

N O R T H F O R K P A R K

Ogden Valley, Utah

2016 Annual Dark Sky Place Report

Submitted to IDA by Ogden Valley Starry Nights and Weber County Culture, Parks, and Recreation

September 1, 2015 - September 1, 2016



DATE OF SUBMISSION

October 1, 2016 (covering period September 1, 2015 - September 1, 2016)

ANNUAL REPORT SUBMITTED

Janet Muir (Ogden Valley Starry Nights)
Jennifer Graham (Weber County Culture, Parks and Recreation)

LIGHTING GUIDELINES

No changes to lighting guidelines; no non-conforming lighting; 100% current conforming lighting.

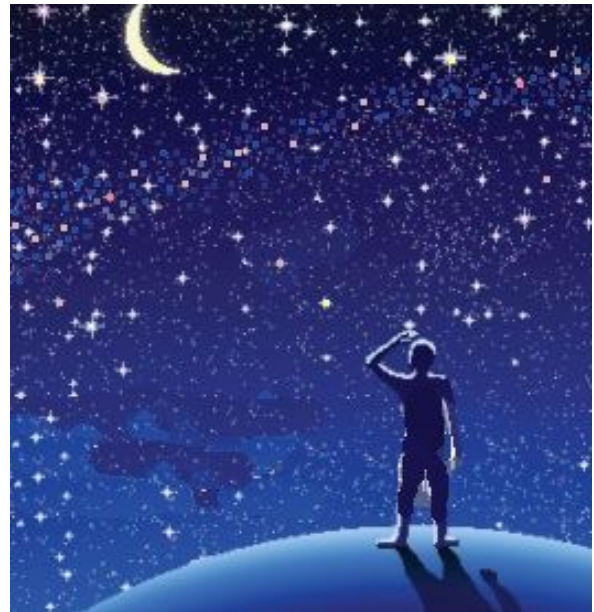
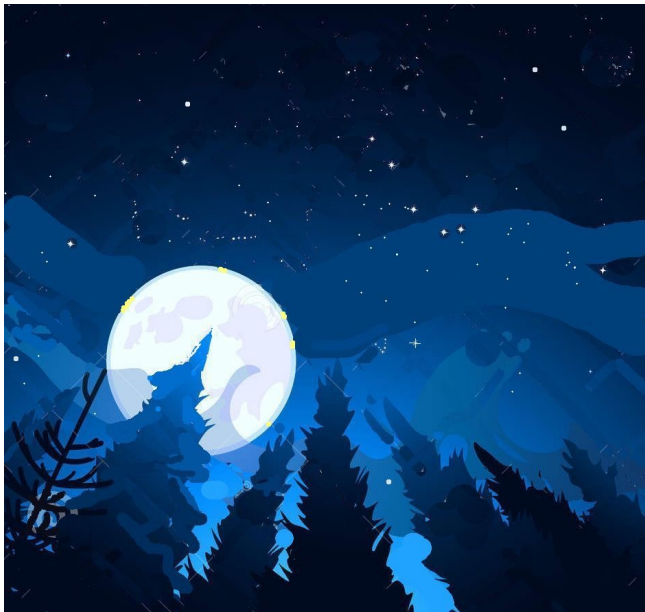
SKY QUALITY MEASUREMENTS

See Appendix A for 2013, 2014 and 2015 measurements by Weber State University teams led by Jeremy Bryson.

