cards provided in the Harris Nuclear Power Plant annual public information brochure. Discuss whether data from registration cards was used in the ETE calculation for transit dependent persons.

ETE-16 [RAI 13.3-16]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

In Section 8.1, Transit-Dependent People – Demand Estimate, the values of 74% of EPZ households have commuters and 42% of which would not return home are used on page 8-3. Discuss the basis for these values when used in the equation to determine the number of buses required for transit dependent persons. These values are not consistent with Table 6-3, Percent of Population Groups for Various Scenarios.

ETE-17 [RAI 13.3-17]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and

E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

The routes for individuals requiring public transit are identified in Figure 8-2, Proposed Transit Dependent Bus Routes. It appears from Figure 8-2, that much of the EPZ is not serviced by bus routes (there are no bus routes serving sub-zones A, B, C, D, J, L, and M), but there is no mention of how transit-dependent individuals get from their residences to these bus routes.

a. Discuss the means by which individuals are assumed to travel to the transit route stops. Discuss how the time required for this activity is included in the ETE.

b. Discuss how the large distances between transit-dependent residents and the bus routes was considered in the ETE calculation.

ETE-18 [RAI 13.3-18]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Discuss why Table 8-7B, Transit Dependent Evacuation Time Estimates – Rain, was developed for the transit-dependent adverse weather condition when ice was identified in Section 2.3, Assumption 11, as the more limiting adverse weather condition. Discuss if using ice for the adverse weather would increase the ETEs provided in Table 8-7B.

ETE-19 [RAI 13.3-19]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Section 8-1, Transit Dependent People-Demand Estimates, identifies the need for 55 bus runs for the transit-dependent population. There are many assumptions with regard to this population group that can insert uncertainty in the actual number of persons requiring bus service.

a. In Section 8-1, explain how an increase in 50% demand for buses could still be accommodated if buses are assumed to be at 68% capacity.
b. With a time difference as short as 5 minutes between bus runs, as indicated for routes 4, 5, and 6 in column 1 of Tables 8-7A and 8-7B, and an estimate of 10 minutes for pick up time, this would indicate that buses would catch up to one another at the first pick up point. This would also indicate a queue of passengers are assumed to be waiting to board the next bus. Having specified different mobilization times for different bus routes, discuss the assumptions used in developing the mobilization and loading times for each bus route including why times differ by route and how the times were derived.
c. Explain why a second wave is not needed for routes 1, 2 and 3.
d. Explain why a second wave is needed for routes 4, 5, and 6.

ETE-20 [RAI 13.3-20]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and

E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

On page 8-7, Analysis of Bus Route Operations, discuss the basis for using five buses for routes 1 and 5, six buses for routes 2, 3 and 6, and eight buses for route 4. Discuss the basis used to determine the number of buses required for each route.

ETE-21 [RAI 13.3-21]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Clarify Section 2.2, Study Methodological Assumptions, Assumption 6, that indicates that there are no peak tourist events that should be considered. Peak Fest, which is held every May in Apex, North Carolina, has an annual attendance of as many as 25,000 people.

a. Discuss why there are no special events listed and why peak tourist populations are not included in the transient population estimates in Section 3.
b. Explain what resources were used to determine the special events.
c. Identify the effect on the ETE of the peak tourist volume listed here, or other events that might be identified through research that may have greater peak tourist volumes.
d. Clarify Section 2.2, Assumption 6. Discuss why there are no special events listed and why peak tourist populations are not included.

ETE-22 [RAI 13.3-22]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Discuss the basis for such a small number of employees within the EPZ. Table 3-4, Summary of Non-EPZ Employees by Sub-Zone, indicates a total of 3,811 non-EPZ employees. Non-EPZ employees are discussed on page 3-13 as making up 60 percent of the employee population within the EPZ. This percentage has been confirmed, however, the total number of employees appears to be significantly low. The total employees within the EPZ would need to be 6,352 if 3,811 represents 60 percent. For an EPZ of over 74,000 residents, the employee population value does not appear realistic. These values would indicate that of 74,000 residents, only 2,541 work within the EPZ. Discuss the resources used to identify the employee population of the EPZ. If the values were accurate, such a distribution would indicate that the majority of residents work outside of the EPZ. Discuss how this affects the time required to leave work, travel home, then prepare to evacuate.

