



**CITY OF HENDERSONVILLE
BUSINESS ADVISORY COMMITTEE - SPECIAL
CALL MEETING**

**Operations Center - Assembly Room | 305 Williams St. | Hendersonville NC 28792
Tuesday, June 22, 2021 – 12:00 PM**

AGENDA

1. CALL TO ORDER

2. NEW BUSINESS

A. Presentation of Draft Lighting Ordinance – *Matthew Manley, Planning Manager*

3. ADJOURNMENT

The City of Hendersonville is committed to providing accessible facilities, programs and services for all people in compliance with the Americans with Disabilities Act (ADA). Should you need assistance or an accommodation for this meeting please contact the City Clerk no later than 24 hours prior to the meeting at 697-3005.



CITY OF HENDERSONVILLE AGENDA ITEM SUMMARY

SUBMITTER: John Connet

MEETING DATE: 6/22/2021

AGENDA SECTION: NEW BUSINESS

DEPARTMENT: Administration

TITLE OF ITEM: Presentation of Draft Lighting Ordinance – *Matthew Manley, Planning Manager*

SUGGESTED MOTION(S):

NA

SUMMARY:

Planning Manager Matthew Manley will present the draft lighting ordinance. This is simply for your information and questions. An updated draft will be brought back to the Business Advisory Committee at your July meeting for a formal recommendation.

BUDGET IMPACT: \$

Is this expenditure approved in the current fiscal year budget? EnterTextHere

If no, describe how it will be funded. EnterTextHere

ATTACHMENTS:

Lighting Ordinance Presentation

Lighting Ordinance

Zoning Code Text Amendment

P21-25-ZTA

Zoning Text Amendment Update

City of Hendersonville City Council Workshop – May 26, 2021

Community Development | Planning Division

Matthew Manley, ACIP | Planning Manager

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Background:

- **"Dark Sky Compliance" has been a Condition for CZDs**
- **Planning Board and City Council Support**
- **Current standards in Zoning Code are lacking:**
6-13-4 Lighting. Lighting facilities, if provided, shall be aimed, directed, shielded or arranged so the light sources for such facilities do not cause undue glare on neighboring properties or interfere with the safe use of public rights-of-way
- **No way to review, measure, enforce or ensure a specific outcome under current standards.**



Background:

- ▶ Planning Board established a “Dark Sky / Lighting Ordinance Committee”
- ▶ Committee has met 6 times since April 8
- ▶ Sought input from outside experts
- ▶ Looked for national standards (IDA - IES - MLO)
- ▶ Compared Lighting Ordinances from a number of regional and national jurisdictions

Lighting Ordinance Committee Members			
	Name	Affiliation	Email
1	Neil Brown	PB	ndbrown1701@gmail.com
2	Tamara Peacock	PB	tamara@tamarapeacock.com
3	Hunter Jones	PB	joneshb9@gmail.com
4	Ralph Hammond-Green	HPC	rrhgreen@aol.com
5	Tyler Morrow	Staff	tmorrow@hvlnc.gov
6	Matthew Manley	Staff	mmanley@hvlnc.gov
Other Consulting Participants			
1	Daniel Caton	NC-IDA	catondb@appstate.edu
2	Gary Steinberg	GE Current	gary.steinberg@gecurrent.com
3	Ken Steiner	PARI	ksteiner30@gmail.com
4	Ken Fitch	Resident	parkslands@aol.com

Lighting Ordinance Matrix

Dark Sky Ordinance Development
Comparison of National & Regional Lighting Ordinances

<u>Jurisdiction</u>	<u># of Pages</u>	<u>Use B-U-G</u>	<u>Use "Full Cut Off"</u>	<u>Applies to SF Residential?</u>	<u>Grandfathering?</u>	<u>Varies based on District (Zoning / Land Use / Lighting Zones)?</u>	<u>Diagrams ?</u>	<u>Max Height for Pole Lights</u>	<u>Color Control (Kelvins)</u>	<u>Applies in ETJ</u>	<u>Includes Streetlights</u>	<u>Measurements</u>
Woodfin, NC	13	N	Y	Y	Improvements of 35% of Taxable Value / Increase Intensity/Parking of 4 spaces or 25% / Utility Provided Security Lighting - 5 yrs	N, Industrial Exempt	Y	25' Res Street, 30' other streets, 32' parking lots	N	N/A	Y	
Black Mountain, NC	13	N	Y	N	15 year exemption, Signage 5 Years, Fixture Replacement = Compliance, 90 days for problem	Y, Commercial Only	Y	37'	Y	N/A	Y	
Buncombe Co, NC	4	N	Y	N	Treated same as other non-conforming structures, All fixtures replaced, Dusk to Dawn 5 years	N	N	37'	Y	N/A	Y	Footcandle Avg for site, at Property line
Asheville, NC	15	Y	Y	Y	Yes including parts replacement, Utility Provided Security Lighting - 5 yrs, Dusk to Dawn - 5 years,	Y	Y	37'	Y	N/A	Y	Lumens
Weaverville, NC	6	Ref. IESNA	Y	?	Yes, Fixture changes	Y		37'	Y	N/A		
Chelan, WA	8	N	N	?	?	N	Y	?	?	N/A	Y	
Blanco, TX	22	N	Y	Y	2 years (non-residential), Change of Ownership, Replacement of bulbs/parts/fixtures, Improvements of 50% taxable value, Vacant 6 months,	Res v Non-Res	N	N/A	Y	Y	Y	
Malibu, CA	6	N	Y	Y	Non-Residential - 2 years, All other districts - 3 years	Y	N	?	Y	N/A	N	Footcandles at Property Line
Maricopa Co, AZ	6		Y	?	Pre-1985 Lighting, Vacant 12 months,	N	N	?	Y	N/A	Y	

