

BCOSR Resolution 2026-06 Introduction Packet

To: All members of the Bloomington Commission on Sustainability and Resilience

From: Zach Ammerman, Vice Chair

Date: XXXXXX

Subject: Introduction and Details on BCOSR 2026-06 / EC 2026-01 Minimizing Light Pollution and Attaining Dark Sky Certification for Bloomington

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Part 1 – Introduction to Resolution 2026-06

I've introduced Resolution 2026-06, which recommends to the Common Council a slew of changes aimed at reducing light pollution and positioning the city to pursue Dark Sky Community status from DarkSky International. Communities who have received this designation are those that have adopted recommended outdoor lighting policies and demonstrated a long-term commitment to reducing light pollution, allowing their residents to better appreciate the majesty of the unobscured night sky. If achieved, Bloomington would become among the largest cities in the United States to achieve it, only the second in Indiana (tiny Beverly Shores is the other), and one of only a handful in the Midwest. While certainly an ambitious goal, I believe it is attainable, and analog cities like Flagstaff, Arizona, a similarly sized college town, have shown that it is possible. And even if we don't quite get over the finish line, this is an example of a rare area where even moderate or incremental reductions in light pollution would have immensely positive value both for humans and for wildlife.

There is extensive scientific evidence of harm to wildlife caused by nighttime light pollution. [A widely cited metastudy](#) in *Biological Reviews* found that even relatively low levels of nighttime light pollution has significant impacts on wildlife, with artificial lighting negatively impacting organisms from the ecosystem down the cellular level. Indiana University researchers at the [Ketterson Lab have been studying light pollution](#)'s impact on birds, and found disruptions to seasonal reproductive timing and parasitic infection cycles, in addition to increased bird strikes on buildings.

For human health, the [American Medical Association's 2016 report](#), recommends outdoor nighttime lighting not exceed 3000K based on evidence for disruption to melatonin and sleep cycles in humans, and other organizations have found a carcinogenic effect to too much exposure to harsh light at night. These and the studies in the preceding paragraph are just a few small samples of fairly extensive literature on this subject. See the suggested reading list at the end of this memorandum for more.

The good news is that Bloomington has already made some progress on the path leading to Dark Sky Community status. Our UDO already requires full-cutoff shielding, sets light trespass limits at property lines, caps light output near residential areas, and imposes light curfews for some categories. Newer private developments appear to be following these requirements, although many if not most of the city's own newer streetlights leased from Duke Energy do not appear to be in conformity with these requirements, and older buildings are under no obligation to comply unless they undergo significant renovation.

I've identified several gaps that remain to get us over the line, including the following main change (among others):

1. Color temperature standards,
2. An amortization schedule for non-compliant fixtures,
3. Restrictions on exterior uplighting,
4. A strong warrant requirement for new public lighting,
5. An extension of the light curfew to all mixed-use and non-residential categories, and a change to 10 pm for all those that currently have an 11 pm curfew,
6. Stronger restrictions on illuminated signage, and
7. Strengthening rules on light trespass.

To better the chances of its adoption by the council, I've proposed explicit code changes that would fill these gaps and specific places where to insert the language. **To make it easier on you, I've attached an updated version of the relevant section of the UDO that clearly highlights the changes and additions proposed by the resolution.**

Part of the resolution calls for conducting an inventory of all streetlights and replacing those with a color temperature lower than 3000K (Kelvin). At first glance, that would appear to be a high-cost item that might doom this resolution's chances of being adopted as city policy. However, it is important to note that the city leases about 95% of its streetlight fleet of approximately 3,400 streetlights, and recent service agreements (starting with agreements last year) for their replacement show that the city is already regularly replacing them with 3000K fixtures at no apparent cost premium over non-compliant options. Bringing the rest of the stock into compliance can thus be accomplished through the city's usual operational replacement cycle, theoretically requiring no capital expenses. That being said, special attention will need to be paid to full-cutoff shielding, which does not appear to be strictly enforced with newer Duke Energy streetlights. A full inventory of the streetlights will allow the city to determine the actual scale of the issue and better estimate costs. A public records request to the city revealed that there is no database of public streetlights' CCT or last replacement date; this inventory would fill that gap in the city's data.