ETE-23 [RAI 13.3-23]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Section 8, page 8-1, states that transit service may be needed for residents, employees, and transients. It appears that in Table 8-1, Transit Dependent Population Estimates, only residents have been factored into those needing transit. Discuss if employees and transients are expected to need transit service.

ETE-24 [RAI 13.3-24]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

In Section 5, Figure 5-1, Events and Activities Preceding the Evacuation Trip, discuss the reasoning behind transients not returning to their "residence" prior to evacuation. For those in hotels, they may return to gather their belongings. Discuss how this would affect the time for the transient population to evacuate.

ETE-25 [RAI 13.3-25]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

It appears there may be schools within the EPZ that were not included in Appendix E, Special Facility Data, or in Table 8-2, School Population Demand Estimate. The schools missing from the ETE lists include:

- Montessori Center for Children, 4817 Johnson Pond Road, Apex, NC
- West Lake Elementary, 4500 West Lake Road, 10.97 miles from HNP, 1018 students
- Middle Creek Elementary, 110 Middle Creek Park, Apex NC, 10.92 miles from HNP, 890 students
- Middle Creek High School, 123 Middle Creek Park, Apex NC, 10.92 miles from HNP, 1762 students
- Community Partners, 116 Quantum Street, Holly Springs, NC
- Fuquay-Varina Elementary, 6600 Johnson Pond Road Fuquay-Varina, 11.16 miles from HNP, 933 students
- Montessori World, 25 Buttonwood Court
- Ballentine Elementary, 1651 McLaurin Lane, 733 students.

Discuss if these schools are within the EPZ. If so, discuss the evacuation resources and any affect these schools may have on the ETE.

ETE-26 [RAI 13.3-26]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

The student population in Table 8-2, School Population Demand Estimate, differs from published values. Specifically, Salem Middle School is listed in the ETE as having 656 students, however, Greatschools.net lists 1094 students; Holly Grove Elementary School is listed in the ETE as having 462 students, but Greatschools.net lists 781 students; Holly Grove High School is listed in the ETE as having 805 students, but Greatschools.net lists 1274 students.

a. Discuss the resources used to identify school populations presented in Table 8-2.
b. Explain if these larger student populations should be included in the Special Facility transit demand analysis.
c. If necessary, provide information to support the evacuation time for these additional students and discuss the effect these may have on the ETEs provided.

ETE-27 [RAI 13.3-27]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Table 8-2, School Population Demand Estimates, indicates approximately 302 buses are needed to support the school evacuation. The ETE provided in Table 8-5A, School Evacuation Time Estimates - Good Weather, and Table 8-5B, School Evacuation Time Estimates – Rain, indicates one bus run. No information is provided to support that there are enough buses and drivers available to evacuate all schools simultaneously. Section 8.4, page 8-4, Evacuation Time Estimates for Transit-Dependent People, states that if the impacted region is other than Evacuation Region R3 (the entire EPZ), there will likely be ample transit resources. It appears that evacuating Evacuation Region R15 would affect all of the schools in Apex, Holly Springs, and Fuquay-Varina and evacuating R14 would possibly affect many of these schools as well.

a. Provide information to support that there are enough buses available to evacuate all schools simultaneously and begin the bus routes for transit-dependent residents.

b. Provide information to support that there are enough drivers available to evacuate all schools simultaneously and begin the bus routes for transit dependent residents.

c. If there are not enough buses or drivers to complete these activities concurrently, explain any effect on the ETE if multiple bus trips must be made.

ETE-28 [RAI 13.3-28]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

In Table 8-2, School Population Demand Estimates, approximately 302 buses are needed to support the school evacuation. The number of buses for each school appears to have been rounded down in many cases. For instance, Apex High School has 2215 students, divided by 50 students per bus would require 44.3 buses whereas the Bus Runs Required indicate 44 buses. This also does not account for any adults on the buses.

Discuss whether any teachers are expected to be present on elementary, middle, or high school buses. Discuss the effect on bus capacity. Discuss whether rounding down the number of bus runs results in an adequate number of buses to accommodate all of the students.

