

Training Meeting



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Night Sky Quality Survey

August 31, 2026

Background



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- Developing Dark Skies regulations identified as a high-priority action in Envision Washoe 2040
 - Priority policy for 9 of 12 planning areas
- Washoe County home to some of the darkest skies in the world
- Washoe County Development Code (e.g. zoning regulation) contains lighting standards for development
 - Dark Skies project focused on updating those regulations to pursue community goals

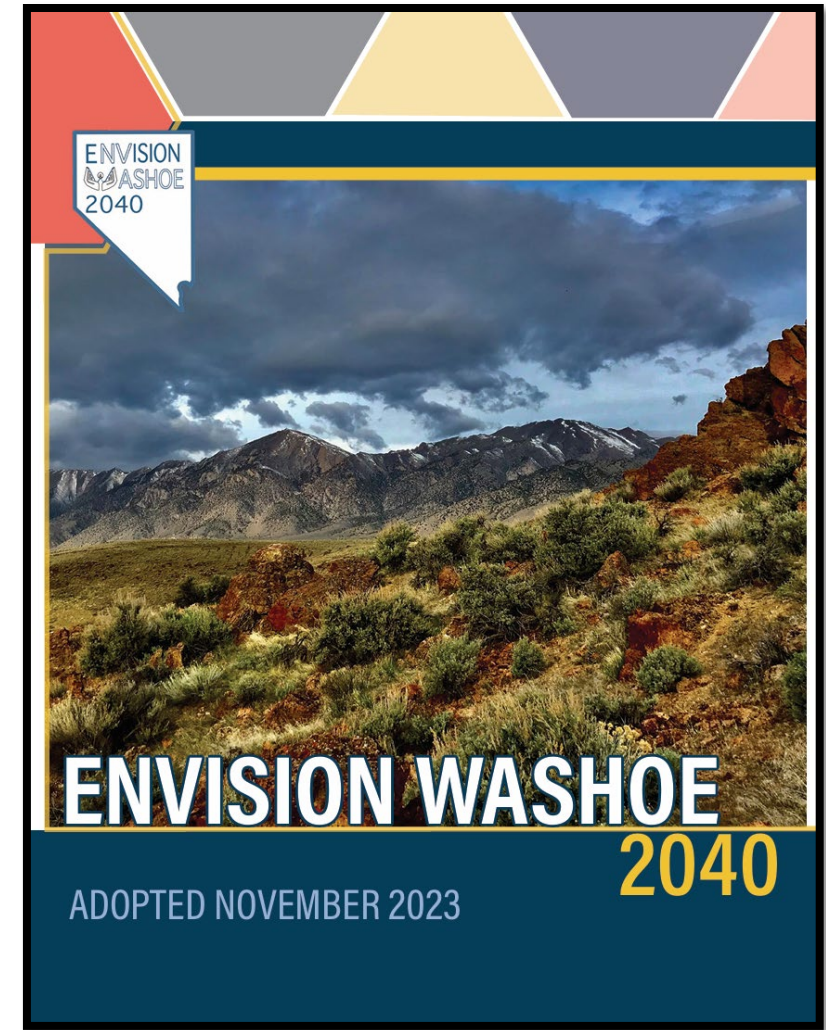
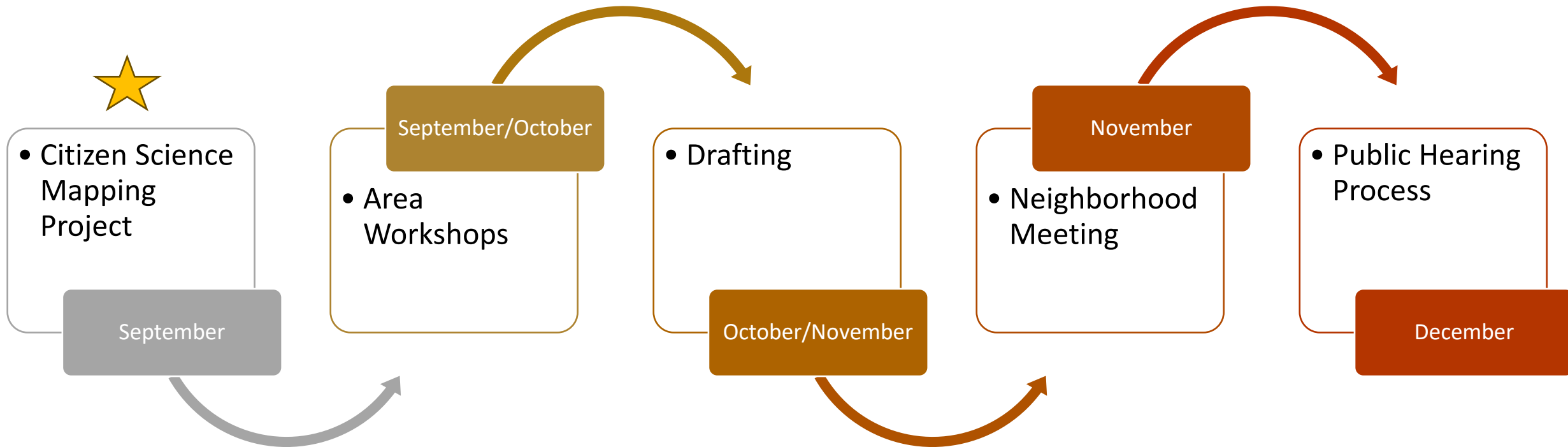


Image 1: Envision Washoe 2040 Cover

Dark Skies Project



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Goals Today



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- Understanding of the impact and importance of dark skies
- Understanding how to participate in the night sky quality survey and make a Bortles observation
- Understanding of the regulatory update process and what it can achieve



