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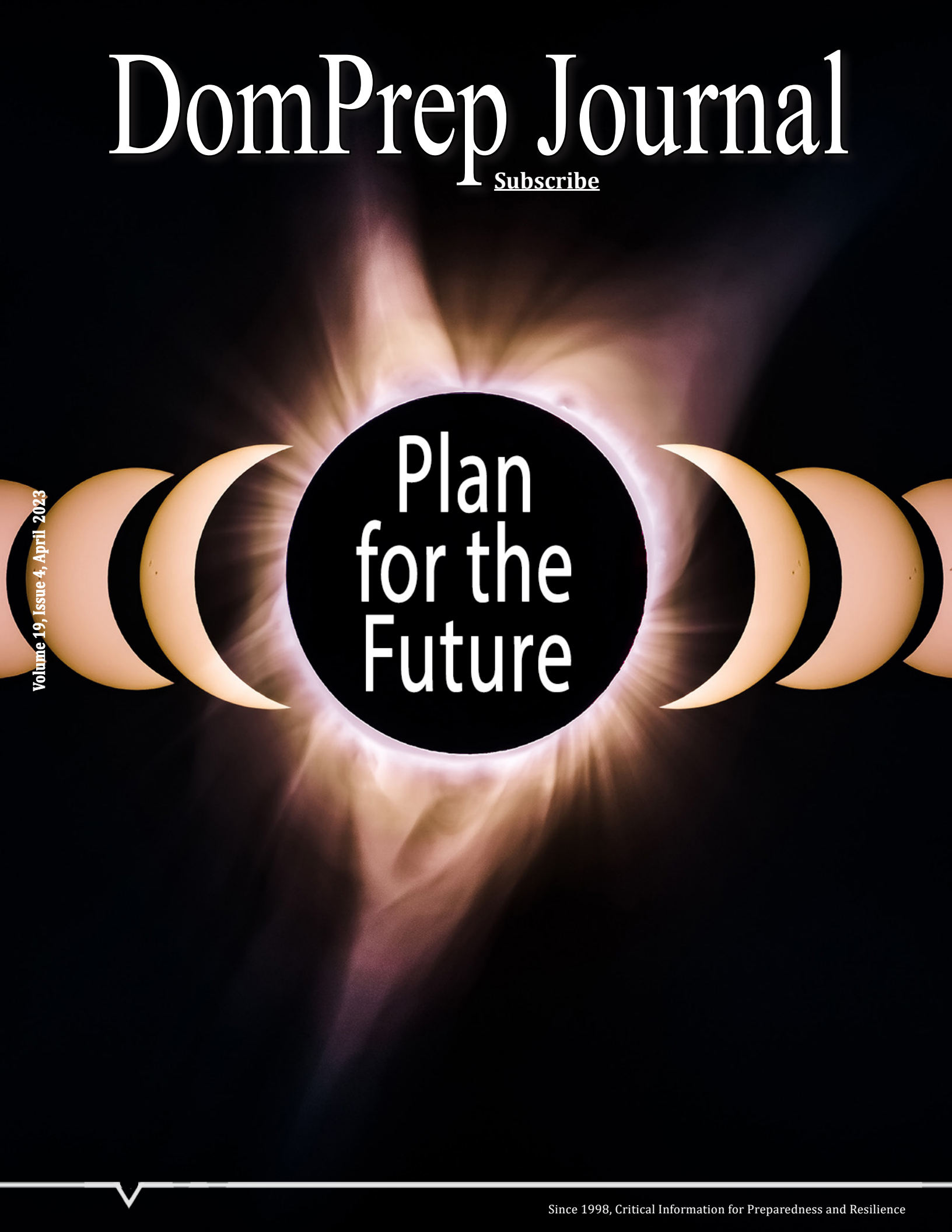

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Eclipses Again Will Darken the Sky in 2023 and 2024

By Laurel J. Radow

On August 21, 2017, time stood still for many in the United States. On that day, the first total solar eclipse transversed the continental United States in nearly a century. Communities across the country saw what many in the recent past had to travel great distances to view. That widespread special event created many lessons learned for cities and states that experienced severe traffic jams, unmet sanitation needs (e.g., lack of portable toilets and trash disposal), and other emergency response challenges.

