PROPOSED

1	ORDINANCE NO. 2019-
2	AN ORDINANCE OF THE BOARD OF COUNTY
3	COMMISSIONERS OF BROWARD COUNTY, FLORIDA, PERTAINING TO UNINCORPORATED AREA LIGHTING; AMENDING SECTION 39-91 OF THE BROWARD COUNTY
4	CODE OF ORDINANCES ("CODE") REGARDING LANDSCAPE LIGHTING; CREATING SECTION 39-113
5	REGARDING OUTDOOR LIGHTING; REPEALING SECTIONS 39-107 AND 39-226 REGARDING BEACH AREA
6	LIGHTING AND OFF STREET PARKING AND LOADING LIGHTING; AND PROVIDING FOR SEVERABILITY,
7	INCLUSION IN THE CODE, AND AN EFFECTIVE DATE.
8	(Sponsored by the Board of County Commissioners)
9	
10	WHEREAS, Section 1.04 of the Broward County Charter states that "Broward
11	County shall enact ordinances which protect its citizens' right to a sustainable
12	environment, including clean air and clean water, while encouraging the stewardship of
13	natural resources";
14	WHEREAS, inappropriate or excessive use of artificial lightknown as light
15	pollutioncan have serious environmental consequences for humans, wildlife, and our
16	climate;
17	WHEREAS, artificial light suppresses melatonin, an antioxidant that induces sleep,
18	boosts the immune system, lowers cholesterol, and helps the functioning of the thyroid,
19	pancreas, adrenal glands, and various other parts of the body;
20	WHEREAS, research to date suggests that artificial light's disruption of circadian
21	rhythm is one of the causes of obesity, depression, insomnia, diabetes, and breast
22	cancer;
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WHEREAS, plants and animals depend on the Earth's daily cycle of light and dark rhythm to govern life-sustaining behaviors such as reproduction, nourishment, sleep, and protection from predators;

WHEREAS, light pollution is negatively impacting the health and resilience of wetland habitats, sea turtles and hatchlings, migratory birds, insects and pollinators, and other wildlife;

WHEREAS, light pollution costs money and wastes energy and resources;

WHEREAS, more than one-third of all outdoor lighting in the U.S. is wasted by poorly aimed or unshielded outdoor lighting, which equates to \$3.3 billion of energy lost to sky glow each year, and the release of an extra 21 million tons of carbon dioxide per year, which would require the planting of 875 million trees annually to mitigate;

WHEREAS, smart lighting increases safety for drivers and pedestrians by reducing hazardous glare, increasing visibility, and creating comfortable and safe spaces;

WHEREAS, through participation in the Sustainability Tools for Accessing and Rating Communities ("STAR") process, Broward County has broadened its approach to sustainability in Broward to include all aspects of the community well-being, economy, and environment, and on February 11, 2014, Broward County became the first 4-STAR Certified County in the nation;

WHEREAS, after obtaining the 4-STAR rating, Broward County highlighted "Light in the Community" as one of seven critical areas for focused attention and improvement in the 4-STAR Broward County Accomplishment and Opportunities Fact Sheet;

WHEREAS, support for Night Friendly Lighting policies and standards is documented in the 2015 Municipal Green Initiatives Survey and has been demonstrated

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by municipal and community involvement in multiple Sustainability Stewards events and workshops since 2015;

WHEREAS, Broward County expanded the definition of "Green Infrastructure" to include Light at Night through The Green Infrastructure Map Series, a project for which Broward County won one of sixteen 2016 National Association of Counties Achievement Awards;

WHEREAS, the Broward County Land Use Plan, updated in 2016 through Broward NEXT, highlights Green Infrastructure and utilization of the Green Infrastructure Map Series in Strategy CCR-2: Increase the resilience of our community to the effects of climate change;

WHEREAS, Action #11 in the Broward County Climate Action Plan, updated in 2015, states that the County will "[d]evelop a model 'Dark Skies' ordinance and encourage municipal and private sector participation to discourage light trespassing";