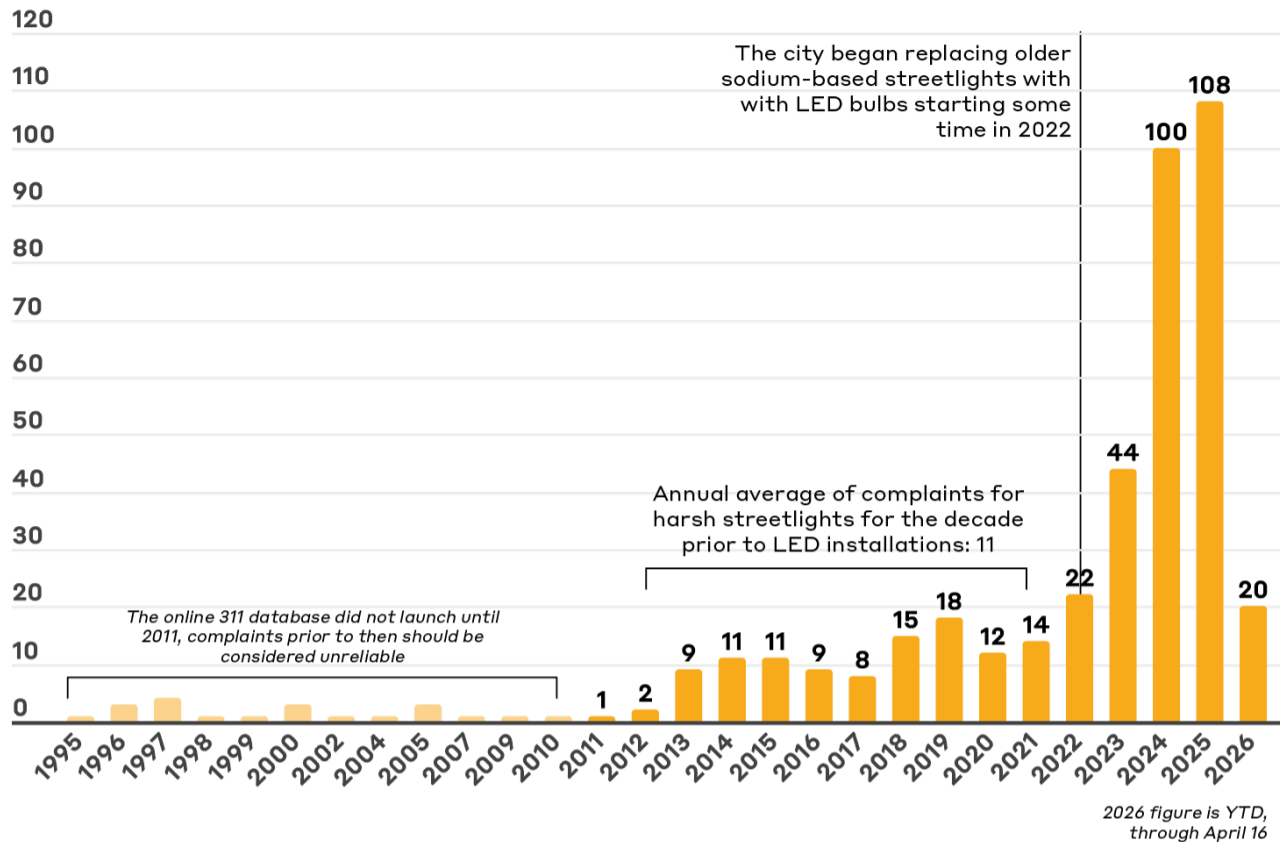
Non-compliant street fixtures (those with color temperatures above 3000K and insufficient shielding), in addition to being harmful to wildlife and human health, are highly unpopular. Bloomington's 311 complaint data backs this up. Sometime in 2022, the city started replacing its older low-CCT sodium light fixtures with new, energy-efficient high-CCT LED lamps. Public contracts show that the majority of these until the past year or so were in the 4000K range or higher, which emit quite harsh, bright whitish-blue light, something that the American Medical Association says is harmful to human health. In the decade prior to this, the city averaged only eleven (11) 311 complaints annually referencing harsh or glaring streetlights. Starting in 2023 and every year thereafter, the number shot up and has been over

100 for the past two years. Replacing the harsh 4000K lights over their lifespan would thus improve resident satisfaction while having a positive impact on wildlife and our view of the night sky. It should be noted that newer LEDs are fully capable of having a lower CCT while maintaining the energy efficiency of the harsher lights of the first generation of LED lights installed.



311 Complaints for Harsh, Bright, or Glaring Streetlights

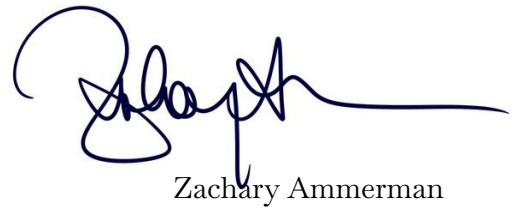
RESULTS OF A PUBLIC RECORD REQUEST MADE IN APRIL 2026



The resolution also recommends several actions outside the UDO: the city-wide lighting inventory mentioned above, a sky quality measurement program (possibly in partnership with IU's Astronomy Department, whose chair expressed interest when I approached her about it), public education and outreach, and coordination with Monroe County and Indiana University on compatible lighting standards. Together, these steps would meaningfully reduce light pollution and improve nighttime quality of life regardless of whether full certification is ultimately achieved.

As I note in the preamble, unencumbered views of the heavens are something common across all human cultures since time immemorial. Obscuring the sky is only a relatively recent wound our civilization has inflicted on the planet, and one that we as a society can reverse through political will. I think we should try. This resolution would position us to be able to do so in Bloomington. I look forward to discussing this with you further during our upcoming meeting, and welcome any questions or comments in the meantime.

Respectfully,



Zachary Ammerman

Recommended for Further Reading:

- Gaston, K.J., Bennie, J., Davies, T.W., and Hopkins, J. (2013). "The ecological impacts of nighttime light pollution: a mechanistic appraisal." *Biological Reviews*, 88(4), 912–927.
<https://onlinelibrary.wiley.com/doi/10.1111/brv.12036>
- Boyes, D.H., Evans, D.M., Fox, R., Parsons, M.S., and Pocock, M.J.O. (2021). "Street lighting has detrimental impacts on local insect populations." *Science Advances*, 7(35).
<https://www.science.org/doi/10.1126/sciadv.abi8322>
- Singh, D., et al. "Impact of light pollution on wildlife." Indiana University Environmental Resilience Institute / Ketterson Lab.
<https://eri.iu.edu/research/projects/impact-of-light-pollution-on-wildlife.html>
- National Park Service. (2025). "Synthesis of Studies on the Effects of Artificial Light at Night."
<https://www.nps.gov/articles/effectsflight.htm>
- Garcia-Saenz, A., et al. (2021). "Exposure to artificial light at night and risk of cancer: where do we go from here?" *British Journal of Cancer*, 124, 1377–1379.
<https://www.nature.com/articles/s41416-020-01231-7>
- American Medical Association. (2016). "Human and Environmental Effects of Light Emitting Diode (LED) Community Lighting." Report of the Council on Science and Public Health, Report 2-A-16.
https://policysearch.ama-assn.org/councilreports/downloadreport?uri=/councilreports/a16_csaph2.pdf

Part 2 – In-Context Code Changes Proposed by Resolution 2026-06

This shows the current relevant chapter of the UDO with proposed changes highlighted.

additions deletions

Section 20.04.090 – Outdoor Lighting

(a) Purpose

The lighting standards are intended to encourage lighting practices and systems that conserve energy and resources; minimize light pollution, glare, and light trespass while maintaining nighttime safety, security, and enjoyment of property; and curtail the degradation of the nighttime visual environment; and to minimize disturbance to sensitive plants and animals.