ETE-29 [RAI 13.3-29]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

In Table 8-5A, School Evacuation Time Estimates – Good Weather, provide the assumptions for loading the students in 5 minutes. For Apex High School, population 2215 students, this would require 44 buses. Seventy-passenger school buses are usually around 35-40 feet long. Assuming 10 feet between buses, this would require almost one-half mile of buses lined up for students to then board and evacuate. The logistics of such a movement indicate a 5-minute loading time would be challenging. Discuss any further assumptions on the boarding time for school buses.

ETE-30 [RAI 13.3-30]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

In Table 8-5A, School Evacuation Time Estimates - Good Weather, the speed of the outbound school buses is approximately 20 mph. The speed is discussed on page 8-5 in Section 8.3, Special Facility Demand, and use of the model output is an excellent approach for establishing speeds. However, Figures 7-3 thru 7-5 (Areas of Traffic Congestion after Advisory to Evacuate) would indicate a level of service of "F" for many roadways during this timeframe. It may not be appropriate to use average speeds. Explain why the average speed for the evacuation was used rather than the speeds that would exist during this timeframe for the evacuation.

ETE-31 [RAI 13.3-31]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Table 8-4, Special Facility Transit Demand, indicates that 23 ambulance runs are required. However, the current census of six facilities is not identified. In addition, the number of ambulance runs is based on census rather than capacity as required.

a. Explain whether the number of ambulance runs will increase if the capacity values are used for all facilities.

b. Identify the assumptions on mobilization time, number of available ambulances, loading time, etc., to support a determination of number of waves needed. Discuss any impact on the ETE.

c. Discuss the resources used to determine that there are enough ambulances to accomplish the evacuation in one wave as indicated.

ETE-32 [RAI 13.3-32]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Special facilities are identified in Table 8-4, Special Facility Transit Demand, and in Appendix E, Special Facility Data, on an individual basis. Tables with names, address, direction from Harris, distance in miles, and populations are provided. However, no maps for schools, day care facilities, or medical facilities were provided. Include a map of special facilities within the EPZ.

ETE-33 [RAI 13.3-33]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

In Section 8.4, Evacuation Time Estimates for Transit-Dependent People, page 8-8, explain the basis for mobilizing buses in 90 minutes for the evacuation of ambulatory persons from special facilities. Page 8-9 states that the average speed output by the model at 90 minutes is 22.9 mph. Use of the model is a good approach for establishing the speeds; however, mobilization time for the buses is 90 minutes, and loading of the buses is at least 30 minutes as indicated on page 8-9, totaling 2 hours.

a. Discuss why the 2-hour speed, which is the peak congestion period as stated in Section 7, was not used.
b. Discuss why the average EPZ speed was used rather than speeds specific to the selected routes or areas.
c. Discuss the effects of adverse weather when evacuating special needs facilities.

ETE-34 [RAI 13.3-34]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

In the ETE calculation on page 8-9 for buses assigned to pick up ambulatory persons, there is no time included for travel between facilities although 5 minutes is mentioned in the text above the equation. Discuss why the time to travel between facilities was not included in the ETE calculation.

ETE-35 [RAI 13.3-35]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

For wheelchair bus runs, the ETE states that “wheelchair buses and vans are often scarce” and regular buses can be used to transport these patients. Wheelchairs would be stacked in the back and evacuees would sit in the front of the bus. Discuss the assumptions on bus capacity when using this approach.

ETE-36 [RAI 13.3-36]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Discuss how the traffic management plan discussed in Section 9, Traffic Management Strategy, and shown in detail in Appendix G, Traffic Management, was integrated into the ETE modeling. Discuss if intersections were modeled as indicated in Appendix G or if intersections were modeled as having signalization control. Was the ETE provided in Table 7-1D, Time to Clear the Indicated Area of 100% of the Affected Population, calculated based upon these traffic controls being in place?

ETE-37 [RAI 13.3-37]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Section 2.3, Study Assumptions, Assumption 8, states that traffic control points outside of the EPZ should be established to facilitate evacuation flow to the reception centers. Discuss if the ETE includes such traffic control in the modeling. Discuss whether local authorities have agreed to implement the traffic control outside of the EPZ as suggested.

