UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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In re:	Docket Nos. 50-247LR and 50-286LR
License Renewal Application Submitted By	ASLB No. 07-858-03-LR-BD01
Entergy Indian Point 2, LLC, Entergy Indian Point 3, LLC, and Entergy Nuclear Operations, Inc.	DPR-26, DPR-64 August 28, 2009
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STATEMENT OF MATERIAL FACTS NOT IN DISPUTE

The Indian Point Nuclear Power Station

1. The Indian Point Nuclear Power Station (the "Indian Point Station") is located in the Village of Buchanan in the northwest corner of Westchester County on the eastern bank of the Hudson River. Draft Supplemental Environmental Impact Statement, Draft NUREG-1437, Supplement 38 ("DSEIS") at § 2.1, p. 2-1.

2. The Indian Point reactors and spent fuel pools are approximately 24 miles north of the New York City line, and approximately 37 miles north of Wall Street, in lower Manhattan. *Id.*

3. The station is approximately three miles southwest of Peekskill, with a population of 22,441; five miles northeast of Haverstraw, with a population of 33,811; 16 miles southeast of Newburgh, with a population of 31,400; 17 miles northwest of White Plains, with a population of 52,802 and approximately 18 miles southwest of Brewster, New York. It is also 23 miles northwest of Greenwich, Connecticut; 37 miles west of Bridgeport, Connecticut and 37-39 miles north northeast of Jersey City and Newark, New Jersey. *Id.*

4. Portions of four counties - Westchester, Rockland, Orange, and Putnam - fall within the inner 10-mile Emergency Planning Zone, and significant population centers in New York, Connecticut, and New Jersey lie within the 50 mile Emergency Planning Zone. The U.S. Census Bureau estimated that New York City, located approximately 24 miles south of plant, had a population of 8,214,426 in 2006. *Id.*

5. More than 17 million people live within 50 miles of the Indian Point power reactors and spent fuel pools. *See* DSEIS at Figure 2-1; p.2-3. Indian Point also has the highest surrounding population within 50 miles of any operating nuclear power plant in the Nation. April 17, 1973 Atomic Energy Commission Report Population Distribution Around Nuclear Power Plant Sites, Appendix B, Figures 2 & 4, PDR Fiche No. 8111120800.

6. The Indian Point Station is on a point of land in the Hudson River valley that protrudes into the Hudson River as the river bends west. DSEIS at § 2.2.5.1, p.2-33. The region surrounding the Indian Point site has undulating terrain with many peaks and valleys. DSEIS at § 2.1.

7. On the west side of the Hudson River one mile north of the station, is Dunderberg Mountain. *Id.* This mountain rises to a height of 1,086 feet above sea level at a distance of approximately 2.5 miles from the station. *Id.*

8. North of the Indian Point Station, the eastern bank of the river is formed by high grounds reaching an elevation of 800 feet; to the west across the river, the Timp Mountains reach an elevation of 844 feet. *Id.*

9. Releases from the station may come from near ground level sources or from stack vents with heights up to 334 feet and within 1-2 miles of high terrain features on the opposite

side of the Hudson River, such as Dunderberg and the Timp Mountains, that rise well above the facility and well above the top of the 122 meter meteorological tower located onsite. *See* Declaration of Dr. Bruce Egan, sworn to August 28, 2009 ("Egan Decl."), ¶ 32; DSEIS § 2.1.1, p.2-2.

10. The DSEIS relies on the MACCS2 computer code output to calculate the economic cost of a hypothetical severe accident at Indian Point. DSEIS at § 5.2.2, p. 5-2.

11. In order to carry out the MACCS2 analysis it is necessary to calculate the dispersion of airborne radiation following the hypothetical severe accident. United States Department of Energy Office of Environment, Safety and Health, MACCS2 Computer Code Application Guidance for Documented Safety Analysis: Final Report (June 2004) at 4-1 ("MACCS2 Guidance")(annexed to the Egan Declaration as Exhibit 10).

Atmospheric Dispersion Modeling

12. Atmospheric dispersion modeling is the field of predicting the fate and consequences of releases of contaminants into the atmosphere. *See* Egan Decl. at ¶ 18.