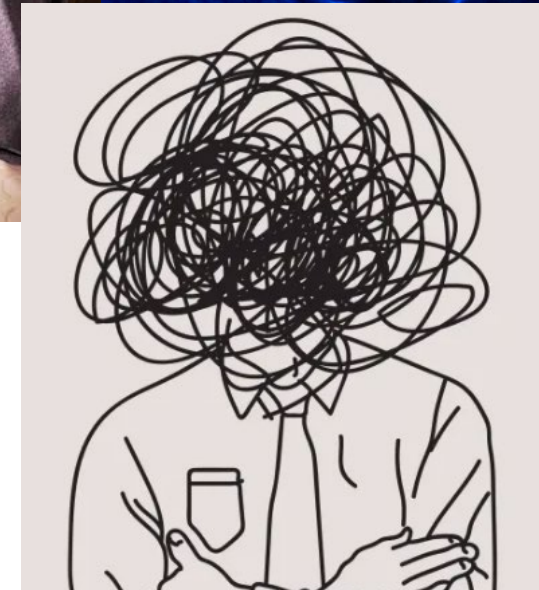
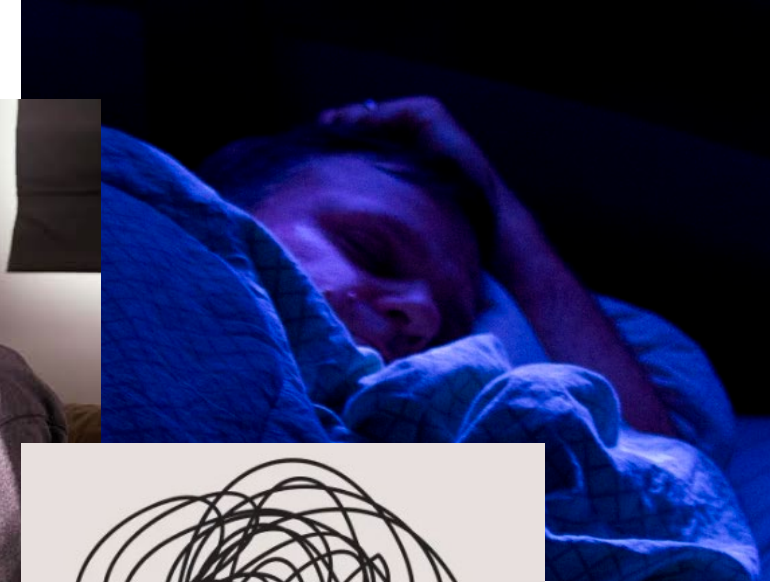
Image 2: Visualization of light pollution in the United States

Importance to People



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- Darkness and circadian rhythms
 - Exposure to lights after dark delays melatonin release and contributes to trouble sleeping
 - Poor sleep contributes to obesity, poor metabolism, diabetes and cardiovascular disease.
 - Darker nights associated with better moods & reduced stress



Importance to Wildlife



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- 2/3 of animals are nocturnal
- 80% of migratory birds travel in dark
- High mortality from collisions with illuminated buildings and windows
- Disrupted pollination and lower insect populations in brighter areas.
- UNR study: House sparrows sleep less, feed their chicks less, chicks born underweight, lower survival rates.



Awe and the Economy



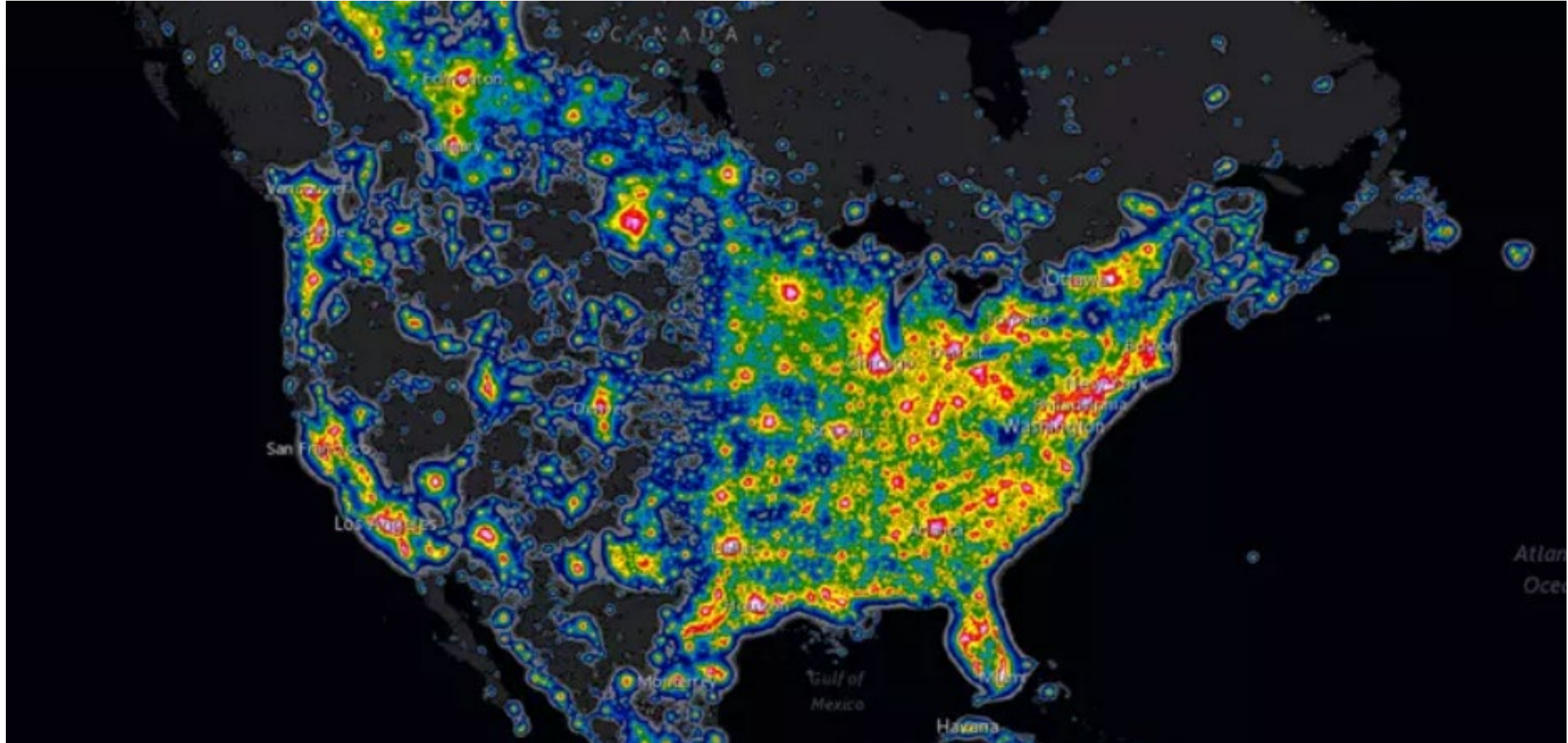
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Awe and the Economy



