Be Ready, Be Safe, Be Responsible

XII. Adverse Driving Conditions

1. Driving At Night
2. Visibility
   - Glare
   - Fog, Smoke, Rain, Snow

Lessons and Hints to Work With Your New Teen Driver
Part 12

pennsylvania DEPARTMENT OF TRANSPORTATION

IUP Institute for Rural Health & Safety

ADVERSE CONDITIONS THAT AFFECT SAFE DRIVING

Controlling What You Have No Control Over

LESSON BENEFITS

- This lesson will allow you to become aware of the effects that changing environmental conditions have on you, your vehicle, and the countermeasures and approach that you should take when driving in these conditions.
- You can't change the weather conditions or time of day, but you can reduce risk by adapting your driving to them.

OBJECTIVES

Visibility

TO:

- **Demonstrate a knowledge of the problems associated with reduced visibility such as driving at night, in fog, in rain, snow, smoke and glare conditions.**

NIGHT DRIVING

Most serious collisions occur in twilight or darkness.(11 pm & 5 pm) 34% of 16 yr. old drivers crash at night.

(Restrictions on permit &Jr. Licenses)

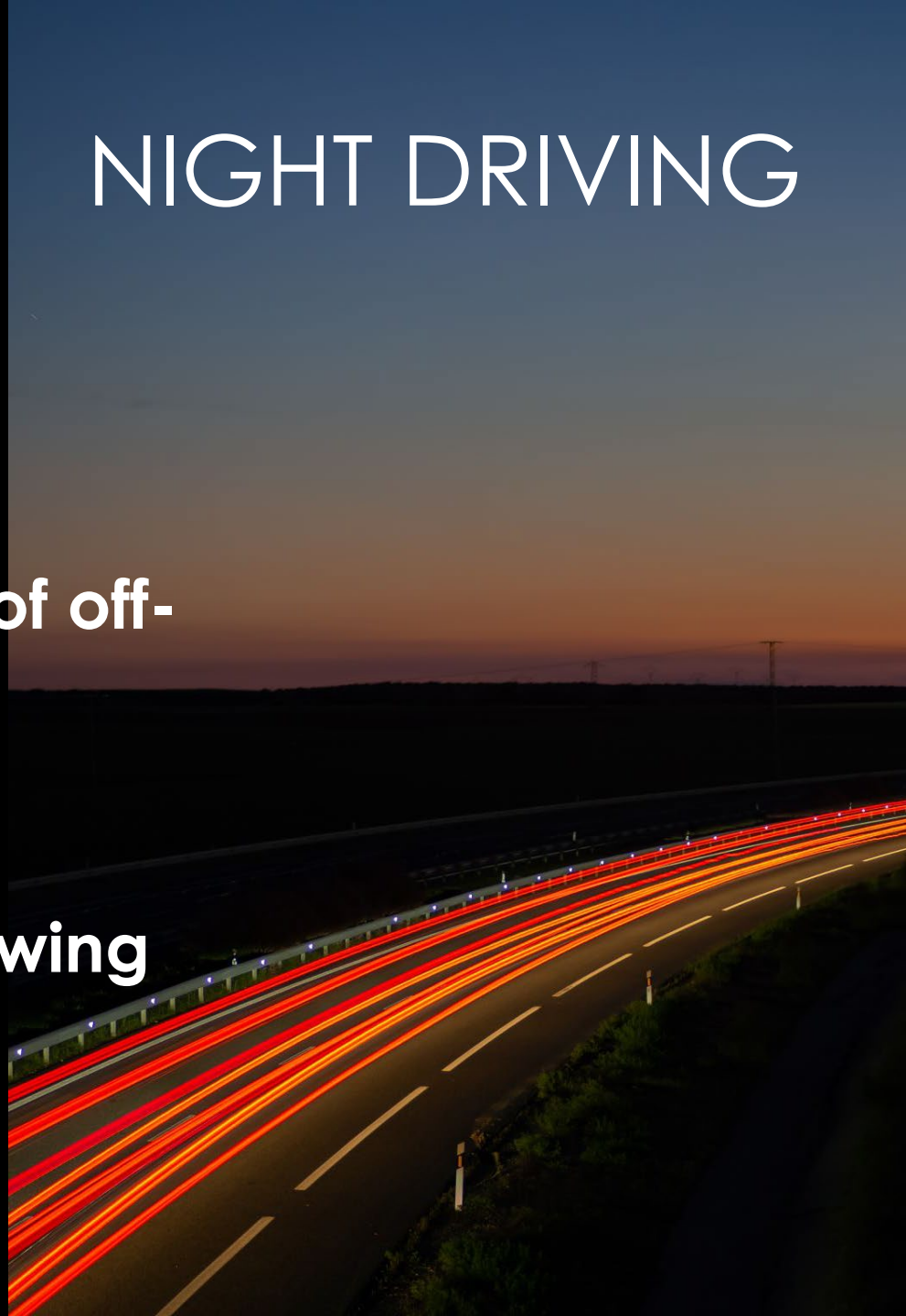
Headlights –to see AND be seen

Required:

