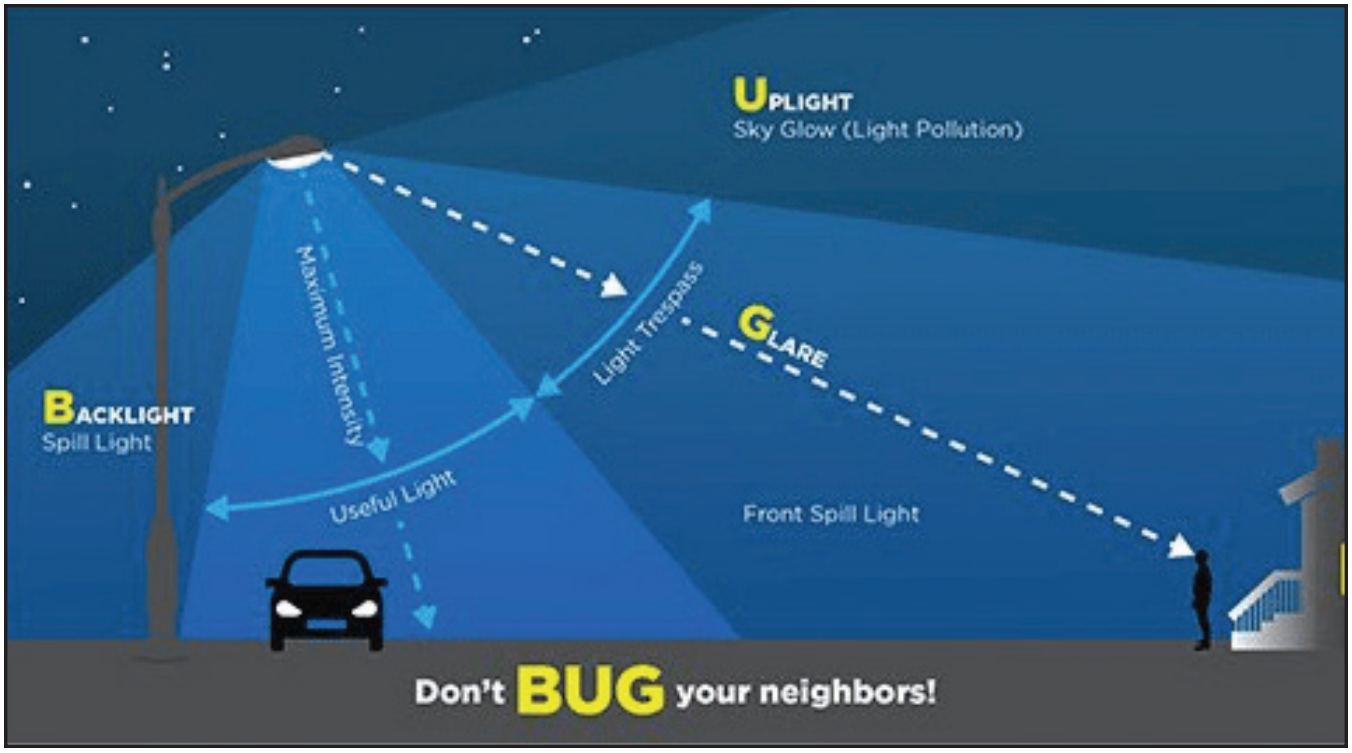
TURN ON THE NIGHT

Task Force Challenges · Student



TASK FORCE CHALLENGE 1: GLARE

Student Instructions for Challenge 1: Glare

1. Consider the complaints made by citizens of your city by reading the Citizen Letters regarding Glare.
2. Begin by brainstorming with your Task Force Members. Use the Problem Solving Worksheets to just begin to write down: What are the issues? What do you know? What's the problem? What are some possible solutions? What do you still need to know?
3. Next, refer to the Background Information on Glare. When you have finished reading, revisit your Problem Solving Worksheets and fill in additional information based on your reading.