ETE-38 [RAI 13.3-38]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Section 9, Traffic Management Strategy, page 9-2, explains the importance of establishing traffic control in a prioritized manner. It is also stated on page 9-2 that the traffic control plans were developed in conjunction with county emergency management and law enforcement and that concern was expressed over the manpower and equipment shortages. Discuss whether these concerns were provided as comments to the traffic control plan and whether these were resolved. Clarify whether the law enforcement officials who reviewed the ETE report have agreed and understand the priority of traffic control placement. Appendix I, Evacuation Sensitivity Studies, includes an evaluation of the effect on the ETE if traffic control is not placed. If State and local police have not confirmed the ability to place the traffic control as described, discuss why the longer ETE values from Appendix I are not more appropriate for Tables 7-1 A thru D which show the time to clear the indicated area of a percentage of the affected population.

ETE-39 [RAI 13.3-39]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

The roadway network is identified on multiple figures including Figure 1-2, Harris Link-Node Analysis Network. According to the North Carolina Department of Transportation and the North Carolina Turnpike Authority, a new Interstate (I-540) is under construction and planned to traverse immediately west of Apex. I-540, which is planned to be open to traffic in the fall of 2011, will link Apex, Holly Springs, and Fuquay-Varina. Discuss why this new Interstate was not considered in the modeling of the roadway network. Identify the affects this roadway may have on the ETE.

ETE-40 [RAI 13.3-40]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Appendix K, Evacuation Roadway Network Characteristics, lists lane widths as 1 or 2 inferring two lane and highways. The actual width of the lane is not provided. It is not mentioned whether lane widths were measured, most likely during the field survey, and if they were one consistent width. Section 1.3, Preliminary Activities, page 1-5, states that unusual roadway characteristics were identified in the field survey including: narrow bridges, sharp curves, poor pavement, flood warning signs, inadequate delineations, etc. This information is not discussed in other areas within the document. Identify the narrowest section or other areas that are not uniform. Discuss how this information was used in the ETE calculations. For Appendix K, provide the value that was used for the "Full Lane" lane width. Identify where the narrowest roadway sections exist within the roadway network and discuss how this was factored into the calculation.

ETE-41 [RAI 13.3-41]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Provide a legible map that includes the nodes identified on Figure 1-2, Harris Link-Node Analysis Network, and in Appendix K, Evacuation Roadway Network Characteristics. The nodes must be annotated (numbered in some manner) to support the review. A larger scale is necessary. Provide a roadway map that includes the sector and quadrant boundaries.

ETE-42 [RAI 13.3-42]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Section 2.1, Data Estimate 3, states that roadway capacity estimates were based on the field surveys and the Highway Capacity Manual (HCM). Section 4, page 4-5, states the two-lane roadway capacity is 1700 passenger cars per hour (pc/hr) as identified in Chapter 20 of the HCM. The HCM identifies these capacities for 'ideal conditions which include physical and operational conditions. Chapter 20 of the HCM does identify 1700 pc/hr as the capacity of a 2-lane roadway when the roadway meets the Base Conditions of Chapter 12 such as 12-foot lane widths and 6-foot shoulders. Operational conditions would include such items as time spent following other vehicles. Clarify whether the field survey confirmed that lane widths meet the conditions for "ideal." Discuss the operational considerations applied to the roadway capacity estimate. If necessary, explain the affect on the ETE if the capacity is determined to be lower than the value used.

ETE-43 [RAI 13.3-43]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and

E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Section 4, page 4-4, states "based on empirical data collected on freeways, we have employed a [reduction factor] value of R=0.85." Provide additional information, such as a reference, for the basis of this empirical data. Was the R factor applied only to freeways or was it also applied to the rural roads of the EPZ? Explain the basis for applying this factor to other than freeways, if applicable.

ETE-44 [RAI 13.3-44]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Section 3, page 3-17, states that approximately 8,100 vehicles enter the EPZ during the first hour after the Advisory to Evacuate. Provide the basis for the 8,100 vehicles. Discuss how this relates to the background traffic assumed on the roadway network when the evacuation begins.