(b) Applicability

Compliance with this Section 20.04.090 shall be required pursuant to Section 20.04.010 (Applicability) and the specific applicability criteria established below:

(1) Change in Use

If there is any change in use of the property, the provisions of this Section 20.04.090 shall apply when the new use commences. Changes in use within multi-tenant centers shall not require the individual tenant or the entire center to comply with the provisions of this section.

(2) Modification, Replacement, or Addition of Outdoor Lighting

Modification, replacement or addition of outdoor lighting fixtures constituting 25 percent or more of the permitted lumens for the parcel, no matter the actual amount of lighting already on a site, shall trigger compliance for the entire site.

(3) Exemptions

(A) Temporary Carnivals and Festivals – Lighting for temporary festivals and carnivals are exempt but shall be turned off within 30 minutes of the last event.

(B) Emergency Lighting – Emergency lighting, used by police, fire fighting, or medical personnel, or at their direction, is exempt from all requirements of this Section 20.04.090.

(C) Traffic Control Lighting – Traffic control lighting is exempt from the provisions of this Section 20.04.090.

(D) Lighted Flags – Up to three flagpoles and flags are exempt from the provisions of this Section 20.04.090. All other outdoor lighted flags shall conform to the provisions of this Section.

(E) Holiday Lighting — Holiday lighting and seasonal decorations using typical unshielded low-intensity incandescent lamps are exempt from the provisions of this section.

(F) Low-intensity Lighting — (i) No shielding is required for a light fixture with a bulb rated at 260 lumens or less. (ii) Full shielding is not required for a light fixture with a bulb rated at more than 260 lumens and less than 1,000 lumens when the bulbs are installed inside frosted glass or other translucent covers and shielded on top. (iii) The total lumens of bulbs specified in subsections (i) and (ii) above, when not motion detector activated, shall not exceed 2,000 lumens per building, or 1,000 lumens per exterior entryway, whichever is less.

(G) Swimming Pool and Fountain Lighting — Underwater lighting used for the illumination of swimming pools and fountains is exempt from the lamp type and shielding standards, though it shall conform to all other provisions of this section.

(4) Amortization of Non-Conforming Lighting

All outdoor lighting fixtures existing on the effective date of this subsection, both publicly and privately owned, that do not conform to the requirements of Section 20.04.090 shall be brought into compliance within ten (10) years of the effective date of this subsection.

(c) General Standards

(1) Conformance with Applicable Codes

All outdoor illuminating devices shall be installed in conformance with the provisions of this UDO and all applicable building and electrical codes.

(2) Initial Lumens

For the purposes of this chapter "lumens" means "initial lumens." The acceptability and shielding restrictions applicable to a particular lamp are decided by its initial lumen output, not wattage; check manufacturer's specifications.

(3) Prohibitions

(A) Laser Source Light — The use of laser, strobe, and/or flashing source light or any similar high intensity light for outdoor advertising or entertainment is prohibited.

(B) Searchlights — The operation of searchlights is prohibited except when used by civil authorities for purposes of public safety.

(C) Towers — Tower lighting shall not be permitted unless required by the Federal Aviation Administration (FAA).

(4) Light Trespass

(A) All lighting fixtures shall be installed so that light trespass from any property line, ~~except a property line abutting a public street,~~ shall not exceed ~~one footcandle~~ **0.5 footcandles** at a point

one meter beyond the property line. Properties bordered by R1, R2, R3, R4, or RMH are allowed no more than ~~0.5~~ **0.3** footcandles at a point ~~one meter beyond the property line~~ **five meters beyond the property line adjacent to those districts or at the dwelling façade, whichever distance is closest,** adjacent to those districts.

(B) Properties bordered by R1, R2, R3, R4, or RMH are allowed no more than ~~0.5~~ **0.3** footcandles at a point ~~one meter beyond the property line~~ **five (5) meters beyond the property line adjacent to those districts or at the dwelling façade, whichever distance is closest,** adjacent to those districts.

(C) Measurements of light readings along any portion of a property line of the subject property shall be taken with a light meter facing the light source at a height of five feet, using any orientation of the light meter. The maximum reading shall be used.

(D) A maximum light intrusion threshold of 0.1 footcandles shall be established at the boundary of any riparian buffer, wetland buffer, karst conservancy easement, or conservation easement established under Section 20.04.030, and to require photometric plans demonstrating compliance for development adjacent to such areas.

(5) Glare

All lighting fixtures shall be installed so as not to cause glare at or beyond the property line and shall not be aimed toward traffic.

(A) Shielding

(i) All lighting fixtures, except motion detector-activated lighting, shall be fully shielded so that the lighting element is not visible to an observer at any property line, except as stated otherwise in this Section 20.04.090.