- between sunset & sunrise
- Unfavorable weather or light conditions-wipers on-lights on
- Visibility less than 1,000 ft.
- Work zones

NIGHT DRIVING

- Distance you can see ahead is limited
- Headlights provide limited illumination of off-road areas
- Loss of contrast and impaired distance judgment
- Glare from lights of oncoming and following vehicles and glare recovery time



CONDITIONS OF VISIBILITY
NIGHT DRIVING

- Driving at night is more dangerous because-
  1. Vision is severely limited at night (90% of reactions depend on vision)
     - Color vision, depth and distance perception are all reduced.
       - Difficult to make safe gap judgments because landmarks and references aren't visible.
       - Difficult to see pedestrians and bicyclists
         - Look for reflection from clothing ,reflective tape or reflectors

CONDITIONS OF VISIBILITYNIGHT DRIVING

2. Glare from oncoming headlights makes it difficult to see and can be temporarily blinding
   - Glare recovery of pupils (affected by drugs & alcohol)
   - Reflections from wet road surface
3. Fatigue at night
   - Slows reaction time & concentration

NIGHT DRIVING

Reducing the Effects of Headlight Glare

1. Look toward the opposite side of the road as the car passes.
   - DO NOT stare into the headlights
2. Use the Enhanced Mirror Settings and flip the inside rearview for night driving.
3. Keep the windows clean.

NIGHT DRIVING

Other Precautions

- **Wipe all lights clean (50 to 90 percent loss of headlight efficiency due to road grime)**
- **Reduce speed compared to daytime. (Light doesn't bend around curves or into dips)**
- **Increase following distance. (shorter reaction distance)**
- **Turn off or dim interior convenience lights**
- **Proper use of high/low headlight beams**
- **Use <u>parking</u> lights only when <u>parked</u>**

SOME THINGS TO WATCH FOR…

Reflections

- Road signs
- Lane markings, center line & edge markers
- Animal eyes
- Metal/glass on the road

Movement/Changes in Contrast

- Vehicle driving with lights off
- Pedestrian in dark clothes
- Dark spot in the road surface-pothole or obstacle

SOME THINGS TO DO… AND NOT TO DO

Do	Do	Do Not
dim your high beams to oncoming vehicles (500 ft.) and when following vehicles (300ft.)	flash your high beams once to warn oncoming drivers if they do not dim.	Don't "punish" oncoming drivers who don't dim- can blind them and drivers behind them cause collision.

