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Board Chair
Truman State University

Stephanie Todd, Board Vice Chair
Missouri Sierra Club

Donald Ficken, Board Treasurer
Astronomical Society of Eastern Missouri
St. Louis Astronomical Society

Daphne Zakarian, Board Secretary
Truman State University

Jackie Beucher, Board Member
Astronomical Society of Kansas City

Loring Bullard, Board Member
Greater Ozarks Audubon Society

Trish Erzfeld, Board Member
Perry County Tourism

DeAnn Gregory, Board Member
Missouri Sierra Club

Jean Nock, Board Member
Affiliate Director,
Conservation Federation of Missouri
Missouri Master Naturalist

Jake Ronecker, Board Member
Missouri Master Naturalist

William Neubert, Board Member
St. Louis Astronomical Society

Cathy Webb, Board Member
Greater Ozarks Audubon Society

Rick Yord, Board Member
Astronomical Society of Kansas City

DarkSky MISSOURI

2024 Annual Report and 2025 Plan

In November 2024, Thousand Hills State Park received certification as an Urban Night Sky Place by the DarkSky International becoming the first state park in Missouri to be designated a UNSP.

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BOARD CHAIR, EXECUTIVE DIRECTOR MESSAGE

2024 was an exciting and greatly consequential year for the Missouri chapter: we successfully organized our first "DarkSky Mssouri Festival" at Big Spring, Missouri in collaboration with the Ozark National Scenic Waterway Park. Additionally, we added a second Urban Night Sky Place with Thousand Hills State Park near Kirksville, Missouri achieving this distinction in November 2024. These and a few other highlights are listed below:

1) Successful **fundraising event at Wenwood Farm Winery** (September 2024) in Bland, Missouri which was attended by close to 500 people, and helped us raise close to $1,500 for DarkSky Missouri. Board members Jean Nock and Vayujeet Gokhale helped organize, coordinate, and conduct this fundraising event.
2) **Thousand Hills State Park** becomes first state park in Missouri, and the second location in the state, to be designated an **"Urban Night Sky Place"** by DarkSky International. DarkSy Missouri board members Stephanie Todd and Vayujeet Gokhale helped the park officials through the application process.
3) DarkSky Missouri was elected as an **Affiliate chapter in the Conservation Federation of Missouri (CFM)**. The **National Wildlife Association**, in turn, has selected CFM, as the "Affiliate of the year". This presents DarkSky Missouri with opportunities to highlight our work and forge consequential collaborations at a national level. Additionally, CFM has a strong legislative presence in Jefferson City, and will help us carry our message to State-level lawmakers.
4) **Successful grant application** for the ***David Risberg Memorial Affiliate Grants*** thatare awarded by the **Conservation Federation of Missouri** ($2,840). The grant ("Educating youth to advocate for the conservation of nighttime darkness as a natural resource") is aimed towards introducing students at Wohlwend Elementary and Oakville Middle schools in St. Louis to the harmful effects of the indiscriminate use of outdoor lighting and tothe beauty and value of the natural nighttime environment. We hope that this will empower students to work towards protecting one of our most valuable and underappreciated natural resources: darkness at night.
5) **Successful grant application** for the ***Missouri Bird Conservation Initiative*** (MOBCI) grant program ($5,000). Funding from this grant will help initiate and strengthen DarkSky programs in Kirksville, St. Louis, Kansas City and Springfield.
6) **Successful organization and implementation of the first DarkSky festival** in Big Spring, Missouri, in collaboration with the Ozark National Scenic Waterway Park. The festival included star parties on the nights of October 25 and 26, and a series of talks by naturalists, astrophotographers, National park rangers, and dark sky advocates.

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DarkSky Missouri members and board members continued to engage audiences throughout the state. Notable events include a seminar at the National Wildlife Rehabilitator Association Conference in Omaha Nebraska (March), "International DarkSky Week" celebrations in Kirksville (April) that included a 'nightwalk' with Truman State University administrators, Earth Day at Forest park in Saint Louis (April), SciFest at the Saint Louis Science Center (April), the BioBlitz event in Golden, Mo (June), and the Butterfly House at Faust Park in Saint Louis (September). In all, DarkSky Missouri members organized or participated in close to 100 in-person and virtual outreach events, and reached more than 7,000 individuals in all. Additional details are in Exhibit G of this document.

DarkSky Missouri members continued to strengthen collaborations with groups including Missouri Master Naturalists chapters, the Prairie Foundation, Audubon and Sierra club chapters, Missouri Bird Conservancy Initiative (MOBCI), and the Missouri River Bird Observatory (MRBO). Dr. Gokhale was the keynote speaker for an in-person DarkSky training session at Rock Bridge State Park on the sidelines of the Missouri Master Naturalist conference. Several Naturalists, in particularly the Saint Louis, Columbia, and Kansas City areas are now participating in a citizen science project related to measuring the sky brightness at their location using *Unihedron* Sky Quality Meters.

DarkSky Missouri officers and members are also in touch with city officials and council members in several Missouri towns & cities, helping them craft language in their laws and ordinances that will help minimize the ill-effects of unshielded, glary blue-white LED lighting. We have also established a few contacts with lighting design firms to help spread our message with practical lighting solutions.

2025 present further opportunities to strengthen DarkSky Missouri, for example in terms of increasing our membership, improving communications with members and potential members, and involving our members to help bring about positive change in all communities. However, we are financially stronger, organizationally more robust, and have a small, dedicated and effective core of volunteer members that are helping establish responsible nighttime lighting as an important consideration in conservation plans and efforts all across the state.

The attached report provides more details about 2024 and discusses our plans for 2025. Enjoy!

Please join us in our fight to reduce light pollution in Missouri. We need volunteers to meet with parks and communities, volunteers to help on committees, and donations to support our growing list of projects. To learn more, email us at info@darkskymissouri.org or call (636) 851-9630.

Vayujeet Gokhale
Chair, DarkSky Missouri

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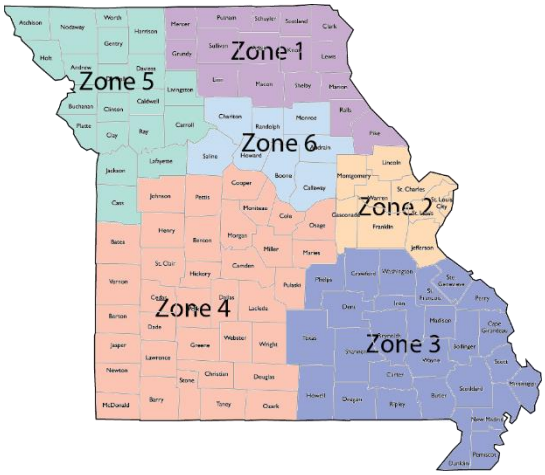
2024 ANNUAL REPORT

Executive Summary

The following pages outline our chapter's sixth full year of operation, recapping our 2024 programs, people, membership, marketing, and financial statements.