4. Post the eye chart at eye level on a wall. We're going to use this to explore how glare affects people with and without aging eyes.
5. Read the smallest line you can at a distance of 6 meters (20 feet) from the chart. Record the line number you read. For students with glasses, try to read the smallest line you can with and without your glasses. For perfect vision, you should be able to read line 8.
6. Then try again with 1 layer of the fuzzy transparency immediately in front of your eyes; repeat with 2 layers, 3 layers, and then 4 layers. Each time, record the line numbers you read. The layers of transparency will simulate different severities of cataracts.
7. Now make the room as dark as you can. Using the large flashlight in your box, fully illuminate the eye chart (so you can still see it). Repeat steps 5 and 6.
8. Keeping the room lights off, have one person in the group stand near the eye chart pointing the Mini Maglite toward you. Repeat steps 5 and 6 under these conditions.
9. Revisit your Problem Solving Worksheets once more. Based on your experience with glare, how would you update, change or support your statement of the issues and problems and your proposed solutions?
10. Conduct additional research as needed in order to create a single group document that lists:
    - The issue or list of issues raised
    - A clear problem statement
    - Information you believe would be helpful that you have not been able to obtain (remaining unanswered questions)
    - A list of one or more suggested solutions with justification for why you recommend each one.
11. Based on the document you created in step 10, create a presentation for your Mayor and other Task Forces (written report, video, poster, website etc.) that clearly communicates the issues, problem(s), solutions and recommendations.

Citizen Letters for Task Force Challenge 1: Glare

Dear Mayor,
I have lived in this city for my entire life, but not with all your new-fangled lights on the streets. It is very hard to see while driving at night. They shine right in my eyes, which is very painful! The city should do something about this!
Sincerely,
Iris Auld

Dear Mayor,
The lights from the sports field are very bright and shine all over the place, especially into my eyes while driving by them at night. I have had close calls with other drivers. Can't they just keep the lights on the field and not on the street?
Sincerely,
Bea Wright

Background Information for Challenge 1: Glare

Glare

- Glare is a visual sensation caused by an overly bright, exposed bulb, meaning that you can see the light bulb itself.
- Glare can be disabling or simply uncomfortable. (See section on *Disability vs. Discomfort Glare*.)
- Older people are usually more sensitive to glare due to the aging characteristics of the eye. (See section on Aging Eyes.)
- Because glare causes pain or discomfort, it can be very unsafe. When a light is glaring to the eye, it makes it very hard to see, especially while driving.
- Have you ever been blinded by car headlights? That's glare!
- Glare affects everyone in some way.

Shielding and Dimming

- Glare is reduced when the light bulb is not exposed.
- Lights should be task-oriented, meaning they light what they were designed to light.
- When a shielded fixture orients all the light downward, often bright light is no longer needed and the wattage can be lowered.

Aging Eyes

- Glare can severely affect people with aging eyes.
- Many people of all ages wear glasses. Glare from lights can scatter off dust, dirt, scratches, or smudges on the lenses making the effects of glare worse.
- As some people age, they lose some control of the muscle that changes the size of the pupil when light levels change. This means that if a light is very bright, the pupil will stay open wider in older people and more light will enter the eye. This can be very painful.
- Cataracts cloud the lens inside the eye. Symptoms include blurriness, lights appearing brighter, poor color perception, and difficulty seeing at nighttime. Advanced cataracts can be corrected with surgery. The clouding causes more light to scatter inside the eye. Glaring lights can cause pain and more blurring!
- Nearly everyone over the age of 60 has pre-cataracts, which can cause yellowed or blurry vision.

Disability vs. Discomfort Glare

- Disability glare is the reduction in vision caused by intense light sources in the field of view, while discomfort glare is the sensation of annoyance or even pain induced by overly bright sources.

- Disability glare degrades your vision by decreasing your ability to see contrasts and color perception. The loss of vision is caused by stray light being scattered within the eye.
- With discomfort glare, the light can be so painfully bright, that it causes you to have to look away from the light.

Start Here! Resources for additional research on Glare and cataracts can be found at: www.laserclassroom.com/TOTN