2024 Total Solar Eclipse Information for Transportation Agencies

The Federal Highway Administration (FHWA) conducted a solar eclipse outreach campaign in anticipation of the total solar eclipse in 2024 to share strategies and recommended practices to help transportation agencies prepare. This fact sheet describes what a transportation agency may experience as part of a solar eclipse and how to prepare for anticipated traffic effects.

WHAT IS A TOTAL SOLAR ECLIPSE?

The National Weather Service (NWS) describes a solar eclipse as a relatively rare phenomenon that occurs when "the Moon passes between the Sun and Earth, casting the Moon's shadow on Earth."[1] The path of an eclipse is narrow and short-lived. A **total solar eclipse** occurs when the Moon's elliptical orbit brings it to its minimum distance from Earth, causing the Moon to appear larger than the Sun and completely (or totally) obscuring the Sun, as shown in **figure 1**. The resulting shadow visible at the narrow "path of totality" appears with a ring of light. The total solar eclipse on April 8, 2024, crossed the United States along the path shown in **figure 2** across the following States:

- Arkansas
- Illinois
- Indiana
- Maine
- Missouri
- New Hampshire
- New York
- Ohio
- Oklahoma
- Pennsylvania
- Texas
- Vermont

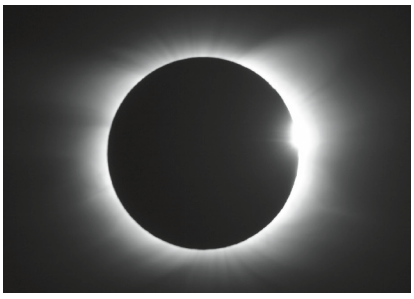

Figure 1. Photo. Image of a total solar eclipse. (Photo Credit: Getty Images.)

WHAT ARE THE POTENTIAL TRANSPORTATION EFFECTS OF A SOLAR ECLIPSE?

Because a solar eclipse is a relatively rare type of planned special event, it can generate large volumes of traffic for which State and local departments of transportation (DOTs) will need to prepare. A solar eclipse is unique in how its path crosses many locations across the Nation. Many people are interested in experiencing a solar eclipse firsthand, even if they do not live near its path. As a result, in addition to people traveling to experience the solar eclipse causing increased traffic and potential safety impacts, a variety of additional associated local activities, festivals, and events may also be scheduled to coincide with the eclipse, which can cause additional impacts.

[1] National Weather Service. n.d. "Solar and Lunar Eclipses." https://www.weather.gov/fsd/suneclipse, last accessed March 12, 2024.

A total solar eclipse occurred in the United States on August 21, 2017, creating delays and queuing on rural interstates and highways across the Nation. During the days before and after the 2017 event, people traveled into rural areas near the path of totality. Coordinating with the NWS helped DOTs understand whether cloud cover might affect the visibility of the eclipse in certain areas, causing increased congestion as visitors moved to locations with better weather conditions and visibility. Additionally, increased traffic to remote areas could cause other safety effects, such as the presence of illegally parked vehicles in unsafe areas (e.g., shoulders or medians), or the increased potential for igniting wildfires in dry areas.

The path of the 2024 total solar eclipse will similarly cross rural areas, although near major population centers, such as Houston, TX; New York City, NY; and Boston, MA. For optimal viewing, many people from these large cities will travel to nearby rural areas to view the 2024 solar eclipse. Major cities such as Dallas, TX, and Cleveland, OH, are also in the path of the 2024 total solar eclipse, and these areas may be more capable of handling an influx of travelers wishing to view the eclipse.

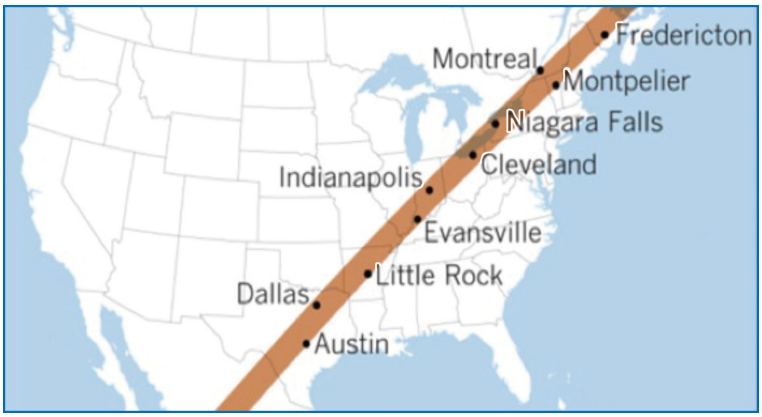

Figure 2. Map. A total solar eclipse passed over Mexico, the eastern United States, and Canada on April 8, 2024. (Source: National Weather Service.)