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Making a Sky Quality Observation

Measuring the darkness of the sky



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- Multiple methods for measuring the darkness of the sky
 - Sky Quality Meters (SQMs)
 - **Bortles Scale**
- Bortles scale—an observational ranking of the darkness of the sky (1-9) based on what you can see



Image 4: People using a SQM



1

Excellent
Dark Sky
Site

2

Dark Sky
Site

3

Rural Sky

4

Suburban/
Rural
Transition

5

Suburban
Sky

6

Bright
Suburban
Sky

7

City/
Suburbia
Transition

8/9

City/Inner
City Sky

Bortles 9

- Brightest places in cities
- Only very bright stars can be seen
- Sky very bright
- Less than 300 stars visible

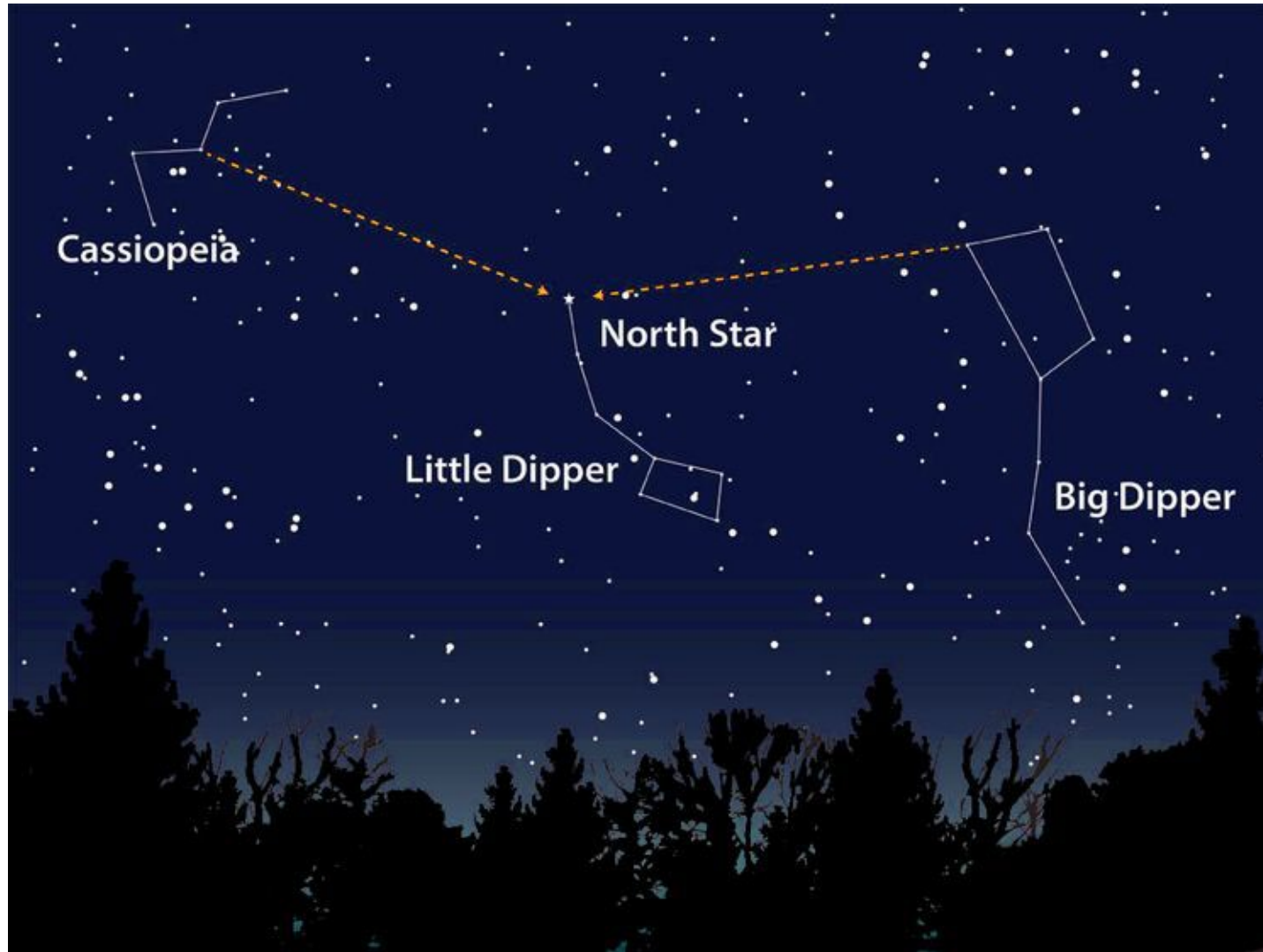
Bortles 8

- A couple more stars visible, but still only the brightest
- Can make out the basic constellations
- Sky bright, glowing white or orange
- Milky Way is invisible
- About 500 stars visible

