Click here for
DISCLAIMER

Document starts on next page

OMSAPC ADVISORY CIRCULAR

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF AIR AND WASTE MANAGEMENT

SUBJECT: Determination and Use of Alternative Dynamometer Power Absorption Values

I. Purpose

The purpose of this advisory circular (A/C) is to provide guidance concerning the determination and use of alternative dynamometer power absorption (DPA) values for emission and fuel economy testing. This A/C supersedes A/C No. 55A for the 1980 model year.

II. Background

A. To conduct an emission or fuel economy test on an emission data vehicle or fuel economy data vehicle, it is essential that the vehicle, when tested on a dynamometer, be subjected to power requirements accurately simulating those it would experience on the road during actual operation. This road-load horsepower equivalent for a vehicle during normal operation can be broken into two components: (1) resistance due to internal vehicle friction and friction due to energy dissipated through the tires, and (2) resistance due to the atmospheric drag on the vehicle as it moves through the air. The resistance due to internal vehicle friction and energy dissipated through the tires is experienced by the vehicle on the dynamometer in a manner similar to what it would experience on the road. It is necessary, however, that the resistance due to atmospheric drag be simulated with a dynamometer power absorber unit since the vehicle during the test is stationary relative to the air. Each vehicle design has its own specific aerodynamic profile and therefore has its own unique atmospheric drag.

B. The EPA regulations allow a vehicle manufacturer to request that an alternative DPA value, other than the DPA value provided by the EPA regulations, be used for emission and fuel economy measurements. On May 19, 1975 (40 FR 21730), EPA revised 40 CFR 85.075-15(e)(2) to permit the vehicle manufacturer to "determine the road-load power by an alternative procedure requested by the manufacturer and approved in advance by the Administrator. . . ." The manufacturer may then request an alternative DPA value such that the vehicle experiences the measured road-load power requirements during emission and fuel economy testing. The intent of this provision of the regulations is to provide more accurate simulation of the vehicle road experience during emission and fuel economy testing.

C. One alternative procedure that has been found by EPA to be adequate is the "EPA Recommended Practice for Determination of Vehicle Road Load" (see Attachment I). Manufacturers should note, the "EPA Recommended Practice for Determination of Road Load" has been modified slightly in some areas from the version attached to A/C No. 55A, most notably with respect to the volume of fuel to be in the fuel tank when the vehicle is coasted down on the road. This modification has been made to more accurately duplicate the weight of an emission or fuel economy data vehicle when confirmatory tested on the dynamometer according to Attachment II of A/C No. 55B, since this confirmatory testing is normally performed after an emission test and a highway fuel economy test have been run on the emission or fuel economy test vehicle. In order to incorporate this provision with minimal adverse impact to the industry, a special carryover provision has been added to A/C No. 55B to account for the change in fuel weight during on-the-road testing. This special carryover provision is not to be construed as general acceptance of corrections for differences in vehicle weight.

D. On September 12, 1977 (42 FR 45641), EPA published revised fuel economy and emission testing regulations which in part incorporated finer inertia weight increments. This test change is effective beginning with the 1980 model year. Since the dynamometer inertial mass has changed from that used in the 1979 model year, the inertial mass-corrected-coastdown time on the dynamometer may change for a given vehicle, when determined according to the 1980 model year procedures, compared with the coastdown time which would be obtained under the 1979 model year procedures, even though all aspects of the vehicle design are the same. In order to provide for carryover of otherwise technically valid road coastdown and alternative DPA data, a carryover provision has been included in section X of A/C No. 55B to allow correction of previously generated data in response to the change in dynamometer inertial mass settings.

III. Applicability

The provisions in A/C No. 55B are applicable, as of the date of its issuance, for emission and fuel economy testing of 1980 model year light-duty vehicles and light-duty trucks.

IV. Procedures and Criteria for Approval of Use of Alternative Methods for Determining Dynamometer Power Absorption Values

A. EPA regulations require that, if a manufacturer elects to use an alternative method for determining DPA values, the proposed method must be approved in advance by the Administrator (40 CFR 86.129-80(c)(3)). EPA will normally approve any reasonable alternative method for determining DPA values. However, approval of an alternative method will not relieve the manufacturer of the responsibility for ensuring that the procedure will

yield results which can be confirmed according to the provisions of A/C No. 55B when using the "EPA Recommended Practice for Determination of Vehicle Road Load."