Only a few years later, the nation awaits two more significant eclipse events on October 14, 2023, and April 8, 2024. These events will cover different paths but allow most U.S. communities to view at least one. The annular eclipse (also known as a ring of fire) on October 14, 2023, will cross nine states from Oregon down through Texas. That event will likely not draw the size of crowds as those seen in 2017. However, emergency preparedness and public safety professionals near the path should still collaborate with other community stakeholders to better prepare for related special events and resource needs. The total eclipse event on April 8, 2024, will cross all of North America – from Mexico, across the United States from Texas to Maine, and finally, eastern Canada – drawing similar attention as the event in 2017. Everyone involved in planning for either the annular or total eclipse events should consider the lessons learned from the 2017 event.

The total eclipse is expected to last up to 4 minutes and 27 seconds, almost double the length of the 2017 event. In addition, because the 2024 eclipse will cross a more populated part of the United States, many more people are expected to view it than the 2017 eclipse. However, not every resident will be in the path of totality. Many science museums outside the eclipse's path plan to invite many people to their sites to learn more about the eclipse and related science. Therefore, while many will travel to the path of totality, many others may travel to learn about the eclipse closer to their homes outside the path.

Eclipse Working Group

With the 2017 eclipse raising awareness and interest, the American Astronomical Society (AAS) realized that interest would grow for the 2023 and 2024 eclipses. So, in the summer of 2020, the AAS established the Solar Eclipse Task Force (SETF). Its members include experts who organized many of the 2017 eclipse events. To ensure that the AAS could gather as much useful information as possible, SETF established seven working groups, including the Local Planning Working Group (LPWG).

This article focuses on the work of the members of the LPWG, whose members represent a range of organizations, including state agencies, county government, universities, and science museums. All are actively involved in developing the eclipse plans for their state, county, locality, university, or rural sites. The working group began with monthly meetings in mid-2021. However, as many of the LPWG members also are involved in the daily operational planning of their own events, the calls are now held every two months.

Since 2020, much of the time has been spent gathering information to post and share with the wide range of localities and states who will host future eclipse events.

With an event that, by its very nature, involves a wide range of capabilities, the information that preparedness professionals need can be difficult to find. One lesson learned is that, with no central repository, much of the material generated in the months and days leading up to the 2017 eclipse was not uploaded until 2017, and eclipse material was sometimes only temporarily available. Unfortunately, this means that, since then, some of those links have gone cold.

Two after-action reports from Wyoming provide agencies with additional lessons learned from the 2017 event. The Great American Eclipse – Natrona County After-Action Report/Improvement Plan was compiled by the public health preparedness manager and recently released to the public. The Wyoming State Agency Eclipse Report was compiled by the Wyoming Department of Agriculture and contains the essential after-action report elements and answers three key questions that are helpful when planning for future eclipse events:

- What was planned vs. what actually happened?
- What went well, and what should be done again?
- What did not go well and can be improved for next time?

Managing a Planned Special Event That Is Also a Natural Event

Preparedness professionals know how to train, prepare, and respond to a natural disaster. However, a natural event that is also planned is rare and often managed like other types of past planned events (e.g., an annual parade or a county fair). It is at one's peril when agencies respond with the approach, "It's only two or four minutes of darkness. We handle those all the time." Following are some common gaps that can be overlooked when working with partners and developing plans with this type of approach:

- This one-off event spans a far more significant area than a typical scheduled event. Rarely do planned special events span state or international borders. Flotillas of tall ships sailing into New York Harbor or an occasional Super Bowl are rare examples.
- No one knows how many people to expect until information such as rented hotel rooms or booked flights becomes known.
- Extra concerns and attention (including health issues) are needed for interstate and intercountry travel.
- Host communities must know how to work with the federal government to prepare for the influx/outflow of people traveling to eclipse viewing areas within and between the three countries.

During the regular calls with LPWG members, it became evident that the lead depends on the state. It is less important which agency takes the lead than it is for the planning to be underway, with information shared within the state and among bordering states. Various states provide best practices for a range of models and activities they currently use.

Rochester, New York's eclipse plans offer an example of a wide-ranging planning effort underway. The Genesee Transportation Council, Rochester Museum & Science Center, Visit Rochester, and Kids Out and About are collaborating with stakeholders across sectors to coordinate a region-wide effort. The goal is to create the best possible

experience for 375,000 or more visitors and 1.1 million residents, with a particular focus on the public sector. Their combined efforts have led to:

- Schools canceling classes across the region at both the K-12 and higher education levels;
- A series of transportation-specific meetings to tackle traffic and safety issues;
- The ordering of several hundred thousand eclipse glasses; and
- The decentralization of viewing and education efforts by training and equipping more than 50 community ambassadors from across the nine-county region.