City Sky Constellations



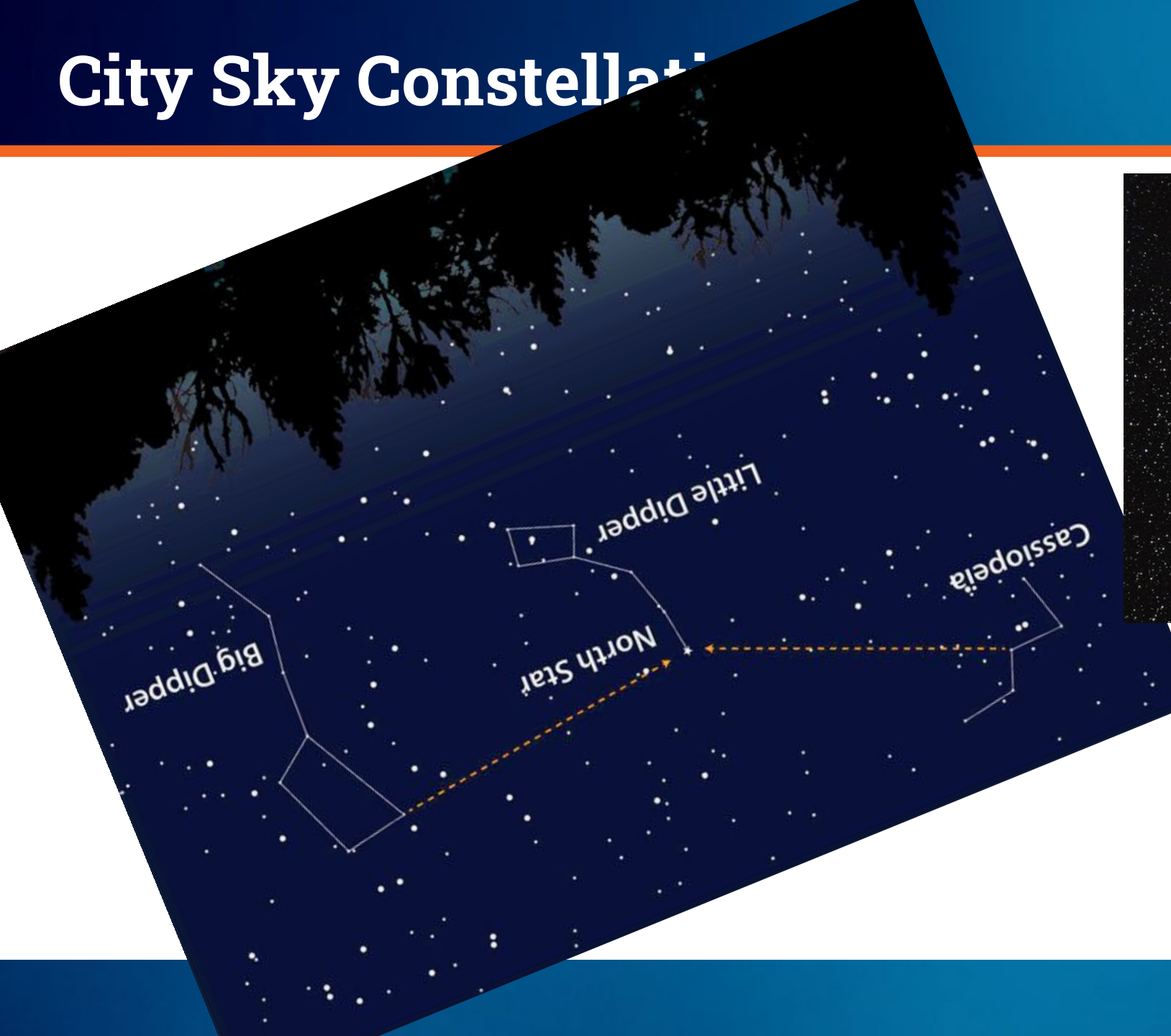
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City Sky Constellations



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Bortles 7

- Darker skies on the fringes of cities
- All stars of the little dipper are visible
- Milky Way is **not** visible
- About 1,000 stars visible

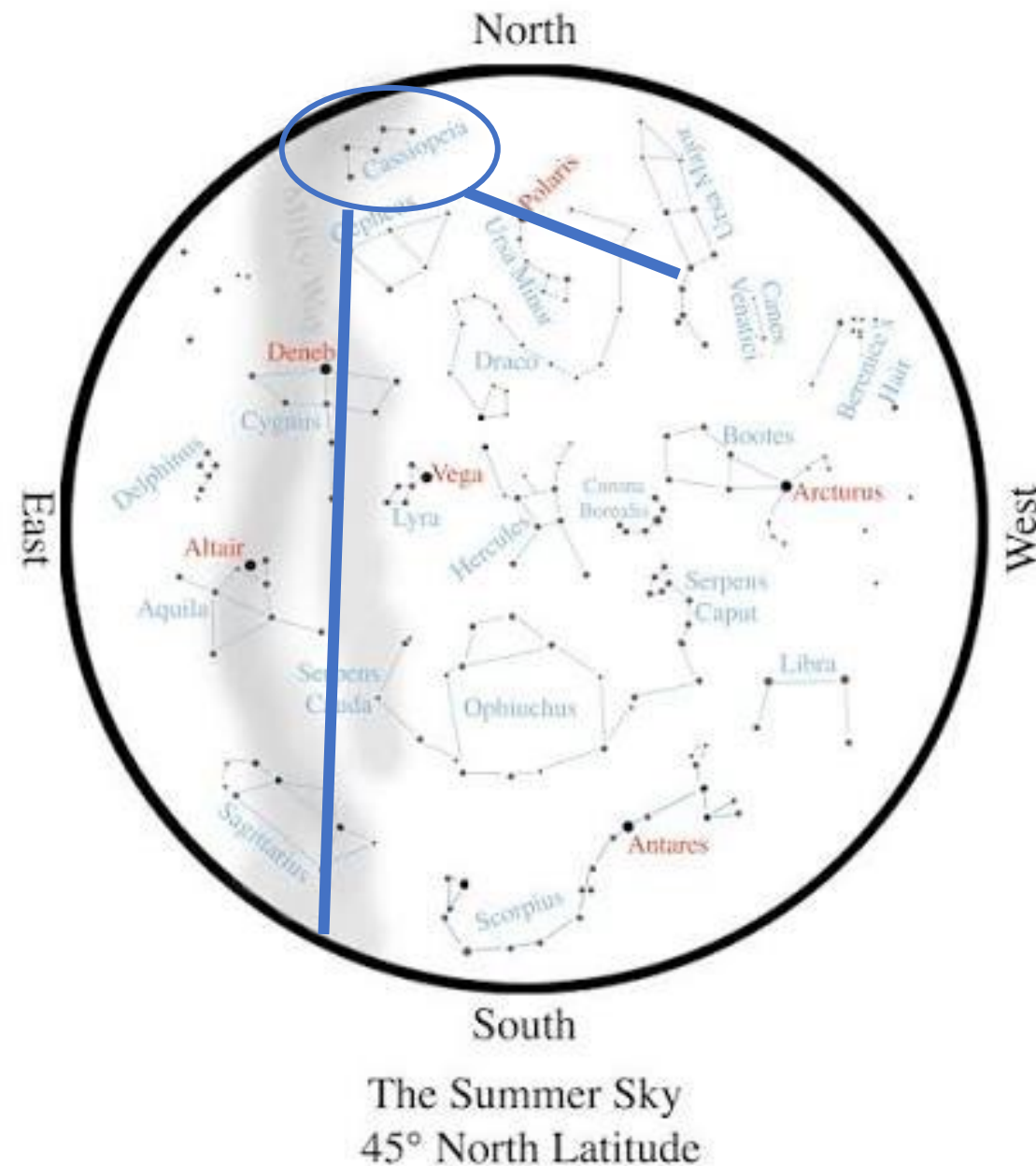
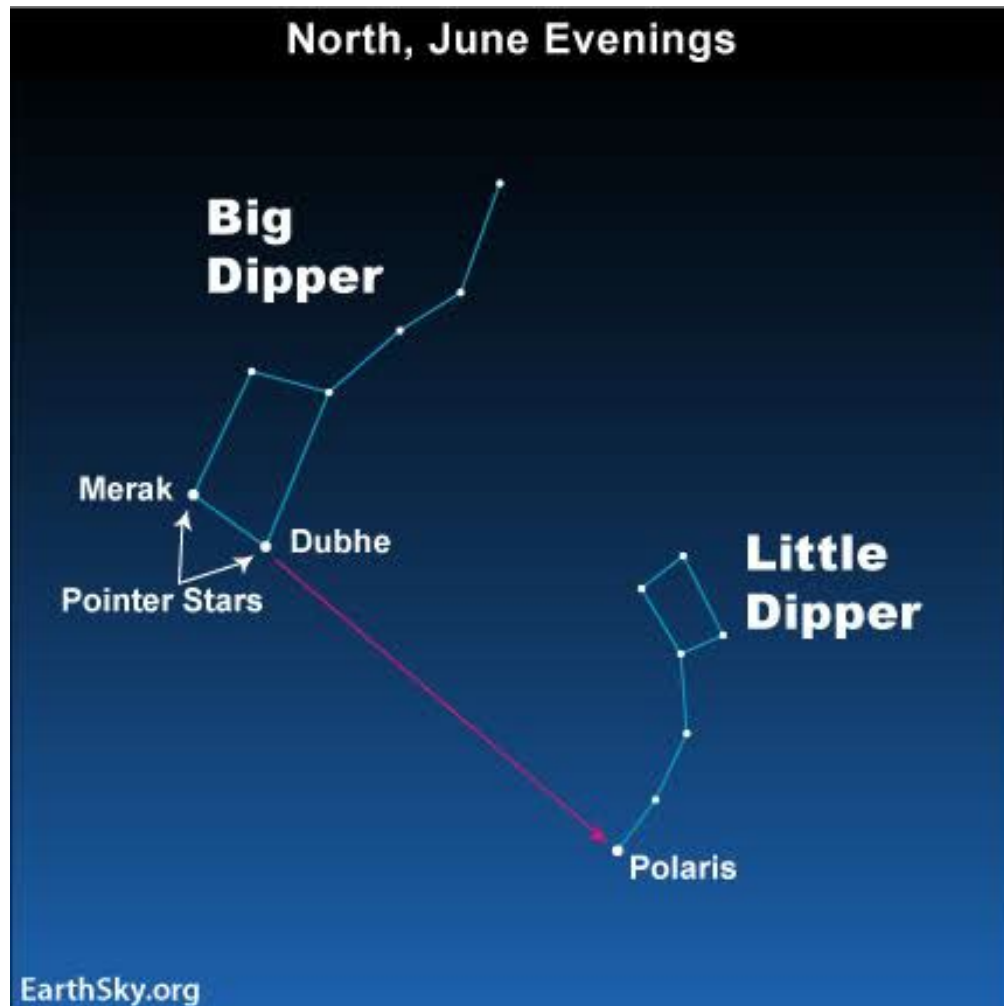
Bortles 6

