

Testing to date indicates that as long as wheel lock-up is prevented on at least the rearmost axle and the steer axle, the vehicle will remain stable during the braking-in-a-curve maneuver. None of the commenters, including TMA, submitted data to the agency indicating that NHTSA's testing on more conventional axle configurations is not applicable to other axle arrangements. Accordingly, NHTSA believes that the braking-in-a-curve test is practicable for less common axle configurations.

TMA and NTEA both objected to the burdens that adoption of the single unit braking-in-a-curve test would allegedly impose on final stage manufacturers. The agency's February 1995 FEA contained calculations of compliance costs for both the stopping distance and ABS requirements of the 1995 Final Rule. Using these costs as a starting point, the December 1999 NPRM contained an estimate for the cost of implementing the braking-in-a-curve test for single-unit trucks and buses. A stand-alone braking-in-a-curve test was estimated to cost \$1500, and the incremental cost to incorporate the braking-in-a-curve test into a complete Standard No. 105 or 121 compliance test was set at \$1,000. The cost per air-braked vehicle, when distributed across the affected population, was estimated to be about \$18. In the later years, it was estimated that 30 compliance tests would be required annually, for a total cost of \$360,000 ($12 \times 30 \times \$1,000$). The cost per air-braked vehicle in those later years would be about \$6.

In the case of hydraulic-braked single-unit vehicles, which were already subject to the existing test requirements of Standard No. 105, the 1995 FEA concluded that the incremental cost of a braking-in-a-curve test would be \$1,000 per test. The FEA estimated that 10 manufacturers would have to complete 20 compliance tests each, the total cost for these vehicles would be approximately \$200,000.00. Given annual sales of hydraulically braked medium and heavy trucks of approximately 195,000 vehicles, we estimated the cost per vehicle for the braking-in-a-curve test for hydraulically braked vehicles at about \$1. This cost per vehicle would be the same in the later years if manufacturers chose to test for each model year.

TMA estimates that stand-alone braking-in-a-curve testing costs between \$4,500 and \$6,000 per test. TMA states that a typical burnish alone costs approximately \$1,500 while a full FMVSS No. 105 or 121 certification test costs \$10,000 to \$13,000. TMA did not provide a detailed breakdown of these costs, so it is difficult for NHTSA to

ascertain how a braking-in-a-curve test, which is not disproportionately demanding in comparison to other tests in the sequence, could account for forty to fifty percent of the total cost of a complete FMVSS No. 105 or 121 certification test. TMA's comments also did not indicate what its members were currently expending in performing testing substantially similar to the test required by this final rule. Because, according to TMA's comments, TMA members are already using the SAE J1626 test procedure, TMA urged the agency to take steps to ensure that the FMVSS No. 121 and 105 braking-in-a-curve test conform as closely as possible to that test.

A review of the SAE J1626 test procedure indicates that it contains a braking-in-a-curve test that is virtually identical to the braking-in-a-curve contained in this final rule. Therefore, it appears, to the extent that TMA members are already performing the SAE J1626 test, that the promulgation of this final rule should not impose additional test costs. If those manufacturers are not currently performing the SAE braking-in-a-curve test, the agency believes that TMA's claimed additional costs for adding the braking-in-a-curve test to FMVSS No. 105 and 121 are overstated.

Our own inquiries with test facilities indicate that adding the braking-in-a-curve test to the existing NHTSA test sequence should impose additional costs of approximately \$1000, particularly since we are now specifying that the braking-in-a-curve test be performed only in the lightly loaded condition. In the agency's view, TMA's projected test costs of \$4500 to \$6000 for adding the braking in a curve test would be reasonable only in the situation where a vehicle has not been tested to SAE J1626, has already been tested to Standard No. 105 or 121, and was being transported to a test facility only for testing to the braking-in-a-curve test with newly-installed and freshly burnished brakes.

The NPRM indicated an estimated cost of \$18 per air-braked single-unit vehicle for manufacturers to include stand-alone braking-in-a-curve testing in the first year and \$6 in later years. In the case of hydraulically-braked vehicles, this figure is \$1 per year for the first year and thereafter. As noted above, NHTSA does not agree that TMA's claimed costs are reasonable, particularly in light of the widespread use of the SAE J1626 test. However, if TMA's cost estimates were applied, then the per-vehicle cost could be as high as \$54 to \$72 per vehicle, provided the FEA and NPRM assumptions are valid

on the number of tests to be conducted. However, as indicated above, NHTSA believes that testing costs as high as those projected by TMA represent an unlikely worst case and that the agency's projection are much more representative of actual conditions. We also note that the cost of ABS components and complete systems has declined approximately 30 percent in the 7 years since the cost-benefit analysis contained in the FEA was performed, thereby reducing the overall cost of compliance.

NTEA also commented on the costs of the agency proposal. The organization contends that the costs of complying with the braking-in-a-curve requirement would be particularly burdensome for its members. NTEA describes these members as small businesses that sell and install truck bodies on incomplete vehicles. Some of these vehicles are obtained from incomplete vehicle manufacturers in a nearly complete condition such as a chassis-cab, *i.e.*, a truck that is complete except for a body. In the case of a chassis-cab, the final stage manufacturer typically adds a body to the portion of the vehicle behind the cab to produce a completed truck. Other configurations, such as cutaways, stripped chassis or chassis cowl require substantially more work before the vehicle is complete. NTEA believes that as much as 20 percent of all single unit trucks built in multiple stages are based on cutaways, stripped chassis or chassis cowl. According to the organization, when these types of incomplete vehicles are used, the final stage manufacturer can only certify the completed vehicle through testing. NTEA also stated that even where a chassis cab or other incomplete vehicle that has been certified by the incomplete vehicle manufacturer, the particular application for the vehicle may require sufficient changes so the final stage vehicle no longer complies with the specifications contained in the incomplete vehicle manufacturer's certification. In both cases, NTEA commented that the final stage manufacturer would then face the practical and financial obstacles of obtaining and paying for the required compliance tests.

NHTSA agrees that final stage manufacturers may not be able to rely on a certification provided by an incomplete vehicle manufacturer or that such a certification may not exist. However, it is our view that NTEA's claims are overstated, and like those presented by the TMA, present a worst-case scenario as the norm. We note first that chassis-cabs, for which pass through certification is available,