13. Dispersion models are routinely used for determining compliance with ambient air quality standards by state and federal agencies, for assessing the incremental changes in air quality levels associated with the permitting of new facilities and for health risk assessments for nuclear energy facilities. *Id.*

14. Dispersion models use meteorological and emission rate information as inputs to mathematical algorithms that simulate the transport and dispersion of air pollutants. *Id.*

15. Dispersion models estimate the ambient air concentrations, deposition rates of particles to ground surfaces at all places of interest and for different averaging times. Models

can include chemical or nuclear atmospheric transformation algorithms to estimate dosages to exposed populations. *Id.*

16. The precision required for the model to determine air dispersion of the pollutant of interest depends upon the precision required in the result. Egan Decl. at ¶ 19.

17. Where the purpose of the air dispersion model is to predict the actual exposure of individuals in the path of the pollutant plume in order to assign a monetary cost to the full extent of the potential health risk, and then to quantify in monetary terms the cost savings that can be achieved by mitigating that exposure, the air dispersion model must have a high degree of accuracy to avoid either understating or overstating the economic costs and benefits involved. Egan Decl. at ¶ 25.

18. The need for accuracy in the predictive model is particularly important where the number of individuals who could be exposed to the pollutant, the level of such exposures and the duration of such exposures is greatly impacted by the actual path the pollutant plume follows once it is released from the source. Egan Decl. at ¶ 26.

19. The need for accuracy in the predictive model is also particularly important where the economic cost of mitigation measures and the economic benefits of mitigation measurements are fairly close, such as within a factor of 2 of each other. Egan Decl. at ¶ 27.

20. MACCS2, as relied upon the DSEIS, relies on an air dispersion model to calculate the dispersion of airborne radiation following the hypothetical severe accident. MACCS2 Guidance, Egan Decl., Ex. 10.

The Air Dispersion Model Used at Indian Point (ATMOS) Was Inappropriate Given Indian Point's Complex Terrain

21. The model used by MACCS2 as applied to the Indian Point site and relied upon in the DSEIS is called ATMOS. *See* Answer Of Entergy Nuclear Operations, Inc. Opposing New York State Notice Of Intention To Participate and Petition to Intervene (Jan. 22, 2008), at 110; MACCS2 Guidance, Egan Decl., Ex. 10.

22. ATMOS is a steady-state straight line Gaussian plume model which assumes that any emissions from the Indian Point Station are imbedded in an air mass having a single wind speed that flows for each period of simulation in a single straight line direction. Egan Decl. at ¶ 35. The atmospheric stability classification is also assumed to be constant over that time period. *Id.* Thus each simulation will result in a prediction that the pollutants will theoretically travel in a straight line to infinity or to the limits of the computational domain, regardless of topographical features that might render such a trajectory impossible. *Id.*

23. The concentrations of contaminants within the plume are assumed to have a maximum value along the plume centerline and to fall off in a bell shaped, Gaussian distribution curve with distance away from the plume centerline. Egan Decl. at ¶ 35.

24. High terrain in the potential path of the plume introduces several complicating factors into dispersion analyses:

a. The presence of high terrain distorts and changes the directions of approaching winds as the flow cannot pass through the terrain.

b. The distortion of the flow direction materially changes the downwind destination of pollutant material emitted into the airflow and also, for elevated emissions, changes the proximity of contaminants to the ground surface increasing the ground level concentrations.

c. The presence of valley sidewalls together with radiational cooling will cause drainage flows that further distort air flow directions.

d. High terrain may degrade the reliability of a single meteorological station of being representative of the transport wind speed and direction needed by the model, especially for longer distance transport calculations, because wind directions measured near the surface will vary with location. The effect is most pronounced during lighter wind and stable atmospheric conditions that occur at night.

Egan Decl. at ¶¶ 20, 21, 23.

25. For the Indian Point site, from a meteorological air flow perspective, the presence of the river, nearby terrain features and non-homogeneous ground surface features all affect the overall air flow patterns, which in turn affect the rates of vertical and horizontal mixing of any pollutants released from the plant. Egan Decl. at ¶ 38.

26. For the Indian Point site, the presence of high terrain features that rise above the height of the meteorological towers at the Indian Point station means that the wind speeds and directions measured on the towers are unlikely to be representative of the larger scale flow patterns that carry contaminants from the plant to the surrounding areas. Egan Decl. at ¶ 39.

