

Comment from Garth Kiepper

Generally, I approve of this proposal to use cameras instead of mirrors.

Some benefits that come to mind:

1. Eliminating traditional mirrors results in better fuel efficiency due to improved aerodynamics.
2. In many cases, cameras can see further at night or in foggy conditions than the human eye. Human eyes do not adjust as quickly to changing light conditions and cannot as easily distinguish small differences in contrast. Ultimately, this means using a camera to relay a video feed to a display can be more effective than traditional mirrors in certain situations.

I've personally observed two deficiencies that directly relate to safety; latency and visual obstructions. I feel a well-engineered camera system can overcome these safety concerns by minimizing latency of video feeds and ensuring that video feeds are free of any self-inflicted camera obstructions.

1. Minimize latency of video feed

There is a safety concern if the cameras have excessive latency. Consider that today, many rear-view backup cameras have some amount of latency present. This is relatively safe at slow speeds when reversing a car at 1-5mph. But at highway speeds, cars may be traveling at differing speeds. Consider in Texas, the legal speed limit for some highways is 85 MPH, while the minimum legal speed limit is 45 MPH.

This means it is legally possible for two cars to have a 40 MPH relative difference in speeds. This is about 60 feet-per-second. Practically, this means such a car would approach at the rate of 4 car-lengths every second.

It is generally recommended to have 2 car lengths (or about 30 feet) when making a lane change.

Consider this; if the video feed has 0.5s latency this means a car may really be 2 car-lengths closer than how they're depicted from the cameras. Just like how current mirrors say "cars are closer than they appear," this is doubly true for a video feed.

2. Eliminate self-inflicted camera obstructions

Many vehicles already have side cameras placed in an ideal position to replace mirrors. Tesla is a great example of this, where their side cams are already positioned in an ideal location to be used as a driving aid. However, Tesla's side cameras have a safety-related design flaw; they are integrated into their side turn signal. The LED lighting for the side turn signal is very close to the camera. This means when you're changing lanes, the flashing turn signal blinds the camera. During the day, this reduces visibility of the camera. While at night, it completely blinds and obstructs the camera when the side turn signal is flashing. So my recommendation is this: require auto manufacturers to design their side cameras in a way that they are not blinded or obstructed by any lighting coming from their own vehicle. A well-designed side camera shouldn't have any self-inflicted obstructions.