PLACE-MAKING THROUGH DARK SKY PUBLIC ART

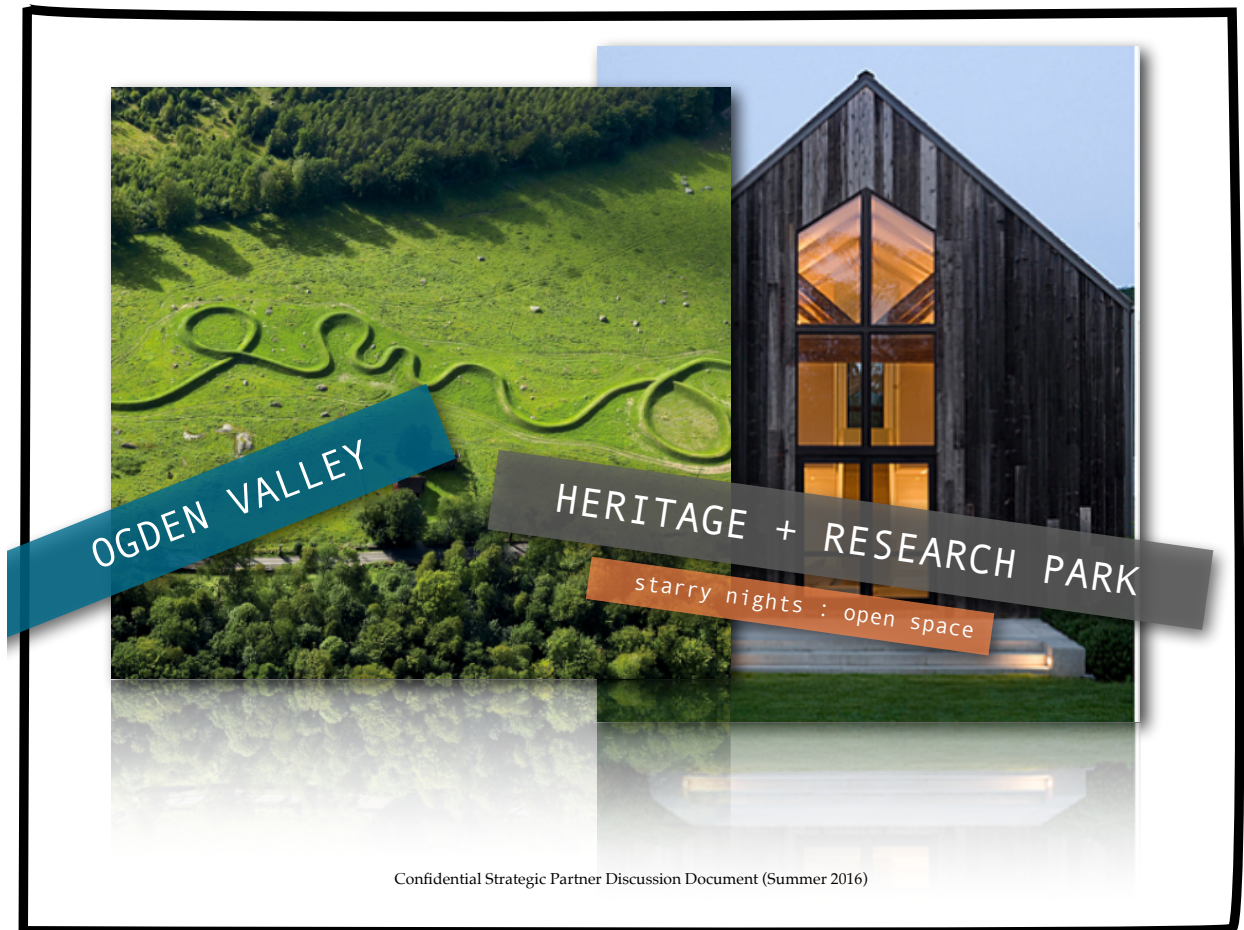
Dark Sky Mural Trail

A dark sky mural trail in Ogden Valley is being inaugurated with an installation on an historic barn (1870s with wooden pegs) opposite the elementary school. At least five more murals are expected to be installed next summer. Ogden Valley Starry Nights is pleased to be working with local artist **Jake Songer** (initial images below). A map of the mural trail will show how to get to North Fork Park



Ogden Valley Heritage + Research Park

A proposed dark-sky themed building and park with land art is being developed in cooperation to celebrate the dark skies and open space of Ogden Valley. It will also provide a research outpost for night sky quality and air quality monitoring of the Wasatch Back and feature the dark sky quality of North Fork Park.