NIGHT DRIVING

SOME THINGS TO DO… AND NOT TO DO

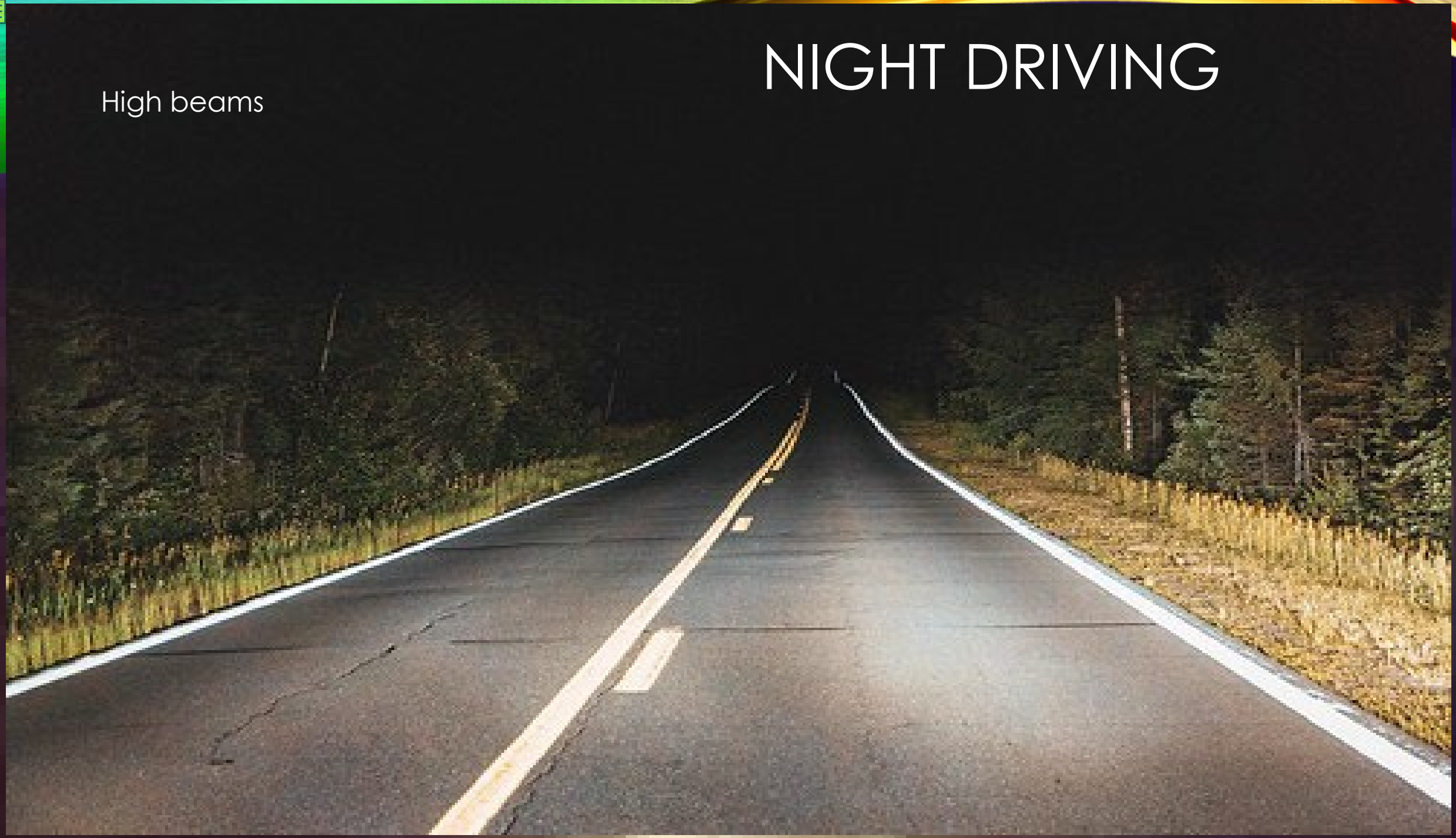
Do Not "overdrive" your headlights.

Your search area and the area that you react, is limited to how far you can see-

- **Visibility of about 255 ft. w/properly aligned low beams - allow for a maximum safe speed of 40-45 mph.**
- **Visibility of about 300 ft. w/properly aligned high beams allow for a maximum safe speed of 55-60 mph**

