supports longer lead times, the Agency may elect to phase in the FTP under the same phase-in schedule used for the new SFTP requirements. Under this alternative, any engine family included in the SFTP phase-in would also use the improved road load simulations for FTP testing. To minimize the laboratory burden of maintaining two different sets of dynamometers, EPA would like to couple any phase-in of the new road load requirements with procedures allowing an electric dynamometer to simulate the existing dynamometer load. Comments addressing new road load lead time should also comment on how such a simulation could be incorporated.

- Changes to allow ''appropriate'' throttle action and new speed tolerance criteria are included in today's proposal. For each test cycle, a range of acceptable speed variation is created using the DPWRSUM [30] variable. Each driving cycle has a unique value of DPWRSUM, which is compared to the DPWRSUM calculated from the driver's trace (what the vehicle actually drove) to determine a valid test. Comments are solicited on these aspects of today's proposal, specifically on the proper method for setting the lower DPWRSUM threshold for a valid test.

XI. Environmental and Economic Impacts

To estimate the emission reductions associated with the proposal, the expected lifetime emission reductions were determined per vehicle sold after implementation of the proposed regulations. Baseline emissions are taken from the extensive test programs conducted by the Agency and the original equipment manufacturers in support of the FTP Review Project, as discussed earlier. The weighted averages of the emission results of these test vehicles over the various new test procedures constitute the baseline emissions used in this analysis.

A. Emission Reductions

The emission reductions used in this analysis were calculated by subtracting the proposed level of control for each control area from the baseline test vehicle emissions. These test vehicle reductions were then weight averaged to simulate the reductions associated with the actual in-use vehicle fleet mix. It should be noted that the test results were derived for an average vehicle with a 50,000 mile catalyst and do not include any allowance for in-use compliance margins. Thus, the emission benefits calculated here are likely to be understated.

The average emission factor impacts per vehicle associated with the proposed regulations are shown in Table 4. The calculated results for A/C control listed in Table 4 include a factor to account for driving with the A/C ''on'' versus driving with it ''off.'' A recent survey of actual A/C operation in Phoenix, AZ found that the compressor was engaged about 61 percent of the time during typical ozone exceedance days. Thus, the estimated g/mi reduction from A/C control was multiplied by 0.61 for inclusion in Table 4.

TABLE 4.—AVERAGE EMISSION FACTOR REDUCTION PER VEHICLE

Control area	NMHC (g/mi)	CO (g/mi)	NO_X (g/mi)
High speed/accel	0.055	2.39	0.062
Soak/start	0.022	0.02	0.037
Air conditioning	0.000	0.00	0.91

These emission reduction numbers constitute the emission reductions associated with the proposed requirements in g/mi. These g/mi values were converted into the estimated lifetime emission reduction per vehicle using assumptions about average annual mileage accumulation rates, a discount rate of seven percent, and estimated survival rates. The results are listed in Table 5; a detailed discussion of the methodology can be found in the Regulatory Impact Analysis.

TABLE 5.—DISCOUNTED LIFETIME EMISSION REDUCTIONS POUNDS PER VEHICLE

Control area	NMHC	CO	NO_X
US06	10.1	441	11.4
Soak/start	4.1	4	6.8
Air conditioning	0.0	0	16.9
Total	14.2	445	35.1

The tons per summer day emission reductions in various years as a result of the proposed test procedure modifications were estimated using vehicle miles traveled (VMT) for different model year vehicles during each year of interest, the emission factor reductions shown in Table 4, and the proposed phase-in schedule. These calculations are show in Appendix B of the Regulatory Impact Analysis (RIA) and are summarized in Table 5. The percent reduction columns in Table 6 compare these estimated tons per summer day (tpsd) emission reductions to the baseline emissions for the light-duty fleet (cars and trucks). Calculations for these percentage reductions are shown in Appendix C of the RIA.

TABLE 6.—FLEET EMISSION REDUCTIONS IN TONS/SUMMER DAY AND PERCENT OF LIGHT-DUTY FLEET

	NMHC		CO		NO_X	
	tpsd	%	tpsd	%	tpsd	%
2005	404	4	12655	11	1000	9
2010	577	6	18047	15	1427	12
2015	694	7	21717	17	1717	14
2020	765	8	23938	18	1892	14

B. Economic Impact

The proposed additions to emission test procedures will impose several costs on the original equipment manufacturers. These costs include added hardware for improved emission control and associated development and redesign costs, improved engine control calibrations, and increased costs associated with the certification process including durability data vehicle testing and reporting.

The cost estimates correspond to costs incurred by the manufacturer in complying with the proposed requirements. These costs can be divided into fixed and variable costs. Fixed costs are those costs made prior to vehicle production and are relatively

[30] DPWRSUM is the sum in the change in power, a statistic which is derived from the vehicle speed.