27. For the Indian Point site, in the case of terrain features across the river, the flow will either turn and pass along the side or rise over the feature depending upon atmospheric stability conditions. Thus, air pollution imbedded in the air flow will not take the straight line trajectory across the valley that would be predicted by ATMOS using data from the Indian Point meteorological tower. *Id.*

28. The Indian Point Station is located in a turning part of the Hudson River. See United States Department of the Interior Geological Survey maps, annexed to the Egan Declaration at Exhibit 3; *see also* Egan Decl. ¶ 34.

29. The high terrain of Dunderberg Mountain to the west distorts and turns winds which might be measured to be from the east at the anemometer at the primary tower location. Egan Decl. ¶ 34.

30. Under overall light wind conditions, even though the Hudson is still tidal at the Indian Point location, the net average downstream movement of the river water and the effects of drainage induced airflows will favor movement of air above and near the river surface to be down river. *Id.*

31. For the Indian Point site, under the more stable atmospheric conditions associated with greater ground level impacts, the plume is likely to be turned down the overall river valley, as it cannot pass through the terrain. Egan Decl. ¶ 39.

32. A second effect of mountainous terrain occurs for sources, like Indian Point, located in river valleys because of the presence of the valley side walls on creating drainage flows. Egan Decl. ¶ 40.

33. For the Indian Point site, at night when the earth's surface cools by radiation, the air in contact with the surface cools and being heavier than other air at that elevation, flows, under the forces of gravity, down the valley slopes toward the base of the valley. In the absence of other influences, the pooling of the heavier air at the low point of the valley cross section, causes that air to then tend to flow down river following the valley contours. *Id.*

34. For the Indian Point site, the presence of high terrain causes increased turbulence generated by the air having to flow close to the surface of terrain features and the mixing also associated with the thermal flows generated by the radiational heating and cooling. Egan Decl. at ¶¶ 39, 40.

35. ATMOS, as implemented in the DSEIS SAMA analysis, did not account for the variations created by the Indian Point terrain as set forth in paragraphs 23-33, *supra*. Egan Decl. ¶ 37.

The Evolution of Air Dispersion Modeling

36. For over three decades atmospheric scientists and meteorologists have been identifying problems in the use of models similar to ATMOS for complex terrain settings like Indian Point. *See* Steven R. Hanna, Gary A. Briggs, Rayford P. Hosker, Jr., National Oceanic and Atmospheric Administration, Atmospheric Turbulence and Diffusion Laboratory, *Handbook on Atmospheric Diffusion* (1982) (excerpt annexed to the Egan Declaration as Exhibit 11); Egan Dec. ¶ 59.

37. Different air dispersion models can be used depending upon the application and regulatory requirements. For example, EPA recommends simple screening models (EPA, SCREEN3, or CT SCREEN) that are structured to provide conservative concentration estimates for simple pass or fail determinations. Egan Decl. ¶ 24. If the estimates fail the test, *i.e.*, if the concentrations are too high for regulatory purposes, the modeler would have an option of using a more refined model and more appropriate meteorological input data in further analyses. *Id.*

38. Even these screening models must be appropriate for the terrain in which the source is located. SCREEN3 is appropriate for sources located in flat terrain. CTSCREEN is appropriate for complex terrain. *Id.*

39. Where the goal is to ascertain the total amount of a pollutant to which a population would be exposed in the event of a release and the population density varies depending upon the direction and distance the plume takes following the release, screening technologies would be

inappropriate because they could not provide a reliable upper limit exposure value without artificially assuming that all the released pollution reached the areas of highest population. Egan Decl. ¶ 24.

40. Generally, the selection of a dispersion model depends critically upon the complexity of the meteorology and terrain influencing a release from a source and at what downwind distances the concentration projections are needed. In flat terrain settings, homogeneous surface characteristics (*e.g.*, surface roughness, albedo and Bowen ratio) and relatively evenly distributed populations of interest the simple straight-line Gaussian plume model algorithm is often appropriate. Egan Decl. ¶ 28.

41. The Industrial Source Complex (ISC3ST) model (a Gaussian plume model) was used for such permitting applications by EPA until it was replaced in 2005 by AERMOD. United States Environmental Protection Agency (2005) *Appendix W to Part 51 – Guideline on Air Quality Models*, 40 CFR Ch. I (11-9-05 Edition) at 68218-68261; Egan Decl. ¶ 28.