Since our formation in 2018, we have striven to have board members, volunteers, and assets in all six of our operating regions. Presently, we have board members from five of the six zones. We continue to expand our volunteer network across Missouri by partnering with groups such as Conservation Federation of Missouri and its vast network of affiliates, Missouri Master Naturalists, the Audubon society, the Sierra club, Missouri Bird Conservation Initiative, and the Prairie foundation.



The designation of Thousand Hills State Park, located near Kirksville, Missouri as an "Urban Night Sky Place" (UNSP) was an important milestone for our Missouri Chapter. Stacy Park was the first such park within Missouri to obtain this designation in 2021. Thousand Hill's designation was a result of almost three years of work by dedicated volunteers and students from Truman State University, who helped make outdoor lighting fixture inventories, make sky brightness measurements, and help conduct star parties at the park 6-8 times a year. At least three other State Parks are close to officially applying for UNSP status within the next few months. More interested is expected as we continue to talk with cities and parks about the IDSP program.

We would like to express our gratitude to DarkSky International for supporting us and to our many volunteers, partners, and donors who made this year successful.

Please join us in our fight to reduce light pollution in Missouri. We need volunteers to champion our cause, workers to help with specific tasks, and funds to support our growing list of projects. To learn more, please email me at info@darkskymissouri.org or call (636) 851-9630.

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Programs

DarkSky Missouri oversees a variety of programs designed to measure light pollution, raise public awareness, and promote positive change. Notable program activity in 2024 is highlighted below.

Outreach Programs

DarkSky volunteers organized and participated in several outreach events in 2024. As part of a concerted effort, we have increased our participating in events where we are likely to encounter individuals and organizations that are already invested in conservation efforts. Examples include Science festivals, Earth-day celebrations and so on.

As shown in **Table 1**, our chapter participated in close to 100 events during 2024. Most of the events have now transitioned to in-person events, though we continued to engage folks from all over the state via virtual events.

TABLE 1 – Outreach Programs

Year	Number of Events				Estimated Attendance			
	In Person	Virtual	Hybrid	Total	In Person	Virtual	Hybrid	Total
2024	85	15	0	100	6898	615	0	7513
2021	10	21	2	33	375	872	155	1502
2020	13	21	0	34	1679	4843	0	6522
2019	9	0	0	9	6610	0	0	6610

Refer to **Exhibit G**
2024"Major" Outreach Programs for a detailed listing of events supported in 2024.

Sky Quality Measurement Program

DarkSky Missouri partners with Truman State University in Kirksville, Missouri, to place Sky Quality Meters ("SQMs") in parks, recreational areas, educational institutions, and municipalities. The SQMs are pointed to a fixed point in the sky with sky brightness measurements logged on a continuous basis for scientific analysis. Eleven sites were active in 2024.Funding for purchase of the SQM's was provided by the NASA-Missouri Space Grant Consortium. **Figure 1**is a photo of an SQM installed at the Gateway Arch National Park in St. Louis.

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Dr. Vayujeet Gokhale, Professor of Physics at Truman State University in Kirksville, manages the overall sky quality measurement program. Students from Truman State University contribute to the program in many ways, including writing procedures for SQM operation, and developing graphs to plot data collected.

Beyond the scientific importance of the measurement data, the SQM program is an important tool to engage the community. Each measurement site must request the loan of the SQM from IDA Missouri and establish a plan to collect and report the data each month. Often, approvals must be obtained through official channels, raising the visibility of the IDA to community leaders.

Figure1– Photo of an SQM installed at the Gateway Arch National Park in St. Louis. Eleven SQMs are installed across Missouri to continuously collect sky brightness data for analysis by Truman State University.

TABLE 3 – Sky Quality Meters by Zone

Zone	Location
Zone 1 - Northeast Region	• Magruder Hall, Kirksville, MO • Truman State Observatory, Kirksville, MO • Missouri State Parks – Thousand Hills, Kirksville, MO
Zone 2 - St. Louis Region	• Brommelsiek Park, Defiance, MO • Jefferson College, Hillsboro, MO
Zone 3 - Southeast Region	• City of Perryville, MO • Mineral Area College, Park Hills, MO • SEMO, Cape Girardeau, MO
Zone 4 - Lakes Region	• City of Ozark, MO
Zone 5 - Kansas City Region	• ASKC, Kansas City, MO • ASKC, Lawson, MO
Zone 6 - Central Region	

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Figure 2 – The Five Principles of Responsible Outdoor Lighting Practices developed by IDA and the Illuminating Engineering Society apply to all outdoor lighting.

Municipal Programs

The growth of light pollution in urban areas is a significant contributor to the increase of light pollution in Missouri. Our chapter encourages cities to enact ordinances or zoning codes that follow the "**Five Principles of Responsible Outdoor Lighting Principles**" as outlined in **Figure 2**. When requested, we provide "model" ordinances and access to lighting experts for technical questions.

Our chapter does not yet have an organized system to track lighting-related ordinances and resolutions of municipalities in Missouri. Tracking out lighting codes, and helping concerned citizens raise this issue with their city authorities is one of our priorities for 2025 (See 2025 Strategic plan). Presently, the city of Brentwood, Ellisville, the City of Ozark, and Webster Groves have "good" lighting ordinances. We are presently working with Kirkwood to help them articulate an effective lighting ordinance.

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International Dark-Sky Places Program

DarkSky Missouri continues to focus on the International Dark-Sky Places Program (IDSP) in order to encourage communities, parks and protected areas around Missouri to preserve and protect dark sites through responsible lighting policies and public education.

DarkSky International offers five IDSP designations as described on DarkSky.org:

1. International Dark Sky Reserves
2. International Dark Sky Sanctuaries
3. International Dark Sky Parks
4. International Dark Sky Communities
5. Urban Night Sky Places

For the foreseeable future, only the last three designations can be achieved in Missouri due to the existing levels of light pollution. A color-coded map showing the darkest areas of our state is provided in **Figure 3**. Quantitative information about Missouri's darkest skies is provided on our website at DarkSkyMissouri.org/DarkSkies.

The IDSP's "Dark Sky Parks" designation is achievable by parks in remote areas of Missouri. Parks located in the gray/purple areas of the color-coded map provided in **Figure 3** are prime candidates for the designation. The "Urban Night Sky Place"(UNSP) designation is particularly attractive as its narrow focus is easier to achieve and the control of light pollution in parks is less controversial. A successful UNSP designation builds community support, creating a natural steppingstone to achieve the more ambitious "Dark Sky Community" designation.

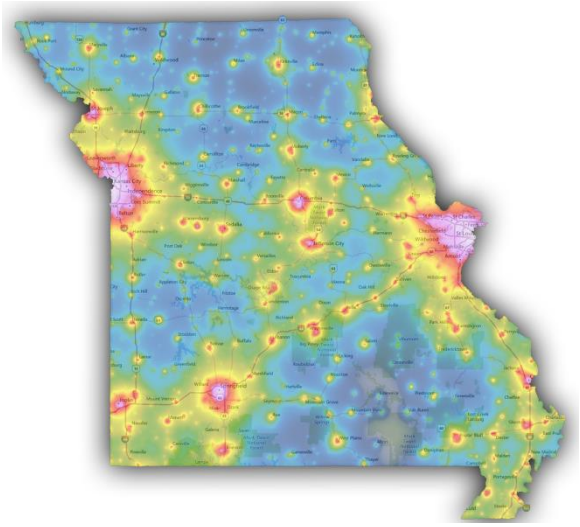

Figure 3 – This color-coded map of Missouri sourced from lightpollutionmap.info shows that Missouri still has a few dark areas left, as indicated by the gray areas on the map.