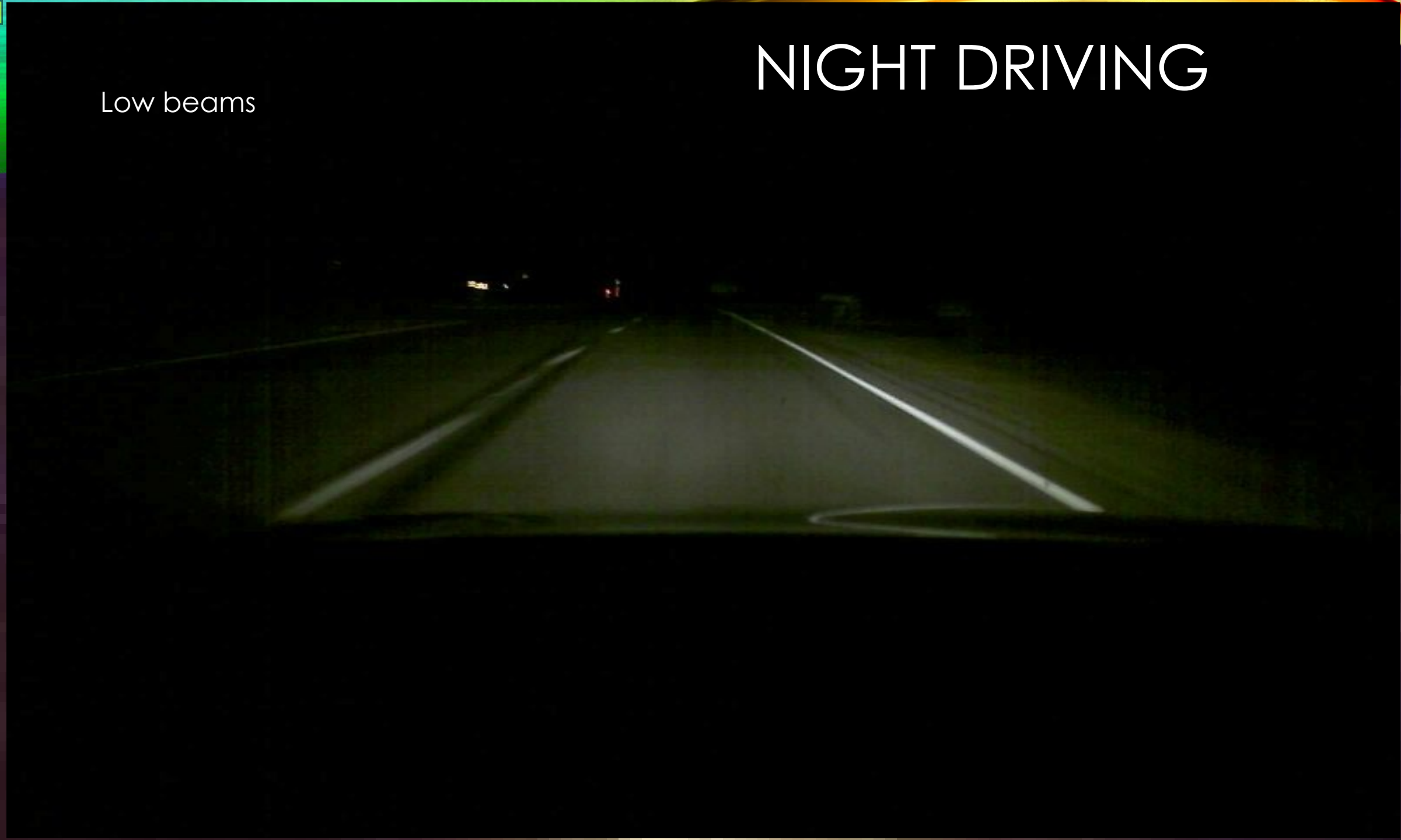
NIGHT DRIVING

High beams



NIGHT DRIVING

Low beams



GLARE

Glare can also occur...

- Dirty windshield
- Paper on dashboard
- Snow-covered landscape
- Facing the sun (dawn and dusk)
- Flashing advertisement signs
- Flood lights
- Failure to dim own headlights in fog, snow or driving rain at night

GLARE

How to fight it…

- Clean all windows and lights
- Keep objects off dashboard
- Adjust sun visors
- Adjust mirrors
- Sit high in the seat-use windshield tint
- Wear sunglasses on sunny days-
  - Snow glare
- Adjust speed to visibility conditions


GLARE

SUNRISE/SUNSET

SUNRISE/SUNSET


SNOWBLINDNESS

SNOWBLINDNESS


Dashboard Glare


Dashboard Glare

FOG

- Fog forms when the air cools to a point at which water vapor in it begins to condense into tiny water droplets.
- The temperature at which water vapor will begin condensing from the air at any particular time is called the "dewpoint".

FOG

Different kinds of fog, where fog forms:

- Advection fog forms when humid air flows over cold ground or water.
- Radiation fog forms on generally clear, cool nights.
- Steam fog forms over water, often in the fall.
- Overnight rain can enhance fog that forms in the morning.
- Precipitation fog forms when rain or snow falls.. Upslope fog is very common along large hills and mountains. It forms when winds blow up the side of a hill or mountain, which cools the air.
- Valley fog forms in mountain valleys during winter and can be more than 1,500 feet thick. Often, the winter sun is not strong enough to evaporate the fog during the day.


FOG


FOG


FOG

Driving in Drifting Fog

- Reduce speed
- Headlights are on low beam to reduce reflected glare
- Turn on windshield wipers
- Turn on defroster or air conditioner