B. Manufacturers must submit to EPA for review and approval any alternative procedure they wish to use in 1980 model year testing, including those which may have been approved for use in prior model year programs. The complete description of the alternative procedure for determining DPA values must be included in the application for certification. If the EPA recommended procedure is to be used, it may be incorporated in the application by reference.

C. The manufacturer must describe any differences between the procedure it wishes to use and EPA's recommended procedure, or the manufacturer must state that no differences exist between the two procedures. EPA will automatically approve EPA's recommended procedure or other procedures the manufacturer determines and states will yield equivalent results. Examples of alternative procedures that EPA will normally not approve include coastdown procedures which call for the steering wheel to be turned lock-to-lock, or which call for the vehicle to be driven over bumps in order to reduce brake drag prior to the coastdown.

V. Coverage

A. Each vehicle to be tested to determine emission or fuel economy values must use either a DPA value based on frontal area (40 CFR 86.129-80) or a technically valid and supportable alternative DPA value.

B. Since it is costly and time consuming to determine a DPA value for each vehicle configuration, manufacturers may aggregate the designs in their product line into populations each represented by a single DPA value. In so doing, however, the manufacturer must be reasonably sure that the DPA value for a population and the coastdown time on the coastdown vehicle used to establish that DPA value are appropriately representative of each member of the population such that, if tested, each member of the population would be confirmed according to the acceptance criteria provided in section VIII of A/C No. 55B. Otherwise, the manufacturer will be required to follow one of the options discussed in section VII of A/C No. 55B if a vehicle is tested and either or both the coastdown time or DPA value are not confirmed. (Note The term "coastdown vehicle" will be used subsequently in A/C No. 55B to refer to any vehicle used to determine an alternative DPA value, regardless of the particular alternative procedure used.)

C. As part of their required records (40 CFR 86.078-7), manufacturers must maintain vehicle and test records for any coastdown vehicle or test used to determine alternative DPA values for emission and for fuel economy test vehicles.

D. The manufacturer must provide the following information regarding each coastdown vehicle tested to establish a DPA value determined by an alternative procedure

1. A reference to the approved alternative procedure used (e.g., "The road coastdown procedure approved by EPA on [date].").

2. The DPA value determined by the manufacturer.

3. For DPA values determined by a coastdown method, the dynamometer coastdown time (e.g., the corrected track coastdown time as explained in the "EPA Recommended Practice for Determination of Vehicle Road Load").

4. For DPA values determined by a method other than a coastdown method, a dynamometer coastdown time determined for the original unmodified vehicle used to establish the alternative DPA value. This coastdown time must be determined using the DPA value specified in paragraph 2, above, and the vehicle coasted down on a dynamometer in accordance with "EPA's Recommended Dynamometer Coastdown Procedure" (see Attachment II), or a procedure which yields equivalent results.

5. For vehicles which are required to be tested with a 10 percent increase (up to a maximum of 1.4 horsepower) in an alternatively determined DPA value to account for air-conditioning usage (see A/C No. 53 for further information), the coastdown time determined for the coastdown vehicle with the DPA appropriately adjusted to the increased value (see paragraph VI.D, below).

6. The dynamometer equivalent-test-weight setting.

7. The following information on the coastdown vehicle:

a. Body type as defined in 40 CFR 86.078-2,

b. For light-duty vehicles, the vehicle reference frontal area, the protuberance frontal area, and the vehicle shape (e.g., fastback versus all others) as determined according to 40 CFR 86.129-80(c),

c. For light-duty trucks, the basic frontal area, the additional frontal area, and the vehicle shape (e.g., vans versus all others) as determined according to 40 CFR 86.129-80(a),

d. Measured cold tire inflation pressures, as tested on the road and on the dynamometer (Note that the tire pressure as tested on the road must be the vehicle manufacturer's minimum recommended tire pressure for that coastdown vehicle/tire combination.),

e. A description of the tires used on the coastdown vehicle by delineating according to:

(1) Tire manufacturer (e.g., Firestone, Uniroyal, Michelin, etc.),

(2) Tire size including tire width, aspect ratio, and nominal wheel rim diameter (e.g., F78-15, 195/70-13, etc.),

(3) Tire type (e.g., radial, bias, etc.),

(4) Sidewall cord material (e.g., nylon, rayon, etc.),

(5) Belt materials (e.g., steel, fiberglass, etc.), and

(6) Number of sidewall plies.

