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TO: Community Development Committee

FROM: Planning & Development Services Staff *[Signature]* **DATE:** Tuesday January 29, 2014

SUBJECT: Community Development Committee Item: Evaluation of the Lighting Ordinance.

This memo addresses the referral from the Community Development Committee concerning evaluation of the current lighting ordinance. The CDC met on October 8, 2013 and asked staff to address the following:

1. Consider stake-holder input per Mr. Fleming's and Mr. McGuire's suggestions, including GRU.
2. Consider ordinance amendments to increase flexibility in lighting installation
3. Report back to the committee in January about suggested amendments to the ordinance.

1. Stake-holder Input

On November 13, 2013 staff received an email from the local stakeholders group with information concerning a meeting held to evaluate the current lighting ordinance. The group's recommendation is to adopt the Illuminating Engineering Society Model Lighting Ordinance (IES MLO) in its original form with minimal modifications; the recommendation also included comments on specific sections of the lighting ordinance.

Staff met with the local group on November 25, 2013 and again on December 9, 2013 and discussed their comments and concerns about the ordinance. We agreed that the purpose and intent of the ordinance is the main factor of concern and examined issues that would enable applicants and reviewers to use the ordinance in a manner that would benefit neighborhoods where developments are located. The following is a list of specific issues. (See Attachment "A" Comments from Stakeholders).

- a. *The need to facilitate a performance based review for some of the lighting regulations is a key priority for stakeholders. They believe that instead of placing restrictions on the fixtures such as full cut-off and mounting heights, the regulations should establish measurable performance values related to light trespass, light pollution, glare, up-light, etc. The recommendation is to remove restrictions on criteria such as pole heights and full cut-off fixtures, replacing those requirements with specific indices consistent with the intent of the ordinance.*
- b. *Concerns were expressed about the level of lighting details required during development plan review. The claim is that the level of detail is burdensome and requires significant financial investments too early in the process. The request is to provide detailed specifications during the building permit phase.*
- c. *The requirement to provide average lighting intensities without specifying the area over which the average should be calculated is another issue of concern.*
- d. *Concerns were raised about the use of LED fixtures to address energy efficiency. Stakeholders recommend that a more definitive approach such as a specific numeric standard should be required to determine energy efficiency. The recommendation is to replace the current language with a numeric standard such as 80 lumens per watt.*
- e. *It is recommended that the waiver provision be maintained but with some clarifying modifications.*

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- f. *The 15-foot limit on pole heights adjacent to residential areas is of concern to stakeholders. The preferred option is to address the concerns of light trespass, glare incident onto adjacent property and night sky pollutions through performance indices.*
- g. *Stakeholders also expressed concerns about the need to clarify some of the existing definitions and to add others.*
- h. *Lighting levels at entrance and exterior of buildings are other areas of concern to stakeholders. The concern is to ensure that the 5fc requirement of the local ordinance is consistent with levels required by State and Federal agencies.*
- i. *The group is also concerned about canopy lighting relative to CPTED principles and whether the ordinance would allow fixtures such as porch and ceiling fan lighting.*
- j. *Stakeholders wanted to make sure that the ordinance facilitates lighting needs for special districts and unique designs which would be consistent with areas such as University Heights and the Historic Districts.*
- k. *Stakeholders noted that the submittal requirements demand additional coordination with electrical and design teams. This effort leads to additional fees, delays and additional review time.*

2. Concerns from GRU

On January 2, 2014 staff met with GRU to discuss the current lighting ordinance. GRU is concerned that the current ordinance limits its ability to continue providing rental site lighting to developments located within the City. GRU expressed concerns about the following: (See Attachment "B" Comments from GRU).

- a. Sec. 344 (d) (1) (d) pertaining to the use of luminaires which are energy and resource efficient as high performance LED lighting.

GRU requests that the language be changed to include High Intensity Discharge (HID) luminaires in addition to LED as acceptable light sources.

- b. Sec. 344 (d) (1) (e) pertaining to automatically extinguish all outdoor lighting when sufficient daylight is available.

GRU requests that the language be modified because photoelectric controls are used widely to extinguish outdoor lighting.

- c. Sec. 344 (e) (4) (f) pertaining to automatically extinguished luminaires no later than one hour after the close of business or facility operation.

GRU suggests that the language be modified because photoelectric controls by their nature are made to turn on at dusk and off at dawn. The requirement to turn lights on and off or be dimmed at specific times will require some form of energy management system.