ISSUE LEADERSHIP

The Committee for Dark Sky Studies

Ogden Valley Starry Nights is a founding member of The Committee for Dark Sky Studies, the first academic center of its kind in North America. A collaboration among a number of universities and colleges, it is based at the University of Utah. See Appendix B.

EVENTS

September 12, 2015: Star Party and Dedication as an IDSP

September 12, 2015: The Marvelous Moon (Huntsville Library)

October 21, 2015: Accreditation Celebration at Weber State University

October 31, 2015: Owl Prowl in North Fork Park (Wasatch Audubon Society)

January 10, 2016: The Stars Speak (Huntsville Library)

April 22, 2016: Full Moon Wildlife Wander: Songbird Migration

September 17, 2016: Full Moon Wildlife Wander and Dedication of Dark Sky Trails

October 1, 2016: Star Party (part of next year's Annual Report)

See Appendix C for selected collateral material.

SIGNAGE

All three entrance signs reference International Dark Sky Park with IDA logo.



Respectfully Submitted:


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Jennifer Graham, Weber County Culture, Parks, and Recreation
[jgraham@co.weber.ut.us - 801-399-8258]

Appendix A

North Fork Park			Unihedron Sky Quality Measurements Oct. 5, 2013 / Sept. 24, 2014 / Sept. 12, 2015					
Sample Name	Year	GPS Coordinates	SQM _{AVG}	SQM ₁	SQM ₂	SQM ₃	SQM ₄	SQM ₅
Coldwater X	2015	41.37247, -111.91376	20.84	20.86	20.84	20.81	20.84	20.83
Coldwater X	2015	41.37252, -111.91377	20.75	20.83	20.72	20.84	20.73	20.65
Corrals E	2015	41.36799, -111.90643	20.88	20.92	20.82	20.86	20.84	20.95
Corrals W	2015	41.37017, -111.91090	20.75	20.95	20.81	20.40	20.80	20.81
Cutler East	2015	41.38579, -111.91120	20.80	20.71	21.25	20.92	20.14	20.98
Dark Sky Viewing	2015	41.37622, -111.91391	20.88	20.83	20.88	20.98	20.84	20.89
East Bowery	2015	41.38512, -111.91278	20.82	20.98	20.89	20.85	20.95	20.42
Environmental Center	2015	41.36757, -111.90856	20.81	20.89	20.69	20.81	20.84	20.80
Mid Gate X	2015	41.37198, -111.90940	20.85	20.76	20.95	20.80	20.86	20.89
Mule Ear	2015	41.38100, -111.91911	20.89	20.79	20.81	20.94	20.96	20.93
Mule Ear North	2015	41.38284, -111.91970	20.90	20.91	20.94	20.89	20.85	20.93
Mule Ear South	2015	41.37327, -111.91344	20.90	20.82	20.81	20.89	20.90	21.06
New Trail Central 1	2015	41.37932, -111.91851	20.85	20.87	20.84	20.84	20.84	20.84
New Trail Central 2	2015	41.37757, -111.91780	20.85	20.90	20.86	20.83	20.84	20.81
New Trail North 1	2015	41.38238, -111.91999	20.92	20.98	20.98	20.88	20.89	20.86
New Trail North 2	2015	41.38132, -111.91972	20.83	20.81	20.82	20.83	20.84	20.84
New Trail South 1	2015	41.37446, -111.91626	20.80	20.83	20.82	20.78	20.78	20.78
New Trail South 2	2015	41.37445, -111.91502	20.77	20.81	20.77	20.76	20.77	20.76
North Fork Mid	2015	41.37347, -111.89973	20.79	20.42	20.95	20.89	20.84	20.84
North Gate	2015	41.38309, -111.90502	20.94	20.96	20.91	20.87	20.99	20.99
North Gate Rd	2015	41.38178, -111.91117	20.97	20.95	20.94	21.04	20.95	20.98
North Gate Rd	2015	41.38301, -111.91531	20.86	20.72	21.08	21.00	20.82	20.67
North Gate Rd X	2015	41.38306, -111.91511	20.93	20.92	20.91	20.84	20.98	21.01
Park Rd Mid	2015	41.37934, -111.91721	20.90	20.91	20.91	20.92	20.88	20.89
South Bowery	2015	41.36747, -111.90306	20.90	21.04	20.84	20.91	20.78	20.91
South Gate	2015	41.37117, -111.90243	20.70	20.09	20.78	20.84	20.85	20.92
Trailhead	2015	41.38100, -111.91824	20.83	20.87	20.92	20.84	20.65	20.89
Trailhead Parking	2015	41.38099, -111.91901	20.89	20.86	20.88	20.84	20.94	20.95
View Bowery	2015	41.38364, -111.91174	20.88	21.04	20.74	20.87	21.01	20.72
Waterfall Trailhead	2015	41.37125, -111.91711	20.91	20.91	21.06	20.88	20.86	20.86