(ii) Fully shielded shall mean that the fixture, as installed,

- (a) emits no light at or above the horizontal plane, such that the light source is not visible from any point at or above the horizontal plane of the fixture;**
- (b) does not exceed a rating of U₀, G₁, and B₂ under the Illuminating Engineering Society's BUG classification system (TM-15) with a reduced maximum of U₀, G₀, B₁ for fixtures within 500 feet of any environmentally sensitive area protected under Section 20.04.030; and**
- (c) directs all emitted light within a maximum cone of seventy (70) degrees from the vertical axis of the fixture (i.e., no light emitted at angles greater than 70 degrees from nadir)."**

(iii) Unless otherwise specified, all lighting fixtures shall be full cutoff type as installed.

~~(iii) A lighting fixture may beam light upward only if all upward light is reflected back down by a canopy, roof, or other such structure.~~

(iv) Full shielding is not required for motion detector activated lighting of less than 1,800 lumens, provided the light cycles off no more than 10 minutes after coming on.

(B) Floodlights and Spotlights

- (i) Floodlights and spotlights shall be fully shielded so that the light element is not visible to an observer on any property either zoned or used for residential purposes and is not visible to an observer on any public right-of-way.
- (ii) The centerline beam of a floodlight or spotlight shall be aimed no higher than 45 degrees above vertical; however, light fixtures that cast illumination over more than 90 degrees shall be aimed such that no light shall be cast above the horizontal.

(C) Prohibition of Exterior Uplighting

Exterior uplighting of buildings and architectural features is prohibited, with a narrow exception for structures designated as historic where the Historic Preservation Commission approves a lighting plan

(6) Landscape Lighting

- (A) When planting materials are lighted, high-pressure sodium lamps and low-intensity incandescent lamps shall not be used.
- (B) Lighting of any tree protection area or conservation easement, including but not limited to those required by Section 20.04.030 (Environment), is prohibited.

(7) Correlated Color Temperature

A maximum color temperature of 3000 Kelvin or lower for all new outdoor lighting installations shall be required and any replacement of existing outdoor lighting fixtures shall comply with the same correlated color temperature standards, with a reduced maximum of 2200 Kelvin or lower for fixtures within 500 feet of any environmentally sensitive area protected under Section 20.04.030.

(8) Warrant for Publicly-Owned Lighting

- (A) General provisions. New publicly-owned outdoor lighting shall be installed only where a specific, site-specific, and documented safety, navigation, or functional need has been established. General assertions of improved safety or security, without reference to conditions at the specific location, shall not constitute a sufficient warrant.**
- (B) Lighting Restrictions Near Environmentally Sensitive Areas. No new outdoor lighting, whether publicly or privately owned, shall be installed within 500 feet of any riparian buffer, wetland buffer, karst conservancy easement, or conservation easement established under Section 20.04.030, unless the installing authority or applicant demonstrates by clear and specific evidence that (i) a serious and immediate risk to public safety exists that cannot be mitigated through non-lighting alternatives such as reflective materials, signage, barriers, or**

path realignment; (ii) the proposed installation is the minimum fixture count, lowest lumen output, and narrowest distribution pattern sufficient to address the identified risk; and (iii) all fixtures comply with a maximum correlated color temperature of 2200 Kelvin, are fully shielded with no backlight component oriented toward the sensitive area, and are subject to adaptive controls or curfew. The burden of proof shall rest with the installing authority or applicant.

(g) Publicly-Owned Lighting Controls

All new installations of publicly-owned outdoor lighting, including streetlights, park path lighting, and lighting at public facilities, shall incorporate adaptive controls such as timers, motion sensors, or photocell-activated switches, or shall be subject to an established curfew consistent with the use. In the absence of an explicitly established curfew for a public use, a default cutoff time of no later than 10 pm or 30 minutes after normal authorized activities, whichever is later, shall be established.

(d) Multifamily Residential Lighting (meets IDSC 1(C), 1(D))

A parcel occupied by a multifamily dwelling shall not be illuminated by more than 6,000 lumens per primary structure, including a maximum of 2,000 lumens per building entryway of any combination of motion detector activated lighting and bulbs rated at no more than 1,000 lumens.

(e) Mixed-Use and Nonresidential Lighting

(1) ~~Adjacent to Residential Districts~~ Maximum Light Output (AMENDED – extends cap to all zoning districts; meets IDSC 1(C), 1(D))

Mixed-use and nonresidential uses ~~bordered by any R1, R2, R3, R4, or RMH zoning district~~ shall be allowed a total light output of not more than 40,000 lumens per acre. Provided, regardless of parcel size, the allowance shall be sufficient to provide a maximum of 2,500 lumens per entryway with motion detector activated lighting counted as one-half lumens.

(2) Use-Specific Conditions

(A) Canopies, Pavilions, or Drive-Through Bays (meets IDSC 1(A), 1(D))

- (i) Illuminance — The canopy, pavilion, or drive-through bay shall be designed to achieve no greater than the minimal illuminance level of a service station pump island as recommended by the Illuminating Engineering Society of North America (IESNA RP-33: Lighting for Exterior Environments).
- (ii) Shielding — All light fixtures mounted on or recessed into the lower surface of canopies, pavilions, or drive-through bays shall be full cutoff, fully shielded and use flat lenses. Such fixtures shall be recessed so the fixture does not extend below the lower horizontal surface of the canopy, pavilion, or drive-through bay.

(iii) Curfew – Lighting shall be turned off no later than 10 p.m., or within 30 minutes after closing of the business if the business closes after 10 p.m.

(B) Outdoor Recreational Facilities

(i) Illuminance – All lighting installations shall be designed to achieve no greater than the minimal illuminance levels for the activity as recommended by the Illuminating Engineering Society of North America (IESNA RP-6: Sports and Recreational Area Lighting).