FOG

Driving in Heavy Fog

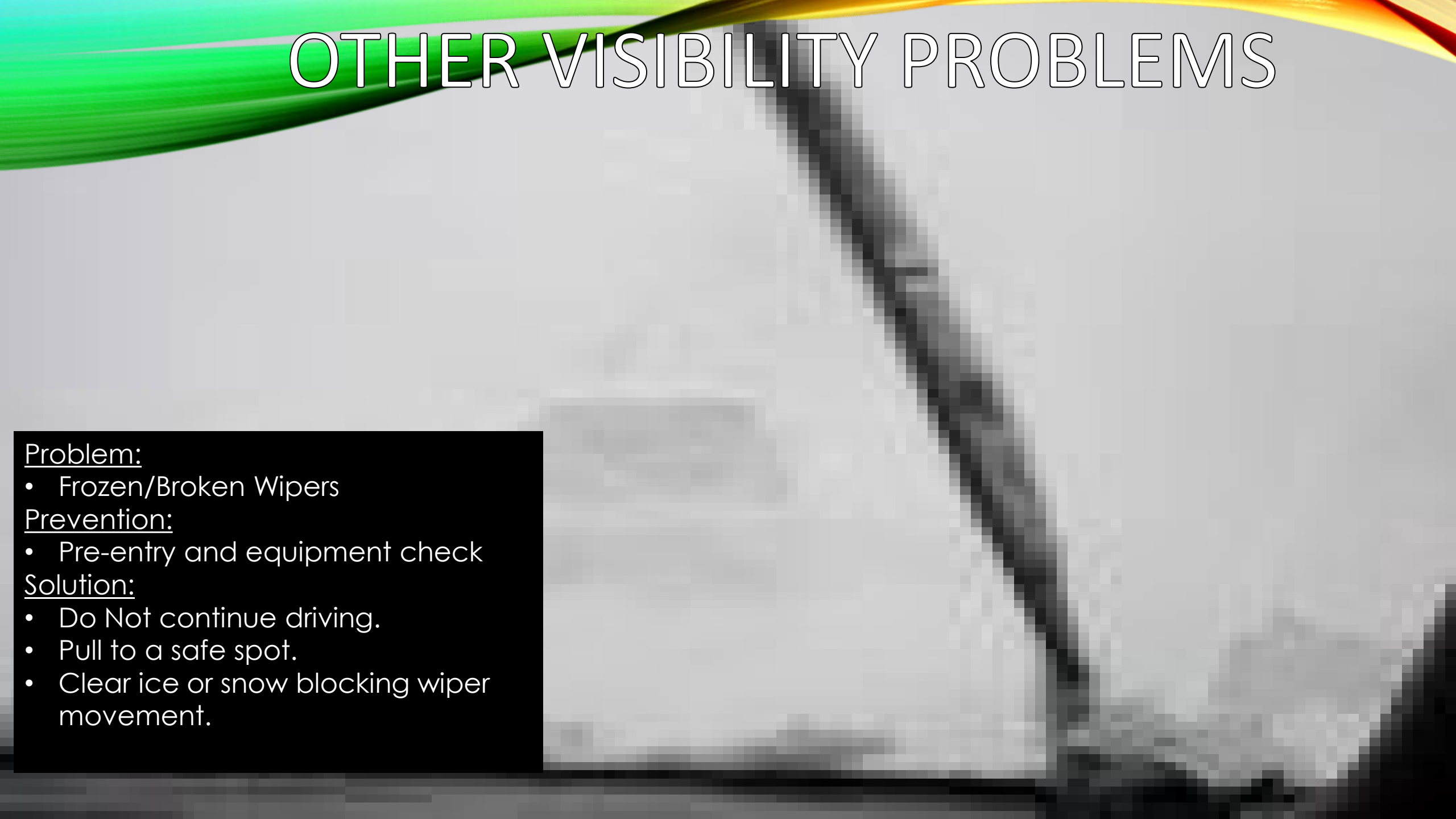
- Further reduce speed, but do not stop in a travel lane
- Turn on emergency flashers
- Look for an exit from the highway
- If impossible to leave highway, stop beyond end of guard rail, check the area, if possible, back up to the outside of the guardrail, turn off all lights and wait for fog to lift.

OTHER DANGEROUS CONDITIONS

Countermeasures for Driving in Smoke, Rain and Snow

- **Maintain lane position (center of your lane)**
- **Turn on windshield wipers**
  - **Snow and smoke may require use of windshield washer**
- **Be alert for vehicles stopped in roadway**
- **Be prepared for effects of gusting or strong steady crosswinds**
- **Make steering, acceleration and braking actions gently and smoothly**

OTHER VISIBILITY PROBLEMS



Problem:
- Frozen/Broken Wipers

Prevention:
- Pre-entry and equipment check

Solution:
- Do Not continue driving.
- Pull to a safe spot.
- Clear ice or snow blocking wiper movement.

Worn wiper blade or no washer fluid


High beams in snow/rain


High beams in fog & snow/rain

High beams in fog

Glare at Night in Rain

DANGEROUS CONDITIONS

Countermeasures for Driving in Smoke, Rain and Snow

- Reduce speed to limits imposed by visibility and road conditions, but do not stop in travel lane or on shoulder near road
  - For snow conditions, look for exit from highway and turn on radio for weather report.
  - If impossible to leave highway, stop beyond end outside of guardrail.
- **Turn headlights to low beams**
- Turn on emergency flashers