Planners in Rochester have been holding stakeholder meetings quarterly since 2019 and moved to monthly starting in April 2023. More than 300 organizations are represented at these meetings.

Unique Planning Considerations

Eclipse planning brings many stakeholders into the planning process who may not be familiar with event planning for other large-scale events. For example, one rural Oklahoma county, McCurtain County with 30,931 residents, will be the only county in the state that falls within the path of totality in 2024. Beginning in 2020, the executive director of the Broken Bow Area Chamber of Commerce and McCurtain County Tourism Authority devised a plan. She started meeting with various groups within the community, beginning with the city managers, mayors, and fire and police chiefs. The quarterly meetings are currently open to the public, with notices posted on Facebook to educate those not attending any of these meetings. Using the chamber's resources, the executive director has begun to contact the communities that need to know about the eclipse, including but not limited to school principals, lodging sites, and managers of parks on federal and state lands.

In addition to the sky darkening, an eclipse event requires many considerations and past lessons learned for emergency planners and public safety professionals.

In addition to remote and rural areas preparing for new and unique challenges, some private sector entities are updating their plans in anticipation of the eclipse events. For example, the Frozen Foods Institute has provided information to its members to help them consider how best to deliver their goods to retailers during the weeks leading up to the eclipse. Culled from the material the LPWG has gathered and with the expertise of its members, Mark Howell of the LPWG developed the following information and recommendations to help agencies work with partners to build eclipse plans.

Tourism/Chambers of Commerce – Pay attention to upticks in numbers, such as visitations, business revenues, etc., starting in April 2023. A significant deviation from typical annual averages for the same month could indicate people are *scouting* for next year. For example, variations occurred in John Day, Oregon, late summer of 2016, when many more people than usual set up early-season bowhunting camps. Even without hard data and numbers, local businesses know what a typically busy time looks like. Watch for that as a *tickler* metric of potential interest in the area.

Rural communities – Three things every rural community should worry about with the eclipse are travel, toilets, and trash. Rural communities often lack the infrastructure in these three areas to fully handle what is coming. Ordering from surrounding areas may be necessary to close the gap between resources on hand and resources that will likely be needed. Reserve reader boards and other extra traffic control devices, port-a-potties, and dumpsters early, as in right now. This was a significant lesson learned in John Day during the 2017 Eclipse.

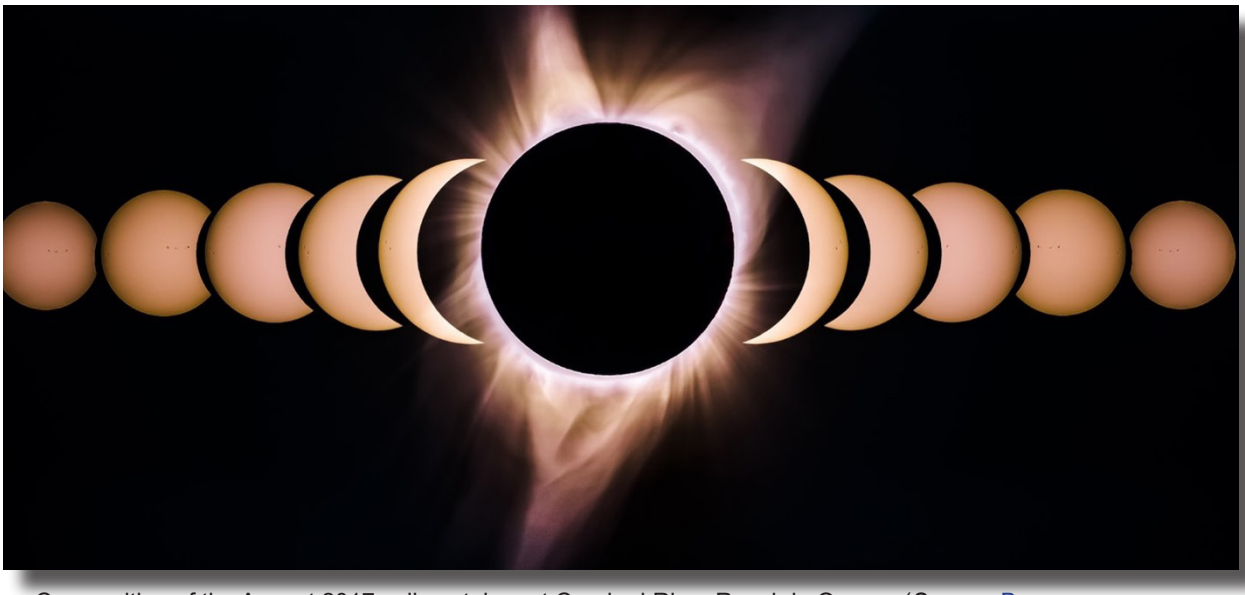
Emergency management – Preparing for a solar eclipse does not fit into the typical disaster or planned special event construct. Yet, it still requires a multidiscipline, multijurisdictional approach to develop realistic expectations, coordinate resources, and plan for potential life and safety concerns. Emergency managers should:

- Focus on local surge capacity (consider the number of people who will likely travel to a location to view the eclipse and the duration of their stay);
- Understand that the normal mutual aid channels may not work when a mass influx of people arrives in the broader regional area (other jurisdictions are just as busy, if not busier, than the local jurisdiction);
- Work with eclipse task forces, lead agencies, facilitating organizations, and other participants to support planning efforts;
- Identify public and private viewing locations;
- Secure resources needed to support the maximum capacity at visitor locations;
- Map ingress and egress options;
- Be aware of other activities and events scheduled before and after the eclipse; and
- Address transportation-specific and other safety issues.

Mutual aid – Organizations like Community Emergency Response Teams and Citizens On Patrol can help with search and rescue, traffic control, aid stations, etc. Think outside the box to engage local groups to help in various ways (REACT, Civil Air Patrol, etc.). If there is a national park, national forest, or fish and wildlife refuge in the area, work with them as much as possible. Stand up a local incident management team the week before the event to coordinate operations within a county or small regional area.

Long-term benefits – Preparedness professionals should be familiar with emergency support functions. However, other stakeholders like tourism professionals, visitors, and event planners may not be familiar with the National Response Framework. The preparedness community can use eclipse planning efforts to share the concepts of the framework with the whole community. In turn, these new partners can learn emergency coordination and organizational structure through eclipse preparation tabletop exercises, site training, and other planning efforts. These groups can then assist when disasters occur in the future.

Tribal Nations – One more area that needs special attention when addressing unique planning considerations is the 574 federally recognized Tribal Nations and Alaska Native Villages in the United States. Although the eclipse is well understood for what it is in the science realm, there is far less to no understanding of the meaning of the eclipse when it comes to certain Tribes. One example of this can be seen by asking the question, "Why



Composition of the August 2017 eclipse taken at Crooked River Ranch in Oregon (*Source*: Bryan Goff on Unsplash).

can't natives see the eclipse?" According to traditional beliefs, viewing the eclipse could result in health and spiritual problems. Navajo beliefs warn against eating, sleeping, or being out in the sun while a solar eclipse is happening. To learn more about Tribes and the eclipse, please read "American Indian Beliefs About the Eclipse."

Preparing for Future Events

Though much will change between the 2024 eclipse and the next total eclipse on August 12, 2045, it is critical to capture how states and localities plan and execute their eclipse events. Though many current preparedness professionals may be long retired in 2045, they will acquire much knowledge from these eclipse events to pass on to future professionals. It is far better to share lessons learned and best practices from these events than to force those in the years ahead to start from scratch.

The AAS is continually updating its website with the most helpful information the task force has been able to gather, including:

- General information for an overview of the eclipse events and
- Specific information to help plan eclipse events.

As the lead federal agency, NASA also updates its website regularly.

Laurel J. Radow, AAS SETF member and Co-chair, AAS Local Planning Working Group. She joined the Federal Highway Administration (FHWA), U.S. Department of Transportation in 1996. From 2004 until her retirement at the end of 2016, she served as a member of the FHWA Office of Operation's Traffic Incident and Events Management Team. In that capacity, she served as program manager for the agency's Evacuations/Emergencies and Planned Special Events programs and managed a range of Traffic Incident Management tasks. From 2014-2016, she served as vice chair of the National Academy of Sciences Transportation Research Board's (TRB) Standing Committee on Critical Transportation Infrastructure Protection (AMR10). She recently completed her second and final term as chair of the same committee. In addition to co-chairing the TRB at the October 2018 Resiliency Conference (T-RISE), she also served as guest managing editor for the TR News September/October 2021 Issue no. 335, "State of Emergency: What Transportation Learned from 9/11."