

ND-2011-0063 October 5, 2011

U.S. Nuclear Regulatory Commission ATTN: Document Control Desk Washington, DC 20555-0001

## Subject: PSEG Early Site Permit Application Docket No. 52-043 Response to Request for Additional Information, RAI No. 32, Population Distribution

- References: 1) PSEG Power, LLC letter to USNRC, Application for Early Site Permit for the PSEG Site, dated May 25, 2010
  - 2) RAI No. 32, SRP Section: 02.01.03 Population Distribution, dated August 22, 2011 (eRAI 5791)

The purpose of this letter is to respond to the request for additional information (RAI) identified in Reference 2 above. This RAI addresses Population Distribution, as described in Section 2.1.3 of the Site Safety Analysis Report (SSAR), as submitted in Part 2 of the PSEG Site Early Site Permit Application, Revision 0.

Enclosure 1 provides our response for RAI No. 32, Question Nos. 02.01.03-3 through 02.01.03-6. Our response to RAI No. 32, Question Nos. 02.01.03-3 through 02.01.03-6 will require revisions to the SSAR. Enclosure 2 provides the proposed revisions to the SSAR. Enclosure 3 provides one CD-ROM containing a pdf file of revised Figure 2.1-21. Enclosure 4 includes the new regulatory commitment established in this submittal.

If any additional information is needed, please contact David Robillard, PSEG Nuclear Development Licensing Engineer, at (856) 339-7914.

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I declare under penalty of perjury that the foregoing is true and correct. Executed on the 5th day of October, 2011.

Sincerely,

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James Mallon Early Site Permit Manager Nuclear Development PSEG Power, LLC

- Enclosure 1: Response to NRC Request for Additional Information, RAI No. 32, Question Nos. 02.01.03-3 through 02.01.03-6, SRP Section: 02.01.03 -Population Distribution
- Enclosure 2: Proposed Revisions Part 2 Site Safety Analysis Report (SSAR) Subsection 2.1.3
- Enclosure 3: CD-ROM Containing SSAR Figure 2.1-21
- Enclosure 4: Summary of Regulatory Commitments
- cc: USNRC Project Manager, Division of New Reactor Licensing, PSEG Site (w/enclosures)
  USNRC, Environmental Project Manager, Division of Site and Environmental Reviews (w/enclosures)
  USNRC Region I, Regional Administrator (w/enclosures)

## PSEG Letter ND-2011-0063, dated October 5, 2011

## ENCLOSURE 1

## **RESPONSE to RAI No. 32**

## QUESTIONS 02.01.03-3 through 02.01.03-6

### Response to RAI No. 32:

In Reference 2, the NRC staff asked PSEG for information regarding Population Distribution, as described in Section 2.1.3 of the Site Safety Analysis Report. The responses to the questions are presented following the same outline in which they were asked:

### Response to RAI No. 32, Question 02.01.03-3:

In Reference 2, the specific requests for Question 02.01.03-3 were:

Regulatory Guide (RG) 1.206, Part III, Section C.I.2.1.3.4 (formerly Draft Guide DG-1145 as cited in SRP Section 2.1.3, Section II (Acceptance Criteria), Technical Rationale, Item 2, with respect to characterizing the low population zone (LPZ)) indicates that a scaled map of the LPZ should be provided to illustrate, among other things, "highways... waterways, and any other transportation routes that may be used for evacuation purposes", so that appropriate protective measures could be taken on behalf of the enclosed population in the event of an emergency.

Figure 2.1-21 of the Site Safety Analysis Report (SSAR) in the Early Site Permit Application (ESPA) for the proposed PSEG ESP Site shows the extent of the LPZ (i.e., a 5-mile radius circle from the center of the proposed plant(s)) including:

- a grid of directional sectors at one-mile distance intervals and associated resident population counts in each segment;
- certain recreational areas; and
- certain nearby transportation routes (i.e., state highways).

Related SSAR Table 2.1-7 identifies facilities and institutions within the LPZ, the directional sectors and distances of these nearby facilities and institutions relative to the center of the proposed plant(s), and the associated peak daily transient population totals for the year 2008 for these locations. Consistent with RG 1.206, the Applicant should address the following issues:

- (a) Clarify SSAR Figure 2.1-21 by identifying the relative locations of the facilities and institutions listed in SSAR Table 2.1-7.
- (b) SSAR Figure 2.1-21 suggests that there are few roadways within and beyond the LPZ that may be used for evacuation purposes (especially on the Delaware side of the LPZ). Some smaller roads appear to connect to Delaware State Route 9 as it courses through the several identified recreational areas. Either explain why these smaller connecting roadways

would not be appropriate for use in a situation calling for an evacuation, or update SSAR Figure 2.1-21 and related text in SSAR Subsection 2.1.3.4 accordingly to show these additional routes. In any case, update Figure 2.1-21 (or provide an additional figure) to more clearly identify, graphically, the few available land-based transportation routes within the LPZ (or connecting to them).

(c) SSAR Figure 2.1-21 shows what appears to be the plant access road to the existing Hope Creek and Salem Generating Plants. Confirm whether the proposed causeway alignment associated with the PSEG ESP Site, as depicted on SSAR Figure 1.2-3, would be available as an additional evacuation route for plant personnel and members of the public that may be in the immediate vicinity of the plant site as discussed in FSAR Section 2.1.2. If so, update SSAR Figure 2.1-21 (or provide an additional figure) to reflect the expected transportation routes during the operational phase of the proposed plant(s) and revise any associated text as necessary.

### PSEG Response to NRC RAI:

- (a) SSAR Figure 2.1-21 has been clarified by identifying the approximate locations of all facilities and institutions listed in SSAR Table 2.1-7. SSAR Table 2.1-7 has also been revised to clarify the names of some facilities shown on SSAR Figure 2.1-21. The revised figure is provided in Enclosure 3 and updated table provided in Enclosure 2.
- (b) SSAR Figure 2.1-21 has been clarified by identifying existing public roads within the LPZ. The text of SSAR Subsection 2.1.3.4 has been revised to state that Figure 2.1-21 shows existing public roads within the LPZ, and that these roads potentially could be used for evacuation purposes. A mark-up of the Subsection 2.1.3.4 is provided in Enclosure 2.

A detailed discussion of roads available for use in an evacuation is included in the Evacuation Time Estimates provided in Part 5, Attachment 11, of the PSEG Site ESP Application.

(c) The causeway alignment shown on SSAR Figure 1.2-3 represents a proposed new plant access road that would be dedicated to the PSEG Site and used only by construction workers and operational staff working at the PSEG Site. While the new causeway would be available for use by existing plant personnel in the event of an emergency, there would be no public access to the causeway except where it connects with the public road system in Elsinboro Township. Therefore, the causeway is not considered an available evacuation route for members of the public. Furthermore, the primary Evacuation Time Estimates provided in Part 5, Attachment 11, of the PSEG Site ESPA conservatively assume that the causeway does not exist. For these reasons, the causeway is not shown on SSAR Figure 2.1-21, which is intended to show existing transportation routes potentially available for use in an evacuation.

## Associated PSEG Site ESP Application Revisions:

SSAR Subsection 2.1.3 will be updated as discussed above and specified in Enclosure 2 of this document.