- All stars of the little dipper are visible
- The Milky Way can barely be seen overhead (but only overhead)
- Can barely see detail on the ground
- About 1,500 stars are visible

Suburban Sky Constellations



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Suburban/Rural Transition Skies



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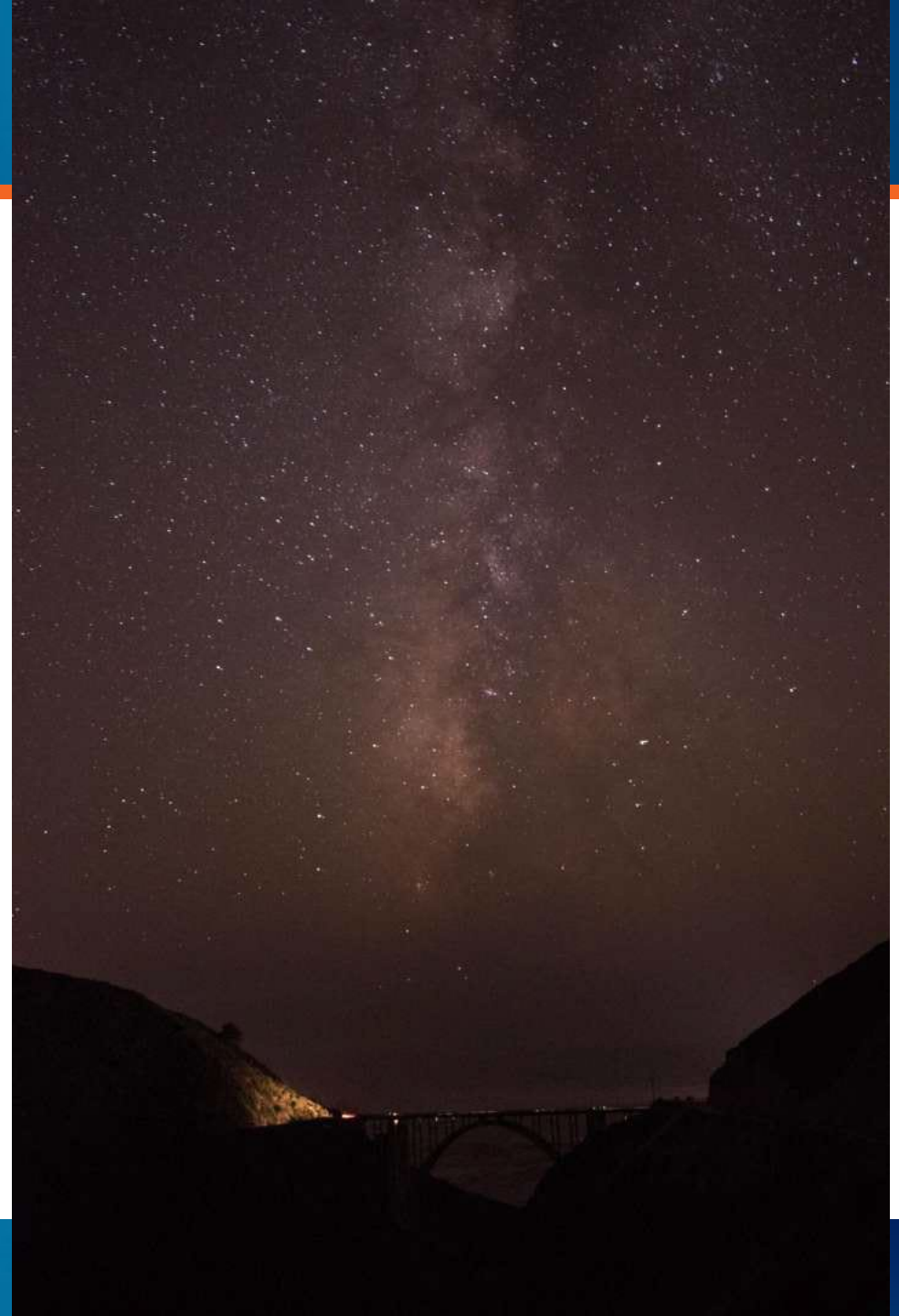
Bortles 5