WHEREAS, Policy 3.6.8 in the Broward County Land Use Plan states "[I]ocal land use elements and development codes should include design guidelines to promote use of light only where needed thereby limiting excess light and reducing glare and to create a safe and pedestrian scaled lit environment, utilizing Night Friendly Lighting or Dark Sky principles outlined in the Model Lighting Ordinance by International Dark-Sky Association and the Illuminating Engineering Society of North America, or other local resources, for the purpose of creating appropriate outdoor lighting standards that reduce energy use, increase public safety, and protect human health and wildlife";

WHEREAS, the Climate Change Task Force voted unanimously on August 17, 2017, to recommend that Broward County develop and enact a Night Friendly Lighting Ordinance and recommend that cities also consider adoption;

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WHEREAS, Broward launched a Sky Quality Monitoring Program in 2017 to assess Broward County's night sky quality and measure progress in reducing light pollution over time; and

WHEREAS, the Board of County Commissioners of Broward County, Florida, deems it to be in the best interest of Broward County to amend, create, and repeal the following sections of the Broward County Code of Ordinances to implement the Broward County Climate Action Plan and the recommendation of the Climate Change Task Force to reduce light pollution and create more night friendly lighting for our communities,

BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF BROWARD COUNTY, FLORIDA:

Section 1. Section 39-91 of the Broward County Code of Ordinances is hereby amended to read as follows:

Sec. 39-91. Landscape lighting.

All landscape lighting installed should shall meet the lighting standards developed pursuant to Section 161.163, Florida Statutes, and shall comply with Section 39-226, "Lighting," 39-113, "Outdoor Lighting," of the Broward County Code of Ordinances. All outdoor areas to be lighted should provide for:

- (a) Outdoor lighting within the minimum levels specified in Illuminating

 Engineering Society (IES) recommended practices for night-time safety,

 utility, security, productivity, enjoyment, and commerce;
- (b) Reduction in the incidence of glare;
- (c) Minimization of adverse offsite impacts of lighting, such as light trespass and obtrusive light;

2		nighttime environment for astronomy;			
3	(e) Protection of the natural environment from the adverse effects of night				
4	lighting from gas or electric sources and use of wildlife approved fixtures				
5		and bulbs near conservation areas; and			
6	(f)	Reduction in the usage of energy and resources.			
7	Section	n 2. Section 39-107 of the Broward County Code of Ordinances is hereby			
8	repealed in it	s entirety.			
9	Section	n 3. Section 39-113 of the Broward County Code of Ordinances is hereby			
10	created to re	ad as follows:			
11	[Underlining	omitted]			
12	Sec. 39-113	Outdoor Lighting.			
13	(a)	Definitions: For purposes of interpreting this section, the following terms			
14	shall be defir	ned as follows:			
15	Adaptive controls shall mean devices such as motion sensors, timers, and				
16	dimmers used in concert with outdoor lighting equipment to vary the intensity or duration				
17	of lighting operation.				
18	Ambient light shall mean the general overall level of lighting in an area.				
19	B.U.G. shall mean a luminaire classification system that classifies backlight ("B"),				
20	uplight ("U"), and glare ("G").				
21	Bulb shall mean the source of electric light; to be distinguished from the whole				
22	assembly (see luminaire).				
23	Correlated color temperature ("CCT") shall mean a measure in degrees Kelvin				
24	("K") of light's	s warmness or coolness.			
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Curtailment of light pollution, reduction of skyglow, and improvement of the

(d)

Fixture shall mean the assembly that holds the bulb in a lighting system. It includes the elements designed to give light output control such as a reflector (mirror) or refractor (lens), the ballast, housing, and the attachment parts.

Footcandle shall mean illuminance produced on a surface one foot (1') from a uniform point source of one (1) candela.

Full cutoff fixture shall mean a fixture that provides a luminous intensity of zero at or above an angle of ninety degrees (90°) above the vertical axis, and no more than ten percent (10%) of bulb lumens at or above an angle of eighty degrees (80°).

Glare shall mean a light that is brighter than the brightness of the nearby lighting to which the eyes are adapted and that may reduce visibility or have a temporary blinding effect.