## Response to RAI No. 32, Question 02.01.03-4:

In Reference 2, the specific requests for Question 02.01.03-4 were:

Pursuant to the regulations at 10 CFR 100.21(b) and the definition for "population center distance" in 10 CFR 100.3, the guidance in NUREG-0800, SRP Section 2.1.3, Subsection III (Review Procedures), Item 4 (Nearest Population Center Boundary) calls for, among other things, an evaluation of the bases used by an applicant to establish the boundary of the nearest identified population center. Population density is the controlling criterion, and the corporate boundary of the community is not limiting. The definition for "population center distance" refers to a densely populated center as containing more than "about 25,000 residents".

Subsection 2.1.3.5 (Paragraph 1) of the Site Safety Analysis Report (SSAR) in the Early Site Permit Application (ESPA) for the proposed PSEG ESP Site states that the nearest population center is the city of Wilmington, DE, with its nearest boundary 14.8 miles north of the proposed plant center point. While the sources of the population estimates listed in SSAR Table 2.1-8, for population centers within 50 miles of the PSEG site, are referenced, the basis for identifying population center boundary locations relative to the proposed reactor(s) is neither explained nor illustrated under Subsection 2.1.3.5.

Furthermore, the city of Bridgeton, NJ, may represent an additional population center whose nearest boundary may be located closer to the proposed reactor(s) than the population center associated with the city of Wilmington, DE. As a result, given this uncertainty and based on the regulations and SRP guidance cited above, the Applicant should update the discussions in SSAR Subsection 2.1.3.5, including any associated current or new table(s) or figure(s), as appropriate, by addressing the following issues:

- (a) The 2010 U.S. Census Bureau (USCB) population count for the city of Bridgeton, NJ, is 25,349 people. Similarly, the 2009 USCB population estimate for Bridgeton, NJ, was 24,858 people, meeting the intent of 10 CFR 100.3 in regards to what constitutes a densely populated center. The city of Bridgeton, NJ, appears to be located about 15 miles to the east or eastsoutheast of the proposed PSEG ESP Site but areas just to the west through the north-northwest of the city limits may be slightly closer to the proposed PSEG ESP Site than the city of Wilmington, DE, otherwise designated in SSAR Subsection 2.1.3.5 as the nearest population center. In order to address this issue, the applicant should:
  - Justify the exclusion of Bridgeton, NJ, from among the population centers identified in SSAR Table 2.1-8 as being within 50 miles of the proposed PSEG ESP Site and, explain the rationale for doing so.

- If added to the list of population centers within 50 miles of the proposed PSEG ESP Site in SSAR Table 2.1-8, confirm whether the nearest population center boundary for Bridgeton, NJ, (on the basis of population density as opposed to the corporate boundary limits as recommended in the referenced guidance) is closer than the distance specified for the population center associated with the city of Wilmington, DE.
- Clearly describe the basis for and illustrate the locations of the nearest population center boundaries for Bridgeton, NJ, (if added) and Wilmington, DE.
- (b) The Staff notes that several other potential population centers appear to be located within 50 miles of the proposed PSEG ESP Site (based on the 50mile radius illustrated in SSAR Figure 1.2-2) but have not been identified in SSAR Table 2.1-8 or addressed in SSAR Subsection 2.1.3.5. These include the Atlantic City, Cape May, and Wildwood areas of New Jersey along the Atlantic Coast.

USCB records indicate that the population of Atlantic City was more than 35,000 people in 2008, and that the Atlantic City-Hammonton, NJ, metropolitan statistical area exceeded 266,000 persons. The residential populations of Cape May and Wildwood, NJ, while generally well below the threshold of "about 25,000 residents" defined in 10 CFR 100.3 as a densely populated center, are seasonally well above that threshold due to transient recreational and other travel-related use (e.g., resorts) drawing more than 40,000 and 250,000 persons, respectively.

The Applicant should justify the need to include or exclude the Atlantic City, Cape May, and/or Wildwood areas of New Jersey from among the population centers identified in SSAR Table 2.1-8 as being within 50 miles of the proposed PSEG ESP Site and, in either case, explain the rationale for doing so. The Applicant should also explain whether and, if so, to what extent these transient populations have been accounted for in other discussions or data summaries presented under SSAR Section 2.1.3, or analyses addressed elsewhere in the SSAR.

## **PSEG Response to NRC RAI:**

(a) In preparing SSAR Table 2.1-8, PSEG listed only communities having an estimated 2007 population of 25,000 or more, in accordance with the guidance provided in NUREG-0800, SRP Section 2.1.3, Subsections I and II. However, PSEG agrees that Bridgeton, NJ, may be considered to have a population of "about 25,000 residents" and therefore may meet the definition of a population center per 10 CFR 100.3. On that basis, Bridgeton has been added to SSAR Table 2.1-8. A mark-up of the revised table is provided in Enclosure 2.

The nearest boundary of Bridgeton, NJ, is 15.5 miles east of the PSEG Site center. The nearest boundary for this purpose is based on the corporate boundary of Bridgeton as identified in USCB Geographic Information System population data. The actual population distribution of the Bridgeton community is not closer to the PSEG Site center than the nearest corporate boundary. Based on review of recent aerial photography, there is limited existing residential development west of the Bridgeton corporate limits. This limited development is along one road; State Route 49 (Shiloh Pike) (Figure RAI-32-1). There is essentially no extension of residential subdivision development west of Bridgeton along either of the other two primary roads in the area, County Road 626 (Roadstown Road) or County Road 607 (Greenwich Road). The predominant existing land use west of the Bridgeton corporate limits is agricultural/open space. Therefore, the nearest population center boundary associated with Bridgeton, NJ, (15.5 miles) is not closer than the distance specified in SSAR Subsection 2.1.3.5 for the population center associated with Wilmington, DE (14.8 miles).

The distances to the nearest population center boundaries associated with Bridgeton, NJ, and Wilmington, DE, are based on the corporate boundaries of those communities as identified in USCB Geographic Information System population data. The actual population distribution of these communities is not closer to the new plant center point than the nearest corporate boundaries.

The text of SSAR Subsection 2.1.3.5 has been revised to state the distance to the Bridgeton population center and the basis of all population center boundary locations. A mark-up of the revised text is provided in Enclosure 2.

(b) The vast majority of the population of Atlantic City is within a densely developed area adjacent to the Atlantic Ocean coastline. The core of Atlantic City is a dense urban area, mostly contained on a barrier island, that includes permanent residents and accommodations for transient populations, primarily visitors to seaside resorts and casinos. The nearest boundary of this densely populated area is more than 50 miles from the PSEG Site center. Adjacent to the west of Atlantic City are the municipalities of Absecon, Pleasantville, Northfield, Linwood and Somers Point. These communities are separated from the Atlantic City population center by an undeveloped and unpopulated expanse of bays and estuaries, and each community is located on the east side of the Garden State Parkway and outside of the 50-mile radius from the PSEG Site center. Therefore neither Atlantic City nor the adjacent municipalities to the west are included in SSAR Table 2.1-8 as population centers.