HOW CAN TRANSPORTATION AGENCIES PREPARE FOR A SOLAR ECLIPSE?

Transportation agencies can prepare for a solar eclipse and for increased traveler volume by taking several proactive steps:

- **Be a primary source for public information:** Transportation agencies may create dedicated Web pages for the solar eclipse event or have special links to solar eclipse events and information available on the DOT traveler information website, via 511, and social media channels. Traffic delays are likely to occur because of travelers driving to the path of the solar eclipse; however, DOTs can manage the message and help travelers anticipate traffic conditions by providing information weeks prior to the event. DOTs may also work with third-party traveler information providers to coordinate messages.
- **Coordinate with the NWS:** Transportation agencies in the path of the solar eclipse may consider a Pathfinder approach to coordinate with the NWS in the days leading up to the solar eclipse. Forecasted precipitation and cloud cover could affect visibility conditions for the solar eclipse, causing last minute shifts in travel to different viewing locations. The NWS can support DOTs in developing accurate, actionable messaging for social media, traveler information websites, or dynamic message signs (DMSs) to help manage traffic and provide weather-related updates for the traveling public.
- **Coordinate with law enforcement, first responders, and local agencies:** State DOTs may consider being part of conversations with law enforcement and local agencies to understand how everyone can work together to coordinate and share resources to most efficiently respond to incidents, manage traffic, and improve safety and mobility. Specifically, these agencies may coordinate with the State DOT to develop traffic control or management plans for specific locations to reduce congestion and prevent illegal parking or turns. First responders

representing fire departments and emergency medical services may also be involved in these conversations, given the long-lasting queues and potential medical emergencies that eclipse viewers could experience.

- **Coordinate with construction and maintenance staff and contractors:** DOTs should consider working with construction and maintenance staff and contractors to minimize lane or road closures around the solar eclipse event that would worsen adverse traffic effects on key corridors. If feasible, planned maintenance activities may be halted or delayed in the areas affected by the event. Additionally, pre-positioning of tow truck operators and courtesy patrols may be considered for areas that are anticipated to experience long-standing queues and delays.
- **Manage travelers' expectations:** In the days leading up to the solar eclipse and the day of the event, State DOTs may consider issuing public service announcements on radio stations or DMSs to help travelers anticipate heavy traffic conditions. State DOTs may encourage travelers to consider modifying travel plans and routes to avoid anticipated congestion. Generally, travelers will arrive for the solar eclipse over a longer period of time, while most people will be departing the area at about the same time once the solar eclipse has passed.

CONCLUSIONS

A solar eclipse can create major traffic issues, and State DOTs have a role in helping to manage the effect. Specifically, State DOTs should consider coordination with the NWS, law enforcement, first responders, local agencies, construction contractors, and maintenance staff to anticipate and prepare for the impacts caused by increased traffic due to public interest in the solar eclipse. State DOTs may also consider providing additional information about the eclipse on existing traveler information websites, social media pages, and DMSs, or even consider developing a Web page dedicated to the event. In this way, State DOTs can help to proactively manage the impacts that the traveling public may cause due to the solar eclipse.

AVAILABLE RESOURCES

1. FHWA, Road Weather Management Program: https://ops.fhwa.dot.gov/weather
2. FHWA, *Managing Travel for Planned Special Events*: https://ops.fhwa.dot.gov/publications/fhwaop04010/handbook.pdf
3. FHWA fact sheet, *Weather-Savvy Roads: Wyoming Department of Transportation Total Solar Eclipse*: https://ops.fhwa.dot.gov/Publications/fhwahop18033/index.htm
4. National Weather Service, Solar and Lunar Eclipses: https://www.weather.gov/fsd/suneclipse
5. National Operations Center of Excellence, Solar Eclipse Resources: https://transportationops.org/eclipse
6. FHWA, Solar Eclipse Resources: https://ops.fhwa.dot.gov/tim/about/eclipse.htm

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