Model Light Ordinance (MLO)

- ▶ Basis for proposed Lighting Ordinance
- ▶ Tailored to Hendersonville's needs



Illuminating
ENGINEERING SOCIETY



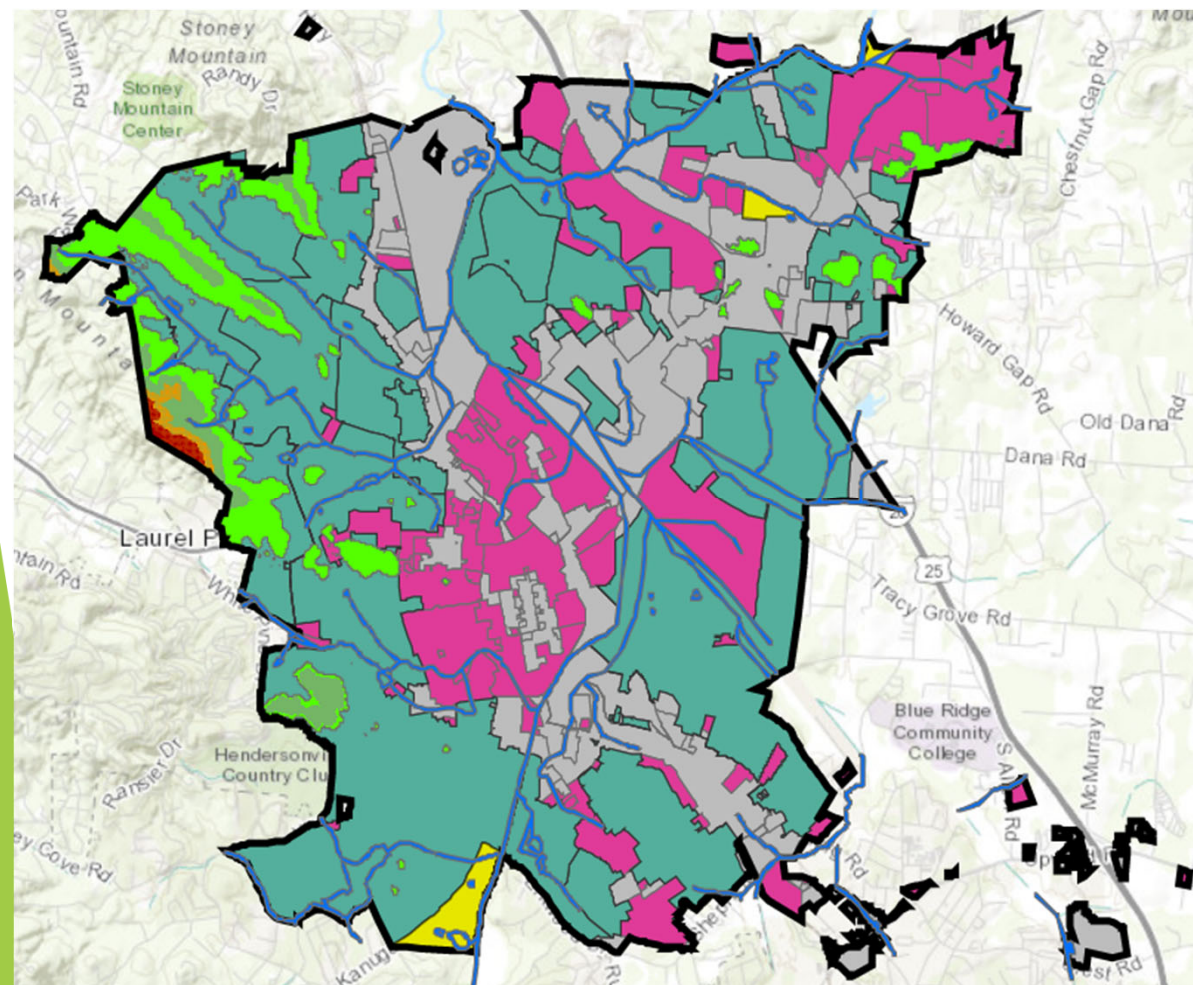
JOINT IDA - IES

MODEL LIGHTING ORDINANCE (MLO)