Green screen shall mean vegetation planted around the perimeter of a building or garage structure, either in containers, along trellises, or in the ground, and used as an architectural tool to block light trespass from the site into the public sphere.

Hardscape shall mean site design elements, such as driveways, stairs, curbs, ramps, walls, fountains, and statues, comprised of nonliving materials, such as asphalt, concrete, stone, and wrought iron.

HPS shall mean high pressure sodium.

Illuminating Engineering Society of North America ("IES" or "IESNA") shall mean the professional society of lighting engineers, including those from manufacturing companies, and others professionally involved in lighting.

Incandescent light shall mean light produced by a filament heated to a high temperature by electric current.

Intensity shall mean the degree or amount of energy or light.

2 Light trespass shall mean light that illuminates surfaces beyond the property 3 boundary. LPS shall mean low pressure sodium. 4 5 Lumen shall mean a unit of luminous flux; the flux emitted within a unit solid angle 6 by a point source with a uniform luminous intensity of one (1) candela. 7 Luminaire shall mean a complete lighting unit that usually includes the fixture, 8 ballasts, and bulbs. 9 Mercury vapor lighting shall mean a high intensity discharge bulb where the light is produced by radiation from mercury vapor. 10 11 Nanometer (nm) shall mean ten to the negative ninth power (10⁻⁹) meters; often 12 used as the unit for wavelength in the electromagnetic spectrum. 13 Outdoor lighting shall mean the nighttime illumination of an outside area or object 14 by any fixed luminaire. 15 Point to point shall mean the method used to determine the horizontal illuminance 16 at a specific site. 17 Shield shall mean an opaque material that blocks the transmission of light. 18 Skyglow shall mean a glow in the night sky caused by the cumulative effect of 19 artificial light sources. 20 Utility sites shall mean sites related to essential services, such as treatment of 21 water or wastewater, production of electrical or natural gas power, telecommunication 22 infrastructure, and the handling of solid and hazardous waste. 23 Wall fixtures shall mean luminaires placed along the outer walls of buildings. 24 Words in struck-through type are deletions from existing text. Words in Coding: underscored type are additions.

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LED shall mean light emitting diode.

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Wildlife friendly lighting shall mean fixtures and bulbs that have been certified by the Florida Fish and Wildlife Conservation Commission through the Wildlife Lighting Certification Program.

- (b) General Provisions.
- (1) Purpose and intent. The purpose of this section is to establish outdoor lighting standards for new outdoor lights that will minimize glare, light trespass, and skyglow. The intent is to facilitate the conservation of energy; improve nighttime safety and security; protect the privacy of residents; minimize disturbance of wildlife; and enhance the ambiance of the community.
- (2) Lighting Handbook. The current edition of the "IES Lighting Handbook," published by the IESNA, is the standard to be used for the design and testing of parking facility lighting. The standards contained therein shall apply unless standards of this section are more restrictive, in which case the more restrictive standards shall apply.
- (3) Applicability.
 - a. All new outdoor luminaires must comply with the standards of this section.
 - b. Except as provided in Section 39-113(b)(7)b., renovation or reconstruction does not require compliance with this section.
 - c. Compliance is required when resurfacing parking lots or when replacing parking lot lighting or sections of street lighting with LED lighting.
- (4) Standards.

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a. The following outdoor lighting restrictions shall apply to sites and structures based on their assigned lighting zone as set forth in Table 1, below.

Table 1. Temperature, Time, and Lumen Criteria for Lighting Zones					
Lighting Site and Structure		Wavelength/	Output	Total	
Zone	Classifications	Temperature	Reduction	Allowable	
				Lumens	
				per Site ⁵	
LZ-0	Boat launch sites,	Lighting shall be	None required ²	One-half	
	cemeteries,	wildlife friendly:		(1/2) lumen	
No	forests, nature	low pressure		per square	
Ambient	trails and	sodium or other		foot ("SF")	
Lighting	pathways,	light fixtures that		of	
	parks, passive	emit wavelengths		hardscape	
	recreational areas,	of five hundred			
	open spaces,	sixty nanometers			
	rivers, lakes,	(560 nm) or			
	submerged lands,	greater, necessary			
	wellfields, and	to protect			
	vacant land	environmentally			
		sensitive habitat			
		areas ¹			