Our chapter took several actions in 2024to build a state-wide volunteer support network to engage parks and communities, to build relations with community leaders, and to provide discounted resources for parks and communities wanting to pursue an IDSP designation.

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The continued top-down, bottom-up approach we have adopted for several years is designed to get the attention of community leaders while building citizen support to encourage leaders to act. We see evidence this approach is working. We are presently pursuing UNSP status in two Missouri State Parks (Knob Noster & Castlewood) and several community parks in the Saint Louis area. These include Shaw and Oaknoll Park in Clayton, Klamberg Woods Conservation area in Ellisville, Wildwood Community Park and Bluff View Park in Wildwood, and Bellefonte Cemetery in St. Louis city. Officials from these parks have formally expressed interest in being designated under the IDSP program. Informal discussions are underway in other locations.

Lights Out Heartland

Missouri lies directly in the path of the Mississippi Flyway, one of the heaviest bird migration flyways in the world. Most birds fly at night, navigating using the Moon. Stars, and night sky. As they pass over big cities, birds can become disoriented by bright artificial lights and sky glow. An estimated 600 million birds in the U.S. die each year from exhaustion caused by light pollution and from collisions with buildings. A study published by Cornell Lab of Ornithology ranked St. Louis and Kansas City among the top ten deadliest cities for birds during migration.

In response to concerns about light pollution impacting birds, our chapter spearheads a collaboration of organizations called "Lights Out Heartland". Lights Out Heartland seeks to reduce the impact of light pollution on migrating birds through responsible lighting practices, particularly in commercial buildings. As noted in **Table 4**, twenty-eight bird-friendly organizations in Missouri, Kansas, Iowa, Tennessee, and Arkansas participate in this growing collaboration.

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Table 4 - Lights Out Heartland Partners

ARKANSAS
Arkansas Audubon Society(arbirds.org)
Arkansas Natural Sky Association (darkskyarkansas.org)
Pink House Alchemy ((https://pinhousealchemy.com(

IOWA
Green Iowa AmeriCorps (greeniowaamericorps.org)
Lights Out Ames ((instagram.com/lighsoutames)

KANSAS
Johnson County Community College ((pinhousealchemy.com)
Topeka Audubon Society ((topkeaaudubonsociety.org))

MISSOURI
Audubon Center at Riverlands(riverlands.audubon.org)
Burroughs Audubon Society of Greater KC(burroughs.org)
Columbia Audubon Society(columbia-audubon.org
Gateway Arch National Park Missouri (nps.gov/jeff)
Greater Ozarks Audubon Society (greaterozarksaudubon.org)
DarkSky Missouri(darkskymissouri.org)
Kansas City Zoo & Aquarium ((fotzkc.org))
Lakeside Nature Center(lakesidenaturecenter.org)
Missouri Department of Conservation ((mdc.mo.gov)
Missouri River Bird Observatory (mrbo.org)
Missouri Sierra Club ((sierraclub.org/Missouri))
Saint Louis Zoo(stlzoo.org)
St. Charles County Parks(sccmo.org/232/Parks-Recreation)
St. Louis Arts Chamber of Commerce(stlouisartschamberofcommerce.org)
St. Louis Audubon Society(stlouisaudubon.org)
St. Louis Public Library (slpl.org)
Tyson Research Center (tyson.wustl.edu)
Washington University - St. Louis (wustl.edu)
Webster Groves Presbyterian Church (wgpc.org)
Wildlife Rescue Center (mowildlife.org)

OKLAHOMA
Oklahoma Alliance for Geographic Education (okageweb.org)

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In addition to raising public awareness about light pollution's negative impact on birds, the collaboration recognizes commercial buildings that reduce/turn off lights during May and September of each year, among the busiest months for migrating birds.

The collaboration is supported by a website (lightsoutheartland.org) and Facebook page (facebook.com/LightsOutHeart). Virtual meetings are held every two months.

Student Program

IDA Missouri seeks to engage students and younger audiences to become advocates for reducing light pollution. Our chapter was active with student/educator groups in 2021:

- Campus SHINE Missouri program –Dr. Vayujeet Gokhale, Professor at Truman State University, has a regular, ongoing program to engage students to learn about light pollution and advocate change. In addition to their advocacy in Kirksville, students analyze, and chart sky quality brightness data collected from our state-wide SQM program.

Figure 4: (A) A map of Kirksville, Missouri with five locations designated for measurements within the Truman State campus (dark boundary) and another five locations elsewhere in town. Locations are chosen based on safety, public access at night, clear access to sky without overhanging lights, buildings or trees nearby.(B): An Opple Light Master 4 showing spectral data and flicker in a light fixture on the Truman campus. (C): A handheld Unihedron Sky Quality Meter (size of a deck of cards). (D): Light Meter Digital luxmeter with sensor (top right) and digital readout.

Starting October 2024, Dr. Gokhale has provided handheld SQMs to the following institutions:

- **Missouri State University, Springfield, MO** – Dr. Sarah Morrison and Simerpreet Girn
- **Southeast Missouri State University, Cape Girardeau, MO** – Joe Murphy & Peggy Hill
- **Jefferson College, Hillsboro, Mo** –Maryanne Angliongto & Bob Brazzle
- **Johnson Area Community College, Overland Park, KS** – Krystal Anton

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Also mentioned are the individuals who will be trained to measure the sky brightness using SQMs, and to do an inventory on outdoor lights on their respective campus using tools such as "*Epicollect*" and luxmeters and handheld spectrometers provided by Dr. Gokhale.

- **Conservation Federation of Missouri** – DarkSky Missouri is working with teachers and administrators at the ***Wohlwend elementary*** and ***Oakville middle schools*** to educate young students about the importance of darkness at night. To this end, we have successfully applied for the *David Risberg Memorial Grant*from the Conservation Federation of Missouri. Students will use night vision cameras purchased from this grant to monitor nighttime activity of animals on the prairie and wilderness areas adjacent to the schools. Students will also develop an inventory of outdoor lights by using handheld luxmeters and spectrometers purchased from funds available through this grant.

DarkSky Missouri Festival

The **first DarkSky Missouri Festival** "Show me the Stars" was held on the 25th and 26th of October 2024 at Big Spring-Van Buren, Missouri. Organizing and conducting this event was greatly facilitated by rangers from the National Parks Service, in particular, from the Ozark National Scenic Riverway.