Waterfall Trailhead	2015	41.37134, -111.92119	20.84	20.91	20.84	20.88	20.80	20.78
Bicentennial Bowery	2014	41.38480, -111.92308	20.83	20.77	20.87	20.83	20.84	20.82
Cold Water Intersection	2014	41.37250, -111.91388	20.91	20.90	20.88	20.91	20.91	20.96
Corrals West	2014	41.36945, -111.90935	20.92	20.90	20.94	20.90	20.95	20.92
Cutler East	2014	41.38610, -111.91113	20.91	20.98	20.93	20.86	20.89	20.88
Cutler West	2014	41.38587, -111.92090	20.96	20.95	20.99	20.89	20.97	21.00
Dark Sky Viewing Area	2014	41.37447, -111.91503	21.06	20.94	21.39	21.00	20.94	21.05
Dark Sky Viewing Entrance	2014	41.37529, -111.91298	20.84	20.84	20.89	20.84	20.83	20.82
East Bowery	2014	41.38512, -111.91278	20.95	21.00	20.98	20.97	20.89	20.89
Middle Gate	2014	41.37467, -111.89707	20.93	20.89	20.89	20.93	20.95	20.97
Middle Gate Intersection	2014	41.37194, -111.90947	20.85	20.80	20.83	20.87	20.89	20.88
Mule Ear Trailhead South	2014	41.37366, -111.91310	20.90	20.88	20.89	20.88	20.98	20.86
Mustang Flats	2014	41.37313, -111.89988	20.91	21.06	20.88	20.86	20.89	20.87
New Trail Central 1	2014	41.37462, -111.91625	20.96	20.92	20.93	20.91	21.03	21.01
New Trail Central 2	2014	41.37580, -111.91625	21.00	21.01	21.01	21.03	21.02	20.92
New Trail South 1	2014	41.37423, -111.91464	20.92	20.97	20.97	20.87	20.89	20.90
New Trail South 2	2014	41.37423, -111.91462	20.85	20.61	20.93	20.88	20.88	20.93
New Trail South 3	2014	41.37384, -111.91438	20.90	20.88	20.83	21.00	20.88	20.90
North Fork Park Rd	2014	41.37827, -111.91722	20.91	20.89	20.91	20.91	20.91	20.93
North Fork Rd	2014	41.37725, -111.90096	21.04	21.47	20.99	20.95	20.87	20.90
North Gate Rd East	2014	41.38233, -111.90715	20.91	20.92	20.93	20.87	20.93	20.92
North Gate Rd West	2014	41.38177, -111.91216	20.91	20.87	20.88	20.91	20.92	20.98
River Trail	2014	41.38915, -111.91440	20.92	20.95	20.82	20.99	21.00	20.86
South Gate	2014	41.37117, -111.90222	20.93	20.89	20.90	20.91	20.96	20.98
Trailhead Parking	2014	41.38072, -111.91859	20.95	20.94	20.98	20.89	20.89	21.05
View Bowery	2014	41.38355, -111.91255	20.82	20.88	20.83	20.83	20.82	20.76
Waterfall Trailhead	2014	41.37138, -111.92113	21.04	20.88	21.04	20.94	21.39	20.96
West Bowery	2014	41.38580, -111.91837	21.11	21.13	21.12	21.14	21.08	21.08
Ben Lomond Trailhead	2013	41.38312, -111.92058	20.93	21.12	20.87	20.91	20.88	
Cold Water Rd	2013	41.37138, -111.91642	20.94	20.95	20.92	20.97	20.90	
Middle Gate	2013	41.37488, -111.89703	20.98	20.91	21.01	21.08	20.92	20.98
Mule Ear Trail North	2013	41.38073, -111.91955	20.93	21.01	20.93	20.91	20.88	
Mule Ear Trail South	2013	41.37348, -111.91377	21.23	21.50	21.27	21.17	20.97	
Mule Shoe Trailhead South	2013	41.37378, -111.91280	20.94	21.05	20.85	20.93	20.93	
Mustang Flats	2013	41.37282, -111.89965	20.98	21.00	21.03	20.96	20.92	20.99
North Gate	2013	41.38313, -111.90527	20.97	20.94	21.01	20.98	20.95	20.97
South Gate	2013	41.37103, -111.90230	20.97	21.10	20.84	20.77	21.16	
Trailhead Parking	2013	41.38105, -111.91822	20.90	20.82	20.80	20.89	21.10	
View Bowery	2013	41.38358, -111.91307	20.80	20.92	20.93	20.93	20.40	
Waterfall Trailhead	2013	41.37157, -111.92165	21.19	21.60	21.04	21.17	20.95	
West Bowery	2013	41.38492, -111.91710	20.75	21.00	20.97	20.86	20.01	20.92