- d. Sec. 344 (d) (2) which limits the height of poles to 30 feet; its current practice is to install poles at heights greater than 30 feet in some situations.
- e. Sec. 344 (d) (2) (b) (3) which limits the height of poles to 15 feet when located within 75 feet of property zoned residential

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GRU requests that the language for both “d.” and “e.” above be modified to focus on adherence to specified glare and light trespass limits and not to artificial restrictions in lighting system design/options.

3. Staff’s Response

The information gained from the outreach as outlined above indicates that the bulk of the issues can be accommodated through some simple amendments to the existing code as opposed to an adoption of an entirely new methodology of the Model Lighting Ordinance (MLO). The MLO is a performance based approach with a strong basis in the concept of “Lighting Zones” and the “Backlight, Up-light, Glare (BUG) ratings. It is relatively new, used in a limited number of cities, has not been thoroughly tested and questions have been raised about the effectiveness of implementing lighting zones. Establishing those zones will require a tremendous amount of work, resources, time and budget allocation if it is to be realistic and reflective of the values of the Gainesville community. As such, staff supports amendments a, b, c, d, e, g, h, i and j listed above as proposed by stakeholders. Item “f”, pertaining to the limitation on pole heights within 75 feet of residential development is important in preserving the landscape and integrity of those areas and as such is not supported by staff. That regulation should be maintained but opportunities to clarify and refine the language will be explored with any code revision. Item “k” addresses the submittal requirements which are essential in facilitating the review process and should be maintained. As the ordinance undergoes revisions, the submittal requirements will be examined in terms of the value and relevance of the each requirement.

Staff also supports the changes proposed by GRU listed as Items a, b, c and d. Item “e” proposed by GRU is similar to Item “f” proposed by stakeholders and is not supported by staff due to the reasons stated above.

4. Recommendation

Staff recommends amendments to the current ordinance to address the following areas:

1. Amend the ordinance to address Items a, b, c, d, e, g, h, i, and j as proposed by stakeholders.
2. Amend the ordinance to address Items a, b, c, and d as proposed by GRU.
3. Create a section that addresses energy efficiency and security lighting consistent with CPTED principles.
4. Revise the waiver provision to create greater flexibility and to clarify the intent and use of the provision.
5. Modify the current development review process to include staff from GRU’s Electrical Department (lighting professionals) who would participate in the review of all developments that include a lighting plan.

Attachment "A"

STAKEHOLDERS REVIEW CITY OF GAINESVILLE LIGHTING ORDINANCE

November 25, 2013

- 1) **Recommendation that the IES MLO be adopted in its original form or with minimal modifications.**
To keep methodology sound, modifications should only be made to the values in the tables, and in the number and types of exemptions. Link to the MLO with User Guide
http://www.ies.org/PDF/MLO/MLO_FINAL_June2011.pdf This will be an excellent reference when reviewing the responses below.

- 2) **Definitions.** Suggestion to rework definitions provided in Sec. 30-23(c). Definitions to utilize industry standard language/terms, provide metrics, and be as specific as possible.
 - a) 'Canopy'
 - i) *Issue:* Current definition includes both pedestrian and vehicular canopies. Higher lighting levels should be allowed for vehicular canopies due to safety concerns.
 - ii) *Suggestion:* Canopy is well defined in the IES MLO and lighting under canopies is further clarified by zone in the same document. See Table "E" on pages 30 & 31 of MLO's Performance Method for Additional Initial Lumen Allowances.

 - b) 'Full Cut Off'
 - i) *Issue:* Definition is dated and could be defined better.
 - ii) *Suggestion:* Use industry standard terms as provided by the Illuminating Engineering Society's (IES) *TM-15 Luminaire Classification System for Outdoor Luminaires*, which define lighting components through 'BUG' ratings; backlight (B rating), up-light (U rating), and glare (G rating). Definition and explanation of BUG ratings can be found in the IES MLO user's guide on page 27. Clarification regarding what "U" rating is required and where it is necessary is outlined in the IES MLO by zone and outlined in table C-2 on page 28 of the IES MLO. Modify table if necessary to meet the needs of the local community.

 - c) 'Glare'
 - i) *Issue:* Need for industry standard terms.
 - ii) *Suggestion:* Use BUG rating terminology as found in the IES MLO User's Guide on page 27. Clarification regarding what "G" rating is required and where it is necessary is covered in the IES MLO by zone and illustrated in table C-3 on page 28. Modify table if necessary to meet the needs of the local community.