with USER'S GUIDE

Light Zones

GIS Map



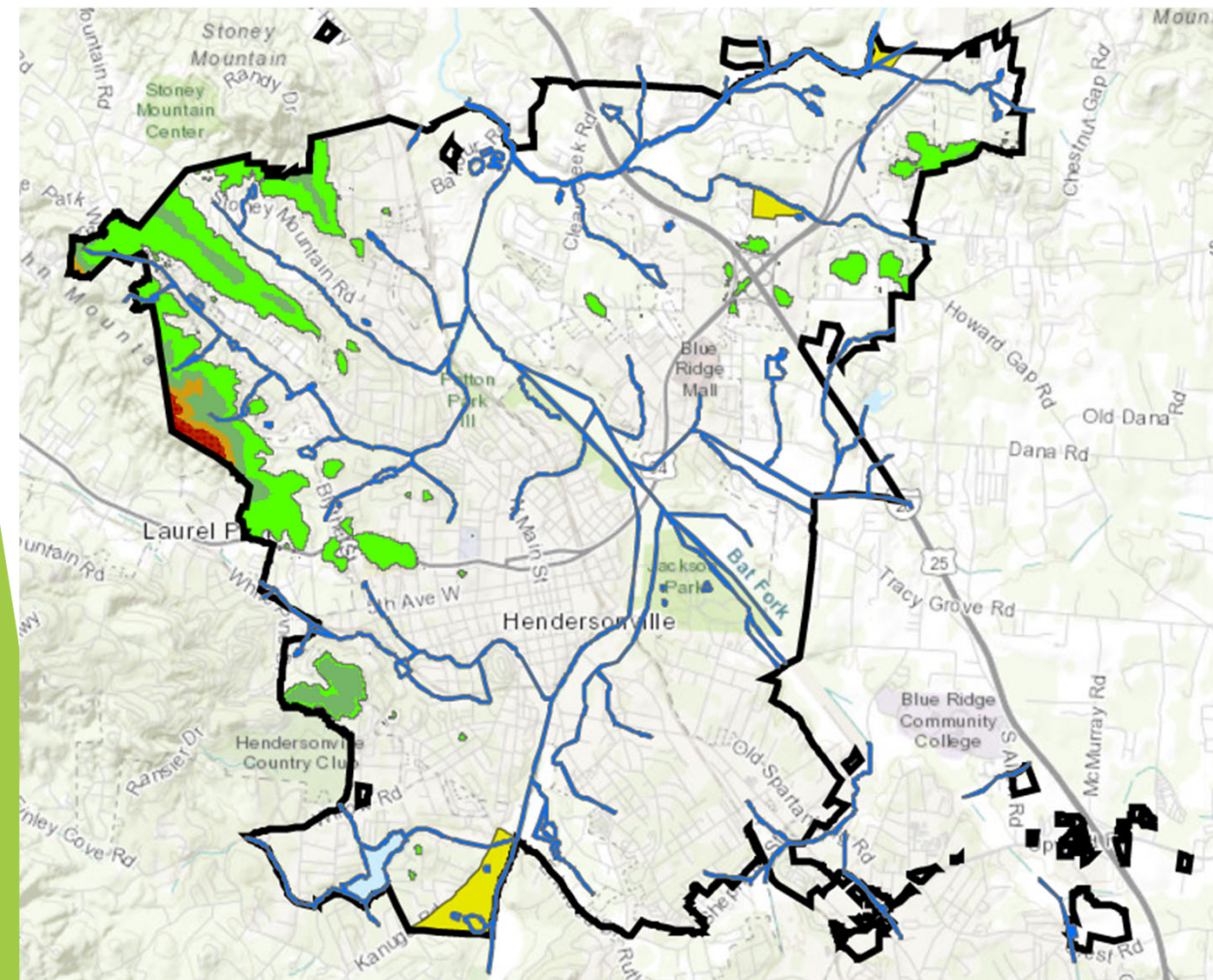
- ▶ LZ 0:
 - ▶ R-40,
 - ▶ 50' Stream Buffer,
 - ▶ Elevations above 2,200'
- ▶ LZ 1:
 - ▶ Suburban Residential Zone
 - ▶ R-20, R-15, R-10, PMH
- ▶ LZ 2:
 - ▶ Transition Zone
 - ▶ R-6, PRD, C-4, All MU Districts, MIC, PID
- ▶ LZ 3:
 - ▶ Commercial & Industrial Zones
 - ▶ Downtown, Corridors, etc.
- ▶ LZ 4:
 - ▶ Not included