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1	LZ-1	Agricultural and	3000K	Reduce to	One and
2		rural,	temperature or	twenty-five	one-
3	Low	landfills and	less ³	percent (25%)	quarter
4	Ambient	recycling centers,		maximum	(1 1/4)
5	Lighting	manufacturing,		output one (1)	lumens per
6		master pump		hour after	SF of
7		stations,		sunset ⁴	hardscape
8		open storage, junk			
9		yards, auto			
10		wrecking,			
11		waste disposal			
12		sites, and			
13		water and			
14		wastewater plants			
15	LZ-2	Campuses,	3000K	Reduce to	Two and
16		community	temperature or	twenty-five	one-half
17	Moderate	shopping centers,	less ³	percent (25%)	(2 1/2)
18	Ambient	fueling stations,		maximum	lumens per
19	Lighting	libraries and		output one (1)	SF of
20		museums,		hour after close	hardscape
21		one-story office		of business, or	
22		and commercial		11:00 p.m.,	
23		buildings, single		whichever is	
24		family residential,		later	

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Words in $\frac{\text{struck-through}}{\text{type}}$ type are deletions from existing text. Words in $\frac{\text{underscored}}{\text{type}}$ type are additions.

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1		outdoor			
2		recreational			
3		facilities, arenas,			
4		water parks,			
5		swimming pools,			
6		parking lots,			
7		public			
8		rights-of-way,			
9		warehousing,			
10		trucking and			
11		distribution			
12		terminals, and			
13		temporary events			
14	LZ-3	Corrections	3000K	Reduce to fifty	Five (5)
15		facilities,	temperature or	percent (50%)	lumens per
16	Moderately	hospitals,	less ³	maximum	SF of
17	High	multistory office		output one (1)	hardscape
18	Ambient	and mixed-use		hour after close	
19	Lighting	residential		of business, or	
20		buildings,		11:00 p.m.,	
21		multistory garage		whichever is	
22		structures, and		later	
23		local and arterial			
24		roadways			
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Words in $\frac{\text{struck-through}}{\text{type}}$ type are deletions from existing text. Words in $\frac{\text{underscored}}{\text{type}}$ type are additions.

- ¹ Consistent with Rule 62B-55, Florida Administrative Code, and Certified Wildlife Lighting standards of the Florida Fish and Wildlife Conservation Commission.
- ² County parks that rent facilities after normal business hours for weddings and events may utilize LZ-1 for these facilities only.
- ³ Consistent with American Medical Association recommendation that outdoor lighting at night should have a Correlated Color Temperature (CCT) of no greater than 3000K.
- ⁴ Cooler color temperatures (greater than 3000K) or an alternative output reduction schedule may be granted at the discretion of the Director of the Environmental Planning and Community Resilience Division, or successor agency, if a project requires an exemption in order to comply with regulations that necessitate higher values.
- ⁵ As recommended in Table B of the IESNA and International Dark-Sky Association's Model Lighting Ordinance Allowed Total Initial Lumens per Site for Nonresidential Outdoor Lighting, Hardscape Area Method.
 - b. All outdoor lighting in all lighting zones shall be designed and installed to prevent glare that affects motorists, bicyclists, or other users of roads, driveways, and bicycle paths.
 - c. All outdoor lighting, except for street lighting subject to Lighting Zone LZ-3 standards, shall meet the standards set forth in Section 39-113(b)(4)a. above. Adaptive controls may be used to vary the intensity or duration of lighting operation to meet these standards.