42. The ISC3ST model was not deemed suitable for calculating concentrations on terrain elevations above the height of the source. This limitation was the reason that EPA sought the development of models appropriate for complex terrain settings. Egan Decl. ¶ 28.

43. After the CTMD project, sources located in complex terrain (defined by EPA as terrain that exceeded the height of the release) were required to use complex terrain screening models or refined models such as CTDM-PLUS. *See* 40 C.F.R. Part 51, Appendix W: Guideline on Air Quality Models at 18453; Egan Decl. ¶ 28.

44. The adoption of AERMOD as a refined model for both simple (flat) and complex terrain settings obviated the need for separate refined dispersion models. United States

Environmental Protection Agency (2005) *Appendix W to Part 51 – Guideline on Air Quality Models*, 40 C.F.R. Ch. I (Nov. 9, 2005) (70 Fed.Reg. 68218 (Nov. 9, 2005)); 40 C.F.R. Part 51, Appendix W: Guideline on Air Quality Models; Egan Decl. ¶ 28.

45. AERMOD was developed for applications within 50 Km (about 31 Miles) of a source. Egan Decl. ¶ 29.

46. AERMOD was developed after more than a decade of efforts of many researchers to incorporate the greatly advanced understanding of boundary layer meteorology into the dispersion algorithms that were available when the Gaussian plume model was parameterized by Pasquill and Gifford. Egan Decl. ¶ 29; *see also* Egan Decl., Ex. 2 (Declaration of Dr. Bruce Egan in Support of the State of New York's Petition to Intervene (Nov. 27, 2007), at ¶¶ 22 - 26 (discussing boundary layer meteorology).

47. The AERMOD model was subjected to extensive statistical model evaluations in a variety of terrain settings. Egan Decl. ¶ 29. These efforts showed that AERMOD represented a major improvement over the ISC3ST and other models. *Id.*

48. The CALPUFF model is appropriate for simulating transport and dispersion in wind fields that change with space and time. Egan Decl. ¶ 30. It is often coupled to CALMET, a model that computes the needed wind and dispersion fields from meteorological data. *Id.*

49. CALPUFF may also be coupled to a full mesoscale meteorological flow model such as MM5. *Id.* CALPUFF also has benefited from advances in the parameterization of wind fields and turbulent dispersion over the past four decades. *Id.*

50. CALPUFF is routinely used in both simple and complex terrain settings to estimate ambient air concentrations at distances beyond the recommended 50 kilometer upper limit of

AERMOD. *Id.* The air flow fields used by CALPUFF generally use data from more than one meteorological station in order to estimate concentrations at large distances from a source. *Id.*

The NRC, Federal Agencies, and the Scientific Community Acknowledge That ATMOS is Inappropriate for Complex Terrain

51. The NRC, in Part 2 of a 2009 Presentation to the National Radiological Emergency Planning Conference ("NRC 2009 Presentation"), concluded that straight-line Gaussian plume models cannot accurately predict dispersion in a complex terrain such as the Indian Point site and are therefore scientifically defective for that purpose. *See* Stephen F. LaVie, Sr. Emergency Preparedness Specialist, United States Nuclear Regulatory Commission, Power Point Presentation: *What's in the Black Box Known as Emergency Dose Assessment?* Prepared for the 2009 National Radiological Emergency Planning Conference (relevant excerpt annexed to the Egan Declaration as Exhibit 3; the full presentation is available at ML091050226, ML091050257, and ML091050269 (page references used here refer to the portion attached, Part 2, ML091050257)).

52. The NRC in its 2009 Presentation, states that the "most limiting aspect" of the basic Gaussian Model, is its "inability to evaluate spatial and temporal differences in model inputs." NRC 2009 Presentation, Slide 28. Because ATMOS is non-spatial, it cannot account for the effect of terrain on the trajectory of the plume - that is, the plume is assumed to travel in a straight line regardless of the surrounding terrain. Therefore, it cannot, for example, "'curve' a plume around mountains or follow a river valley." NRC 2009 Presentation, Slide 33.