1) The festival included eight talks on topics ranging from logging in the Big Spring area, the uniqueness and beauty of Big Spring, nightscape photography, the detrimental effects of irresponsible nighttime outdoor lighting, and on the wonders of the dark sky.
2) Several information tables by organizations such as the Greater Ozarks Audubon Society, Missouri River Bird Observatory, MDC, Ozark Riverway Foundation and the Sierra Club White River Chapter were set up during the day.
3) The morning nature walk was extremely well attended (> 50 individuals).
4) The highlights of the festival were the stargazing events on 24th and 25th night. Several telescopes were set up by DarkSky Missouri volunteers as well as amateur astronomers, including those from the St. Louis Astronomical Society.
5) Additionally, night vision goggles and audiomoths (that help us "hear" bat activity at night) provided attendees with audio and visual evidence of nighttime activity of several bird species; in particular bats and owls.

The event was an unqualified success, with over 200 people attending, including close to 100 for the stargazing events.

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Figure 5: The DarkSky Missouri Festival 2024 poster

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People and Operations

The relatively large geographic size of Missouri creates challenges for the Chapter to represent the state as whole. In response, DarkSky Missouri has divided our state into six operating zones as noted in **Figure 6.** The zones allow more thoughtful recruiting of board members by region, building a volunteer network by region, and deploying resources such as Sky Quality Meters by region.

The table on the following page summarizes our people and assets by zone on December 31, 2024.

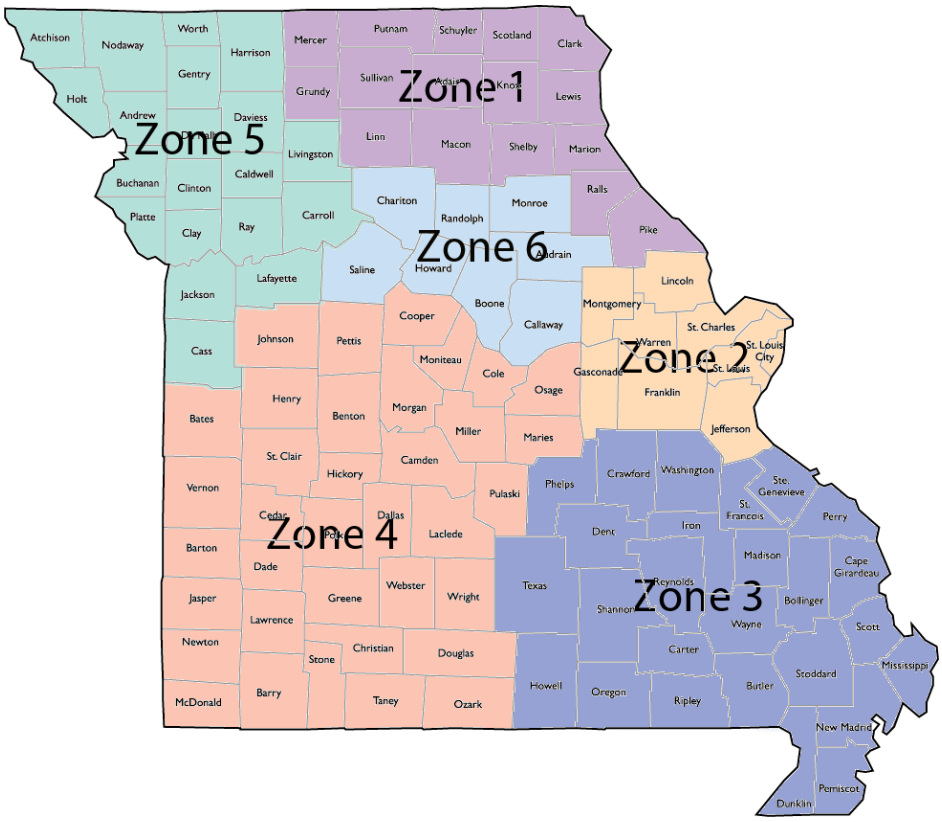

Figure 6–The division of Missouri into six operating zones allows our chapter to more thoughtfully allocate or people and resources to ensure representation in all areas of our state.

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TABLE 5 - PEOPLE AND ASSETS BY ZONE

Zone	Board Members	Advisors	Sky Quality Meter
Zone 1 (Northeast Region)	• Vayujeet Gokhale, Ph.D.	• Vayujeet Gokhale, Ph.D., Truman State University	• Magruder Hall, Kirksville, MO • Truman State Observatory, Kirksville, MO • Missouri State Parks – Thousand Hills, Kirksville, MO
Zone 2 (St. Louis Region)	• Don Ficken • Bill Neubert • Jean Nock • Jake Ronecker	• Dan Duffy, City of Ellisville • Trish Erzfeld, Perry County Heritage Tourism • Will Snyder, Saint Louis Science Center • Dan Zarlenga, Missouri Department of Conservation	• Brommelsiek Park, Defiance, MO • Jefferson College, Hillsboro, MO
Zone 3 (Southeast Region)	• Trish Erzfeld	• Chad Follis, Ph.D. Mineral Area College	• City of Perryville, MO • Mineral Area College, Park Hills, MO • SEMO, Cape Girardeau, MO
Zone 4 (Lakes Region)	• Loring Bullard • Cathy Webb	• David Mitchell, Ph.D., Missouri State University	• City of Ozark, MO
Zone 5 (Kansas City Region)	• DeAnn Gregory • Jackie Beucher • Rick Yord	• Bentley Ousley, ASKC	• ASKC, Kansas City, MO • ASKC, Lawson, MO
Zone 6 (Central Region)	• None	• None	

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Board of Directors

DarkSky Missouri is governed by a Board of Directors. Our board is active, meeting at least six times each year, with board attendance averaging 85% during 2024. Guests are welcome at board meetings.

We ended 2024 with 14 board members. Board expertise includes behavioral ecology, economics, tourism, city operations, state parks and astronomy. The diverse experience and background of the board stimulates robust discussion.

The board elects four officers: Chair, Vice-Chair, Treasurer and Secretary at the end of each calendar year. Elections were held in November 2024 resulted in the election of Stephanie Todd (chair), Jean Nock (vice-chair), Don Ficken (treasurer), and DeAnn Gregory (secretary) as board officers.

Chapter Advisor Program

A "Chapter Advisor" program provides our chapter with access to "experts" from Missouri and to showcase our state-based talent. The role of Chapter Advisor is less demanding than joining our Board or volunteering for a committee. Fewer demands make it easier to recruit top talent with much needed expertise. In addition to providing a useful source of technical expertise, the program helps the chapter recruit new members and chapter leaders.