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- d. Motion detecting security lighting is not subject to the output reduction requirements in Section 39-113(b)(4)a.
- e. All outdoor lighting, including display, sign, building, parking lot, and aesthetic lighting, must use full cutoff fixtures or equivalent.
- f. Functional equivalents allowed. Lights that are properly installed in an architectural space (such as under a porch roof or a roof overhang), which provide the functional equivalence of a full cutoff fixture, need not use full cutoff fixtures. Similarly, a fixture having a U-0 B.U.G. rating may also be used.
- g. High intensity lighting, such as incandescent, fluorescent, and mercury vapor lighting, is prohibited. Energy efficient lighting (such as HPS, LPS, and LED) is recommended and encouraged.
- h. All outdoor lighting shall have a Correlated Color Temperature (CCT) of no greater than 3000K. In addition, sites with or adjacent to environmentally sensitive habitat areas shall use lights that emit wavelengths of five hundred sixty (560) nanometers or greater.
- i. Excluding parking areas, in all zoning districts that allow residential or commercial uses, pedestrian scale lighting on poles shall not exceed a maximum overall height of sixteen (16) feet. Whenever possible, pole lights with low-profile, low-level luminaires no higher than forty-eight (48) inches off the ground, such as low-mounted wall fixtures, low bollards, and ground-level fixtures, shall be used.
- j. In no case shall a bulb be exposed beyond the luminaire housing.

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- k. Multistory garage structures shall adhere to the criteria set forth in this section. Consideration will be given for increased lighting if "green screens" are planned for the project to minimize light emitting from the structure.
- Interior lights shall not introduce significant glare, light trespass, and skyglow through windows or building openings at nighttime. All spaces larger than ten thousand (10,000) square feet in size shall incorporate adaptive controls to turn off lights when the spaces are not in use or use film to block light to forty-five percent (45%) transmittance or less.
- m. No outdoor lighting shall exceed by more than ten percent (10%) the minimum levels specified in IES recommended practices for nighttime safety, utility, security, productivity, enjoyment, and commerce.
- n. No street lighting, if not in conflict with the regulations of a superseding jurisdiction, shall emit light above ninety (90) degrees.
- (5) Allowable light trespass. Outdoor lighting shall conform to the following quantitative lights trespass limits. If multiple site and structure classifications are present on one (1) parcel, the more restrictive lighting zone limits will apply.
 - a. Light trespass shall be limited to one-half (1/2) footcandle at the property lines for parcels with residential and public open space uses and at abutting property lines for parcels abutting residential and public open space zones, except as provided for in b. below.

1		D.	Light trespass shall be limited to one (1) footcandle at the abutting
2			property line for parcels abutting public rights-of-way.
3		c.	Light trespass shall be limited to one (1) footcandle at the property
4			lines within all other zones.
5	(6)	Exem	nptions. The following are exempt from the requirements of this
6		section	on:
7		a.	Emergency declarations.
8			If the Broward County unincorporated area is included in a formal
9			state of emergency declaration by local, state, or federal action, the
10			standards herein shall be temporarily suspended for the duration of
11			the declaration for lighting necessary to address or respond to the
12			declared emergency.
13		b.	Emergency, nonstructural, temporary lighting.
14			Law enforcement, fire service, and emergency medical services, and
15			emergency response and management lighting not attached to a
16			fixed structure in a permanent manner.
17		c.	Holiday Lights.
18			Holiday lights, provided the individual bulbs are less than ten (10)
19			watts and seventy (70) lumens.
20		d.	Live and recorded performances.
21			Film, stage, and video broadcasting equipment for use in live or
22			recorded performances for up to one (1) hour before and after the
23			performance.
24		e.	Lake fountain lighting.
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1		f.	Swimming pool in-water lighting.
2		g.	License plate capture security camera lighting at entrance gates,
3			provided the light is located at least one hundred feet (100') from the
4			right-of-way line of the nearest public roadway.
5		h.	Lighting for automated teller machines.
6		i.	Exterior accessways, provided they are shielded, recessed, or
7			underneath an overhang.
8		j.	Temporary uses (events permitted within the local jurisdiction).
9		k.	Utility sites.
10		l.	Emergency call boxes/rescue assistance stations.
11		m.	Airports and seaports, except for external roadways and parking
12			areas.
13	(7)	Nonce	onforming luminaires. The following categories of outdoor lights must
14		be bro	ought into compliance with the standards of this section in accordance
15		with th	ne following criteria:
16		a.	All luminaires that direct light toward streets, bicycle paths, or parking
17			lots that cause glare to motorists or cyclists shall be either shielded
18			or redirected within one (1) year after the effective date of this section
19			so that the luminaires do not continue to cause a potential hazard.
20		b.	All other nonconforming luminaires shall be brought into compliance
21			with Section 39-113 during site renovation or improvement (building
22			additions, renovation of existing building or site, and building space),
23			if the building permit value of the site renovation or improvement
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exceeds fifty percent (50%) of the replacement cost of the building or building space.