 - d) 'Shielded'
 - i) *Issue:* Definition does not adequately relate to all types of fixtures and/or applications.
 - ii) *Suggestion:* Provide definition that uses BUG rating metrics. When the IES MLO is properly applied the use of adjustable fixtures is primarily limited to low lumen output landscape

lighting. Please refer to IES MLO Table “G” on page 33 for Residential Lighting Limits For “Unshielded Exemptions”, and page 14 - 3(a) for “Ornamental parking lighting exemption” By Special Permit Only, as well as Tables “C-2 & C-3” on page 28. All BUG Ratings need to be calculated with all shielding devices installed. Field modifications should not be allowed.

e) ‘Screen’

- i) *Issue:* Definition not provided.
- ii) *Suggestion:* Define what elements beyond a fixture shield could be used for light screening. Define metrics for hardscape or landscape* elements. (*See discussion regarding landscape below, C. 2.)

f) ‘Outdoor’ or ‘Exterior’

- i) *Issue:* Definition for what is considered as exterior or outdoor lighting is not provided.
- ii) *Suggestion:* Outdoor Lighting is defined in the IES MLO on page 39. Proper application of the IES MLO provides lumen allowances based on Method by Zone. Guidance can be found in the IES MLO Table “B” on page 24-25 and table “E” on page 29-31 categorize each area and determine the allowable lumens including Additional Lighting Allowance.

g) ‘Nature Park’

- i) *Issue:* Definition is not provided but term is used in Sec. 30-344(d)(3)(b)(2) Nature Parks and Sec. 30-344(e)(2) Nature Parks.
- ii) *Suggestion:* Provide reference to existing code for definition. Perhaps reference Sec. 18-16, Definition of Parks and Sec. 18-18, Listing of city parks, (b) Nature parks, centers and conservation areas. The IES MLO zonal method addresses nature parks in LZ0. See IES MLO page 5.

3) **Application.**

- a) *Issue:* Concern with ‘one code fits all applications’ approach.
- b) *Suggestion:* Use instead the IES MLO or a modified version of the IES MLO with a ‘lighting zones’ approach. Define lighting zones. Use zones to define thresholds/metrics and criteria for each zone using BUG ratings, wattage, etc. Ensure zone definitions and criteria relate to and/or are not in conflict with LEED criteria. The IES MLO provides sound methodology with easily modifiable tables that allow for a customized local approach.

4) **Specific issues.**

- a) Light overthrow, Sec. 30-344(d)(1)(b) Luminaire design and operation, non-horizontal surfaces
 - i) *Issue:* “...luminaires shall be... installed and aimed so as to not project output past the object being illuminated.” Output will pass the object in some manner.
 - ii) *Suggestion:* Define metric for output beyond an object, such as number of foot-candles a specific number of feet beyond and around the object. The IES MLO addresses this in the Performance Method Option “B”. Limitation of 15% of total site lumens measure at 33’ above the tallest luminaire. This allows for light overthrow, and provides a simple means for a locally customizable approach by modifying the percentage.