(ii) Light Trespass – All lighting fixtures shall be installed so that light trespass from any property line, except a property line abutting a public street, shall not exceed two footcandles at a point one meter beyond the property line.

(iii) Restriction – Field lighting for all outdoor recreational facilities shall be turned off **no later than 10 p.m., or within 30 minutes after the completion of the last event of the night if the event takes place after 10 p.m.** [amended from: “within 30 minutes after the completion of the last event of the night”]

(C) Parking Lots and Outdoor Display Lots or Areas

(i) Illuminance – The parking lot shall be designed to achieve no greater than the minimal illuminance levels for the given land use as recommended by the Illuminating Engineering Society of North America (IESNA RP-33: Lighting for Exterior Environments). However, a parking lot shall also be designed to achieve a minimum illuminance level of one lux.

(ii) Curfew – Lighting for outdoor display lots and parking lots with more than 20 parking spaces shall be reduced by half no later than **10 p.m., or within 30 minutes after closing of the business if the business closes after 10 p.m.** [amended from: “11 p.m., or within 30 minutes after closing of the business, whichever is later”]

Related Amendment to Section 20.04.100 (Signs)

(g)(5) Illuminated Sign Standards

Illuminated signs shall not exceed 100 nits (100 cd/m²) luminance between sunset and sunrise, measured under conditions of a full white display. Sign illumination shall be extinguished completely beginning one hour after sunset and remain off until one hour before sunrise. Individual illuminated signs shall not exceed 200 square feet (18.6 square meters) of luminous surface area.

IDSC Requirements Met Outside the UDO

IDSC 2(A) – City-owned lighting brought into compliance within 5 years: addressed through the inventory and conversion timeline in Resolution 2026-06

IDSC 2(B) – Municipal support through publications, funding, etc.: addressed through Resolution 2026-06 and ongoing city communications.

IDSC 4 – Community dark sky education events: addressed through Resolution 2026-06 committing to at least three public outreach events annually.

IDSC 6 – Sky brightness measurement program established and maintained: addressed through Resolution 2026-06.

IDSC 3, 5, 7 – Broad organizational support, demonstrated success in light pollution control, and entrance signage: application-stage and post-certification requirements not requiring code amendment.

BCOSR Passed X-Y-Z

EC Passed X-Y-Z

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12 BCOSR RESOLUTION 2026-06 / EC RESOLUTION 2026-01**13 MINIMIZING LIGHT POLLUTION AND ATTAINING**
14 DARK SKY CERTIFICATION FOR BLOOMINGTON

15 WHEREAS, gazing at the majesty of the stars is an ancient human birthright common to all cultures since time
16 immemorial, a source of expansive awe and mystery, of myths and legends, of direction both
17 spiritual and navigatory, of the humbling awareness of the vastness of the cosmos and the
18 perspective of our small place in it, of connection to galaxies whose basic matter is our matter and
19 of wonder at the question of what other beings may be looking at the same sky, of the knowledge
20 that to look up is to look back across time and that some starlight reaching our eyes was emitted
21 even before the birth of our species, of the passage of seasons and the marking of births, of
22 humanity's deepest inquiries into the nature of the universe and of the quiet contemplation
23 available to anyone who steps out and looks up; and

24 WHEREAS, light pollution causes profound ecological disruption, manipulating the rhythms of the natural, and
25 contributing to increased insect mortality, bird disorientation, disrupted plant phenology, confused
26 migration patterns, with documented harms to species such as the endangered Indiana bat and to
27 declining firefly populations, as well as causing suppressed melatonin production in humans; and

28 WHEREAS, the presence in our city of Indiana University's Astronomy Department and the Kirkwood
29 Observatory, as well as Bloomington's proximity to Hoosier National Forest, Morgan-Monroe and
30 Yellowwood State Forests, Brown County, Spring Mill, and McCormick's Creek State Parks, and
31 some of the darkest remaining skies in Indiana makes the city a natural candidate to anchor a
32 regional dark sky corridor, and Dark Sky Community certification would distinguish Bloomington
33 as a leader in a growing national movement while supporting astrotourism and the regional
34 outdoor recreation economy; and

35 WHEREAS, light pollution is a manageable phenomenon that can be reduced by choice through political will
36 and vision, and Bloomington is well-placed to attain certification as a Dark Sky community,
37 having already made advancements that meet some of the existing criteria for such a designation;
38 and

39 WHEREAS, the American Medical Association in 2016 adopted guidance (Report 2-A-16)¹ recommending that
40 outdoor lighting use a correlated color temperature of no greater than 3000 Kelvin, finding that

¹Human and Environmental Effects of Light Emitting Diode (LED) Community Lighting, Report of the Council on
41 Science and Public Health, American Medical Association:

42 https://policysearch.ama-assn.org/councilreports/downloadreport?uri=/councilreports/a16_csaph2.pdf

43 high-CCT lighting is associated with adverse health effects including sleep disruption and
44 melatonin suppression; and

45 WHEREAS, a 2026 study² found that artificial light at night significantly extends the duration of the pollen
46 season and elevates allergen exposure, with light-polluted sites experiencing pollen seasons up to
47 fifty days longer and nearly twice the proportion of days at severe allergy thresholds compared to
48 sites with minimal artificial light; and

49 WHEREAS, the assumption that more lighting necessarily produces greater public safety is not supported by
50 evidence; research³ consistently finds that poorly designed lighting can reduce safety by producing
51 glare⁴ that impairs night vision and creating sharp shadows that conceal rather than reveal, and that
52 the most rigorous studies on the relationship between lighting levels and crime find no consistent
53 effect, while finding that lighting quality, direction, and appropriateness to context matter far more
54 than light quantity; and