The Atlantic City-Hammonton, NJ, metropolitan statistical area (MSA) boundary (which is concurrent with the boundary of Atlantic County, NJ) extends westward and reaches within the 50-mile radius from the PSEG Site center. However, centers of population density in the MSA are concentrated in a few areas of the MSA, all but one of which are outside of the 50-mile radius. The greatest density of permanent and transient population is found in the barrier island communities (Atlantic City, Brigantine, Ventnor and Margate) and communities along the east side of the Garden State Parkway (Absecon, Pleasantville, Northfield, Linwood and Somers Point), all of which are outside of the 50-mile radius from the PSEG Site center. The other substantial municipal population in the MSA is the city of Hammonton, which is located approximately 40 miles from the PSEG Site center. This city has a population of 14,791 (per 2010 Census) and therefore does not qualify as a population center. Smaller municipalities in the MSA (each with populations of less than 5,000 per 2010 Census) are Buena Borough, Corbin City, Egg Harbor City, Folsom Borough, and Port Republic. The remaining population in the MSA is organized into townships which cover broad areas of the MSA. Based on review of aerial photography showing current development patterns, these townships do not have the population density characteristics of a population center.

Wildwood, North Wildwood, West Wildwood Borough, Wildwood Crest Borough, and Diamond Beach together comprise a densely developed barrier island coastal community of permanent residents and accommodations for transient visitors. With the exception of the extreme western edge of West Wildwood Borough, this developed area is more than 50 miles from the PSEG Site center. The combined population of these communities is 12,772 per 2010 Census data; therefore, it is not appropriate to include this area in SSAR Table 2.1-8 as a population center. The area immediately to the west of these communities, which is located within 50 miles of the PSEG Site center, is an expansive tidal estuary that is bounded on the west by the Garden State Parkway. Along the western side of Garden State Parkway (and north of Cape May Harbor) are several small communities in Middle Township and Lower Township (Whitesboro, Burleigh, Rio Grande, Erma) each with a population less than 3,000 per 2010 Census data. Also in Lower Township, situated on the Delaware Bay coastline and north of US Route 9, are the adjacent communities of Villas and North Cape May. Combined, these communities have a population under 13,000. Based on review of existing conditions in the area surrounding Villas and North Cape May, it is apparent that that there is very little opportunity for new development within the communities themselves, and that environmental conditions, specifically tidal estuaries, limit these communities from Therefore, the Villas and North Cape May area does not arowing outwards. approach the population center threshold of 25,000.

The city of Cape May, West Cape May Borough, and Cape May Point Borough are located to the south of Cape May Harbor and US Route 9. The city of Cape May is partially outside of the 50-mile radius from the PSEG Site center, with approximately half of the community and two-thirds of the beachfront outside of the 50-mile radius. The balance of Cape May and both West Cape May Borough and Cape May Point Borough are inside of the 50-mile radius. Per 2010 Census data, the population of Cape May is approximately 4,000, the population of West Cape May Borough is approximately 1,000, and the population of Cape May Point Borough is approximately 300. Therefore, the Cape May area does not approach the population center threshold of 25,000 and thus is not included in SSAR Table 2.1-8.

Both 10 CFR 100.3 and NUREG-0800, SRP Section 2.1.3, define a population center in terms of the resident population; neither document indicates that transients should be considered in identifying population centers. Therefore, transient populations generally were not included in the discussions and analyses of population centers presented in the SSAR. However, with regard to the Atlantic City, Cape May, and Wildwood areas of New Jersey, it is clear that transient populations attracted to these areas tend to be concentrated along the Atlantic Ocean coastline and therefore are located more than 50 miles from the PSEG Site center.

## Associated PSEG Site ESP Application Revisions:

SSAR Subsection 2.1.3 will be updated as discussed above and specified in Enclosure 2 of this document.



## Response to RAI No. 32, Question 02.01.03-5:

In Reference 2, the specific requests for Question 02.01.03-5 were:

Pursuant to 10 CFR 100.21(b), NUREG-0800, SRP Section 2.1.3, Subsection III (Review Procedures), Item 4 (Nearest Population Center Boundary) establishes the need, among other things, for the reviewer to evaluate communities that are closer to the plant than the design population center to determine the likelihood that their population will grow to greater than 25,000 people within the lifetime of the proposed power plant.

Subsection 2.1.3.5 of the Site Safety Analysis Report (SSAR) in the Early Site Permit Application (ESPA) for the proposed PSEG ESP Site:

- identifies the city of Wilmington, DE, as the closest population center to the proposed plant (Paragraph 1);
- states that one and one-third times the distance from the new plant center point to the proposed LPZ boundary is 6.7 miles (Paragraph 3);
- indicates that none of the distance / direction segments within 10 miles, as shown in SSAR Figure 2.1-11, have a projected resident and transient population in the year 2081 that exceeds 25,000 people, although the segment from 5 to 10 miles to the west of the PSEG Site approaches this 25,000-person criterion (Paragraph 4); and
- further indicates that Middletown, DE, is included in the 5- to 10-mile distance segment west of the PSEG Site with its nearest boundary being 7.0 miles from the site (Paragraph 4).

Given that the distance between the nearest boundary of Middletown, DE, and the new plant center point at the PSEG ESP Site, as stated by the Applicant, is so close to the separation requirement in 10 CFR 100.21(b) for population center distance (i.e., in this case, 7.0 versus 6.7 miles), the Staff evaluated the population estimates for the distance / direction segments around Middletown, DE. As a result, the Staff requests additional information which demonstrates that the population of and around Middletown, DE, will remain at a level below the threshold of "about 25,000 residents", which 10 CFR 100.3 defines as a densely populated center, over the expected life of the proposed power plant(s).

The Applicant should update the discussions under SSAR Subsection 2.1.3.5, as indicated, by addressing the following technical issues with respect to the estimated population counts of and around Middletown, DE:

(a) The Applicant based its comparison between the estimated population count for the year 2081 (expected end of the plant's operating life) and the criterion in 10 CFR 100.3 that defines a densely populated center on the estimated count for the west direction sector between 5 and 10 miles from the PSEG ESP Site. However, examination of SSAR Figure 2.1-11 shows that several large portions of the Middletown community appear to extend into the westsouthwest sector between 5 and 10 miles away and into both the west and west-southwest sectors beyond 10 miles. Consequently, it is not clear that the total population count associated with this potential population center has been established. Therefore, before a meaningful comparison can be made, the Applicant should update SSAR Subsection 2.1.3.5, including any associated current or new table(s) or figure(s), as necessary, by either:

- justifying the exclusion of the resident and transient population in those portions of these adjacent sectors (areas) from being considered part of this potential population center; or
- determining the estimated population counts for all of this potential population center by either including areas not only between 5 and 10 miles to the west of the proposed plant, but any adjacent distance / direction segments, or other alternative approach, and, in either case, explaining the method(s) used for making these estimates.
- (b) Table 2.5-4 of the Environmental Report (ER) in Part 3 of the ESPA contains annual population growth rates for the communities of Middletown, Odessa, and Townsend, DE, among others within 10 miles of the PSEG ESP Site. The Applicant indicates that these growth rates are based on the decennial census for the year 2000 and on local population estimates for the year 2007 from the U.S. Census Bureau (USCB). The annual average growth rates over this 7-year period are 8.85, 2.24, and 1.27 percent; respectively; significantly higher than the county-wide annual average growth rate (i.e., 0.72 percent), and in the case of the Middletown community more than an order of magnitude greater. ER Subsection 2.5.1.1.1 (Paragraph 4) attributes the estimated increase in overall population within 10 miles of the proposed plant over the period from 2000 to 2010 as being "primarily due to the rapid growth in the Middletown-Odessa-Townsend, DE area".