On December 31, 2024, IDA Missouri had the following Chapter Advisors:

1. Dan Duffy, City of Ellisville, City Council, Ellisville, MO
2. Trish Erzfeld, Perry County Heritage Tourism, Perryville, MO
3. Chad Follis, Ph.D., Mineral Area College, Professor Horticulture, Park Hills, MO
4. Vayujeet Gokhale, Ph.D., Professor of Physics, Truman State University, Kirksville
5. John Kraemer, Ph.D., Professor/Director of Center for Environmental Science, Southeast Missouri State University
6. David Mitchell, Ph.D., Professor of Economics, Missouri State University, Springfield, MO
7. Bentley Ousley, Astronomical Society of Kansas City, Virtual Reality Filmmaker
8. Brett Seymoure, Ph.D., Behavioral Biologist, University of Texas at El Paso
9. Will Snyder, James S. McDonnell Planetarium Manager, Saint Louis Science Center, St. Louis, MO
10. Dan Zarlenga, Missouri Department of Conservation, Metro Media Specialist – St. Louis Regional Office, St. Louis, MO

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Chapter Committees

The Chapter maintains a variety of Standing and Ad-Hoc Committees to address chapter governance, operations, and program support. Specifics can be found in Exhibit E – Chapter Standing Committees and Exhibit F – Chapter Ad-Hoc Committees.

Collaborations/Partnerships

Collaborating and building partnerships with other organizations can be an effective tool in accomplishing our goals of reducing light pollution in Missouri. By combining expertise and leveraging marketing efforts in a cohesive and coordinated plan, great things can be achieved with less effort.

In addition to the "Lights Out Heartland" discussed in the Program Highlights of this document, our chapter also partners with the following groups

- Amateur Astronomy Clubs – DarkSky Missouri is supported by amateur astronomy clubs in Missouri to include the Kansas City Astronomical Society, the St. Louis Astronomical Society, and the Astronomical Society of Eastern Missouri (St. Charles, MO). Amateur astronomy clubs also help raise awareness of DarkSky Missouri's mission, help with volunteers, and assist with measurement sites in the SQM program.

- Gateway Arch National Park in St. Louis –DarkSky Missouri partners with the Gateway Arch National Park in St. Louis to deliver public programs during the year, providing important visibility of the chapter to a national audience. In addition to raising public awareness, the Gateway Arch turns off lights on the Arch Grounds in May and September of each year to help protect birds during migration.

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Membership

As noted in **Table 6 – Membership**, our chapter ended 2024 with 73 members, a gain of 27 members over 2023. While increasing membership has not been a particular focus until now, moving forward we intend to actively work towards increasing our membership.

TABLE 6 – Membership

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2024												
Count	46 (63*)	45 (61*)	N/A (62*)	N/A (59*)	66	62	--	82*		70		73
2023												
Count	63	61	62	59	N/A	N/A	N/A	55	N/A	53	56	46
2022												
Count	66	68	68	67	68	70	68	66	68	65	59	64
2021												
Count	48	49	51	55	54	57	60	60	62	62	68	65
2020												
Count	42	41	42	44	45	42	43	38	40	43	45	48
2019												
Count	23	24	25	28	29	35	36	38	38	39	42	39
2018												
Count									10	20	19	22

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Social: @DarkSkyMissouri
Email: info@DarkSkyMissouri.org
Phone: (636) 851-9630

Marketing and Communications

Email

Our chapter uses Mailchimp software for email communications to members and interested parties. Our email contact list grew to 872 contacts by the end of 2024. Our goal is to produce and distribute a quarterly newsletter, but we have not had a volunteer to implement this idea.

Website

Our chapter supports a website located at DarkSkyMissouri.org. The website is rich in content and regularly updated. Events are displayed in an event calendar.

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Social Media

Our chapter has social media accounts on Facebook and Instagram under @DarkSkyMissouri. Chapter events are posted on Facebook "Events". Our Twitter ("X") account has largely been inactive. As part of our communications strategy moving forward, we intend to use an array of features on "MailChimp", and have started tracking our MailChimp list from November 2024 onward.

Through partnerships with the Gateway Arch in St. Louis, amateur astronomy clubs, Lights Out Heartland, public libraries and other organizations, we grew our Facebook account to nearly 1240 followers at year end. Other social media accounts have had modest growth, but overall levels of "engagement" have increased significantly due to some of the high profile events advertised on social media (Wenwood Farm fundraiser, DarkSky Missouri festival, Northern Lights alerts etc.).

DarkSky Missouri maintains a YouTube channel to post videos and training related to our outreach and educational programs. The YouTube channel can be accessed from the home page of our chapter's website. We have not used this avenue in the recent past; something we hope to rectify in 2025.

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TABLE 8 – Social Media

Media	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2024												
Date	1/15		3/18		5/19		7/25		9/23		11/18	12/31
Facebook	1005		1024		1073		1091		1145		1226	**1238**
Mail Chimp*											815	**872**
Instagram	158		161		171		177		191		213	**223**
YouTube	52		53		55		56		57		57	**58**
Groups.IO	75		74		75		74		86		93	**103**
2023												
Date	1/6		3/21		5/16		7/17		9/14		12/3	
Facebook	862		893		912		924		954		975	
Twitter	62		62									
Instagram	102		112		125		130		149		149	
YouTube	45		45		47		47		49		50	
Groups.IO	31		31		31		32		31		75*	
2022												
Date	1/2		3/17		5/18		6/19		9/15		11/14	
Facebook	759		820		830		836		854		861	
Twitter	47		52		54		58		61		62	
Instagram	74		82		87		91		97		101	
YouTube	36		42		42		43		45		45	
Groups.IO	28		29		30		30		30		30	
2021												
Date	1/2		3/14		5/18		7/12		9/14		11/15	
Facebook	578		583		617		645		695		759	
Twitter	38		44		44		44		44		47	
Instagram	43		51		59		65		74		74	
YouTube	16		20		20		21		25		36	
Groups.IO	12		22		26		28		28		28	
2020												
Date	1/12		3/15		5/14		7/9		9/14		11/13	
Facebook	142		148		176		452		539		570	
Twitter	22		25		30		33		34		37	
Instagram	9		11		20		24		31		36	
YouTube	-		-		-		4		6		12	
Groups.IO	-		-		-		12		12		12	
2019												
Date			3/26			6/23			9/19		11/24	
Facebook			24			81			125		132	
Twitter			-			14			20		22	
Instagram			-			9			9		7	
YouTube			-			-			-		-	
Groups.IO												

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Financial Statements

Refer to Exhibit B – Financial Report for a financial report on 2024 and our plans for 2025.

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2025 STRATEGIC PLAN

Executive Summary

Over the past few years, we have established a presence in Missouri that goes beyond astronomy and astronomers. By talking to, and working with volunteers and activists representing Missouri Master Naturalists, various Sierra club chapters, Audubon society, MRBO, MOBCI, the Missouri Prairie foundation, and CFM, we have succeeded in embedding light pollution and the value of dark natural skies into conversations and plans related to various conservation initiatives. Additionally, we have talked to several city officials to convey dark sky and light pollution related concerns and to impress on them that good, responsible lighting and having secure, reassuring nighttime lighting are not just compatible, but inherently identical. These efforts are our attempt to **decrease the rate of increase of light pollution in populated areas** – in short, "stop the bleeding" when it comes to protecting our natural night sky.