- Milky Way more visible across the sky but not horizon to horizon
- Some definition between light and dark spots in the Milky Way overhead
- Any clouds are noticeably brighter than the sky
- About 2,000 stars visible

Bortles 4

- Milky Way reaches horizon to horizon, but lacking fine details
- Can see “light domes” on the horizon in the direction of cities/artificial light sources
- Light domes are still brighter than the brightest parts of the Milky Way
- About 2,500 stars visible

Transition Sky Features



Bortles 3

- The sky is full of stars
- The Milky Way is complex from horizon to horizon
- The sky is dark overhead, but there may still be some small light domes or cloud illumination near the horizon
- About 3,500 stars visible

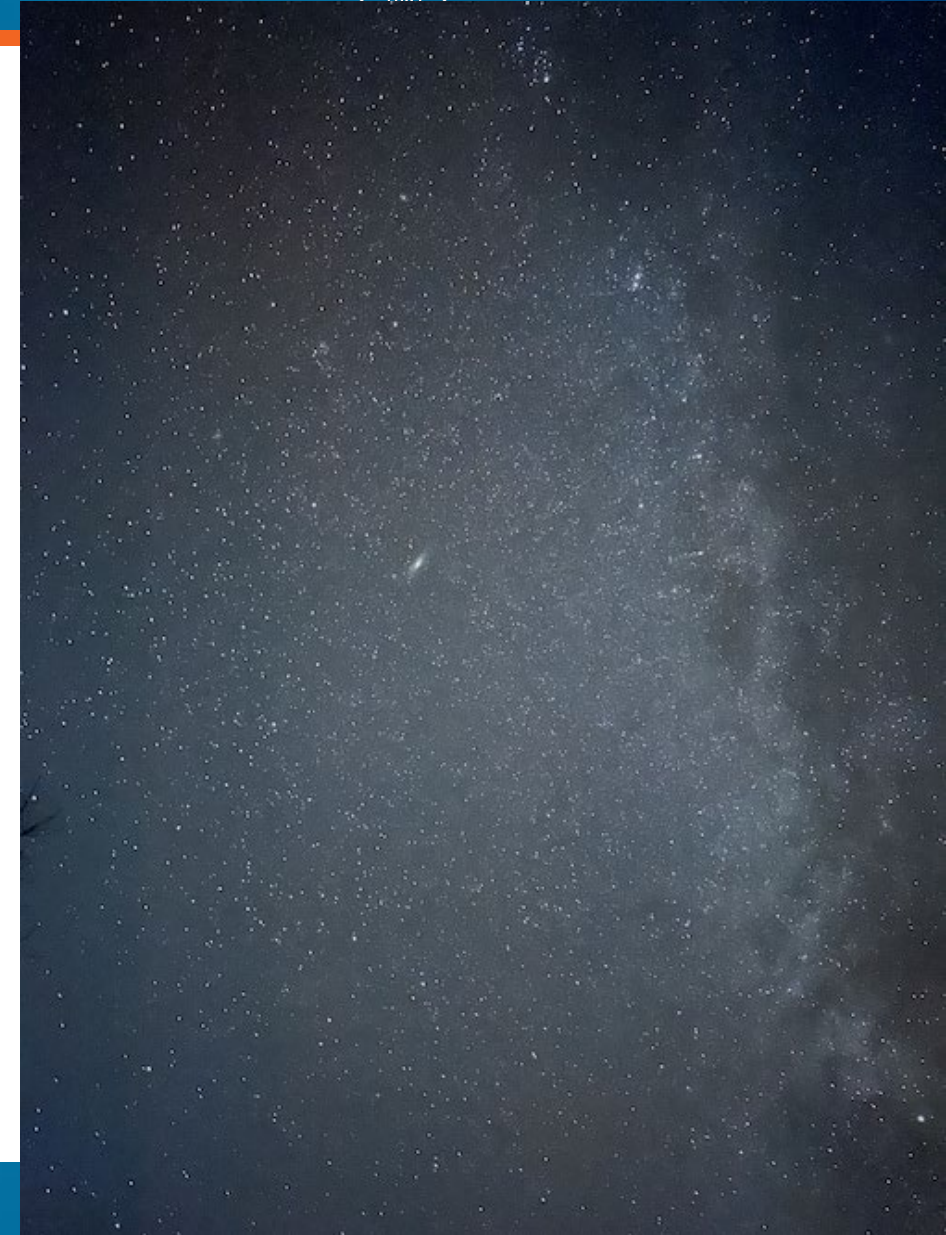
Bortles 2

- The Milky Way is complex and detailed
- Any clouds are not illuminated and are dark holes in the stars
- There are a lot of stars
- There are blurs and clumps of light in the sky outside of the Milky Way—these may be globular clusters or the Andromeda Galaxy
- About 4,500 stars visible

Rural Sky Features



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Excellent Dark Skies



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Bortles 1

- Sky full of stars
- Milky Way detailed and complex
- Dark areas in the Milky Way cast shadows on the ground
- No evidence of artificial light
- Over 5,000 stars visible
- Important: thank your lucky stars that you're there



Making your Observation



- Make your observation between 9:00 p.m. and midnight
- Give your eyes 10 minutes to adjust
- Block/avoid any artificial light sources if you can
- Don't look up your likely Bortles classification beforehand
- Don't stress and enjoy the skies!
- A note on smoke and clouds: try to make your observation on a clear night if possible