55 WHEREAS, the City does not currently maintain a comprehensive inventory of streetlights within
56 Bloomington, and existing datasets held by the City and Duke Energy diverge dramatically in their
57 totals, do not agree on which lights the City itself maintains, omit most city-maintained lights in
58 parks, and do not include any information on lights on the Indiana University campus, all
59 demonstrating the need for a full inventory of public lights; and

60 WHEREAS, the City directly maintains only a small fraction of the total streetlights within Bloomington, with
61 the overwhelming majority leased from or maintained by Duke Energy; and

62 WHEREAS, based on responses to public record requests, the city does not currently possess an inventory of
63 streetlights that contains information pertaining to the correlated color temperature or most recent
64 date of replacement for lights maintained either by Duke or the city; and

65 WHEREAS, outdoor lighting accounts for a significant share of municipal energy consumption, and measures
66 such as dimming, adaptive controls, curfews, and the removal of unwarranted fixtures directly
67 reduce electricity use, lowering both costs to the community and greenhouse gas emissions
68 associated with energy generation; and

69 WHEREAS, the City of Bloomington began a large-scale conversion of sodium vapor streetlights to LED by
70 2023⁵, during which period uReport complaints from residents regarding bright, glaring, or
71 otherwise intrusive lighting rose sharply from an average of 11 per year in the preceding decade to
72 over one hundred per year, consistent with Duke Energy's standard Roadway LED product being
73 specified at 4000 Kelvin through this period; and

74 WHEREAS, more recent Outdoor Lighting Service Agreements indicate that fixtures now being leased by the
75 City are 3000 Kelvin and compliant with the recommended color temperature standard, such that
76 bringing the remaining non-compliant fixtures into compliance through the natural replacement
77 cycle represents primarily an ongoing operational cost rather than a significant capital expenditure;
78 and

83 ² Brandt Geist, Lin Meng, Daniel S W Katz, Huidong Li, Franz Hölker, Qian Xiao, Artificial light at night extends
84 pollen season and elevates allergen exposure, PNAS Nexus, Volume 5, Issue 1, January 2026, pgaf405,
85 <https://doi.org/10.1093/pnasnexus/pgaf405>

80 ³ Steinbach, R., Perkins, C., Tompson, L., Johnson, S., Armstrong, B., Green, J., Grundy, C., Wilkinson, P., &
81 Edwards, P. (2015). "The effect of reduced street lighting on road casualties and crime in England and Wales:
82 controlled interrupted time series analysis." Journal of Epidemiology and Community Health, 69(11), 1118–1124.
83 DOI: [10.1136/jech-2015-206012](https://doi.org/10.1136/jech-2015-206012)

⁴ <https://darksky.org/resources/what-is-light-pollution/effects/safety/>

⁵ "Bloomington in the midst of transitioning to LED streetlamps," Indiana Public Media, June 2023
79 <https://www.ipm.org/2023-06-28/bloomington-in-the-midst-of-transitioning-to-led-streetlamps>

85 WHEREAS, Bloomington's Unified Development Ordinance (UDO) at Section 20.04.090 already requires full
86 cutoff shielding, establishes light trespass limits at property lines, caps total lumen output adjacent
87 to residential districts, mandates curfews for parking lots and recreational facilities, and prohibits
88 lighting of conservation easements, meeting some but not all of the criteria⁶ established by
89 DarkSky International for community designation; and

90 WHEREAS, certification of Bloomington as a Dark Sky Community would make it among the largest such
91 communities in the United States and peer to cities such as Flagstaff, Arizona, a similarly sized
92 college town; and

93 WHEREAS, obtaining Dark Sky Community status is an ambitious, attainable goal for Bloomington, and the
94 substantive reforms required to pursue it would meaningfully reduce light pollution, protect
95 ecological and human health, and improve nighttime quality of life regardless of whether full
96 certification is ultimately achieved.

97 NOW THEREFORE, BE IT HEREBY RESOLVED BY THE BLOOMINGTON COMMISSION ON
98 SUSTAINABILITY AND RESILIENCE AND THE BLOOMINGTON ENVIRONMENTAL COMMISSION,
99 THAT

100 SECTION 1. Recommendations.

101 (1) **Unified Development Ordinance (UDO) Changes.** The following changes to the UDO are recommended
102 to reduce light pollution and to advance Bloomington toward certification as a Dark Sky Community by
103 DarkSky International:

- 104
- 105 (a) That the Common Council amend UDO § 20.04.090(b) by adding a new subsection (4), titled
106 “Amortization of Non-Conforming Lighting,” to read: “All outdoor lighting fixtures existing on
107 the effective date of this subsection, both publicly and privately owned, that do not conform to the
108 requirements of UDO § 20.04.090 shall be brought into compliance within ten (10) years of the
109 effective date of this subsection.” *This satisfies Dark Sky Community Requirement 1(H),*
110
- 111 (b) That the Common Council amend UDO § 20.04.090(c)(4) to add a new subsection (d) as follows:
112 “A maximum light intrusion threshold of 0.1 footcandles shall be established at the boundary of
113 any riparian buffer, wetland buffer, karst conservancy easement, or conservation easement
114 established under UDO § 20.04.030, and to require photometric plans demonstrating compliance
115 for development adjacent to such areas.” *This exceeds Dark Sky Community requirements.*
116
- 117 (c) That the Common Council amend UDO § 20.04.090(c)(5) by adding a new subsection (C), titled
118 “Prohibition of Exterior Uplighting,” to read: “Exterior uplighting of buildings and architectural
119 features is prohibited, with a narrow exception for structures designated as historic where the
120 Historic Preservation Commission approves a lighting plan” and to repeal UDO §
121 20.04.090(c)(5)(A)(iii) which allows such uplighting when under canopy structures. *This exceeds*
122 *Dark Sky Community requirements.*
123
- 124 (d) That the Common Council amend UDO § 20.04.090(c)(5)(A) to add a definition of “fully
125 shielded” as follows after (i): “(ii) Fully shielded shall mean that the fixture, as installed, (a) emits
126 no light at or above the horizontal plane, such that the light source is not visible from any point at
127 or above the horizontal plane of the fixture; (b) does not exceed a rating of U0, G1, and B2 under
128 the Illuminating Engineering Society's BUG classification system⁷ (TM-15) with a reduced
129 maximum of U0, G0, B1 for fixtures within 500 feet of any environmentally sensitive area
130 protected under § 20.04.030; and (c) directs all emitted light within a maximum cone of seventy
131 (70) degrees from the vertical axis of the fixture (i.e., no light emitted at angles greater than 70
132 degrees from nadir),” and deleting § 20.04.090(c)(5)(A)(iii). *This clarifies and significantly*