At the other end of the spectrum, we are working with Missouri Department of Conservation (MDC) and Missouri State Parks to protect wilderness areas that have minimal levels of ambient outdoor lighting. The recognition of Thousand Hills State Park as a UNSP is a shot in the arm for this effort; and the impending applications from other state and municipal parks will further our efforts to embed dark sky considerations and "responsible outdoor lighting" firmly in the institutional development and planning framework of these entities. That is, moving forward, responsible outdoor lighting will be part of all future projects when it comes to any new construction initiated on MDC or Missouri State Park properties. These efforts will help **maintain natural nighttime conditions in swaths of Missouri lands**, usually away from significant population centers.

Admittedly, some of the above mentioned efforts are in a state of infancy, but we believe that through our efforts over the past few years we are in a good position to accomplish significant results vis-à-vis responsible outdoor lighting both in our wilderness areas as well as population centers. Strategically, we want to leverage the reflexive goodwill that citizens and institutions have for our parks and "widen the circle" around our parks by impressing on neighboring towns and cities to adopt responsible lighting principles to encourage astrotourism and improve safety and financial savings.

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In 2025, we plan on continuing to build on some of the successes of the previous year and focus on improving on some of our shortcomings. Here we present a list of our priorities for 2025:

1) Organization and Restructuring

a. Board of Directors

Our target range for the number of board members for IDA Missouri is twelve to eighteen. With fourteen board members in place, we will take a strategic approach to add more board members. Ideally, we want at least two board members in each region with more than two board members in regions containing large urban areas such as Kansas City. We will seek opportunities to create a more diverse board (age, gender, race) and expand our expertise in ecosystems, human health, and lighting.

b. Committee Structure

One of the challenges of a relatively small volunteer organization like ours, is the appropriate division of duties and responsibilities to minimize conflict and duplication. In 2025, we plan on establishing and strengthening the following committees:

i. Laws and Ordinances
ii. Outreach (in-person)
iii. Partnership
iv. Fundraising (library presentations, star parties at Winery, farms, grants, etc.)
v. Electronic newsletter and Social Media

2) Fundraising

DarkSky Missouri is a volunteer organization that relies on grants, donations and membership dues to carry out its mission. Funds are needed for event registration, purchase of instruments such as light meters and Sky Quality Meters, and for outreach supplies: giveaways, printing handouts, brochures, and so on. The fundraising committee will pursue avenues to nurture and enhance the existing sources of funding, and explore new ways to attract funds to help us fulfil our mission.

3) Outreach

We will continue our emphasis on raising public awareness on light pollution issues by supporting existing programs, namely:

- **Dark Sky Training**: Update the current offerings; set up schedule for “live events” to engage audience.

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- **In-person events**: Develop and distribute a common vocabulary, and a set of tabling materials (slides, handouts, giveaways, banners, etc.)that is used in a consistent way during DarkSky Missouri events across the state.
- **Communications**: Publish a quarterly Newsletter to disseminate information, opportunities, upcoming events, and engage members and non-members.
- **Membership**: DarkSky Missouri membership has hovered between 50-75 individuals over the past 4 years (see Table 6). We have not really made a conscious effort to attract new members. In 2025, we plan on attracting more members by having sign-up options during in-person outreach events, and also push membership solicitations via MailChimp (where we have more than 850 individuals on the mailing list) and social media (about 1,250 followers on facebook).We hope that boosting our membership will help strengthen our institutional core by ensuring that we have a strong board and volunteer base, along with resources to operate throughout Missouri, and a financial base that supports our needs.

4) Partnerships

a. We will aim to strengthen our partnerships with organizations such as the Audubon Society, Missouri River Bird Observatory (MRBO) and the Missouri Bird Conservation Initiative (MOBCI).

b. We also aim to continue training Missouri Master Naturalists, in particular, to help conduct sky brightness measurements (see “Research and Action” below).

c. This year, we will aim to set up “astrotourism” events by collaborating with private entities that have access to dark skies due to their location. These include wineries, horse-stables, private parks, and so on.

5) Research and Action

We will continue with our programs to measure light pollution in Missouri, continue supporting communities and parks wanting to adopt ordinances or resolutions, and continue allocating resources to help parks and communities achieve designations under the International Dark-Sky Places Program. In particular, we will continue to conduct, strengthen and expand the following programs:

a. Campus SHINE Missouri: A program to improve lighting on college campuses across Missouri,
b. Sky Brightness and Lighting Inventory: A program that helps quantify sources and consequences of light pollution in communities and wilderness areas and,

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c. Citizen Science Programs: Globe at Night measurements by individuals from their homes and neighborhoods.

6) DarkSky Missouri Festival

The success of the DarkSky festival in 2024 has inspired us to make the Missouri DarkSky Festival and annual event. The festival brings together several of our goals and aspirations: outreach, fundraising, membership, partnerships, and so on. It also helps us get name-recognition and notoriety.

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Financial Plan

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EXHIBITS

Website: DarkSkyMissouri.org
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Exhibit A – Legal Entity

Parent Entity

The International Dark-Sky Association (DBA DarkSky International) is a 501(c)(3)nonprofit organization incorporated in the state of Missouri. The EIN of DarkSky International is 74-2493011.

DarkSky Missouri

DarkSky Missouri is a recognized chapter of DarkSky International and functions under the same legal entity and tax-exempt status as DarkSky International.

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Exhibit B – Financial Report

DarkSky Missouri
Financial Statements (Unaudited)

Description	2020 Actual	2021 Actual	2022 Actual	2023 Actual	2024 Actual	2025 Budget
BALANCE SHEET						
ASSETS						
Unrestricted Funds	$ 985	$ 2,073	$ 2,396	$ 3,607	$ 6,556	$ 7,515
Restricted Funds - CFM	-	-	-	-	519	-
Restricted Funds - MOBCI	-	-	-	-	1,874	-
Inventory - Sky Quality Meters	-	515	-	-	-	-
TOTAL ASSETS	$ 985	$ 2,588	$ 2,396	$ 3,607	$ 8,950	$ 7,515
LIABILITIES & EQUITY						
Liabilities	$ -	$ -	$ -	$ -	$ -	$ -
Equity	985	2,588	2,396	3,607	8,950	7,515
TOTAL LIABILITIES & EQUITY	$ 985	$ 2,588	$ 2,396	$ 3,607	$ 8,950	$ 7,515
STATEMENT OF CASH FLOW - UNRESTRICTED FUNDS						
CASH INFLOW						
Contributions - Organizations	$ 340	$ 800	$ 1,715	$ 800	$ 2,791	$ 1,150
Contributions - Individuals	75	2,324	1,234	586	998	1,033
Sales of T-Shirts	-	-	-	-	1,096	1,096
Sales of Sky Quality Meters	-	-	418	-	110	-
Membership Share	-	-	-	610	280	280
TOTAL CASH INFLOW	$ 415	$ 3,124	$ 3,366	$ 1,996	$ 5,275	$ 3,559
CASH OUTFLOW						
DarkSky Festival/Annual Conf.	$ -	$ -	$ 1,167	$ -	$ 762	$ 762
Outreach Registration Fees	325	950	1,319	335	258	258
Outreach Brochures and Handouts	-	446	474	-	218	218
Outreach Displays	-	63	-	-	205	205
Partnerships (CFM)	-	-	-	200	200	200
Sales of Sky Quality Meters	-	515	-	-	-	-
Technology Fees	-	-	-	220	220	428
Shipping Cost	-	-	12	-	6	6
PayPal Fees/DarkSky Intl Fee (10%)	1	62	72	30	488	492
TOTAL CASH OUTFLOW	$ 327	$ 2,036	$ 3,043	$ 785	$ 2,357	$ 2,568
NET CASH INCREASE (DECREASE)	$ 88	$ 1,087	$ 323	$ 1,211	$ 2,918	$ 990
BEGINNING CASH	$ 897	$ 985	$ 2,073	$ 2,396	$ 3,607	$ 6,525
NET CASH INCREASE (DECREASE)	88	1,087	323	1,211	2,918	990
ENDING CASH	$ 985	$ 2,073	$ 2,396	$ 3,607	$ 6,525	$ 7,515