f. Both vehicle weight measured at the drive axle and total measured vehicle weight as tested on the road with the fuel tank filled to 40 percent of capacity, and including instrumentation and any on-board observing personnel but excluding the driver,

g. Projected production vehicle weight with 40 percent fuel tank fill and the projected production vehicle weight on the drive axle at that projected production vehicle weight with 40 percent fuel tank fill (Note: The projected production vehicle weight includes the weight of all optional equipment that the manufacturer wishes to include on the coastdown vehicle. This may differ from vehicle curb weight as defined in 40 CFR 86.080-2 which necessarily includes the weight of optional items installed in 33 percent or more of the vehicles in a car line in an engine family.),

h. A description of all optional equipment installed on the vehicle which might have an effect on road-load horsepower,

8. A description of any difference between the coastdown vehicle and the design, with respect to body type, of the production vehicle(s) it is intended to represent.

E. All vehicles in a population to be represented by a coastdown vehicle must have the same body type (as defined in CFR 86.078-2) as the coastdown vehicle. (Note that this less stringent requirement provides the manufacturer with greater flexibility than was described in A/C No. 55A. However, because EPA may elect to confirm according to the procedures discussed in section VII, below, an alternative DPA value for any vehicle selected from the population represented by a coastdown vehicle according to paragraph VII.C.1, below, manufacturers may wish further to assure successful confirmaton by EPA by taking care that coastdown vehicle parameters such as frontal area, protuberance area, vehicle shape, tires, tire pressures, drive axle weight, total vehicle weight, vehicle ride height, front end alignment, brake drag, and optional equipment are representative of the producton designs included in the population.) If the manufacturer creates more than one population within a body type, the manufacturer must be explicit as to which vehicles are segmented into each population and the differences in design which distinguish each segment.

F. Tires will be handled in the following manner:

1. The tires to be used on a coastdown vehicle or durability-data vehicle must be tires which the manufacturer projects will be available on the production vehicles to be represented by that coastdown vehicle or durability-data vehicle. Additionally, tires identified in terms of the parameters discussed in paragraph D.7.e, above, must be consistently used throughout the durability-data vehicle's mileage accumulation and testing unless otherwise allowed by EPA.

2. For emission-data or running change vehicles, unless as provided in paragraph 3, below, and for required fuel economy data vehicles [40 CFR 600.506-79(d) and (f)], unless otherwise specified as in section VII or paragraph 3, below, the tires to be used must be the tires with the largest projected corporate sales available within the body type represented by the test vehicle as identified in terms of the parameters discussed in paragraph D.7.e, above.

3. If, within a body type, an emission-data vehicle, running change vehicle, or fuel economy data vehicle will not be offered with the tire otherwise required in paragraph 2, above, that vehicle must be tested with the tires with the largest projected sales within the body type represented by the test vehicles and available on that test vehicle. For example, although the tire specified by EPA within the body type represented by Camaros, Firebirds, TransAms, etc., may be a bias-ply tire, the TransAm may only be offered with a radial tire. Therefore, the TransAm would be tested with the radial tire specified in paragraph 2, above, within the body type and available on the TransAm. Similarly, if due to particular vehicle specification (e.g., N/V ratio) an emission-data or running change vehicle cannot be equipped with the tires otherwise required in paragraph 2, above, that vehicle must be tested with the tires with the largest projected sales within the body type represented by the test vehicle, available on the design represented by the vehicle test, and otherwise meeting the specifications of that test vehicle.

4. If, for purposes of establishing appropriate fuel economy values, EPA requests that an emission-data or running change vehicle be retested, the tires to be installed on these specific test vehicles are to have the same specifications as the tires which were used during the original emission-data or running change vehicle test. For additional required fuel economy data vehicles, EPA will not normally request that tires other than as determined in paragraph 2, above, be installed. However, upon EPA's request, the manufacturer must submit tire information as discussed in paragraph D.7.e, tire sales information, and tire availability information, and EPA reserves the option to select other tires. EPA will exercise this option if, in EPA's judgment, the tires that would be selected according to section V.F.2 or 3, or the tires selected by the manufacturer and installed on voluntary fuel economy data vehicles, might result in fuel economy values which are unrepresentative of the vehicle configurations a manufacturer intends to sell.