North Fork Park (71 Samples) SQMAvg	20.90		WEBER STATE UNIVERSITY DEPARTMENT OF GEOGRAPHY
2013 Avg (13 Samples)	20.96		
2014 Avg (27 Samples)	20.93		
2015 Avg (31 Samples)	20.85		

Appendix B

Fun, Free, Family-Friendly Star Party
Saturday, September 12 at 8:00 pm
Enter Middle Gate to Mustang Flats Bowery

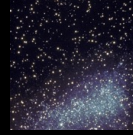
Dedication of International Dark Sky Park:
Commissioner Matt Bell and Zach Thomas

Ogden Astronomical Society
Weber County Parks and Recreation
Ogden Valley Starry Nights
www.starrynightsutah.org

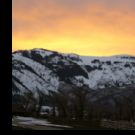
Bring flashlight, walking shoes, smart phone app, warm jacket and sense of wonder.



The Magic of Night



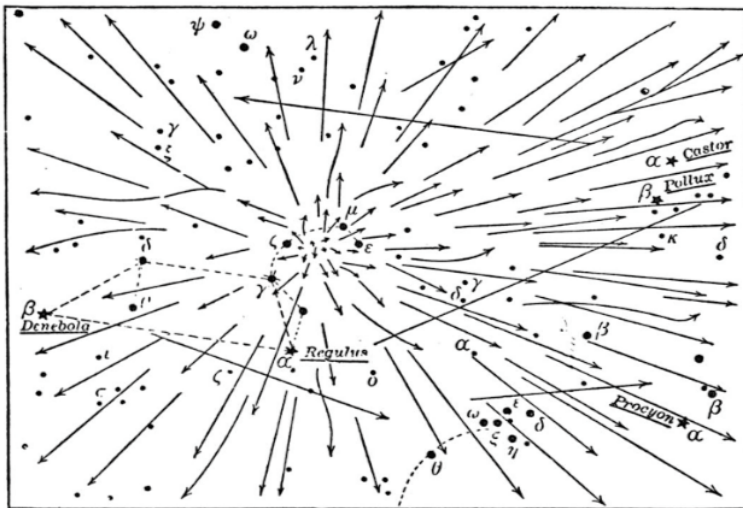
The Milky Way



The Valley's Dark Skies

North Fork Park: World's 21st International Dark Sky Park
Star Party 2015!