Light Zone 0

GIS Map

► LZ 0:

- R-40,
- 50' Un-piped Stream Buffer,
- Elevations above 2,200'



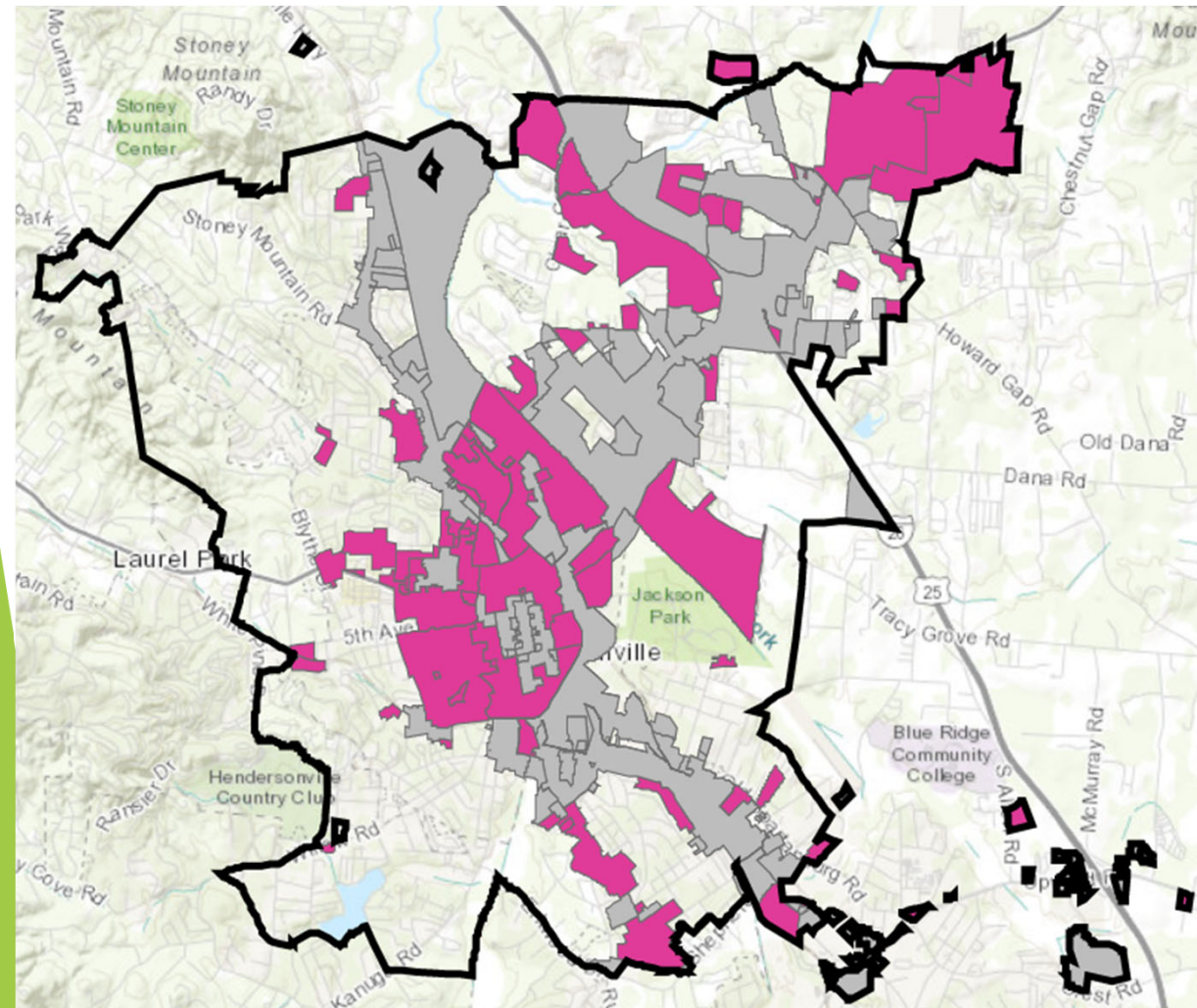
Light Zone 0 & 1

GIS Map

- ▶ **LZ 0:** ■
 - ▶ R-40,
 - ▶ 50' Stream Buffer,
 - ▶ Elevations above 2,200'
- ▶ **LZ 1:** ■
 - ▶ Suburban Residential Zone
 - ▶ R-20,
 - ▶ R-15,
 - ▶ R-10,
 - ▶ PMH