⁶ See full list of criteria here: <https://darksky.org/app/uploads/2018/07/IDSC-Guidelines-Jun2018.pdf>

⁷ http://www.escolighting.com/PDFfiles/BUG_rating.pdf

strengthens the existing full cutoff standard, exceeding Dark Sky Community Requirement 1(A).

- (e) That the Common Council amend UDO § 20.04.090(c) of the UDO to add a new subsection (7) as follows: “A maximum color temperature of 3000 Kelvin or lower for all new outdoor lighting installations shall be required and any replacement of existing outdoor lighting fixtures shall comply with the same correlated color temperature standards, with a reduced maximum of 2200 Kelvin or lower for fixtures within 500 feet of any environmentally sensitive area protected under Section 20.04.030.” *This satisfies Dark Sky Community Requirement 1(B),*
- (f) That the Common Council amend UDO § 20.04.090(c) by adding a new subsection (8), titled “Warrant for Publicly-Owned Lighting,” to read: “(A) General Provisions. New publicly-owned outdoor lighting shall be installed only where a specific, site-specific, and documented safety, navigation, or functional need has been established. General assertions of improved safety or security, without reference to conditions at the specific location, shall not constitute a sufficient warrant.” *This satisfies Dark Sky Community Requirement 1(E)(i).*
- (g) That the Common Council add a new subpart (B) to UDO § 20.04.090(c)(8), titled “Lighting Restrictions Near Environmentally Sensitive Areas,” to read: “No new outdoor lighting, whether publicly or privately owned, shall be installed within 500 feet of any riparian buffer, wetland buffer, karst conservancy easement, or conservation easement established under Section 20.04.030, unless the installing authority or applicant demonstrates by clear and specific evidence that (i) a serious and immediate risk to public safety exists that cannot be mitigated through non-lighting alternatives such as reflective materials, signage, barriers, or path realignment; (ii) the proposed installation is the minimum fixture count, lowest lumen output, and narrowest distribution pattern sufficient to address the identified risk; and (iii) all fixtures comply with a maximum correlated color temperature of 2200 Kelvin, are fully shielded with no backlight component oriented toward the sensitive area, and are subject to adaptive controls or curfew. The burden of proof shall rest with the installing authority or applicant.” *This exceeds Dark Sky Community requirements.*
- (h) That the Common Council amend UDO § 20.04.090(c) by adding a new subsection (9), titled “Publicly-Owned Lighting Controls,” to read: “All new installations of publicly-owned outdoor lighting, including streetlights, park path lighting, and lighting at public facilities, shall incorporate adaptive controls such as timers, motion sensors, or photocell-activated switches, or shall be subject to an established curfew consistent with the use. In the absence of an explicitly established curfew for a public use, a default cutoff time of no later than 10 pm or 30 minutes after normal authorized activities, whichever is later, shall be established.” *This satisfies Dark Sky Community Requirement 1(E)(ii),*
- (i) That the Common Council amend UDO § 20.04.090(e)(1) by striking the language limiting the lumens-per-acre cap to parcels “bordered by any R1, R2, R3, R4, or RMH zoning district” so that the 40,000 lumens per acre cap applies to all mixed-use and nonresidential properties, and retitling the subsection from “Adjacent to Residential Districts” to “Maximum Light Output.” *This satisfies Dark Sky Community Requirement 1(C) and 1(D),*
- (j) That the Common Council amend UDO § 20.04.090(e)(2)(A), (B), and (C) to move the curfew time up to 10 p.m. for all categories that currently have an 11 p.m. curfew; and to establish a 10 p.m. curfew for all other categories that currently have no hard curfew. All categories shall allow lighting to stay illuminated after 10 p.m. until up to 30 minutes past the cessation of normal authorized activities if those activities take place after 10 p.m. *This satisfies Dark Sky Community Requirement 1(G) for outdoor recreational facilities and exceeds Dark Sky requirements for parking lots, canopies, and drive-through bays.*
- (k) That the Common Council amend UDO § 20.04.100(g) by adding a new subsection (5), titled “Illuminated Sign Standards,” to read: “Illuminated signs shall not exceed 100 nits (100 cd/m²) luminance between sunset and sunrise, measured under conditions of a full white display. Sign illumination shall be extinguished completely beginning one hour after sunset and remain off until one hour before sunrise. Individual illuminated signs shall not exceed 200 square feet (18.6 square

meters) of luminous surface area.” *This satisfies Dark Sky Community Requirement 1(F)(i), 1(F)(ii), and 1(F)(iii),*

(l) That the Common Council amend UDO § 20.04.090(c)(4)(a) to read “All lighting fixtures shall be installed so that light trespass from any property line shall not exceed 0.5 footcandles at a point one (1) meter beyond the property line. Properties bordered by R1, R2, R3, R4, or RMH are allowed no more than 0.3 footcandles at a point five meters beyond the property line adjacent to those districts or at the dwelling façade, whichever distance is closest.”