- (8) Luminaire and fixture replacement or relocation. Any replacement or relocated luminaire must meet the standards of Section 39-113.
- (c) Interpretation of Conflicts. Where any of the provisions of this section conflict with any provision of this Zoning Code, the provision providing the greatest protection against glare, light trespass, and sky glow shall apply.
- (d) Enforcement. Enforcement will be conducted in accordance with Chapter 8½ of the Broward County Code of Ordinances, Code Enforcement.
 - (e) Photometric plans.
 - (1) A "point to point" lighting plan, signed and sealed by an engineer registered in the State of Florida, shall be submitted with any site plan application. Lighting plans submitted for single family residential properties shall not be required to be signed and sealed.
 - The lighting plan shall include all visible exterior lighting for the a. project, including lighting for parking, landscape, building, and signage. It is the responsibility of the design engineer to meet the lumen requirements listed in Section 39-113(b)(4)a., and to adequately convey this on the photometric plans. Approved plans do not constitute approval of the final design by the County if field maximum measurements exceed the noted requirements. Additionally, photometric plans shall include the luminaire specification sheet along with the following table:

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1	EXAMPLE LIGHTING COMPLIANCE CHART *				
2	Bulb Descriptions	Luminaire Lumens	Total		
3	18w LED	1,020	24,480		
4	150w HPS	10	15,800	158,000	
5	70w LPS	5	12,600	63,000	
6	TOTAL LUMINAIRE LUMENS	245,480			
7	** Site allowed Total Lumens (lumens pe	250,000			
8	IS PROJECT COMPLIANT?				

^{*} Bulb type, quantity, lumens, and allowed lumens are examples only.

- (2) The lighting system shall not be placed in permanent use until the design engineer has certified in writing that the system has been field tested and has been installed and is functioning per the approved plans and specifications.
- (3) The issuance of a final certificate of occupancy for the project is contingent on the County's confirmation that the site meets the photometric lighting requirements set forth in this section.

Section 4. Section 39-226 of the Broward County Code of Ordinances is hereby repealed in its entirety.

Section 5. Severability.

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If any portion of this Ordinance is determined by any court to be invalid, the invalid portion will be stricken, and such striking will not affect the validity of the remainder of this Ordinance. If any court determines that this Ordinance, in whole or in part, cannot be legally applied to any individual, group, entity, property, or circumstance, such

^{**} Allowable lumens calculations per Section 39-113(b)(4)a.

2 group, entity, property, or circumstance. Inclusion in the Broward County Code of Ordinances. 3 Section 6. 4 It is the intention of the Board of County Commissioners that the provisions of this 5 Ordinance become part of the Broward County Code of Ordinances as of the effective 6 date. The sections of this Ordinance may be renumbered or relettered and the word 7 "ordinance" may be changed to "section," "article," or such other appropriate word or 8 phrase to the extent necessary in order to accomplish such intention. 9 Section 7. Effective Date. This Ordinance is effective as of the date provided by law. 10 11 12 **ENACTED** PROPOSED 13 FILED WITH THE DEPARTMENT OF STATE 14 **EFFECTIVE** 15 Approved as to form and legal sufficiency: 16 Andrew J. Meyers, County Attorney 17 By /s/ Michael C. Owens 11/27/18 18 Michael C. Owens (date) Senior Assistant County Attorney 19 20 By /s/ Maite Azcoitia 11/27/18 Maite Azcoitia (date) 21 **Deputy County Attorney** 22 MCO/gmb 23 11/27/18 Ch 39 Lighting Ordinance.doc 24 #41039-0000

determination will not affect the applicability of this Ordinance to any other individual,

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