North Fork Park 2015

International Dark Sky Park

Weber State University and Ogden Valley Starry Nights present:

Accreditation Celebration

October 21, 2015 Noon - 1pm
Wildcat Theatre / Weber State University

THE STARS SPEAK

and lead us from human experience to a deeper understanding of the universe

stunning visual experience
importance of dark skies

Thursday January 7th (7:00 - 8:00pm)
Huntsville Library Auditorium

Professor Stacy Palen (Physics)

Professor Jeremy Bryson (Geography)

Representative Gage Froerer

Mayor Brent Taylor (North Ogden)

Zach Thomas (Weber High School)

North Fork Park Team

A Spectacular Must-See

Fun, Free and Family-Friendly

The mighty telescopes of the Ogden
Astronomical Society will be there for
night-time viewing.



OGDEN VALLEY STARRY NIGHTS - WWW.STARRYNIGHTSUTAH.ORG

Friday 22 April 2016 @ 7pm
Family-Friendly Adventure
Led by DWR Biologist Clint Brunson
Meet in South Entrance Parking Lot
Songbird Migration



Utah Division of Wildlife Resources
Weber County Parks
Ogden Valley Starry Nights
Weber State University Volunteers

Bring flashlight, walking shoes, smart phone app, warm jacket and sense of wonder.

Songbird Migration + Full Moon in North Fork Park

Wildlife Wander!



Saturday 17 September 2016 @ 7pm

**Family-Friendly Adventure
Led by DWR Biologist Clint Brunson
South Entrance Parking Lot and Follow Signs**



**Dedication of New Dark Sky Trail
Live Birds from HawkWatch
Short Trail Walk
Moon Binoculars**

**Utah Division of Wildlife Resources
Weber County Parks
Ogden Valley Starry Nights**

Full Moon in North Fork Park Fall Wildlife Wander!

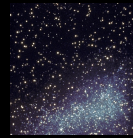


Fun, Free, Family-Friendly Star Party
Saturday, October 1 at 8:00 pm
Enter Middle Gate to Mustang Flats Bowery

Ogden Astronomical Society
Weber County Parks and Recreation
Ogden Valley Starry Nights
www.starrynightsutah.org



The Magic of Night



The Milky Way



The Valley's Dark Skies

Bring flashlight, walking shoes, smart phone app, warm jacket and sense of wonder.

North Fork Park: World's 21st International Dark Sky Park Star Party 2016!



Appendix C



The Committee for Dark Sky StudiesSM
Trans-disciplinary, multi-institutional and in affiliation with
the International Dark-Sky Association

Mission

The Committee for Dark Sky Studies (CDSS) is dedicated to the discovery, development, communication, and application of knowledge across a wide range of disciplines and professional fields pertaining to the quality of night skies, growing light pollution and the varied human, animal, and environmental responses to the "disappearing dark."

Location

Utah, the highly strategic location of CDSS, possesses night skies among America's darkest (with its steadily growing number of International Dark Sky Parks)¹ and brightest (with light pollution levels of the Wasatch Front reaching those of the Los Angeles Basin)²; its annual astro-tourism dollars likely exceed those of any other state.³

Members

University of Utah (current administrative home)
Brigham Young University
Southern Utah University
Utah State University
Utah Valley University
Weber State University

Affiliates

Colorado Mesa University (Center for Natural Resources) [Tim Casey, Director]
Rensselaer Polytechnic Institute (Lighting Research Center) [Mark Rea, Director]
University of Wyoming (Berry Biodiversity Conservation Center) [Carlos Martinez del Rio, Director]

¹ Canyonlands NP, Capitol Reef NP, Natural Bridges NM, Hovenweep NM, North Fork Park (Weber County). On the border: Great Basin NP, Kaibab Paiute Dark Sky Nation. Pending: Goblin Valley State Park, Dead Horse Point State Park with nine additional state parks in process

² Class 8.0 Bortle Scale

³ Notable that at Bryce Canyon (2012), astronomy related attendance accounted for over 50,000 visits and \$2 million contributed to the local economy (National Park Service: Protecting Night Sky Resources).