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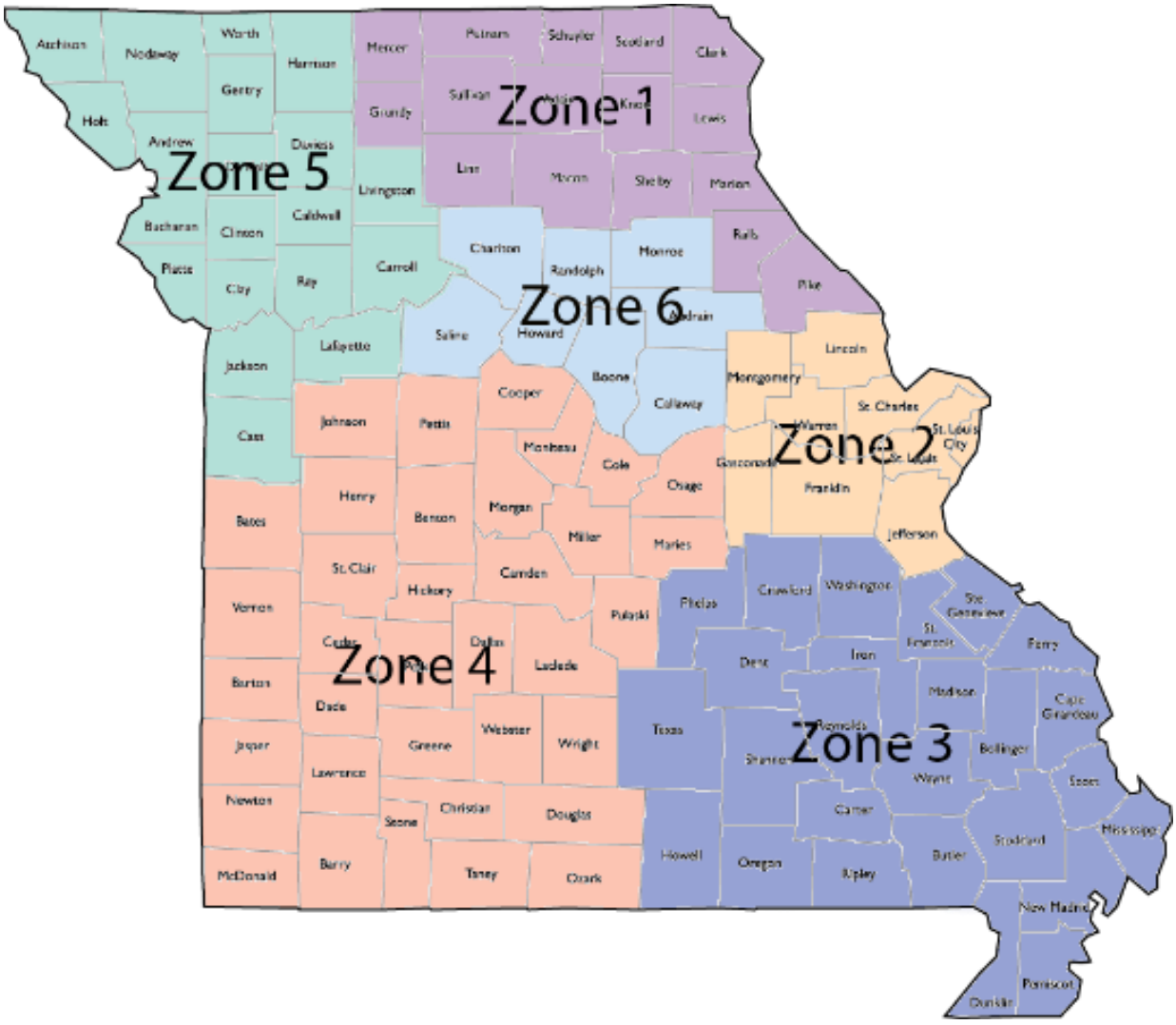
Exhibit C – People and Assets by Zone



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PEOPLE AND ASSETS BY ZONE			
Zone	Board Members	Advisors	Sky Quality Meter
Zone 1 (Northeast Region)	• Vayujeet Gokhale, Ph.D.	• Vayujeet Gokhale, Ph.D., Truman State University	• Magruder Hall, Kirksville, MO • Truman State Observatory, Kirksville, MO • Missouri State Parks – Thousand Hills, Kirksville, MO
Zone 2 (St. Louis Region)	• Don Ficken • Bill Neubert • Jean Nock • Jake Ronecker • Stephanie Todd	• Dan Duffy, City of Ellisville • Trish Erzfeld, Perry County Heritage Tourism • Will Snyder, Saint Louis Science Center • Dan Zarlenga, Missouri Department of Conservation	• Brommelsiek Park, Defiance, MO • Jefferson College, Hillsboro, MO
Zone 3 (Southeast Region)	• Trish Erzfeld	• Chad Follis, Ph.D. Mineral Area College	• City of Perryville, MO • Mineral Area College, Park Hills, MO • SEMO, Cape Girardeau, MO
Zone 4 (Lakes Region)	• Loring Bullard • Cathy Webb	• David Mitchell, Ph.D., Missouri State University	• City of Ozark, MO
Zone 5 (Kansas City Region)	• DeAnn Gregory • Jackie Beucher • Rick Yord	• Bentley Ousley, ASKC	• ASKC, Kansas City, MO • ASKC, Lawson, MO
Zone 6 (Central Region)	• None	• None	

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Exhibit D – Board of Directors

BOARD OF DIRECTORS TERMS AND ZONES (12Board Members)

Class (Note 1)	Name	Zone	Vote	Term Start	Term End	Term (Note 2)
First Class	Don Ficken	2	9/24/2019	12/1/2019	11/30/2025	2
	Rick Yord	5	9/24/2019	12/1/2019	11/30/2025	2
	Jean Nock	2	11/17/2022	12/1/2022	11/30/2025	1
	Jake Ronecker	2	11/17/2022	12/1/2022	11/30/2025	1
Second Class	Jackie Beucher	5	11/19/2020	12/1/2020	11/30/2026	2
	Bill Neubert	2	11/19/2020	12/1/2020	11/30/2026	2
	Trish Erzfeld	3	11/19/2020	12/1/2020	11/30/2026	2
	DeAnn Gregory	5	11/16/2023	12/1/2023	11/30/2026	1
	Cathy Webb	4	11/16/2023	12/1/2023	11/30/2026	1
Third Class	Vayujeet Gokhale, Ph.D.	1	11/21/2021	12/1/2021	11/30/2027	2
	Stephanie Todd	2	11/21/2021	12/1/2021	11/30/2027	2
	Loring Bullard	4	11/21/2021	12/1/2021	11/30/2027	2

OFFICERS (12/1/2023-11/30/2024)

Vayujeet Gokhale, Chair ; Stephanie Todd, Vice-Chair ; Don Ficken, Treasurer ;Daphne Zakarian, Secretary.