VI. Use of Alternative DPA Values

A. The decision to use an alternative DPA value for any emissions or fuel economy test vehicle rests with the manufacturer. However, for any emission or fuel economy test vehicle, the same DPA value must be used for all exhaust and evaporative emission compliance and fuel economy testing. (Note: Consistent with the policy of previous years, a manufacturer may use an alternative DPA value in emission-data or running change vehicle testing although a frontal area value was used in durability-data vehicle testing.)

If a vehicle is to be tested under various test conditions [e.g., various DPA values to generate fuel economy data representing various vehicle-based road load discriminators (VRLD) within a vehicle configuration] as provided for in 40 CFR 600.007(b)(2), the DPA value established for each set of test conditions will be used for both city and highway testing for those conditions.

B. EPA may use the DPA value as one of the criteria in selecting emission-data vehicles. No emission-data vehicles for an engine family will be selected unless the manufacturer specifies the DPA values for each vehicle included in that engine family in his application for certification.

1. Manufacturers must specify vehicle frontal areas and calculated DPA values based on these frontal areas prior to emission-data vehicle selection. (See, for example, Section 10.09.00.00, page 13, of the Appendix to the Application Format for Certification of Light-Duty Motor Vehicles -- 1980 Model Year Recommended Procedures.)

2. If the manufacturer intends to use alternative DPA values for either emission compliance testing or for fuel economy testing, such values must also be included in the application for certification prior to emission-data vehicle selection for that engine family. After emission-data vehicle selection, EPA will not revise, nor allow the manufacturer to revise, the DPA values for that engine family unless a physical change has been made to the vehicle(s) originally represented by that value. However, this does not preclude the manufacturer from requesting, or EPA from approving, a change in the DPA value due to an error in the values originally submitted that would make the original values unrepresentative of the population. Revision is also allowed under the options discussed in section VII of A/C No. 55B when EPA elects to confirm the value by a full coastdown on the road. The physical change must be one which can reasonably be expected to influence the DPA value for that vehicle and for which the manufacturer can establish distinct production volumes (e.g., lower drag brakes, aerodynamic improvements, etc.). The procedure for updating alternative DPA values in response to EPA's election to confirm alternative DPA values is described in section VII of A/C No. 55B. If, after emission-data vehicle selection, the manufacturer updates his application for certification by changing the DPA values, EPA may need to revise its emission-data vehicle selections within the affected engine family.

C. Manufacturers must report in the application for certification the DPA value rounded to the nearest 0.1 horsepower using the ASTM round-off method. For any emission or fuel economy test vehicle for which the DPA value has been determined by an alternative procedure, the

manufacturer should indicate in its application that an alternative procedure was used, preferably on the Vehicle Log Sheet (see, for example, Section 12.06.00.00, page 16 of the Appendix to the Application Format for Certification of Light-Duty Motor Vehicles -- 1980 Model Year Recommended Procedures) that an alternative procedure was used. A footnote should also appear at the bottom of the page indicating for example, "EPA-approved technique used to determine dynamometer power absorption value." For ease of recordkeeping, the footnote should appear on each vehicle data sheet. In addition, the vehicle data sheet for that test vehicle must contain the design vehicle curb weight and the design vehicle weight on the drive axle at that design vehicle curb weight.

D. If a DPA value correction for air-conditioning is required (as explained in A/C No. 53), the corrected DPA value used in emission and fuel economy testing will be the value as determined in accordance with section V, above, increased by 10 percent, up to a maximum of 1.4 horsepower prior to rounding off, and then rounded to the nearest 0.1 horsepower as discussed in paragraph VI.C using the ASTM roundoff method.

E. Manufacturers should note that the coastdown time determined according to "EPA's Recommended Dynamometer Coastdown Procedure" is sensitive to dynamometer equivalent-test-weight setting. For a given DPA setting, a vehicle properly tested at a higher dynamometer equivalent-test-weight setting will coast down on the dynamometer in a longer time than an otherwise identical vehicle properly coasted down at a lower equivalent-test-weight setting. In order to account for this change in coastdown times, EPA considered allowing a mathematical correction of the coastdown times between equivalent-test-weight settings. However, because of the differences in tire deformation both on the road and on the dynamometer with a change in wheel loading, it may not be appropriate to assume that the coastdown time for a vehicle in one equivalent-test-weight category can be mathematically corrected to determine the actual coastdown time of a vehicle in another equivalent-test-weight category, even though the vehicles are similar enough to have the same DPA value. Since at this time EPA is unable to determine the proper additional correction factor to account for differences in tire deformation, such mathematical corrections will generally not be allowed except as uniquely provided for in section X of A/C No. 55B.