53. The NRC 2009 Presentation also acknowledges the "gravity sink" phenomenon that could cause the plume to travel down river towards New York City from a valley site such as

Indian Point. Egan Decl. ¶ 45. As Slide 46 explains, the air in a valley is not heated directly by the sun but by heat convection from the earth. *Id.*; NRC 2009 Presentation, Slide 46. At night the earth cools and because higher elevations cool faster, cool air flows toward warmer air in the valley. This flow is described by the NRC as "gravity drainage," and in the absence of other meteorological influences (such as high wind speeds), the drainage will tend to flow down river. *Id.*

54. In its introduction to a discussion of advanced air dispersion models, the NRC 2009 Presentation summed up the Gaussian model's inability to project dispersion in a complex terrain:

> In many Gaussian models, terrain height is addressed only in determining the effective plume height.
>
> The impact of terrain on plume transport is not addressed.
>
> Straight-line models can not "curve" a plume around mountains or follow a river valley.

NRC 2009 Presentation, Slide 33.

55. The NRC 2009 Presentation discussed the methods of more advanced models that can address terrain impact on plume transport, including models in which emissions from a source are released as a series of puffs, each of which can be carried separately by the wind. NRC 2009 Presentation Slides 35, 36.

56. Lawrence Livermore National Laboratory conducted a study apparently intended to compare the results of using a Gaussian, a two-dimensional and a three-dimensional model. *See Comparison of Average Transport and Dispersion Among a Gaussian, A Two-Dimensional and a Three-Dimensional Model*, Lawrence Livermore National Laboratory (Oct. 2004) ("Livermore

Report"), annexed to the Egan Declaration at Exhibit 5.

57. The study did not compare the results for a discrete event such as a postulated severe accident. *Id.*

58. The study did not compare the computer generated results with actual measurements to see how close any of the models came to predicting reality. *Id.*

59. The study was conducted in terrain that was fairly homogenous with little vertical variations and no major valleys, mountains or rivers. *Id.*

60. The study found the results of the ATMOS model when compared to the most sophisticated of the models used - the LODI model - produced average differences of as much as a factor of two: "All of the arc average and the great majority of the arc-sector average exposures and depositions are within a factor of two when comparing MACCS2 to the state-of-the-art model, LODI." *Id.* at 72.

61. The authors included a strong caveat cautioning about the use of simple straight line Gaussian models in complex terrain. *See id.* at 72 ("this study was performed in an area with smooth or favorable terrain and persistent winds although with structure in the form of low-level nocturnal jets and severe storms. In regions with complex terrain, particularly if the surface wind direction changes with height, caution should be used.")

62. In March 1996, the NRC issued RTM-96, Response Technical Manual, which contains "simple methods for estimating the possible consequences of different kinds of radiological accidents." T. McKenna, J. Trefethen, K. Gant (ORNL), J. Jolicoeur, G. Kuzo, G. Athey, United States Nuclear Regulatory Commission, Incident Response Division, Office for Analysis and Evaluation of Operational Data, RTM-96: Response Technical Manual

(NUREG/BR-0150, Vol. 1, Rev. 4) (Mar. 1996)(annexed to the Egan Declaration as Exhibit 7). In the glossary of that document, the NRC's definition of "Gaussian plume dispersion model" states that such models have important limitations, including the inability to "deal well with complex terrain." *Id.*

63. In December 2005, as part of a cooperative program between the governments of United States and Russia to improve the safety of nuclear power plants designed and built by the former Soviet Union, the NRC issued a Procedures Guide for a Probabilistic Risk Assessment, related to a Russian Nuclear Power Station. United States Nuclear Regulatory Commission/ Brookhaven National Laboratory, NUREG/CR-6572, Rev. 1, Kalinin VVER-1000 Nuclear Power Station Unit 1 PRA: Procedure Guides for a Probabilistic Risk Assessment (Dec. 2005) (ML060450618). The Guide, prepared by the Brookhaven National Laboratory and NRC staff, explained that atmospheric transport of released material is carried out assuming Gaussian plume dispersion, which is "generally valid for flat terrain." *Id.* at 3-114. However, the Guide contained the caveat that in "specific cases of plant location, such as, for example, a mountainous area or a valley, more detailed dispersion models may have to be considered." *Id.*; Egan Decl. at ¶ 55.