ETE-45 [RAI 13.3-45]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Shadow evacuation refers to the residents and employees in the shadow region (outside the EPZ) who will spontaneously decide to relocate during an evacuation.

a. For the shadow evacuation values used in Table 6-4, Vehicle Estimates by Scenario, provide the assumptions with regard to trip generation times and loading of the transportation network.

b. In Appendix I, Table I-2, Evacuation Time Estimates for Shadow Sensitivity Study, explain how the 30% increase of vehicles was distributed throughout the EPZ. Was the distribution uniform or based on the current population densities?

ETE-46 [RAI 13.3-46]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Section 4, Estimation of Highway Capacity, describes the modeling of intersections and states on page 4-1 that control at critical intersections will often be provided by traffic control personnel. How are intersections that are controlled by traffic personnel modeled? Explain any assumptions on traffic speed, service flow, capacity, and queue discharge through a manned intersection.

ETE-47 [RAI 13.3-47]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Discuss where the voluntary evacuation population within EPZ as shown on Figure 2-1, Voluntary Evacuation Methodology, (not the shadow evacuation as defined in Section 2.2) is allocated within Table 6-3, Percent of Population Groups for Various Scenarios, and Table 6-4, Vehicle Estimates by Scenario.

ETE-48 [RAI 13.3-48]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

It appears the analysis may include truncated distributions. The longest evacuation time for 100% of the ETE is 4 hours 40 minutes in Table 7-1D, Time to Clear the Indicated Area of 100% of the Affected Population. This is based on the notification distributions in Section 5.

a. Figure 5-3, Evacuation Trip Generation for Various Population Groups, identifies a tail that may extend to 300 minutes, or 5 hours. Explain how the total evacuation time for 100% of the population as identified in Table 7-1D, Time to Clear the Indicated Area of 100% of the Affected Population, can have a maximum ETE of 4 hours 40 minutes if the trip generation time may take as long as 5 hours.

b. Distribution No. 4, Prepare to Leave Home, on page 5-8 does not agree with Appendix F, Figure F-12, Time to Prepare Home for Evacuation. Figure F-12 indicates that it takes 250 minutes for approximately 100% of people to prepare to leave home; however, it appears this tail could be as long as 360 minutes in the Figure. Distribution No. 4 indicates that 100% of the people are prepared to leave home in 195 minutes. Discuss the differences in the data between Appendix F, Figure F-12, and Section 5.

c. If necessary, reconcile Figure 5-2, Evacuation Mobilization Activities, and Figure 5-3, Evacuation Trip Generation for Various Population Groups, with the comments above on the distribution of data for time to prepare to leave home.

ETE-49 [RAI 13.3-49]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Section 2.3, Study Assumptions, Assumption 2, states that it is assumed that everyone within the group of sub-zones forming a Region will evacuate. However, Section 7.3 states that these ETE estimates do not and should not be distorted to account for stragglers. Discuss whether reference to 100% evacuation throughout the ETE does indeed represent 100% evacuation or whether values have been truncated to eliminate those that may take longer to evacuate.

ETE-50 [RAI 13.3-50]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

For the trip generation time events and activities in Figure 5-1, Events and Activities Preceding the Evacuation Trip, it appears that for scenarios (b) and (c), the assumption is 100% of the public is at home when the sirens sound. Explain the basis for not having a 'prepare to leave activity' and 'travel home' sequence for these scenarios.

ETE-51 [RAI 13.3-51]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

For the distribution of data tables in Section 5, there is a note that states the survey data was normalized to the "Don't Know" response. Provide additional information to explain the normalization process.

ETE-52 [RAI 13.3-52]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

In Table 7-1C, Time to Clear the Indicated Area of 95% of the Affected Population, for Evacuation Region R03 (entire EPZ), there is a difference in evacuation time between normal and adverse weather. In Table 7-1D, Time to Clear the Indicated Area of 100% of the Affected Population, there is no such difference for R03 although there are minor differences in time for some of the other regions. Discuss why adverse weather does not affect the total evacuation time for the 100% evacuation of R03.