Light Zones 2 & 3

GIS Map



- ▶ **LZ 2:** ■
 - ▶ Transition Zone
 - ▶ R-6,
 - ▶ PRD,
 - ▶ C-4,
 - ▶ All MU Districts,
 - ▶ MIC,
 - ▶ PID
- ▶ **LZ 3:** ■
 - ▶ Commercial & Industrial Zones
 - ▶ Downtown,
 - ▶ Corridors, etc.
- ▶ **LZ 4:**
 - ▶ Not included

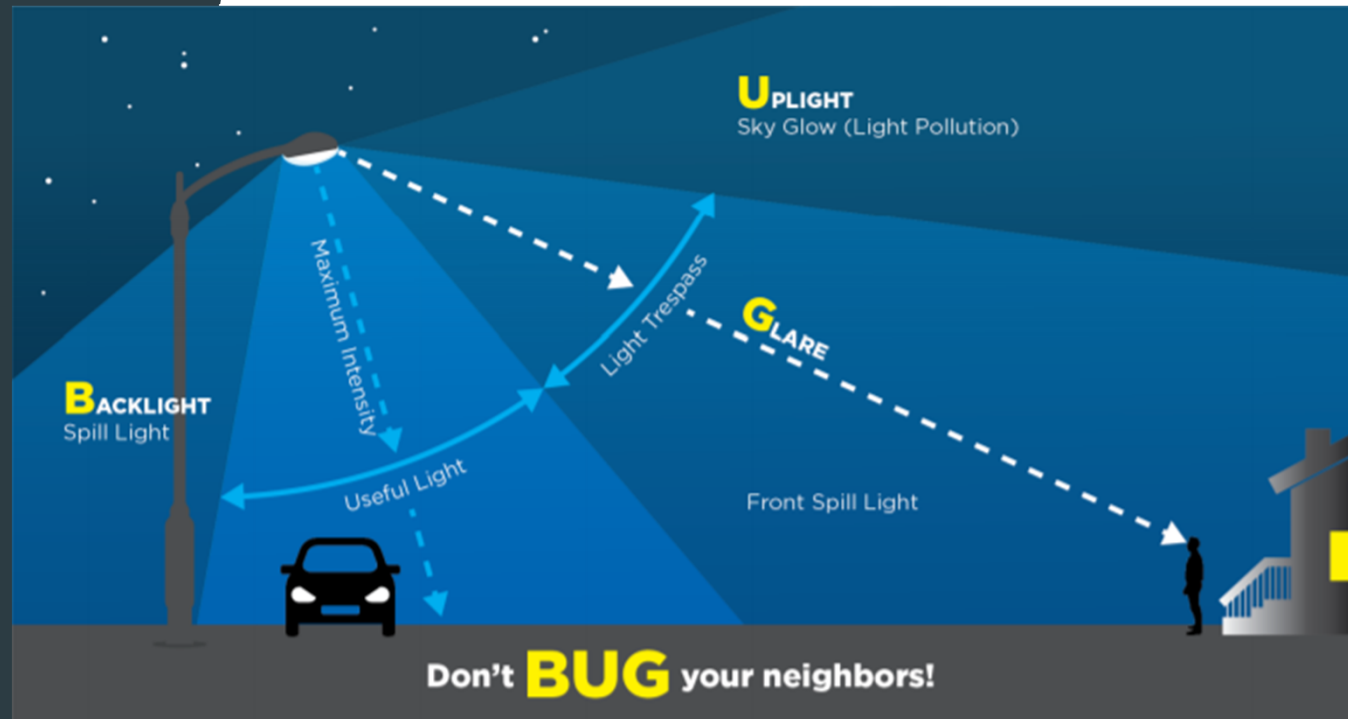
B-U-G Ratings

- ▶ Backlight
- ▶ Uplight
- ▶ Glare (or Frontlight)

B - Permitted rating based on pole height / distance from property line & LZ

U - Permitted rating based on fixture type & LZ

G - Permitted rating based on orientation of light fixture & LZ



To learn more... <https://blog.1000bulbs.com/home/how-is-a-bug-rating-calculated>

“Hypothetical Example” Step 1

Site Allowed Total Initial Lumens	
Site Description (Use)	Parking Lot
Lighting Zone	LZ3
Option 1: # of Parking Spaces	111
Parking Space Method (Table A): Allowed Lumens per Parking Spaces	N/A
Option 2: Hardscape Area (Sq Ft)	71,874
Allowed Lumens per Sq Ft of Hardscape (Table B)	5.0
Site Allowed Total Initial Lumens (Lumens per Parking Space or Lumens per Sq Ft of Hardscape Area)	359,370

“Hypothetical Example” Step 1

Prescriptive Method Compliance Chart			
Lamp Descriptions	QTY	Initial Luminaire Lumens	Total
LEDa	18	19300	347400
LEDb	1	19300	19300
Total Initial Luminaire Lumens			366,700
Site Allowed Total Initial Lumens*			359,370
Project Compliant?			N