- b) Landscape used for light screening, Sec. 30-344(d)(1)(f) Luminaire design and operation, vegetation and landscaping
- i) *Issue:* “Where landscaping is used for light screening, it shall be in addition to the applicable landscaping requirements listed in... Land Development Code. ...The Technical Review Committee shall determine whether existing vegetation is adequate to meet required screening...” Concern with additional space and cost implications of requiring additional landscape if code-required landscape provides screening. Concern with lack of metrics for defining adequate screening. Agreed
 - ii) *Suggestion:* As a living and dynamic site element, landscape should not be used to ensure light screening. The industry has more reliable methods of preventing light trespass, including shields, fixture types, etc. Suggestion to remove section on vegetation and landscape as a screen. The IES MLO somewhat address this on page 17 2(b)-2 if the IES MLO is adopted “objects’ will need to be refined to eliminate vegetation.
- c) Light levels at stairs, viewing positions, etc., Sec. 30-344(e)(3) Building exteriors
- i) *Issue:* Concern with requirement of five foot-candles maximum at exterior areas where 10 foot-candles is typically required, such as at stairs, ATM’s, and other critical viewing positions
 - ii) *Suggestion:* Florida Energy Code Table 505.6.2(2) for exterior stairways and ATM’s. Safety / Security must supersede local ordinance. Life Safety “101” 7.8.1.3 dictates certain required levels. The IES MLO address most of these concerns in the methods described therein. Table “D” on page 29 and table “E” on page 29-31 add “Additional Initial Luminaire Lumen Allowances” for these circumstances. If there concerns beyond what is listed this would be the appropriate place to add them.
- d) Parking lots, Sec. 30-344(e)(4) Parking Lots
- i) *Issue:* Requirement limiting pole heights to 15 feet will lead to a significant increase in poles required on a given project, which will eliminate trees, parking, amenity areas, etc. Concern with ability to predict tree/light conflict at tree’s maturity.
 - ii) *Suggestion:* Define light levels through BUG rating versus pole height. Refer to Ashton Lane 2 parking lot lights at a 30 ft. mounting height. Define tree/light conflict as distance required between tree and light or define as the tree’s impact to foot-candle distribution. Consider how tree maintenance/trimming can prevent conflicts. Define how mature tree size will be determined. The IES MLO performance method “B” requires a property line calculation plane at 5’ AFG. This will restrict pole heights that are adjacent to the property line thereby reducing or eliminating the need for a pole height restrict. See IES MLO page 17 “The Design Complies if (b)” then refer to Table F on page 32, if required adjustments could be made to Table F to accommodate local needs.
- e) Canopy lighting, Sec. 30-344(e)(6) Canopy Lighting
- i) *Issue:* Is porch and ceiling fan lighting allowed? Concern for safety (CPTED principles)/facial recognition if only ground level lighting is allowed on porches/stoops
 - ii) *Suggestion:* Allow and define/control through BUG ratings. The IES MLO Table “G” on page 33 allows for “Unshielded Exemptions” to address the porch and ceiling fan issue. This table is for residential applications but could be adopted for multi-family dwellings.
- f) Historic district

- i) *Issue:* The majority of throw-down type light fixtures available in today's market are more contemporary in look and won't fit into the historic character of University Heights and other historic districts of Gainesville.
- ii) *Suggestion:* Allow special conditions/consideration for smaller scale and more residential type lighting, such as door, wall, stair, porch, and carriage lighting fixtures within historic districts. When the IES MLO is properly applied the use of historic or period lighting is somewhat allowable. Please refer to IES MLO Table "G" on page 33 for Residential Lighting Limits For "Unshielded Exemptions", and page 14 - 3(a) for "Ornamental parking lighting exemption" By Special Permit Only, as well as Tables "C-2 & C-3" on page 28. All Bug Ratings need to be calculated with all shielding devices installed, field modifications will not be allowed. If there concerns beyond what is listed this would be the appropriate place to add them.

g) Sign lighting

- i) *Issue:* Need for specific criteria for sign lighting.
- ii) *Suggestion:* Provide criteria. Coordinate with Sec. 30-318 Permanent Signs and Sec. 30-321 Illumination of Signs. The IES MLO requires the lumens from lighting directed at signage to be included in the maximum allowable lumens calculation. Internally illuminated signage will require the use of the Performance Method option B.

5) **Procedure.**

a) Submittal requirements in general, Sec. 30-344, (f) Lighting Plan Submission.

- i) *Issue:* Decorative lighting is now included in site plan submittal package. Requirements include numerous new items as well as additional coordination between electrical engineer and the design team, which will lead to additional design fees, more cost to the project, and potential delays due to additional review time.
- ii) *Suggestion:* Most of these costs are currently accounted at different times in the process. However, the new language now accelerate these services to the permitting phase. The IES MLO could simplify this process for simply construction and improvement projects and utilizing the Performance Method will require this to be done up front regardless.

b) Light levels illustration, Sec. 30-344(f)(7)

- i) *Issue:* Requires showing light output for "...each source of light." Concern with how to provide this information while demonstrating uniformity of the site as a whole.
- ii) *Suggestion:* Better define areas of the site to illustrate. Eliminate areas that are not on a house/controllable meter, such as pedestrian canopies, porches, etc. As areas outside of the owner's control, these areas should be removed from the site lighting equation. The IES MLO User's Guide addresses this on page 18 as "Design Compliance" the city has simply moved this forward to the permitting phase.

END

Attachment “B”

Comments from GRU

1. Input from GRU as a stake-holder

City Planning Staff met with GRU to review concerns about the current Outdoor Lighting Ordinance.

GRU has the following concerns:

1.) Light Fixture Type

Sec. 344 (d) (1) (d) pertaining to the use of luminaires which are energy and resource efficient as high performance LED lighting.

