

parking pricing based on availability has resulted in VMT reductions, both in terms of fewer miles driven “cruising” for spaces and fewer discretionary trips.

## 1.4 Conclusions for Chapter 1

Reducing human exposure to transportation-related emissions that most directly affect human health—carbon monoxide, nitrogen oxide, ozone, (the primary ingredient in smog), particulate matter, sulfur dioxide, and toxics such as lead—can be accomplished through reducing emissions or reducing exposure or both.

Reductions in human exposure can be accomplished by expanding current monitoring systems by focusing on, for example, urban areas with persistently high ozone levels; siting long-term facilities and those that serve vulnerable populations in a way that provides an adequate buffer away from high-pollution sources, with special attention paid to PM<sub>2.5</sub> exposure; and continuing to build on the success of advanced motor vehicle emission control technologies and fuel efficiency efforts.

The transportation sector’s level of greenhouse gas emissions and its contribution to climate change can be reduced by increasing the share of electric vehicles, though there are unknowns about driver behavior, infrastructure investments, and vehicle costs. Another approach is to reduce size disparities among vehicles by reducing their size overall, which can reduce consumer demand for large vehicles and thereby improve fuel economy and decrease transportation-related greenhouse gas emissions. The new CAFE standards that use a size-based indexing system create incentives for carmakers to reduce size disparities in their fleets.

Another method to reduce overall transportation-related emissions is to use pricing measures to reduce vehicle-miles traveled (VMT). These measures address three elements of transportation: the cost of operating a motor vehicle (fuel prices, insurance prices, and mileage costs); the cost of access to transportation facilities (tolls and cordon charges); and the cost of housing the vehicle at the destination (parking costs). Results are mixed for achieving VMT reductions through changing the price of operating costs. Fuel taxes would have to increase substantially for any significant reduction in VMT. Pay-as-you-drive-insurance and mileage charging schemes would provide incentives to drive fewer miles, but there has been no widespread deployment to test the hypothesis. Changing the way access to facilities is priced also shows varying results. Cordon pricing has reduced VMT in some settings. In the case of tolling, more study is needed to determine whether it causes absolute reductions or merely shifts trips to other times of day. Parking pricing has resulted in VMT reductions, both in terms of fewer miles driven “cruising” for spaces and fewer discretionary trips.