* Based on Parking Space Method or Hardscape Method

INSERT SCREENSHOT OF BUG RATING
ADD Column for Distance from Property Line

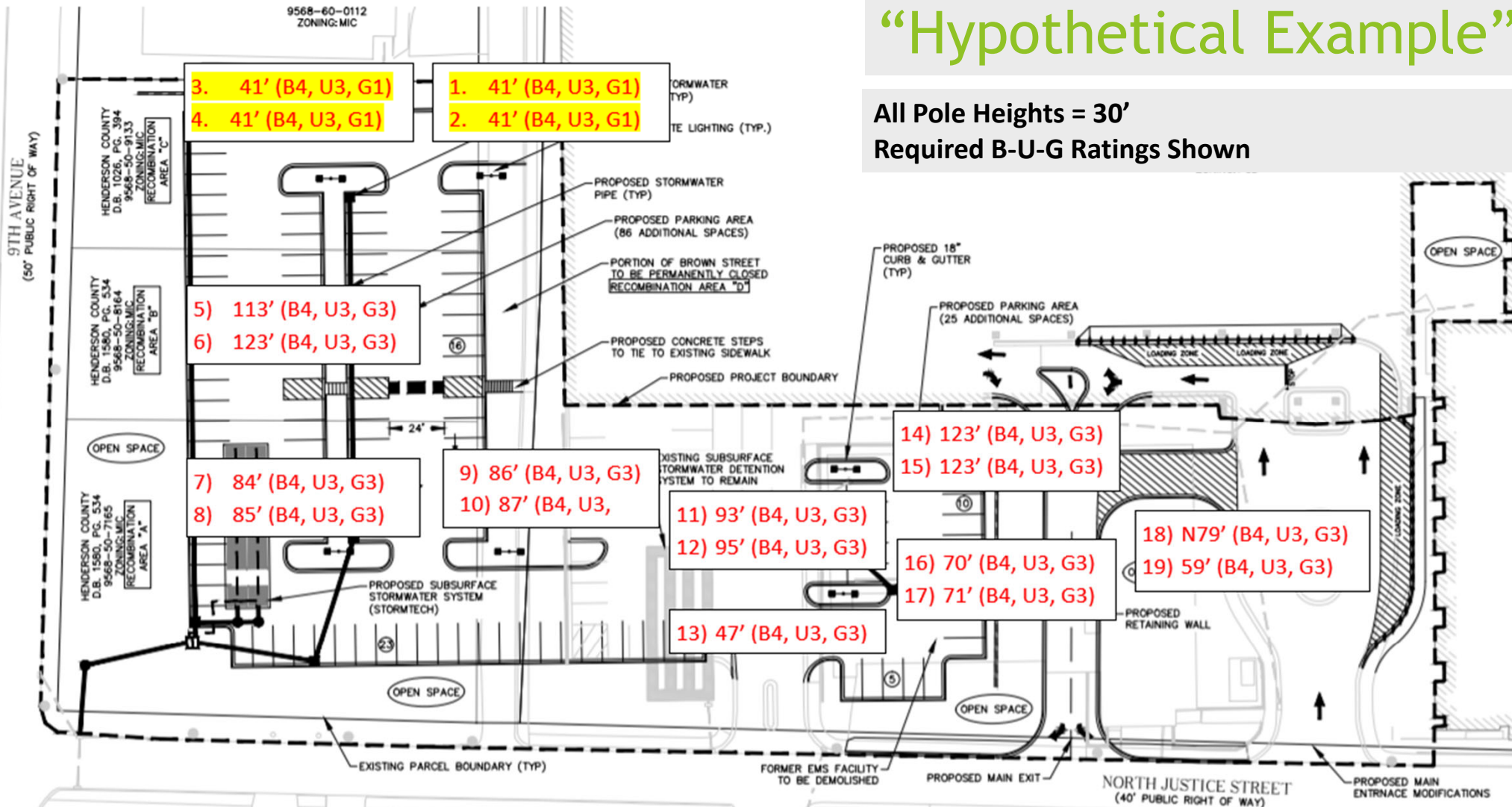
“Hypothetical Example” Step 2

Fixture	BUG Rating	Pole Height	Distance from Property Line	Orientation
1	B4, U0, G2	30'	41'	On Site Plan
2	B4, U0, G2	30'	41'	On Site Plan
3	B4, U0, G2	30'	41'	On Site Plan
4	B4, U0, G2	30'	41'	On Site Plan
5	B4, U0, G2	30'	113'	On Site Plan
6	B4, U0, G2	30'	123"	On Site Plan
CONTINUE FOR EACH FIXTURE ON THE SITE				