University of Northern Arizona [Nadine Barlow, Professor, Department of Physics]

Training Partner

Salt Lake Community College⁴

Steve Crossland, Chair, Environmental Science and Sustainability
Adam Dastrup, Assoc. Professor, Environmental Science and Sustainability

Steering Group Members

University of Utah

Keith Bartholomew: Chair, City and Metropolitan Planning

Tariq Banuri: Professor, Department of Economics and Lecturer, City and Metropolitan Planning

Kelly Bricker: Chair, Department of Parks Recreation and Tourism

Jess Dwyer: Academic Program Manager, Center for Science and Math Education

Cynthia Furse: Assoc. Vice-President for Research; Professor, Electrical and Computer Engineering

Stephen Goldsmith: Director, Capstone Initiatives Undergraduate Studies; Associate Professor, City and Metropolitan Planning⁵

Bill Johnson: Professor, Department of Geology & Geophysics

David Kieda: Dean of the Graduate School; Professor, Department of Physics and Astronomy⁶

John Lin: Associate Professor, Department of Atmospheric Sciences

Gabriel Lozada: Associate Professor, Department of Economics

Thomas Parks: Vice-President for Research; Professor, Neurobiology & Anatomy

Kevin Perry: Chair, Department of Atmospheric Sciences

Glenn Prestwich: Professor, Medicinal Chemistry

Dave Strayer; Professor, Department of Psychology

Myron Willson: Deputy Chief, Sustainability Office

⁴ Dark sky lighting certification: Electrical Engineering, Energy Management, Environmental Services

⁵ Founding member

⁶ Founding member

Brigham Young University

Mike Joner: Associate Research Professor, Department of Physics and Astronomy

J. Ward Moody: Professor, Department of Physics and Astronomy

Denise Stephens: Associate Professor, Department of Physics and Astronomy

Southern Utah University

Kelly Goonan: Director, Outdoor Recreation in Parks and Tourism

Cameron Pace: Professor, Department of Physics, College of Science & Engineering

Utah State University

Maura Hagan, Dean, College of Science

Jan Sojka: Chair, Department of Physics

Tonya Triplett, Principal Lecturer, Department of Physics

Utah Valley University

Karl Haisch: Professor, Department of Physics

Joe Jensen: Associate Professor, Department of Physics

Kim Nielsen: Asst. Professor, Department of Physics

Weber State University

Laine Berghout: Chair, Department of Chemistry

Jeremy Bryson: Assistant Professor, Department of Geography⁷

John Cavitt: Professor, Department of Zoology

Rick Ford: Chair, Department of Geosciences

David Matty: Dean, College of Science

Brad Mortensen: Vice-President, Institutional Advancement [Honorary]

Stacy Palen: Professor, Department of Physics⁸

Charles Wight: President, Weber State University [Honorary]

State of Utah

Patrick Barickman: Manager, Technical Analysis, Utah Division of Environmental Quality

⁷ Founding member

⁸ Founding member

Justina Parson-Bernstein, Heritage and Interpretation Manager, Utah State Parks

Tracy Aviary

Tim Brown, Executive Director

Natural History Museum of Utah

Sarah George, Executive Director

Becky Menlove, Associate Director

International Dark-Sky Association

John Barentine, IDA (Tucson, AZ)⁹

Richard Menzies (Ogden Valley Chapter)

Janet Muir (Ogden Valley Chapter)¹⁰

Advisors/Supporters

Jay Kinghorn, Director Digital Strategy, Utah Office of Tourism

Douglas Larsen: Director, Economic Development Partnership (Weber County)

Sara Toliver: President/CEO, Ogden/Weber Convention & Visitor Bureau

David Williams, Associate Managing Director, Utah Office of Tourism

Trans-Disciplinary Scope (including, but not limited to, the following)

Anthropology
 Architecture + Planning
 Art + Design
 Astronomy
 Atmosphere Sciences
 Biology
 Business Management + Public Administration
 Chemistry
 Economics
 Education
 Engineering
 Environmental Humanities
 Environmental Planning
 Environmental Studies + Sustainability
 Geography

⁹ Founding member

¹⁰ Founding member