ETE-53 [RAI 13.3-53]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Section 12, Confirmation Time, addresses the time needed to confirm that the evacuation process is effective, i.e., the public is complying with the advisory to evacuate. Please address the following questions:

a. On page 12-1 it states, "[a]lthough Chatham County, Harnett County, Lee County and Wake County may use their own procedures for confirmation, we suggest an alternative or complementary approach." This statement suggests that the confirmation process and times discussed in Section 12 are an alternative for others that may be specific to the counties. It is unclear whether the counties have agreed with the ETE approach – or even if other county plans exist for confirmation of evacuation. Discuss whether the counties have agreed with the ETE for confirmation of evacuation, including the existence of other county plans. If other county plans exist, discuss how they would work with the ETE approach.

b. On page 12-1, it states that "[s]hould the number of telephone responses (i.e., people still at home) exceed 20 percent, then the telephone survey should be repeated after an hour's interval until the confirmation process is completed." Explain what is required if the telephone survey response is less than 20%, but still significant, such as 15%.

c. Discuss if the time required to mobilize the personnel needed to confirm the evacuation has been included in the time estimate. This would include the time and resources needed to obtain telephone numbers for the EPZ that are necessary prior to beginning the telephone survey. Discuss whether the time and resources needed to obtain telephone numbers for the EPZ, which are necessary prior to beginning the telephone survey, is included. Provide an estimate of the time needed to confirm that the evacuation is complete

ETE-54 [RAI 13.3-54]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

The report discusses intelligent transportation systems (ITS), dynamic message signs, and highway advisory radio in Section 9. It is not clear if the use of such systems was considered in the ETE or whether the results are dependent upon their use. Appendix G provides traffic control tactics for traffic control points, which have been developed in conjunction with the county emergency management representatives and law enforcement personnel. Section 1.3, Analytical Tools, page 1-8, states that the analyst can identify bottlenecks and develop countermeasures that are designed to expedite the movement of vehicles. Were any such adjustments integrated into the traffic management plan? Identify any adjustments that were made to expedite the movement of vehicles and improve evacuation times.

ETE-55 [RAI 13.3-55]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

The Executive Summary indicates that State and county personnel reviewed and modified the telephone survey prior to its use. The Executive Summary also says (page ES-3) that the traffic management plan was reviewed by State and local law enforcement officials; however, Section 9, page 9-2, states that concern was expressed over manpower and equipment issues at meetings with law enforcement personnel. The cover letter states that the contractor has addressed comments provided by the counties.

a. Include the comments received.

b. Identify changes that were made to address comments. Clarify whether State and local police reviewed the changes and now agree with the traffic management plan.

c. Clarify if the priority assigned to each traffic control point in Appendix G has been agreed to by local response agencies.

ETE-56 [RAI 13.3-56]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

Maps were provided in Section 10, Evacuation Routes, to indicate the locations of reception centers. Provide textual information regarding the location, types, and capacities of facilities to be used in an evacuation.

ETE-57 [RAI 13.3-56]

[Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV of Appendix E to 10 CFR Part 50; NUREG-0800, Chapter 13.3, SRP Acceptance Criteria: Requirements A, B, and E and Acceptance Criterion 11; NUREG-0654/FEMA-REP-1, Rev.1, Evaluation Criterion J.8 and Appendix 4]

The proposal to increase the level of the Harris Reservoir by approximately 20 feet which could potentially affect the evacuation time. This additional depth will have an impact on the surrounding infrastructure and roadway network, the effect of which is difficult to define without details on the improvements to accompany the increase in size of the reservoir. Additional information should be provided to clarify any affect on the ETE.

a. Identify the proposed water surface elevation and limits of the area in which the reservoir is to be raised.

b. Discuss whether roadway alignments will remain the same.

c. Discuss whether electrical power lines within the area will need to be raised to provide adequate roadway clearance or if any new roadways will be constructed to avoid power line replacement.

d. Discuss whether infrastructure adjacent to the reservoir, such as boat ramps, require reconstruction. If so, will the size of these be the same as current facilities or will additional capacity or facilities be added that may increase the number of vehicles and correspondingly the evacuation demand.

e. Discuss whether the higher water level will cause nearby roadways to be susceptible to flooding during adverse weather conditions.

f. Discuss whether the higher water level will create any new areas that may be land-locked by water and require additional time to evacuate.