(m) That the Common Council amend UDO § 20.04.090(c)(4)(b) to read “Properties bordered by R1, R2, R3, R4, or RMH are allowed no more than 0.3 footcandles at a point five (5) meters beyond the property line adjacent to those districts or at the dwelling façade, whichever distance is closest.”

(2) **General Recommendations.** The following policy actions are further recommended to bring Bloomington into compliance for Dark Sky Community recognition and reduce light pollution in Bloomington:

(a) That City of Bloomington Utilities conduct an inventory of all city-owned and utility-leased streetlights and public facility lighting, assessing each fixture for correlated color temperature, shielding type, full cutoff compliance, and lumen output. The inventory shall specifically identify all fixtures that do not meet the full cutoff standard defined in UDO § 20.04.090(c)(5)(A), and shall include an assessment of whether non-compliant fixtures can be brought into compliance through retrofit shielding or require full replacement. The results shall be reported to the Common Council with a proposed timeline and cost estimate for converting non-compliant fixtures to 3000K or lower, fully shielded, full cutoff alternatives, with a reduced maximum of 2200K or lower for fixtures located within 500 feet of any environmentally sensitive area protected under UDO § 20.04.030, with a goal of reaching at least 70% compliance within three years and substantial progress toward full compliance within five years, subject to Council appropriation, utility coordination with Duke Energy, and alignment where practical with the natural replacement cycle of existing fixtures. *This satisfies Dark Sky Community Requirement 2(A).*

(b) That the City establish a sky quality measurement program, in partnership with Indiana University’s astronomy department or other qualified entity, to document baseline and ongoing nighttime sky brightness conditions at representative locations across the city. *This satisfies Dark Sky Community Requirement 6,*

(c) That the City develop a public education and outreach program on light pollution and dark sky awareness, which may be coordinated with existing environmental education efforts and community partners, with a goal of at least three public outreach events annually. *This satisfies Dark Sky Community Requirement 2(B) and 4(A),*

(d) That the Commission on Sustainability and Resilience and/or the Environmental Commission, upon substantial progress toward the actions described above, evaluate the city’s readiness to apply for Dark Sky Community designation and report to the Common Council with a recommended timeline for application.

(e) That the City initiate coordination with Monroe County government regarding compatible lighting standards for the shared planning jurisdiction and for county roads adjacent to city limits, particularly near Griffy Lake, the Clear Creek corridor, and the Lake Monroe watershed.

(f) That the Mayor formally request that Indiana University evaluate its campus outdoor lighting for consistency with DarkSky International standards, including correlated color temperature and shielding, and explore a voluntary commitment to align campus lighting practices with the city’s standards.

(g) That the City of Bloomington amend its Outdoor Lighting Service Agreement with Duke Energy to specify correlated color temperatures of 3000K or lower (2200K or lower in sensitive areas), full cutoff optics, and appropriate wattage matched to task as the default procurement

249 specifications in all future Outdoor Lighting Service Agreements between the City and Duke
250 Energy, consistent with the specifications already used in recent city contracts⁸.

251 **SECTION 2. Transmittal.**

- 252 1. The Chairs of each respective commission shall jointly transmit copies of this Resolution within
253 ten (10) business days of the date of passage, or shall delegate such task to the Vice Chair or
254 Secretary of both commissions, to the Mayor, to all members of the Common Council, to the
255 Director of the Planning and Transportation, to the Director of Economic and Sustainable
256 Development, to the Director of Public Works, to the Director of Housing and Neighborhood
257 Development, to the Director of Parks and Recreation, to the President of Indiana University, to all
258 members of the Indiana University Board of Trustees, to all members of the Monroe County
259 Board of Commissioners, and to all members of the Monroe County Council.
260
- 261 2. The Chairs of each respective commission are requested to jointly transmit a courtesy copy to the
262 chair of the Indiana University Department of Astronomy.
263
- 264 3. The staff liaisons of each respective commission are requested to post a copy of the resolution on
265 both of the Commission websites within ten (10) business days of passage.
266
- 267 4. The Commissions further authorize the resolution author and co-sponsor(s) to speak before the
268 Common Council on behalf of their respective Commissions in order to communicate the
269 recommendations of this resolution as adopted.

270 PASSED AND ADOPTED JOINTLY by the Bloomington Commission on Sustainability and Resilience and the
271 Bloomington Environmental Commission together in joint session upon this ____ day of _____, 2026.

272 _____
273 Justin Vasel, Chair
274 Bloomington Commission on Sustainability and Resilience
275

276 _____
277 Carrie Albright, Chair
278 Bloomington Environmental Commission
279

280 *The views expressed here are solely those of the Bloomington Commission on Sustainability and Resilience and the Bloomington Environmental*
281 *Commission, as approved in their public meetings, and do not necessarily reflect the views, policies, or positions of the City of Bloomington. Only*
282 *the Office of the Mayor has the authority to issue policy statements on behalf of the Executive Branch of the City of Bloomington.*

⁸ See city contract: [Outdoor Lighting Service Agreement with Duke Energy for Various Locations](#), Feb. 2026
283 specifying 3000K lighting for 22 new light poles, which appears broadly representative of several other recent
284 contracts with Duke for similar services.