The FTP is the core procedure used to measure compliance with emission standards for light-duty vehicles (LDVs) and light-duty trucks (LDTs). The current version of the FTP (40 CFR 86.130-96) consists of a series of preparatory steps to ensure the vehicle has been properly preconditioned on the test fuel, periods when the engine is off between vehicle operation (called "soaks"), and emission tests which measure tailpipe and evaporative emissions. Tailpipe emissions are measured while the vehicle is operated according to a specified driving cycle on a dynamometer. Figure 1 presents the Urban Dynamometer Driving Schedule, commonly referred to as the LA4. With the exception of running losses, which are measured during dynamometer operation, evaporative emissions are measured in a sealed enclosure while the vehicle is turned off. An additional cold temperature CO test procedure measures tailpipe emissions at 20° F following a cold soak. By comparing the emission test results to emission standards applicable to a given vehicle class, combustion cycle, and motor fuel, EPA determines if the vehicle meets applicable certification or in-use requirements.3

The current evaporative emission procedure, including refueling, and cold temperature CO test procedures were promulgated following passage of the Amendments. Thus, the test procedures in these rules were recently developed to reflect the actual current driving conditions under which motor vehicles are used (57 FR 31888; 58 FR 16002). The Agency is not proposing to change these test procedures and the remainder of this section and the subsequent proposal focuses on the light-duty tailpipe emission testing procedures of the FTP.

The FTP simulates on-road vehicle operation using a dynamometer in a laboratory test cell held between 68° F and 86° F. The vehicle is driven on the dynamometer over cycles that prescribe the vehicle operator's speed as a function of time. The method for measuring tailpipe emissions of HC, CO, and NO_x requires filling a bag with

exhaust drawn from the tailpipe and diluted with background air while the vehicle is driven over the appropriate cycle. The bagged sample is analyzed for the concentrations of exhaust constituents, which serve as inputs to subsequent emission compliance calculations. Additional procedures apply to the sampling of particulate matter from diesel-cycle vehicles and organic gases from alternative-fuel vehicles.

III. Proposal Requirements and Alternative Approaches

Today's proposal deals primarily with five areas of driving behavior that have not previously been represented in the test procedure: aggressive driving behavior (such as high acceleration rates and high speeds); rapid speed fluctuations (microtransient driving behavior); start driving behavior; intermediate soak times (engine-off times between 10 minutes and 2 hours prior to vehicle start); and actual air conditioner (A/C) operation. The Agency is proposing new requirements for these areas, separate from the existing FTP requirements. Also included in this proposal are requirements to improve the simulation of actual road load forces 4 across all speed ranges and to revise the criteria for allowable speed variation for a valid test, which would be applicable both to the new provisions proposed in this NPRM and the existing FTP.

As most of this proposal deals with areas that have not previously been regulated, the Agency is considering a broad range of alternative approaches and requests. Comment on the alternative approaches, as well as the central proposal, are requested. Depending on comments and data received and analyses conducted subsequent to today's proposals, EPA may include some of the alternatives, in whole or in part, in the final rule. Interested parties may also submit comments on alternatives not specifically identified or analyzed by EPA for this proposal.

While both the central proposal and the alternatives are EPA's own design, they incorporate some concepts put forth both by the California Air Resources Board (CARB) and the Ad Hoc Panel on Revisions to the FTP (Ad Hoc Panel), a joint committee of the American Automobile Manufacturers Association (AAMA) and the Association of International Automobile Manufacturers (AIAM).

The proposed additions and revisions to the tailpipe emission portions of the FTP would apply to all LDVs and LDTs, certifying on all current motor fuels. The proposed changes would apply to testing conducted during certification, Selective Enforcement Audits, and inuse enforcement (recall). Adjustments are included to accommodate certain vehicle types, transmission types, and performance categories where the additions are not representative of inuse driving. The Agency solicits comments and data on the appropriate treatment of vehicles for which adjustments are allowed and the methods for making the adjustments.

A. Central Proposal

The central proposal relies on a new Supplemental Federal Test Procedure (SFTP) that addresses various conditions under which vehicles are actually driven and used, which are not in the FTP. The SFTP includes three new driving cycles to represent (1) aggressive driving (as characterized by high speeds and/or high accelerations); (2) driving immediately following vehicle startup; and (3) microtransient driving (rapid speed fluctuations), which occur across the majority of the normal ranges of operating speeds and accelerations. The proposed SFTP incorporates conditions that are designed to more accurately reflect actual engine load due to A/C operation under typical ozone exceedance conditions. A new intermediateduration (10- to 60-minute) soak period is also included.

Two components of today's proposal have wider impacts than just the SFTP. The first is to more accurately simulate real on-road loads at the tire/ dynamometer interface, which is an element of the proposal that affects dynamometer operation throughout both the FTP and SFTP. The second would remove language specifying "minimal throttle movement" when conducting emission tests and replace it with "appropriate throttle movement" and require a specification of allowable speed variation, which also impacts both SFTP and FTP testing. The Agency is also requesting comment on whether the increased sophistication of vehicle computers necessitates replacing existing defeat device language with a requirement for proportional emission control under conditions not directly represented by the FTP and the SFTP.

The proposed standards would apply for full useful life under section 202 of the Clean Air Act. The warranty provisions under section 207 of the Clean Air Act also apply to this rulemaking.

³ The Agency has historically relied on emission performance standards because they directly limit production of exhaust constituents that affect attainment of the National Ambient Air Quality Standards, while providing maximum flexibility to the vehicle manufacturers in determining cost-effective compliance strategies. Other basic compliance program approaches include system performance standards, which set bounds on measurable performance parameters of the engine or emission control system rather than actual emission levels, and design standards, which prescribe primary design elements of the engine or control system.

⁴Road load forces refers to the force needed to overcome wind and tire resistance when driving at specific speeds.