The Staff notes that for the west and west-southwest sectors between 5 and 10 miles from the PSEG ESP Site, SSAR Figures 2.1-3 through 2.1-11 appear to reflect this rapid growth between the years 2000 and 2010, increasing at a significantly lower estimated rate of growth of 6.34 percent over the 11-year period from 2010 to 2021 (or 0.57 percent per year), and at an even lower estimated growth rate of 4.10 percent over the 10-year period from 2021 to 2031 (or about 0.4 percent per year). This lower rate appears to be the basis for the remaining 10-year population estimates for the years 2041, 2051, 2061, 2071, and 2081 for distance / direction segments entirely within New Castle County, DE.

Finally, consistent with the guidance in SRP Section 2.1.3, Section III (Review Procedures), Item 1 (Population Data), the Staff notes that the total population for the community of Middletown, DE, based on the latest USCB data for 2010, is 18,871 persons. This total is more than 30 percent higher than the estimated population for the year 2010 as presented in ER Table 2.5-4 (i.e. 14,383 persons).

Given that the near-term increase in overall population within 10 miles of the proposed PSEG ESP Site has been attributed to rapid growth in the Middletown-Odessa-Townsend, DE, area, and that the population for the community of Middletown, as projected by the Applicant, appears to be underestimated by more than 30 percent compared to current actual USCB survey results for 2010, the updated population estimates for this potential population center, as called for in preceding comment (a), with appropriate updates to SSAR Subsection 2.1.3.5 and any associated current or new table(s) or figure(s), should also:

- either account for the actual population total reported by the USCB for the community of Middletown in the 2010 census results as a reference point, or justify continued reliance on a markedly underestimated total for making future population projections over the expected life of the proposed power plant(s);
- either determine and explain the rationale for the appropriate rates of growth to be applied to the time periods between 2010 and 2021, between 2021 and 2031, and any subsequent 10-year interval through 2081, for this specific potential population center as opposed to one or a group of distance / direction segments, considering that if the total population for the Middletown community has been underestimated by more than 30 percent then the segment-specific rate(s) of growth have been underestimated as well, or justify the retention and use of segmentspecific growth rates for making future population projections over the expected life of the proposed power plant(s);
- identify and explain the technical bases for the length(s) of time (years) over which any revised rates of growth will be applied in relation to the specific time periods for which estimated population totals have are reported (i.e., the ten-year intervals between 2021 and 2081);
- although a design has yet to be chosen, if a multiple unit configuration were to be selected, address to what extent population estimates beyond the year 2081 will need to be determined for both distance / direction segments out to 50 miles from the PSEG ESP Site and for this potential population center; and

- determine the estimated population counts for this potential population center over the expected life of the proposed plant(s) so as to demonstrate whether or not the criterion of "about 25,000 residents" in 10 CFR 100.3 would be exceeded.
- (c) As indicated above, ER Subsection 2.5.1.1.1 (Paragraph 4) attributes the estimated increase in overall population within 10 miles of the proposed plant over the period from 2000 to 2010 as being "primarily due to the rapid growth in the Middletown-Odessa-Townsend, DE area". At its closest point, the current political boundaries of Middletown and Odessa appear to be separated by only about one-quarter mile. Consistent with the guidance in SRP Section 2.1.3, Subsection III, Item 4, that population density is the controlling criterion and the corporate boundary of the community is not limiting:
  - address the potential for such growth to continue into and around Odessa, DE, which is located just to the east of Middletown, over the expected life of the proposed plant(s) (i.e., during at least the next 70 years depending on the number of units to be built), such that the current and estimated population counts for both communities (rather than for Middletown alone) should be considered as representing the potential population center, and
  - in either case, update SSAR Subsection 2.1.3.5 and any associated current or new table(s) or figure(s), as necessary, to clearly explain the rationale for the determination made.

## **PSEG Response to NRC RAI:**

(a) The population distribution of Middletown, DE, does extend partially into the west-southwest sector between 5-10 miles and both the west and west-southwest sectors beyond 10 miles. Based on a review of recent data, PSEG now believes that the population of the Middletown area is likely to approach 25,000 residents within the lifetime of the new plant. On that basis, the text of SSAR Subsection 2.1.3.5 will be revised to discuss Middletown as a potential future population center closer to the new plant than the existing population centers. Details of that discussion are provided in the response to Question 02.01.03-5(b) below.

Population estimates for the potential Middletown population center, as well as the methods used to determine those estimates, are provided in the response to Question 02.01.03-5(b) below.

(b) The bullet structure presented in Question 02.01.03-5(b) above has been followed in providing this response:

## Bullet 1

Middletown population estimates for 2007 and 2010, as included in ER Table 2.5-4, are based on USCB estimates. As the 2010 Census results have demonstrated that the USCB underestimated growth in Middletown, PSEG recognizes that projections for higher population growth levels in Middletown should be considered.

The Town of Middletown Comprehensive Plan (SSAR Reference 2.1-17), adopted November 7, 2005, presented population projections for the year 2020 in terms of a range between 23,000 and 33,000 residents. Therefore, PSEG believes that the population of the Town of Middletown is likely to reach or exceed 25,000 during the life of the new plant. Enclosure 2 provides proposed revisions to SSAR Subsection 2.1.3.5 to address the Town of Middletown as a potential population center.

## Bullet 2

Retention and use of the growth rates specified in the SSAR is justified as follows:

Despite the local underestimate of the 2010 Middletown population, the segmentspecific population projections are appropriate as their basis is the more predictable growth rate of New Castle County. Use of the State Planning Department county-level projections for years beyond 2010 is expected to provide more stable results because long range projections for larger geographic areas are more reliable than are projections for small areas such as Middletown which can experience dramatic fluctuations due to very localized trends and circumstances. It should also be noted that the projected 2010 population for New Castle County (536,587) is within 0.05% of the 2010 value reported by the USCB (538,479). The minimal underestimate associated with the 2010 New Castle County projection supports the use of New Castle County growth rates as a basis for segmentspecific projections beyond 2010.

The use of New Castle County growth rates to project the long range populations of the Middletown Census blocks beyond 2010 is supported by the policies of the Middletown Comprehensive Plan, which establish a greenbelt surrounding the town that is expected to constrict its long range growth potential. Additionally, based on review of residential unit permit trend data available from the State of Delaware Office of State Planning Coordination and Delaware State Housing Authority, there has been a significant decline in residential development in New Castle County and Middletown in the years since 2007. For example, in 2008 there were a total of 256 building permits issued in Middletown, but in 2009 and 2010 this declined to 149 and 106, respectively. Similarly, the total housing production in New Castle County declined from 1,460 in 2007 to 608 in 2010. Future population projections for Census blocks within Middletown that were established using the more moderate growth rate given for New Castle County for all calculations beyond 2010 are substantiated by these data.