NOTES :

Note 1: Board terms are divided into three classes which are staggered to expire in different years to help ensure continuity of the Board.

Note 2: Per our operating agreement with Dark Sky, DarkSky Missouri Board members serve for a term of three years and cannot serve for more than two (2) consecutive full year terms of office without a break in service of at least one (1) year.

The term count indicated in this column is the current “full term” number the board member is serving. Board members with a count of “1” only have one full term left. Board members with a count of “2”

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must take a break in service of at least one (1) year at term's end. "Partial" means the member was elected to the board under for a partial term only under that class. Partial means the board member can still serve two full terms of service at term's end before a break in service is required.

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Exhibit E – Chapter Standing Committees

Standing committees handle issues that are considered timeless in nature.

- **Executive Committee** - Resolve issues needing immediate attention between board meetings, followed by reports to the full board for voting and decision-making.
- **Finance Committee** - Review and provide guidance for the organization's financial matters.
- **Board Nomination and Development Committee** - Develop board recruitment and retention plan.
- **Laws and Ordinances Committee**: Assist citizens and city officials advocate for and implement responsible outdoor lighting laws and ordinances.
- **Collaborations/Partnerships** - Develop working relationships with organizations to leverage chapter resources.
- **Fundraising Committee -** Raise funds to support chapter operations.
- **Membership Committee** - Monitor chapter membership; welcome new members; encourage members to get involved; periodically communicate with members via email.
- **Outreach Committee** - Provide public talks and exhibitions to promote DarkSky Missouri, publish Newsletter and mange Social Media.
- **Public Relations Committee** - Issue press releases; manage all printed publications, such as brochures, flyers, leaflets, and whitepapers; oversee website.

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Exhibit F – Chapter Ad-Hoc Committees

Ad-hoc committees have been formed to handle issues that are typically short-term and specialized in nature.

- **DarkSky Festival** – Plan and support an annual conference for IDA Missouri.
- **Lights Out Heartland** - Partnering with organizations across several states to raise awareness of how light pollution causes problems with bird migration.
- **Missouri Dark Sky Destinations** – Promote Missouri's darkest skies through brochures and handouts. Partner with parks, tourism, and other organizations for distribution of the brochures and handouts to the public.
- **Missouri Dark Sky Places Program** – Work with cities, parks, and other entities to achieve an official Dark Sky status such as Urban Night Sky Designation. Includes working with cities to encourage adoption of ordinances to reduce light pollution.
- **SQM/Sky Brightness Program** - Deploy SQMs throughout Missouri in both rural and urban areas. Encourage use of handheld SQMs and participation in the citizen science "Globe at Night" program. Assess light pollution trends and recommend corrective action.
- **Tourism Program** - Raise awareness of how dark skies can enhance tourism in Missouri; develop and implement tourism related programs.

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Exhibit G
2024"Major" Outreach Programs

DarkSky Missouri					
Major Outreach Programs					
Calendar Year 2024					
Date		Attenc	Time		Description of activities
2/10/2024	Cathy Webb, Loring Bullard	40	Day	in person	Brought owl/hawk from Dickerson Park Zoo to help explain the importance of dark sky for birds and affects on migration.
3/1/2024	DeAnn Gregory	80	Day	Virtual	National Wildlife Rehabilitator Association Conference: "Artificial light at Night as an Emergent Threat to Wildlife": Omaha, Nebraska
4/4/2024	Vayujeet Gokhale	35	Night	in-person	DarkSky Week @ Truman State; presentation followed by "Nightwalk" across campus to observe outdoor lighting
4/5/2024	Don Ficken	400	Day	In-person	St. Louis Science Center SciFest (booth)
4/6/2024	Don Ficken	500	Day	In-person	St. Louis Science Center SciFest (booth)
4/13/2024	Jean Nock	300	Day	in-person	Family Conservation Day Booth and Presentation
4/20-4/21/2024	Stephanie Todd	400	Day	in-person	Booth at Earth Day in Forest Park.
5/4/2024	Jean Nock	150	Day	in-person	While Stallion Ranch Presentation
5/19/2024	DeAnn Gregory	70	Day	Virtual	Kansas City Oasis talk: "2023 the Good, the Bad and the Ugly of Outdoor lighting"
6/1/2024	Cathy Webb	100	Day	in-person	Bioblitz at prairie near Golden, Mo assisting Jean Nock with distributing material and info on DarkSky Mo
6/1/2024	Don Ficken	50	Day	In-person	Missouri Botanical Garden- Green Living Festival (Presentation)
6/7/2024	Vayujeet Gokhale	100	Twilight	in-person	Advanced Training program for Missouri Master Naturalists at Rock Bridge State Park
6/8/2024	Don Ficken	400	Day	In-person	Spirit of St. Louis Airshow (booth)
6/9/2024	Don Ficken	300	Day	In-person	Spirit of St. Louis Airshow (booth)
6/23/2024	Don Ficken	150	Day	In-person	St. Louis Opera at Hilton (booth)
7/31/2024	Vayujeet Gokhale	150	Day	Virtual	Dark Sky as a Natural Resource: Talk at the Prarie Foundation
9/13/2024	Jean Nock	120	Day	in-person	Kansas City Osage Missouri Master Naturalist Presentation
9/14/2024	Don Ficken	100	Night	In-person	DOBFest hosted by St. Louis area astronomy clubs (booth)
9/20/2024	Vayujeet Gokhale	150	Mixed	in-person	Wenwood Farm Fundraising Event
9/28/2024	Stephanie Todd	200	Day	in-person	Booth at Butterfly House in Faust Park.
10/25/2024	Multiple Board Members	200	Mixed	In-person	DarkSky Festival (booth)
10/26/2024	Multiple Board Members	200	Mixed	In-person	DarkSky Festival (booth)
11/29/2024	DeAnn Gregory	5	Night	in-person	DarkSky Monitoring: New collaborative project with Osage Trails MMN, beginning a monthly darksky monitoring event; MDC Discovery Center

2024 Outreach Program Summary[1]

Individual	# of events	Attendence
Don Ficken	47	3869
Vayujeet Gokhale	16	970
DeAnn Gregory	8	291
Stephanie Todd	8	828
Cathy Webb	13	419
Jean Nock	8	956

[1]*Details are in Spreadsheet on DarkSky Missouri google-drive*