INSERT SCREENSHOT OF BUG RATING
ADD Column for Distance from Property Line

“Hypothetical Example”

All Pole Heights = 30'
Required B-U-G Ratings Shown



B-U-G Rating of Proposed Lights = B4, U0, G2 = Exceeds Requirements for all Lights except 1, 2, 3, & 4 (non-compliant)

Policy Questions

- ▶ **Light Zones** - Are proposed designations suitable
 - ▶ Recommended by Committee as presented
- ▶ **Inclusion of Residential Requirements**
 - ▶ Full MLO standards - Not Recommended by Committee
 - ▶ Hard to review and enforce. Some standard may be necessary.
- ▶ **Amortization Date - Full compliance within __ years**
 - ▶ Not Recommended by Committee
- ▶ **Conformance Triggers** (for existing non-conforming lighting)
 - ▶ Recommended by Committee as follows:
 - ▶ Replacement of 25% or more of existing lighting = Conformance
 - ▶ Renovations = 10%+ of tax value
 - ▶ Improvements = 10% increase
 - ▶ Change of Use
 - ▶ Vacant for 180 Days

Remaining Focus Areas

- ▶ Incorporate Graphics
- ▶ Special Permits
- ▶ Basic Standards for Residential?
- ▶ Exceptions/Coordination with Historic District Design Guidelines
- ▶ Streetlight Ordinance
- ▶ Additional Feedback & Review:
 - ▶ Duke Energy
 - ▶ Business Advisory Board
 - ▶ Emergency/Safety Services
 - ▶ Planning Board
 - ▶ Others?_____



Questions?

Zone	Recommended Uses or Areas	Zoning Considerations
LZ-0	Lighting Zone 0 should be applied to areas in which permanent lighting is not expected and when used, is limited in the amount of lighting and the period of operation. LZ-0 typically includes undeveloped areas of open space, wilderness parks and preserves, areas near astronomical observatories, or any other area where the protection of a dark environment is critical. Special review should be required for any permanent lighting in this zone. Some rural communities may choose to adopt LZ-0 for residential areas.	Recommended default zone for wilderness areas, parks and preserves, and undeveloped rural areas. Includes protected wildlife areas and corridors.
LZ-1	Lighting Zone 1 pertains to areas that desire low ambient lighting levels. These typically include single and two family residential communities, rural town centers, business parks, and other commercial or industrial/storage areas typically with limited nighttime activity. May also include the developed areas in parks and other natural settings.	Recommended default zone for rural and low density residential areas. Includes residential single or two family; agricultural zone districts; rural residential zone districts; business parks; open space include preserves in developed areas.

Zone	Recommended Uses or Areas	Zoning Considerations
LZ-2	Lighting Zone 2 pertains to areas with moderate ambient lighting levels. These typically include multifamily residential uses, institutional residential uses, schools, churches, hospitals, hotels/motels, commercial and/or businesses areas with evening activities embedded in predominately residential areas, neighborhood serving recreational and playing fields and/or mixed use development with a predominance of residential uses. Can be used to accommodate a district of outdoor sales or industry in an area otherwise zoned LZ-1.	Recommended default zone for light commercial business districts and high density or mixed use residential districts. Includes neighborhood business districts; churches, schools and neighborhood recreation facilities; and light industrial zoning with modest nighttime uses or lighting requirements.
LZ-3	Lighting Zone 3 pertains to areas with moderately high lighting levels. These typically include commercial corridors, high intensity suburban commercial areas, town centers, mixed use areas, industrial uses and shipping and rail yards with high night time activity, high use recreational and playing fields, regional shopping malls, car dealerships, gas stations, and other nighttime active exterior retail areas.	Recommended default zone for large cities' business district. Includes business zone districts; commercial mixed use; and heavy industrial and/or manufacturing zone districts.
LZ-4	Lighting zone 4 pertains to areas of very high ambient lighting levels. LZ-4 should only be used for special cases and is not appropriate for most cities. LZ-4 may be used for extremely unusual installations such as high density entertainment districts, and heavy industrial uses.	Not a default zone. Includes high intensity business or industrial zone districts.