### Bullet 3

PSEG does not believe there is a need to revise the growth rates specified in the SSAR. As stated in the previous paragraph, the projected 2010 population for New Castle County is within 0.05% of the reported 2010 USCB value. Using the Delaware Office of State Planning Coordination projections is expected to provide the most accurate results moving forward. Those projections are available to 2031. The growth rate for the 2021-2031 is used for periods beyond 2031 because it represents the best available future growth rate for this demographic area.

### Bullet 4

In reviewing 10 CFR 100.21 and associated Regulatory Guide 1.70, the guidance indicates that population estimates apply to the projected life of the plant. Regulatory Guide 1.70 goes on to state that that population growth should be taken into account approximately 5 years after site approval and that subsequent population growth is expected and will be taken into account during routine evaluation of the Emergency Plan. From a licensing perspective, the life of the plant is considered to be 40 years since that is the duration of the initial license granted by the NRC. It is projected that initial plant operation will occur in 2021. The license will expire 40 years after initial operation, and for the purposes of evaluating population projections, the year 2061 is the end of plant operations. Therefore a multiple unit configuration does not necessitate a revision to population estimates beyond the year 2081 given the substantial margin identified between the expected commercial operation date (COD) for the first unit (2021) and COD for the potential second unit given the above basis for a 40-year licensed life of the plant. The PSEG Site ESPA population estimate to 2081 can be considered sufficiently conservative to accommodate a two unit site.

## Bullet 5

As discussed in the response to the first bullet, above, PSEG now believes that the population of the Town of Middletown is likely to reach or exceed 25,000 during the life of the new plant. Therefore, Middletown is discussed as a future population center in the following responses to NRC questions.

(c) The potential for the Middletown population center to expand to the east (around Odessa, DE) is limited by geographic conditions and local policy factors. The Middletown population center will remain limited to the west side of State Route 1, a controlled-access divided highway that separates Middletown from Odessa. The area to the east of State Route 1, including Odessa and surrounding unincorporated New Castle County, should not be considered an expansion of the Middletown population center due to the significantly lower population density that currently exists and is expected to continue to exist as a result of local zoning and land use controls. The following analysis, based on available information about local land use and zoning controls, discusses five points that provide the basis for this finding.

1: The corporate limits of Middletown, due to physical/geographic factors and local planning policies, effectively define the Middletown population center boundary.

The corporate limits of Middletown extend from the western edge of State Route 1 westward approximately five miles to near the intersection of Middle Neck Road and US Route 301. At the town's eastern edge, several properties within the Middletown corporate boundaries are adjacent to the State Route 1 right-of-way, including a DELDOT park and ride lot, the Willow Grove Mill residential subdivision, and the Smith Farm property, an agriculture preserve. Adopted local land use policy, as shown in the Middletown Comprehensive Plan – Future Land Use and Annexation Map, includes official plans for future annexation that would result in expansion of the corporate boundaries. Most expansion is planned to the south and west, with a lesser amount to the east remaining on the west side of State Route 1. The Comprehensive Plan indicates that annexation (growth) is not planned to the east of State Route 1 nor inside the 6.7 mile distance from the PSEG Site center.

Middletown growth and development trends cited in the Comprehensive Plan focus on areas at the north and west edges of the town. The growth is desired to remain close to the community's existing boundaries. As part of the Comprehensive Plan, Middletown has adopted a greenbelt concept that surrounds the core populated area and planned town growth area with a ring of agricultural preserve and/or very low density land use. The following statement is made under the heading Geographic and Policy Constraints of Development on page 61 of the Comprehensive Plan: "The establishment of a greenbelt buffering the more urban uses in Middletown from rural New Castle County has been a town policy since the adoption of Middletown's 1998 comprehensive plan. Development and annexation plans embodied in this plan largely round out Middletown's borders without encroaching on the planned greenbelt area." Thus, the Comprehensive Plan directs future growth and development to occur within the core town area and preserves the greenbelt. Map 10 of the Comprehensive Plan shows the planned greenbelt in comparison with the incorporated Middletown and potential annexation areas, and clearly demonstrates that State Route 1 is the eastern extent of Middletown.

2: The potential housing density of Middletown is defined by Town of Middletown local land use and zoning policies.

The official Middletown Zoning Map (last updated 10/13/2010) defines Middletown boundaries and shows zoning as applied to each land parcel. Zoning districts shown on the map include those that are residential and those that are primarily non-residential (manufacturing/industrial, employment/regional retail, downtown commercial). The residential districts and associated density limits (approximate maximum housing units per acre) are as follows:

- R-1A, Single Family Residential (low density) 4.5 housing units per acre
- R-1B, Single Family Residential (lower density) 3.5 housing units per acre
- R-2, Single Family Residential (medium density) 8.5 housing units per acre
- R-3, Multi-family Residential 12 to 16 housing units per acre
- R-MH, Mobile Home Residential 10 housing units per acre
- C-2, Downtown Commercial allows density equal to R-2, R-3

Per the Middletown zoning map, approximately equal amounts of the town's land area are zoned for R-1A, R-1B, R-2 and R-3 districts. A smaller amount is zoned for R-MH. Approximately two-thirds of Middletown is zoned for one of these residential districts, and the remainder is zoned for manufacturing/industrial, employment/regional retail, downtown commercial and agriculture preservation districts. Overall, zoning policy for Middletown establishes that the allowable residential development density is in the range of approximately 4 to 16 housing units per acre. As discussed under Point 1, the Middletown Comprehensive Plan specifically promotes development within the corporate boundaries while maintaining a clear edge to the community by preserving a low-density greenbelt. The Comprehensive Plan references the Middletown Zoning Code concerning land use controls and density limits.

3: The potential housing density of the areas east of State Route 1 and around the town of Odessa is defined by policies of the New Castle County Zoning Ordinance.

Zoning maps for New Castle County, available from the official county website (<u>http://www2.nccde.org/landuse/Maps/Zoning/default.aspx</u>) and the New Castle County Unified Development Code (Chapter 40 of the New Castle County Code, SSAR Reference 2.1-18) define land use and development policy for unincorporated areas. Specific to the area east of Middletown, east of State Route 1, and south of the town of Odessa, residential zones and associated density limits (approximate maximum housing units per acre based on maximum gross density allowance in table 40.04.110) are as follows:

- SR, Suburban Reserve 0.2 housing units per acre (1 unit per 5 acres)
- S, Suburban 0.67 to 1.5 housing units per acre
- NC2A 0.5 housing units per acre (1 unit per 2 acres)
- NC40 1 housing unit per acre
- NC21 1.5 housing units per acre
- NC6.5 4 housing units per acre

Per the New Castle County zoning map, the largest proportion of property between State Route 1 and the Delaware Bay is zoned Suburban Reserve. Much of this land area is environmentally unsuited to development due to extensive wetlands, as well as some public park and wildlife management areas. The second largest proportion of land east of State Route 1 is zoned Suburban. Several large areas around the town of Odessa are zoned Suburban, with smaller areas zoned either NC40 or NC21, a few parcels zoned NC2A, and one group of small parcels zoned NC6.5.