64. The U.S. Department of Energy ("DOE") has also acknowledged problems with the ATMOS simple straight line Gaussian plume model in the MACCS2 Code when used in complex terrain. For example, the Radiation Safety Information Computational Center ("RSICC") of DOE's Oak Ridge National Laboratory has a summary description of the MACCS2 Code in its Code Package CCC-652. *See* RSICC Code Package CCC-652, *MACCS2 Ver. 1.13.1: MELCOR Accident Consequence Code System for the Calculation of the Health and*

Economic Consequences of Accidental Atmospheric Radiological Releases (Abstract dated May 1997, revised June 1998, March 2004, June 2005)(annexed to the Egan Declaration as Exhibit 9). Under the heading "Restrictions or Limitations," the RSICC unequivocally states that "the atmospheric model included in the code does not model the impact of terrain effects on atmospheric dispersion." *Id.* (emphasis added).

65. In June 2004, the U.S. Department of Energy's Office of Environment, Safety and Health issued a final report entitled MACCS2 Computer Code, Application Guidance for Documented Safety Analysis. United States Department of Energy Office of Environment, Safety and Health, *MACCS2 Computer Code Application Guidance for Documented Safety Analysis: Final Report* (June 2004)(annexed to the Egan Declaration as Exhibit 10). In Table 2-1, Summary Description of MACCS2 Code Software, under the heading Restrictions or Limitations, the Guidance also states "the atmospheric model included in the Code does not model the impact of terrain effects on atmospheric dispersion nor can it accept more than one weather spatial location." *Id.* at 2-5. Table 6-1, entitled "Limitations of Gaussian Plume Model in MACCS2 and MACCS," describes the "terrain sensitivity" of the Gaussian plume model as "flat earth" to "gently rolling" and instructs that "complicated terrain over the region of transport may require Lagrangian particle or other models." *Id.* at 6-1.

66. More recently, the NRC revised their Regulatory Guide 1.23, Meteorological Monitoring Programs for Nuclear Power Plants. *See* United States Regulatory Commission, Regulatory Guide 1.23, Meterological Monitoring Plan for Nuclear Power Plants (Rev. 1, Mar. 2007)(annexed to the Egan Declaration as Exhibit 13). Regulatory Guide 1.23 recognizes the

important relationship between meteorological measurements and atmospheric dispersion modeling. *See id.*, Introduction at 3:

> Thus, each nuclear power plant has multiple needs for an onsite program to measure and document basic meteorological information. These data may be used to develop atmospheric transport and diffusion parameters that with *appropriate* atmospheric dispersion models, may be used to estimate potential radiation doses to the public resulting from actual routine or accidental releases of radioactive materials to the atmosphere or to evaluate the potential dose to the public and control room as a result of hypothetical reactor accidents....This regulatory guide describes a suitable onsite program to provide meteorological data to estimate these impacts."

(emphasis added).

67. Regulatory Guide 1.23 also states that the program should be capable of providing the meteorological information needed to make several assessments including: "a realistic assessment by both the applicant and the regulatory staff of the potential dispersion of radioactive materials from, and the radiological consequences of, a spectrum of accidents to aid in evaluating the environmental risk posed by a nuclear power plant in accordance with Subpart A to 10 CFR Part 51." *Id.* at 5. On page 11, the section entitled *Special Considerations for Complex Terrain Sites* states that the program "should provide an adequate basis for atmospheric transport and diffusion estimates ... [within 8 kilometers (5 miles) in each downwind sector]" (brackets in original) and mentions special "complex flow patterns in nonuniform terrain" and "circulation for a hill-valley complex or a site near a large body of water." *Id.* at 11. The Regulatory Guide also states that "[t]he plant's operational meteorological monitoring program should provide an adequate basis for atmospheric transport estimates within the plume exposure emergency planning zone [i.e., within approximately 16 kilometers (10 miles)]." *Id.*

68. The inability of a simple Gaussian plume model to accurately predict air transport

and dispersion in complex terrains is discussed in a textbook for a college-level introductory course in environmental science and engineering. In listing the assumptions that are made to develop a simple straight line Gaussian plume model, the textbook warns that:

> The equation is to be used over relatively flat, homogeneous terrain. It should not be used routinely in coastal or mountainous areas, in any area where building profiles are highly irregular, or where the plume travels over warm bare soil and then over colder snow or ice-covered surfaces.

ENVIRONMENTAL SCIENCE AND ENGINEERING, J. Glynn Henry & Gary W. Heinke (Prentice-Hall 1989) at 528.

Respectfully submitted,

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