The language is of concern to GRU because 1) it prescribes one type of light source for which there is **nothing** comparable at this time. Although alternatives light sources such as high intensity discharge (HID) lamps (such as high pressure sodium and metal halide) are not as energy efficient as LED, they do provide high lumens per watt as compared to mercury vapor and incandescent type fixtures. HID lamp fixtures are readily available from GRU and others. Prescribing one solution limits options and possibly best practice due to limitations in fixture design, application and availability and 2) “energy and resource efficient” is not a defined term.

GRU requested that the language be changed to include High Intensity Discharge (HID) luminaires in addition to LED as acceptable light sources.

Without language modification, GRU’s ability to provide lighting

services would be limited to the sale of energy (as measured by the electric meter).

The requested will be included as part of proposed modifications to the current ordinance.

2) ON / OFF Controls with Battery Backup

b. Sec. 344 (d) (1) (e) pertaining to automatically extinguish all outdoor lighting when sufficient daylight is available, all controls with battery or similar backup power.

GRU requested that the language to be modified because photoelectric controls are used widely to extinguish outdoor lighting. Photoelectric controls by their nature do not have or use a backup source of power such that a battery.

If battery backup is required the luminaires would have to be controlled by an energy management system of some sort. Typically such a system would be an extension of the structure's energy management system (and located within the building envelop), be owned by the customer and be installed behind the meter.

Without language modification, GRU's ability to provide lighting services would be limited to the sale of energy (as measured by the electric meter).

The requested change will be included as part of proposed modifications to the current ordinance.

3) Extinguishing or Dimming of Lights 1 hour After Close of Business

c. Sec. 344 (e) (4) (f) pertaining to automatically extinguished luminaires no later than one hour after the close of business or facility operation.

GRU suggested that the language to be modified because photoelectric controls by their nature are made to turn on at dusk and off at dawn. Should it be required to turn lights on and off or be dimmed at specific times, some form of energy management system (simple or elaborate) would be needed. Typically such a system would be an extension of the structure's energy management system (and located within the building envelop), be owned by the customer and be installed behind the meter.

Without language modification, GRU's ability to provide lighting services in such scenarios would be limited to the sale of energy (as measured by the electric meter). However, in some circumstances the customer could still contract with GRU to a) lease the utility's standard fixtures (when feasible to satisfy the ordinance requirements) and b) maintain fixtures (if standard GRU inventory).

No change will be made to the current ordinance.

4a) Pole Height

Sec. 344 (d) (2) which limits the height of poles to 30 feet; Utility rate ordinance and GRU rental rates, in Appendix A of the Code of Ordinances,

GRU requested that the language to be modified to focus on

adherence to specified glare and light trespass limits and not to artificial restrictions in lighting system design/options. Practice over the past 30 years or more has been to install cut-off luminaires poles at heights up 45 feet. The change to 30 feet will demand the installation of additional luminaires and poles to meet specified lighting requirements, all at additional cost. Cutoff luminaires by their nature limit glare by not allowing light above 90 degrees of the horizontal plane, with cutoff luminaires glare is illuminated therefore height is not an issue. Furthermore cutoff luminaires by the nature of their design limit the amount of light behind the fixture therefore limiting the amount of light trespass and the distance to which the light can travel behind the fixture.

Without language modification, GRU's ability to provide lighting services in such scenarios may be limited to the sale of energy (as measured by the electric meter).

The requested change will be included as part of proposed modifications to the current ordinance.

4b) Pole Height to 15 feet within 75 feet residential property

Sec. 344 (d) (2) (b) (3) which limits the height of poles to 15 feet when located within 75 feet of property zoned residential.

GRU requested that the language to be modified to focus on adherence to specified glare and light trespass limits and not artificially restrict lighting system options. Practice over the past 30 years or more has been to install cut-off luminaires poles at heights up 45 feet. The change to 15 feet will demand the installation of additional luminaires and poles to meet specified lighting

requirements, all at additional cost. Cutoff luminaires by their nature limit glare by not allowing light above 90 degrees of the horizontal plane, with cutoff luminaires glare is illuminated therefore height is not an issue. Furthermore cutoff luminaires and luminaires of other designs limit the amount of light behind the fixture therefore limiting the amount of light trespass and the distance to which the light can travel behind the fixture.

Without language modification, GRU's ability to provide lighting services in such scenarios may be limited to the sale of energy (as measured by the electric meter).

The requested change will be included as part of proposed modifications to the current ordinance.