Overall, the zoning policy for New Castle County restricts the allowable residential density of the area east of Middletown to a range of approximately 0.67 to 1.5 housing units per acre from State Route 1 to approximately 2 miles east of Odessa. Farther to the east, the area extending to the Delaware Bay is restricted to rural/resource reserve with a maximum gross density of 0.3 housing units per acre.

4: The corporate boundary of Middletown is an appropriate population center boundary for the present and future, due to the significant difference in potential population density per review of land use and zoning policies.

Based on zoning and future land use policy, the allowable residential development density within the Middletown corporate boundaries is in the range of about 4 to 16 housing units per acre. In comparison, the allowable development density of unincorporated New Castle County immediately east of State Route 1 and around the town of Odessa is in the range of about 0.67 to 1.5 housing units per acre. From a zoning standpoint, there is a substantial difference between the allowable density of Middletown and the unincorporated areas to the east. In addition, the presence of State Route 1, a controlled-access divided highway, will continue to limit the points of connectivity between Middletown and areas to the east.

5: There are substantial geographic and policy-based limitations on the general potential for development and population growth to the east of Middletown within 6.7 miles of the PSEG Site center.

Approximately 80% of the town of Odessa, located east of Middletown, is within 6.7 miles of the PSEG Site center. Odessa is a small historic community that has experienced a long term trend of fluctuation from periods of minor population losses to periods of very low population growth. From 1970 to 2000, the population declined from 547 to 286. In 2010, the population was 364 per the 2010 Census. According to the Town of Odessa Comprehensive Plan Update (2006, page 8), the population is projected to grow to a maximum of 1,000 by 2030. The Odessa Future Land Use and Annexation Areas plan (Comprehensive Plan Update, map 6) suggests that only minor annexations to the west and north are options in the future. Therefore, it is not expected that the population of Odessa has the potential to approach 25,000 during the life of the new plant.

Approximately 60% of the area of unincorporated New Castle County that is south and southeast of Odessa, and within the County-defined sewer service area, falls within 6.7 miles from the PSEG Site center. This area includes part or all of approximately 7 existing subdivisions with density ranging from less than 1

to 2 housing units per acre. There are approximately 4 large parcels within the sewer service area which are currently in agricultural use but have potential to be developed in the future at suburban density. However, it is not expected that these parcels would be subject to development pressure in the foreseeable future due to the fact that, at the present time, there are numerous existing lots available for housing construction in adjacent, partially developed subdivisions. Beyond these parcels, there are significant restrictions on the potential for development at any time in the future due to zoning and land use policy (Suburban Reserve zoning) and the many undevelopable wetland areas associated with the Delaware Bay.

## Associated PSEG Site ESP Application Revisions:

SSAR Subsection 2.1.3.5 will be updated to discuss Middletown as a future population center as shown in Enclosure 2 of this document.

## Response to RAI No. 32, Question 02.01.03-6:

In Reference 2, the specific requests for Question 02.01.03-6 were:

Pursuant to 10 CFR 100.21(b), NUREG-0800, SRP Section 2.1.3, Subsection III (Review Procedures), Item 4 (Nearest Population Center Boundary) establishes the need, among other things, for the reviewer to evaluate the basis used by an applicant to establish the boundary of the nearest identified population center. SRP Section 2.1.3, Subsection III, Item 4 goes on to state that "[t]he population center boundary should be established at that point nearest the plant where, in the reviewer's judgment, the population density may grow to a value comparable to the density of the community itself", and that the "[p]opulation density is the controlling criterion, and the corporate boundary of the community is not limiting".

Subsection 2.1.3.5 of the Site Safety Analysis Report (SSAR) in the Early Site Permit Application (ESPA) for the proposed PSEG ESP Site states:

- that one and one-third times the distance from the new plant center point to the proposed LPZ boundary is 6.7 miles (Paragraph 3); and
- that the town of Middletown, DE, is included in the 5- to 10-mile distance segment west of the PSEG Site with its nearest boundary being 7.0 miles from the site (Paragraph 4).

The Applicant concludes the discussion in SSAR Subsection 2.1.3.5 by unequivocally stating that "there is no realistic possibility that a population center will exist closer than one and one-third times the distance to the LPZ within the projected life of the new plant".

Given that the distance between the nearest boundary of Middletown, DE, and the new plant center point at the PSEG ESP Site, as stated by the Applicant, is so close to the separation requirement in 10 CFR 100.21(b) for population center distance (i.e., in this case, 7.0 versus 6.7 miles), the Staff evaluated both the population estimates for the distance / direction segments around Middletown, DE (see Question 02.01.03-5 in this RAI regarding the issues to be resolved with respect to the population projections under SSAR Subsection 2.1.3.5), and the possible nearest boundary location for this potential population center relative to the PSEG ESP Site.

As a result, the Staff requests additional information which demonstrates that the nearest boundary of a population center will <u>not</u> exist closer than one and onethird times the distance from the reactor(s) to the outer boundary of the low population zone (LPZ), as required by 10 CFR 100.21(b), within the projected life of the proposed power plant(s). As indicated above, SSAR Subsection 2.1.3.5 (Paragraph 4) points out that the nearest boundary of Middletown, DE, is 7.0 miles from the PSEG Site. In the west to west-southwest direction this occurs along the Korean War Veterans Memorial Highway (also referred to as Delaware State Route 1). In the same direction, the distance corresponding to 6.7 miles from the proposed reactor(s) occurs at the town of Odessa, DE, at about the U.S. Route 13 / Delaware State Route 299 interchange.

Therefore, in order to support the Staff's evaluation of whether the population center distance will be acceptable over the projected life of the proposed power plant(s), the Applicant should resolve the following technical issues:

- (a) As indicated in Question 02.01.03-5 in this RAI, Paragraph 4 under Subsection 2.5.1.1.1 of the Environmental Report in Part 3 of the ESPA attributes the estimated increase in overall population within 10 miles of the proposed plant over the period from 2000 to 2010 as being "primarily due to the rapid growth in the Middletown-Odessa-Townsend, DE area". At its closest point, the current political boundaries of Middletown and Odessa appear to be separated by only about one-quarter mile. Consistent with the guidance in SRP Section 2.1.3, Subsection III, Item 4, that population density is the controlling criterion and the corporate boundary of the community is not limiting:
  - address the potential for such growth to continue into and around Odessa, DE, which is located just to the east of Middletown, over the expected life of the proposed plant(s) (i.e., during at least the next 70 years depending on the number of units to be built), such that compliance with the population center distance requirement in 10 CFR 100.21(b), regarding the location of the nearest boundary of this potential population center, is able to be demonstrated;
  - identify and illustrate the areal extent of the growth of this potential population center over the expected life of the proposed plant(s) (e.g., on the basis of, but not limited to, available land use data and land use controls such as zoning, as indicated in SRP Section 2.1.3, Subsection III, Item 4), such that the nearest point to the plant from this potential population center over this time period is clearly indicated;
  - in any case, update SSAR Subsection 2.1.3.5 and any associated current or new table(s) or figure(s), as necessary, to clearly explain the rationale for the determinations made.
- (b) To the extent applicable, identify any changes to the current LPZ boundary distance and the implications of such changes on related analyses, discussions, tables, and/or figures in other sections of the ESPA.