F. The manufacturer may request use of a DPA value which is greater than the value otherwise determined via an approved alternative procedure. EPA will normally approve the use of such a greater value if it is requested in the initial submission of the DPA value. In making such a request to EPA, the manufacturer must indicate both

the DPA value determined by the approved alternative procedure and the higher DPA value which the manufacturer wishes to use.

G. Also, the manufacturer may request use of coastdown times, and EPA will normally allow use of coastdown times which are less than the values otherwise determined for that population via an approved alternative procedure. As in paragraph F, above, the manufacturer must indicate both the corrected coastdown time determined by the approved alternative procedure and the lower coastdown time the manufacturer wishes to use.

H. EPA will not perform any emission or fuel economy testing using a DPA value if that value is in the process of being confirmed by EPA as discussed in sections VII and VIII, below. At their option, manufacturers may proceed with mileage accumulation and emission or fuel economy testing using a DPA value which is in the process of being confirmed. Manufacturers may also proceed with zero-mile testing on the vehicle using an approved DPA value based on frontal area calculations. However, manufacturers may be required to retest for emission or fuel economy data that vehicle at a different DPA value if the original DPA value is not confirmed. Zero-mile testing and mileage accumulation will not need to be repeated for that test vehicle configuration. However, under the provisions of the policy described in paragraph VI.B.2, above, EPA may select a different vehicle for emission-data or running change testing.

I. EPA will not issue certificates of conformity or calculate fuel economy label values based on data generated using DPA values which are in the process of being confirmed, as discussed in sections VII and VIII, below.

VII. Confirmations

A. Each vehicle or vehicle configuration in a population represented by a coastdown vehicle must be capable of being tested such that both the accuracy and representativeness of the coastdown time and DPA value are confirmed. Therefore, any vehicle equipped with any or all available optional equipment, including any of the tires offered on a specific configuration, which may affect total road-load horsepower must be capable of meeting the acceptance criteria in section VIII, below, when confirmatory tested. Therefore, the manufacturer should make every effort to simulate as closely as possible the weight, body design, tires, drive axle load, and other design features of production vehicles on the coastdown vehicle which could reasonably be expected to affect the validity and representativeness of the resultant corrected coastdown time and of the resultant DPA value.

B. The two techniques EPA will use in an attempt to confirm alternative DPA values are: (1) a comparison of the coastdown time obtained on the dynamometer for emission and fuel economy test vehicles with the manufacturer's supplied target coastdown time (obtained from the coastdown vehicles, see Attachment II to A/C No. 55B), and (2) a full coastdown confirmation on the road (see Attachment I to A/C No. 55B) using an EPA-specified vehicle from among the population of vehicles represented. EPA will always attempt to confirm the target coastdown time on the dynamometer for each and every emission-data, running change data, or fuel economy data vehicle using either results from tests conducted at the manufacturer's facility or at EPA. EPA will selectively exercise its option to confirmatory test on the road. (A flowchart of the procedures to be followed during these confirmations is included as Attachment III to A/C No. 55B.)

C. Although all vehicles in a population (as determined by the manufacturer) should be capable of being successfully confirmatory tested, EPA will only elect to confirm alternative DPA data on vehicle designs most likely to affect the representativeness of actual emission or fuel economy test data.

1. Vehicles subject to confirmatory testing by EPA include:

a. The coastdown vehicle used by the manufacturer in determining the alternative DPA value for the population,

b. Other vehicles from the population if they include options with projected sales of more than 33 percent of a carline within an engine-system combination,

c. A vehicle of a design identical to that represented by an emission-data, required fuel economy data, or voluntary fuel economy data vehicle.

2. If within paragraph C.1.b, above, vehicles of expected equivalent aerodynamic properties and tire specifications are available in more than one equivalent-test-weight category, EPA will normally select a vehicle in the heaviest equivalent-test-weight category for full road coastdown confirmation.