TABLE C-1	Lighting Zone 0	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
Allowed Backlight Rating*					
Greater than 2 mounting heights from property line	B1	B3	B4	B5	B5
1 to less than 2 mounting heights from property line and ideally oriented**	B1	B2	B3	B4	B4
0.5 to 1 mounting heights from property line and ideally oriented**	B0	B1	B2	B3	B3
Less than 0.5 mounting height to property line and properly oriented**	B0	B0	B0	B1	B2

TABLE C-2	Lighting Zone 0	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
Allowed Uplight Rating	U0	U1	U2	U3	U4
Allowed % light emission above 90° for street or Area lighting	0%	0%	0%	0%	0%

TABLE C-3	Lighting Zone 0	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
Allowed Glare Rating	G0	G1	G2	G3	G4
Any luminaire not ideally oriented*** with 1 to less than 2 mounting heights to any property line of concern	G0	G0	G1	G1	G2
Any luminaire not ideally oriented*** with 0.5 to 1 mounting heights to any property line of concern	G0	G0	G0	G1	G1
Any luminaire not ideally oriented*** with less than 0.5 mounting heights to any property line of concern	G0	G0	G0	G0	G1

MLO Residential Regs

Property Type: Residential
Lighting Zone 1

Luminaire Type	Location	Luminaire Description	Fully Shielded	Lamp Type	Initial Luminaire Lumens*	Maximum Allowed Initial Luminaire Lumens (Table G)	Controls	Compliant
A	Front Entry	Decorative wall sconce	No	9W CFL	420	420	None	Yes
B	Garage Door	Fully shielded wall pack	Yes	23W CFL	1050	1260	Occupancy Sensor	Yes
C	Back Entry	Decorative wall sconce	No	7W CFL	280	315	Occupancy Sensor	Yes
D	Shed Entry	Fully shielded wall pack	Yes	40W INC	343	1260	Occupancy Sensor	Yes
E	Driveway	Fully shielded post top	Yes	13W CFL	1260	1260	None	Yes

*Initial Luminaire Lumens are calculated by multiplying the total initial lamp lumens by the luminaire efficiency. If the luminaire efficiency is not known, assume an efficiency of 70% and multiply the lamp lumen value by 0.7.

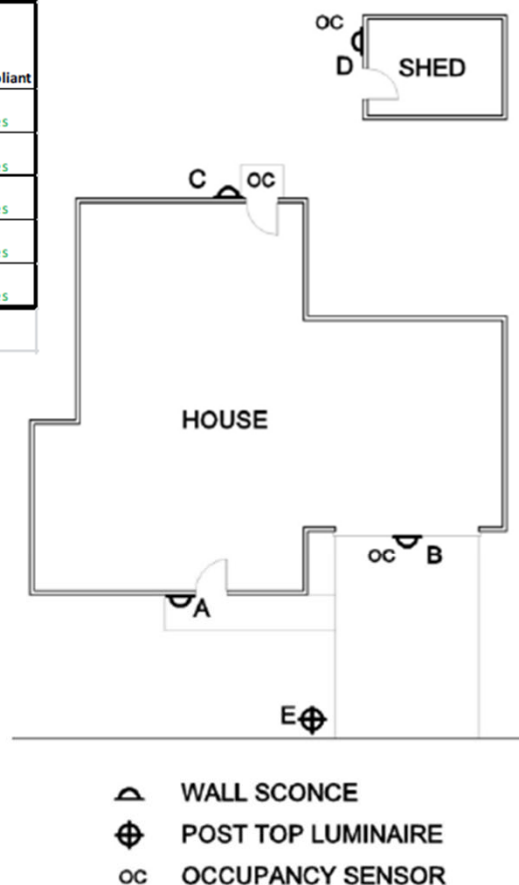


Table G - Residential Lighting Limits

Lighting Application	LZ 0	LZ 1	LZ 2	LZ 3	LZ 4
Row 1 Maximum Allowed Luminaire Lumens* for Unshielded Luminaires at one entry only	Not allowed	420 lumens	630 lumens	630 lumens	630 lumens
Row 2 Maximum Allowed Luminaire Lumens* for each Fully Shielded Luminaire	630 lumens	1,260 lumens	1,260 lumens	1,260 lumens	1,260 lumens
Row 3 Maximum Allowed Luminaire Lumens* for each Unshielded Luminaire excluding main entry	Not allowed	315 lumens	315 lumens	315 lumens	315 lumens
Row 4 Maximum Allowed Luminaire Lumens* for each Landscape Lighting	Not allowed	Not allowed	1,050 lumens	2,100 lumens	2,100 lumens
Row 5 Maximum Allowed Luminaire Lumens* for each Shielded Directional Flood Lighting	Not allowed	Not allowed	1,260 lumens	2,100 lumens	2,100 lumens
Row 6 Maximum Allowed Luminaire Lumens* for each Low Voltage Landscape Lighting	Not allowed	Not allowed	525 lumens	525 lumens	525 lumens

* Luminaire lumens equals Initial Lamp Lumens for a lamp, multiplied by the number of lamps in the luminaire

Comparison of efficacy by power
(120 Volt Incandescent lamps)

Output (Lumens)	Power (Watt)		
	Incan	CFL	LED
500	40	8 - 10	9
850	60	13 - 18	12 - 15
1,200	75	18 - 22	15
1,700	100	23 - 28	18