## PSEG Response to NRC RAI:

(a) As discussed in our response under Question 02.01.03-5(c), bullet one, the potential for population growth to extend from Middletown into or around Odessa is severely restricted by zoning policies and physical barriers. Based on the above constraints, these two areas are not expected to result in a contiguous population center.

The areal extent of potential growth of Middletown and the relevance of applicable land use policies is discussed in detail in our response to Question 02.01.03-5(c), bullet one. In summary, the Middletown population center, which is expected to grow to reach a population level of "about 25,000" during the expected life of the new plant, is also expected to remain within a boundary that is established in the Town of Middletown Comprehensive Plan. The eastern edge of this boundary is defined by State Route 1, a controlled-access divided highway. Middletown is not expected to expand to the east of State Route 1, and neither potential expansion of the town of Odessa nor potential development of unincorporated New Castle County will achieve a housing density that is comparable to the Middletown population center.

With regards to establishment of a specific boundary for the Middletown population center, there are several existing residential subdivisions at the eastern edge of Middletown, within the corporate boundaries, that are in stark contrast to the significantly lower density development to the southeast, east and northeast of the corporate limits. These Middletown subdivisions include Cricklewood Green, Lakeside, Middletown Crossing, Longmeadow, Willow Grove Mill, Dove Run, Villagebrook Mobile Home Park, and Parkside. These communities are each adjacent to commercial services and public services (e.g., schools) within Middletown that are supportive of their density. The potential density beyond the Middletown corporate boundaries is dramatically reduced by local policies that will maintain a greenbelt around Middletown, and that will allow only lower density suburban residential uses and land conservation to the east of State Route 1.

(b) PSEG does not intend to make any changes to the current LPZ boundary distance. Therefore, no changes are required to analyses, discussions, tables, or figures related to the LPZ boundary.

## Associated PSEG Site ESP Application Revisions:

SSAR Subsection 2.1.3.5 will be updated to discuss Middletown as a future population center as shown in Enclosure 2 of this document.

## PSEG Letter ND-2011-0063, dated October 5, 2011

## **ENCLOSURE 2**

Proposed Revisions Part 2 – Site Safety Analysis Report (SSAR)

# Subsection 2.1.3 Population Distribution

## Marked Up Pages

2.1-6
2.1-7
2.1-10
2.1-17
2.1-18

limited land access to areas beyond the main access points. The daily usage data collected at these points reflect where most of the recreational transient population is located. Therefore, transient populations in the Cedar Swamp and Augustine Wildlife Management Areas are shown in the 3 to 4 mi. and 4 to 5 mi. bands in Tables 2.1-3 and 2.1-4. Transient populations for the Mad Horse Creek Wildlife Management Area are shown in the 5 to 10 mi. band.

#### 2.1.3.3.2 Transient Population between 10 and 50 Miles

The major employment centers located between 10 and 50 mi. from the PSEG Site are shown in Table 2.1-5. These major employment centers include Philadelphia, which is the core of the Philadelphia Standard Metropolitan Statistical Area, as well as subregional centers such as Camden, Vineland, Millville, and Bridgeton, New Jersey; and Wilmington, Newark, and Dover, Delaware: The estimated total 2008 employment for these centers is 1,676,400, as shown in Table 2.1-5.

Philadelphia generates the largest student population in the area due to a concentration of major colleges and universities. Students at colleges and universities are counted in the USCB census as year-round residents in their place of residence in February and March. Therefore, virtually all students are considered permanent, not transient, persons.

Major public recreation areas located between 10 and 50 mi. from the PSEG Site are shown in Table 2.1-6. Independence National Historical Park in Philadelphia generates the largest number of annual visitors, followed by Valley Forge National Historical Park in Pennsylvania. The total annual visitors for these recreation areas are 5,966,331 as shown in Table 2.1-6.

#### 2.1.3.4 Low Population Zone

The proposed LPZ consists of a 5 ml. radius around the center point of the new plant as shown in Figure 2.1-21. This area is dominated by the open waters of Delaware Bay and low coastal wetlands to the east and west of the bay. Much of these coastal wetlands are under state ownership and managed as wildlife areas that are protected from future development. Additionally, most of the land on the New Jersey side within 2 ml. of the new plant center point is owned by PSEG, the USACE, or the New Jersey Department of Environmental Protection. Most of the privately owned land within the LPZ is managed for agricultural production and/or private access hunting/fishing.

Figure 2.1-21 shows the projected 2010 resident population in each distance band and directional sector within the LPZ. The projected 2010 resident population within the LPZ is 2047 people.

# -{Insert A

Table 2.1-7 lists facilities and institutions identified within the LPZ. The directional sector, distance from the new plant center point, and associated 2008 peak transient populations are also shown in Table 2.1-7. It can be seen that the total 2008 peak transient population within the LPZ is estimated to be 260 people, almost all of whom are associated with recreation areas. One small day care facility, located 4.8 mi. from the plant center point, contributes seven students and two employees to the transient population. As discussed in Subsection 2.1.3.3.1, portions of Mad Horse Creek Wildlife Management Area are within the LPZ, but transient population use is concentrated beyond the LPZ.

RAI 32. Question 02.01.03-3 2.1-6

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2.1-7

=& county=Essex& cityTown=Essex& state=04000US24& zip=& lang=en& sse=o n&ActiveGeoDiv=geoSelect&\_useEV=&pctxt=fph&pgsl=160&\_submenuId=factsheet 1&ds name=ACS 2007 3YR SAFF& ci nbr=null&qr name=null&reg=null%3Anul l& keyword=& industry=, accessed on May 15, 2009. U.S. Census Bureau, American Fact Finder, Perry Hall CDP, Maryland, Fact Sheet,

U.S. Census Bureau, American Fact Finder, Perry Hall CDP, Maryland, Fact Sneet, 2005-2007 American Community Survey 3-Year Estimates.

http://factfinder.census.gov/servlet/ACSSAFFFacts?\_event=Search&geo\_id=16000U S2426600& geoContext=01000US%7C04000US24%7C16000US2426600& street =& county=Perry+Hall& cityTown=Perry+Hall& state=04000US24& zip=& lang=en &\_sse=on&ActiveGeoDiv=geoSelect&\_useEV=&pctxt=fph&pgsl=160&\_submenuId=f actsheet 1&ds name=ACS 2007 3YR SAFF& ci\_nbr=null&gr\_name=null&reg=nul !%3Anull&\_keyword=&\_industry=. Accessed on May 15, 2009.

U.S. Census Bureau, American Fact Finder, Drexel Hill CDP, Pennsylvania, Fact Sheet, 2005-2007 American Community Survey 3-Year Estimates.

http://factfinder.census.gov/servlet/ACSSAFFFacts? event=&geo\_id=16000US4219 920& geoContext=01000US%7C04000US42%7C16000US4219920& street=& cou nty=Drexel+Hill+Township&\_cityTown=Drexel+Hill+Township&\_state=04000US42& zip=& lang=en& sse=on&ActiveGeoDiv=geoSelect& useEV=&pctxt=fph&pgsl=160 & submenuId=factsheet 1&ds name=null& ci nbr=null&gr name=null&reg=null%3 Anull&\_keyword=&\_industry=. Accessed on May 15, 2009.