Inputting Your Observation

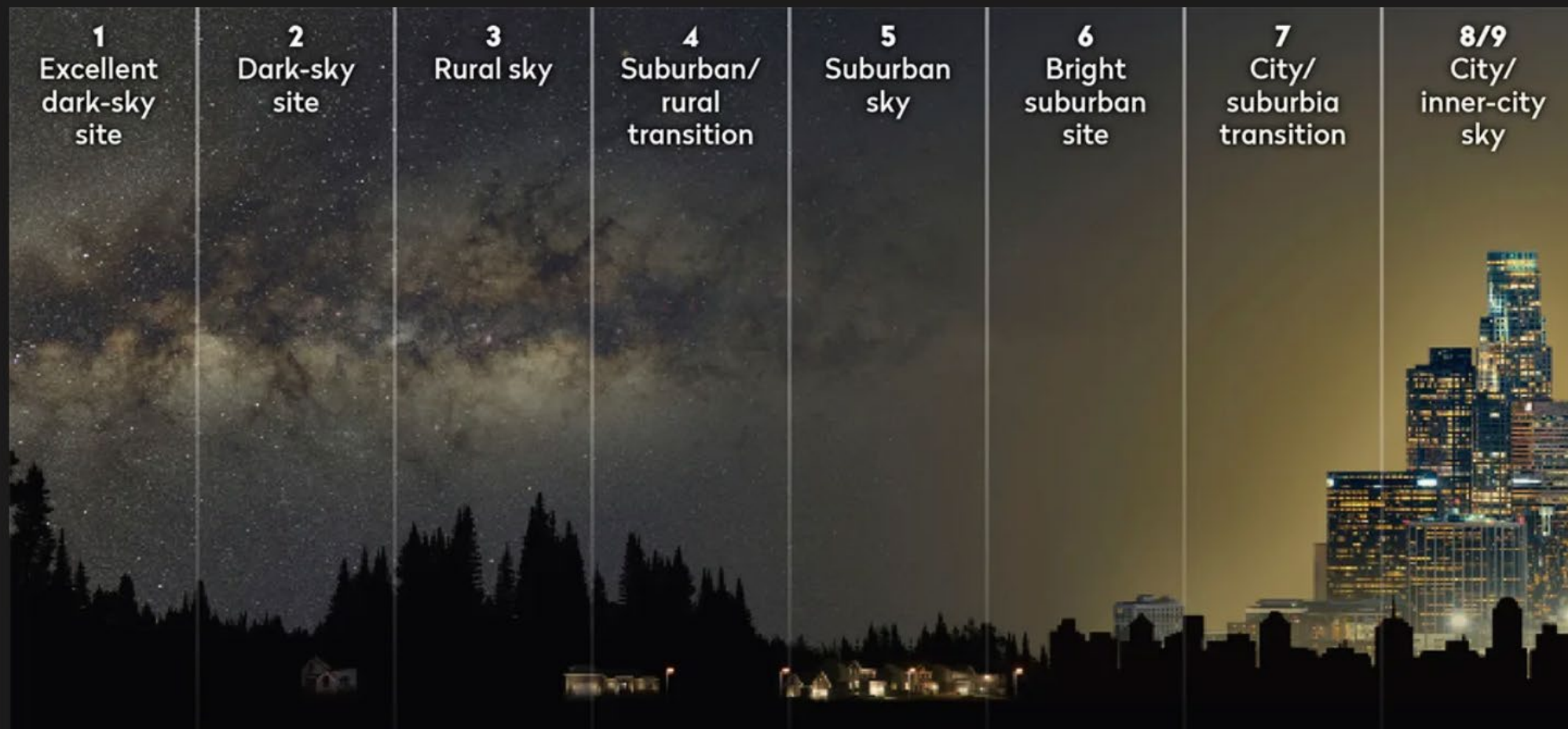


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Washoe County Dark Sky

Use the Bortle Scale below and provided training materials to report dark sky quality across Washoe County locations.



Report dark sky conditions
when

Report Offline

Report dark sky conditions

Report Online

Inputting Your Observation

- Automatically collects your location and the date/time
 - Ensure location sharing is turned on
- Answer the questions and click submit!

Weather Conditions*

At the time of observation.

☐

Clear or Mostly Clear Skies

☐

Cloudy or Mostly Cloudy Skies

Artificial Light*

Report the level to which street/building lights are visible.

☐

High (street/building lights present)

☐

Medium (porch/building lights present)

☐

Low (few dispersed/distant light sources)

☐

None (no artificial light visible)

Provide your rating based on the Bortle Scale above:*

1 - Excellent, no light interference – 9 - Poor, completely obscured.



 [Reset](#)

