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16. Abstract <p>This report discusses the major advantages and disadvantages associated with battery-electric vehicles (BEVs) and fuel-cell vehicles (FCVs). As a reference for comparison, information for current gasoline-powered internal combustion engines is also presented. In addition to reviewing the technical literature, interviews were conducted with experts in the automotive and energy sectors regarding their views concerning these issues. The main findings are highlighted below.</p> <p>BEVs currently offer the most readily available fuel source via the existing electric grid. Additionally, more BEV models are available to the public (relative to fuel-cell vehicles) and they offer the best fuel economy, resulting in the lowest cost to operate (per mile). BEVs also tend to produce the lowest amount of greenhouse gases (well-to-wheels) per mile. However, the driving ranges of these vehicles are currently the lowest of any vehicle type, while also requiring the longest time to refuel or recharge.</p> <p>FCVs have significantly longer driving ranges and lower refueling times than comparable BEVs, and it is also possible for them to use the least amount of petroleum (well-to-wheels) per mile, depending on the type of hydrogen used. On the other hand, only a small number of vehicle models are available, and only in the most recent model years. Similarly, the hydrogen-refueling infrastructure is practically nonexistent outside of California. There is a general consensus among the experts that expansion of the hydrogen infrastructure needs to precede the mass introduction of FCVs in order to raise consumer confidence in the availability of hydrogen fuel.</p> <p>Both alternative fuels and vehicle types require additional training for emergency responders and mechanics, but also generally require lower overall maintenance than a traditional gasoline-powered vehicle.</p> <p>Additionally, hypothetical trips of varying lengths are modeled and described for each vehicle type in terms of the required number of refueling stops, and combined driving and refueling time.</p>					
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