2.1-14 Bureau of Labor Statistics, Website, <u>http://www.bls.gov/sae/eetables/annav108.pdf</u>, accessed August 7, 2009.

2.1-15 Environmental Science Research Institute, ArcMap9.2 software, 2006.

Insert F

2.1-16 U.S. Census Bureau, Geographical Comparison Tables, Population Estimates 2000 to 2008, by State and County, Website: <u>http://factfinder.census.gov/servlet/GCTGeoSearchByListServlet?ds\_name=PEP\_20\_08\_EST&\_lang=en&\_ts=281556534886</u>, accessed on June 8, 2009.

RAI 32, Question 02.01.03-5 and 6

2.1-10

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REPLACE WITH: "Wildlife Management Area" Facility	State	Directional Sector	Distance (miles)	2008 Peak Daily Transient Population
Augustine Beach Boat Ramp	DE	NW	3.1	88
Augustine Wildlife Area	DE	NNW	3.6	50
Port Penn Interpretive Center	DE	NW	3.7	25
Cedar Swang: The Rock	DE	SW	4.1	58
Abbot's Farm }	NJ	NE	4.4	10
Sugar & Spice Pre-School Day Care Center	NJ	ENE	4.8	7
Hancock House	NJ	ENE	4.9	20
Total	-	-	-	260

### Table 2.1-7 Facilities and Institutions within the Low Population Zone

Reference 2.1-2



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2.1-17

	2000 Population	2007 Population	Distance	Direction
Population Center	Census	Estimate	Sector <sup>(a)</sup>	Sector
Bel Air North, MD	25,798	28,179	40 - 50	W
Bel Air South, MD	39,711	45,345	40 - 50	W
Camden, NJ	79,904	78,675	30 - 40	NE
Chester, PA	36,854	36,695	20 - 30	NNE
Dover, DE	32,135	35,811	10 - 20	S
Drexel Hill, PA	29,364	30,036	30 - 40	NNE
Essex, MD	39,078	39,643	40 - 50	WSW
Millville, NJ	26,847	28,459	20 - 30	ESE
Newark, DE	28,547	29,992	10 - 20	NW
Norristown, PA	31,282	31,108	40 - 50	NNE
Pennsauken, NJ	35,737	35,116	40 - 50	NE
Perry Hall, MD	28,705	28,997	40 - 50	W
Philadelphia, PA	1,517,550	1,449,634	30 - 40	NNE
Radnor Township, PA	30,878	31,163	30 - 40	NNE
Vineland, NJ	56,271	58,505	20 - 30	E
Wilmington, DE	72,664	72,868	10 - 20	N

Table 2.1-8 Population Centers (> 25,000 people) within 50 Miles of the PSEG Site

a) Distance Sector is to closest boundary of population centers

References 2.1-10, 2.1-12, and 2.1-13



2.1-18

Rev. 0

#### SSAR MARKUP INSERTS REQUEST FOR ADDITIONAL INFORMATION NO. 32

#### Insert A

Figure 2.1-21 also shows the locations of the facilities and institutions listed in Table 2.1-7, as well as the locations of existing public roads within the LPZ. All of these roads potentially could be used for evacuation purposes.

#### Insert B

(defined in 10 CFR 100.3 as densely populated communities containing more than about 25,000 residents)

#### Insert C

For this purpose, the population center boundary is based on the corporate boundary of the city of Wilmington as identified in USCB GIS population data.

### Insert D

The town of Bridgeton, NJ, has an estimated 2007 population of 24,575, and therefore may be considered a population center per the 10 CFR 100.3 definition of "about 25,000 residents". The nearest boundary of Bridgeton is 15.5 mi. east of the new plant center point. All of the population center distances discussed in this paragraph are based on the corporate boundaries as identified in USCB GIS population data.

### insert E

The only segment that approaches the 25,000 criterion is the segment west of the PSEG Site from 5 to 10 miles. This segment includes the town of Middletown, DE, which also extends somewhat into the west-southwest sector between 5 and 10 miles and into both the west and west-southwest sectors beyond 10 miles. Middletown appears to be the only community within 10 miles of the Site that has the potential to reach "about 25,000 residents" within the lifetime of the new plant. Therefore, the potential future population and population boundaries of the Middletown area were examined in greater detail.

The Middletown Comprehensive Plan (Reference 2.1-17) reports a 2005 population estimate of "10,000 or more" and describes rapid population growth in recent years. Based on analysis of local residential permit activity and assumptions about the average household size, the Comprehensive Plan includes the projection that the population will range between 23,000 and 33,000 residents by the year 2020. Therefore, it appears likely that Middletown will reach a population of "about 25,000 residents" within the lifetime of the new plant. Middletown will then become the nearest population center to the PSEG Site.

Based on the corporate boundaries delineated in USCB GIS map date, the nearest boundary of Middletown is approximately 7.0 miles west of the new plant center point. This nearest boundary location is on the west side of State Route 1, a controlled-access divided highway that separates Middletown from areas farther east and nearer to the PSEG Site. The Middletown Comprehensive Plan indicates that there are no plans for the town to annex land or otherwise expand to the east of

State Route 1. Population growth east of State Route 1 will be controlled by the New Castle County Unified Development Code (Reference 2.1-18) and associated zoning districts. An analysis of the zoning districts indicates that allowable housing densities in the areas of New Castle County east of State Route 1 are significantly lower than the density in the town of Middletown. Therefore, population densities east of State Route 1 are expected to remain significantly below the density in the town of Middletown for the foreseeable future. This information indicates that the Middletown corporate boundary location on the west side of State Route 1 is the appropriate location to use in measuring the distance to the nearest future population center boundary. As stated above, this location is approximately 7.0 miles west of the new plant center point, which complies with the 10 CFR 100.21 siting requirement.

### Insert F

- 2.1-17 Institute for Public Administration, Town of Middletown Comprehensive Plan, adopted and certified November 2005
- 2.1-18 New Castle County Department of Land Use, Unified Development Code, http://www.nccde.org/czo/acc/, accessed on September 19, 2014

PSEG Letter ND-2011-0063, dated October 5, 2011

**ENCLOSURE 3** 

CD-ROM Containing SSAR Figure 2.1-21

A.



# PSEG Letter ND-2011-0063, dated October 5, 2011

## **ENCLOSURE 4**

# Summary of Regulatory Commitments

## ENCLOSURE 4

## SUMMARY OF REGULATORY COMMITMENTS

The following table identifies commitments made in this document. (Any other actions discussed in the submittal represent intended or planned actions. They are described to the NRC for the NRC's information and are not regulatory commitments.)

COMMITMENT	COMMITTED DATE	COMMITMENT TYPE		
		ONE-TIME ACTION (Yes/No)	Programmatic (Yes/No)	
PSEG will revise SSAR Subsection 2.1.3 to incorporate the changes in Enclosure 2 and revise Figure 2.1-21 in response to NRC RAI No. 32.	This revision will be included in the next update of the PSEG Site ESP application SSAR.	Yes	No	

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