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Duke Power
2700 Homestead Road
Chapel Hill, NC 27516

Mayor Rosemary Waldorf
Town of Chapel Hill
306 North Columbia St.
Chapel Hill, NC 27516

September 20, 2001

Dear Mayor Waldorf,

We have reviewed Section 5.11 - Lighting Standards of the second draft of the Town's proposed development ordinance. Of concern to us is the reference to .3 foot-candles at the property line, inclusion of street lighting in some sections where not applicable, the perceived absence of safety in the consideration of proposed lighting levels, the perceived absence of nationally approved lighting levels for certain applications, and the omission of certified lighting specialists in lighting plan approval. We offer the following questions and some proposed changes.

5.11 – Proposed new reading: Purpose: This section provides standards for lighting which shall be designed to minimize spillover of light onto adjacent property, glare that could impair vision, and/or other conditions that deteriorate normally accepted qualities and uses of adjacent property. (removed “is” from phrase “which is shall be designed” in first sentence)

5.11.1 – With reference to “in buildings”, does the town intend to regulate the lighting within buildings? If so, does this conflict with state or national approved/recommended lighting levels for building interiors? Also, we strongly suggest that the reference to roadways be stricken. If the Town retains the reference to roadways, MOST of the lights currently in place will exceed the maximum light levels required at property lines (.3 foot-candles as proposed in Section 5.11.4), therefore there will be significantly reduced roadway lighting in Chapel Hill. Proposed new reading: The provisions of this section apply to any outside lighting used around buildings, recreation areas, parking areas, walkways, drives, or signs.

5.11.2 – As proposed, the Town needs to be aware that prohibited will be all flood lights (unless used for sports lighting), most wall packs on buildings, all NEMA head fixtures, drop lens COBRA head fixtures for street lighting, and all other semi-cutoff sources taller than 15 feet. Again, the Town is severely limiting street lighting applications which they have requested from us in the past. We recommend coordination of the wording of this section between planning/zoning and the street lighting section of the public works department.

5.11.4 – IESNA (The Illuminating Engineering Society of North America) has published numerous documents that recommend lighting levels for various applications. These light levels

are based on nationally accepted research for viewing a task, for safety, and for security. Many of these documents have been adopted as ANSI (American National Standards Institute) standards, and have been defended in the court systems. The Town may be exposing itself to legal liability if challenged as not providing safe lighting levels for its citizens or visitors.

For instance, DG-5 is an IESNA Document entitled "Recommended Lighting for Walkways and Class 1 Bikeways". Table 2 recommends 2.0 foot-candles minimum maintained average vertical for special conditions (security). Since many walkways in Chapel Hill abut adjoining property, the spillover onto these properties would exceed 0.3 foot-candles. The need to safely light walkways used by thousands of students and pedestrians would seem to far outweigh the need to limit the spillover light to 0.3 foot-candles. The potential for lawsuits due to lighting constraints could possibly run into the hundreds of thousands of dollars, if not more. We also recommend the Town consult IESNA RP-8 for Roadway lighting design lighting levels, RP-20 for parking lot and parking deck lighting levels, and other IESNA documents that speak to specific lighting applications. The State of North Carolina may also have codes specifying light levels for specific applications, however IESNA documents should be consulted for minimum values.

Please use caution in setting minimum values. Chapel Hill has a very high concentration of foot and vehicular traffic and sufficient light levels have to be provided to permit safe passage of both pedestrians and vehicles. Lights cannot be cut off or shielded in such fashion that they provide high enough levels for the streets and sidewalks, and no light immediately behind the sidewalks.

Additional questions include: Is this maximum lighting level at the property line determined by initial reading or maintained reading (taken after the lights have been on for 100 hours)? Is the measure an average of several points or the maximum reading found? At what point(s) or how far from the property line should the measures be taken? Is this measure the same for residential and business? In the case of two adjacent property owners, may one prevent the other from lighting their property? In the case of two adjacent properties owned by the same party, will the proposed spillover limitations be enforced even though both parcels have a common owner? In the case of adjacent property owners wishing to share the illumination of a light among their properties, will the proposed spillover limitations be enforced and prevent their wishes?

5.11.5 – Is it possible (and legally defensible) to ensure the security of property and the safety of persons as desired given the constraints proposed above. To what recognized standard is the security of property and the safety of persons determined? Our lack of familiarity with the Town's Design Manual makes it difficult to base an opinion otherwise. We would like the opportunity to review the Design Manual before making additional statements regarding these proposed lighting standards.

5.11.6 – We question the ability to meet this requirement in all cases. Does this apply to a resident who wants a safe light installed in their yard? How close are the grid points? Is this done through lighting software or actual field verifications? Simulation through computer software is virtually impossible without IES formatted curves for all lights in the area. The research for

this information is costly and will not yield accurate results. Night-time survey work is generally billed at time-and-a-half after hour rates and is normally \$100 to \$150 per hour. We believe this is a burdensome and unnecessary expense, as this information is not needed. We question the need for required pre-development and post-development light levels. We have not seen such a requirement for the provision of pre-development light levels in any other ordinance that we have seen.

To meet the Town's desired objectives of safety, security, and reduced spillover and glare, we recommend the establishment of an obtainable light level on adjacent off site property as can be found in IESNA guidelines.

Finally, we are of the opinion the need to have a sealed PE lighting plan is too limiting. We have Duke Power Company employees who are Lighting Certified (LC) by NCQLP (National Council on Qualifications for the Lighting Professions). LC's are recognized as having the highest degree of lighting expertise by IESNA, NEMA, California Energy Commission, New York State Energy Research, US Department of Energy, EPA, and US General Services Administration, along with the 10 top lighting professional groups in the United States. While some P.E.'s are qualified to submit plans, every single LC should be qualified to submit plans – having demonstrated the professional skills and passing the stringent exams necessary to perform the work. Furthermore, all LC's must complete 36 hours of lighting education every 3 years, while P.E.'s can get their professional continuing education in any area and none has to be in lighting.

We ask that you give consideration to the questions, concerns, and recommendations offered in this response to the latest draft of lighting standards. We stand ready to work with the Town on developing lighting standards that provide safety, security, reduced spillover and glare, and at a reasonable cost, while at the same time limiting the potential legal liability of the Town. Please contact us if you have questions or concerns.

Sincerely,



Scott T. Gardner
District Manager

Copy: Cal Horton
Aaron Nelson