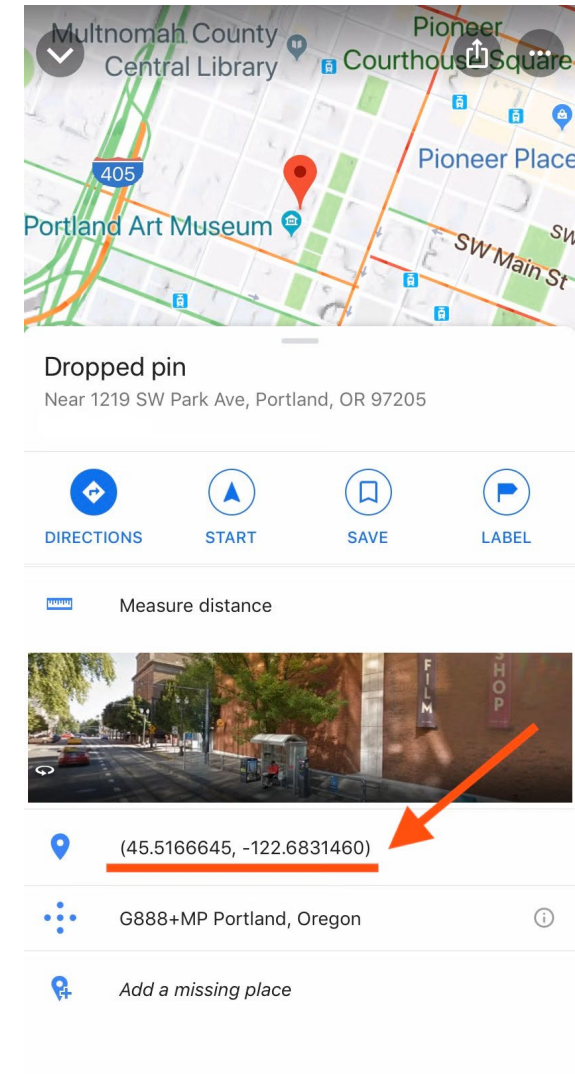
Submit

Inputting Your Observation



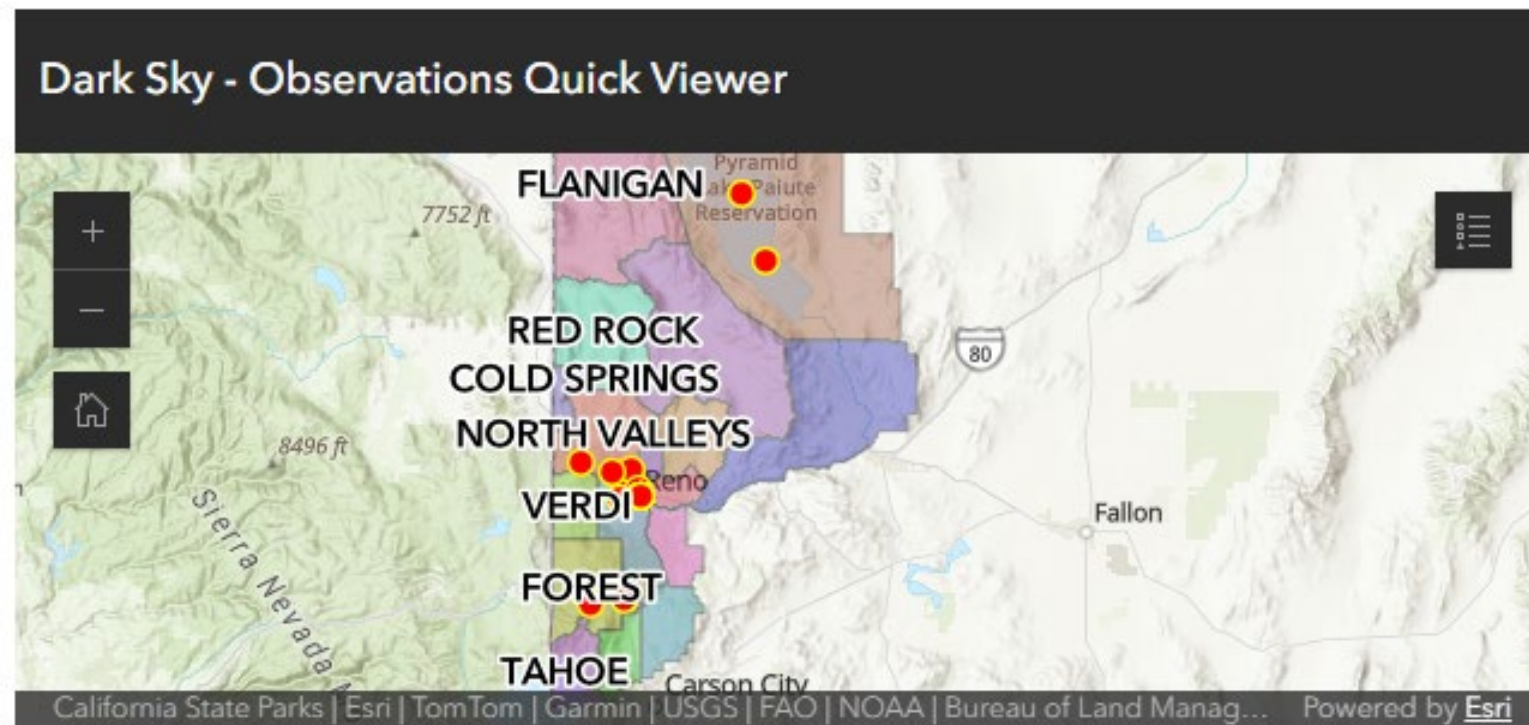
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- You input the coordinates of your observation
 - Copy from mobile or desktop map app
- You input date/time of the observation
 - Make sure the AM or PM is correct, so that your observation doesn't get filtered out for being taken outside of the survey hours



Dark Sky Survey Observations

Use this map to see where people have already made night sky observations as part of the Washoe County dark skies survey and to plan your own survey location.

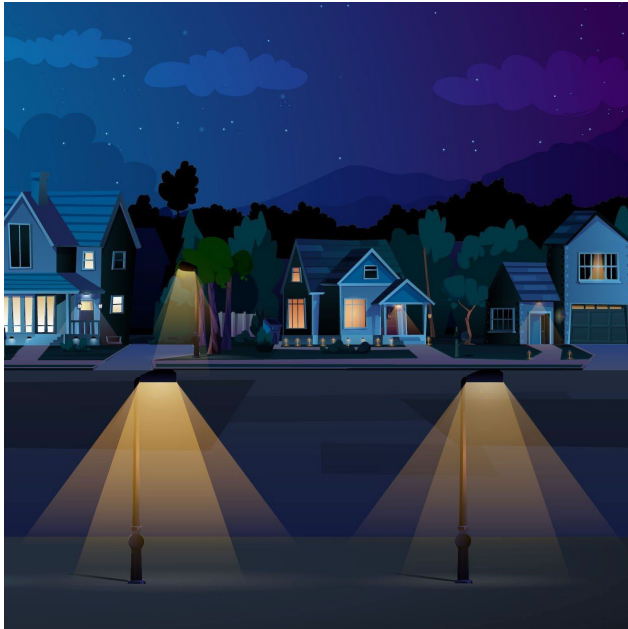


Dark Skies in Cities



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- Flagstaff, Arizona
 - The Milky Way is visible downtown
 - City is Bortles 4-6
- Reducing light pollution is possible



Anticipated Outcomes



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- On-the-ground data about sky darkness in Washoe County
- Code updates to improve lighting regulations
- Limiting light pollution, particularly in less developed areas
- Decreasing light pollution over time
 - As new fixtures are installed under the updated code
 - Improved education about and interest in maintaining dark skies



One last request: take pictures and share them with us! Tag Washoe County or email them to planning@washoecounty.gov. We may use/share pictures shared with us.

Thank you

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