D. If the manufacturer elects to use the DPA value determined from frontal area for a given population, EPA will not normally approve subsequent requests for use of an alternative DPA value for vehicles in that population. However, due to a physical change in the vehicle design which would be expected to affect the DPA value, or at the manufacturer's option, an on-the-road confirmatory test is also conducted under the provisions of paragraphs E.2 or F.5, below, the frontal area DPA value may be replaced with the originally

submitted alternative DPA value if EPA confirms the appropriateness of the originally submitted alternative DPA value and coastdown time. The manufacturer, at its option, may retest and provide the retest data to EPA. If EPA determines that the retest was valid, the retest data will replace the emission and fuel economy data generated using the frontal area DPA value.

E. Prior to emission or fuel economy testing, if EPA elects to confirm on the road the DPA value for a given population of vehicles, the manufacturer may:

1. Elect to update all applications which include the affected vehicles to specify only the use of the DPA value determined from frontal area (as determined according to 40 CFR 86.129-80) for those affected vehicles.

2. Supply an EPA-specified vehicle to an EPA-approved independent contractor who, at the manufacturer's expense, will obtain coastdown data on the vehicle according to EPA's recommended practice described in Attachment I. EPA will not necessarily accept data from such testing unless it is informed in advance of the test date so EPA personnel may witness and/or inspect any or all aspects of this procedure including, but not limited to, the vehicle, equipment calibrations, measured parameters, the actual coastdown(s), data acquisition, and data reduction. EPA will accept such data only if they are transmitted directly to EPA by the independent contractor (and <u>not</u> from the contractor to the manufacturer and then to EPA). The resultant, corrected coastdown time determined from the coastdown of the vehicle in question will be compared with the manufacturer's originally submitted target coastdown time. The EPA-specified vehicle must then be taken to the manufacturer's facility, or EPA's facility at EPA's option, placed on a dynamometer, and a DPA value determined using "EPA's Recommended Dynamometer Coastdown Procedure" (see Attachment II) and using the corrected coastdown time determined from the road coastdown discussed above in this paragraph.

a. The corrected coastdown time determined from the coastdown of the EPA-specified vehicle discussed above will be compared with the manufacturer's originally submitted target coastdown time, and the DPA value determined from the newly determined road coastdown time using the EPA-specified vehicle will be compared with the manufacturer's originally submitted DPA value. The criteria by which EPA will judge the acceptability of the manufacturer's originally submitted target coastdown time and DPA values are discussed in section VIII, below.

b. If the manufacturer's originally submitted target coastdown time and DPA value are confirmed by EPA, they may continue to be used for any vehicle in the population in question.

c. If either the manufacturer's originally submitted coastdown time or the DPA value is not confirmed by EPA, the manufacturer may:

(1) Declare that the coastdown vehicle selected by EPA for confirmatory testing is unrepresentative of the design intent, provide an identical replacement vehicle, repeat the confirmation procedure using this vehicle, and provide an engineering report to EPA detailing the reasons why the vehicle is deemed unrepresentative,

(2) Use the DPA value determined from frontal area for the entire population in question, or

(3) Use the corrected coastdown time and DPA value which were determined by EPA's confirmation procedure for the entire population in question. EPA may still elect to confirm the representativeness of this DPA value and the corrected coastdown time for other members of the population in question.

F. After emission certification or fuel economy testing begins, EPA will elect to perform a dynamometer coastdown confirmation, and may additionally elect to perform a full coastdown confirmation on the road. The manufacturer may perform a second dynamometer coastdown confirmation, and EPA will normally perform a second dynamometer coastdown confirmation, if the first dynamometer coastdown confirmation fails the criteria specified in section VIII, below. The manufacturer <u>must</u> report both the failed and retested dynamometer coastdown confirmation times. If EPA elects to perform a full coastdown confirmation on the road, the procedure which will be followed is that discussed in paragraphs B.2, B.2.a, and B.2.b, above. In addition, if an emission-data, running change, or fuel economy data vehicle fails the dynamometer coastdown confirmation (see section VIII.A, below), or if the EPA-specified vehicle fails the full coastdown confirmation procedure on the road, the manufacturer may:

1. Declare that the particular test vehicle is unrepresentative of the design intent, provide an identical replacement test vehicle, and provide an engineering report to EPA detailing the reasons why the original vehicle is deemed unrepresentative.

2. Drop the vehicle configuration from the manufacturer's application for certification. Another emission-data or fuel economy data vehicle may be needed to fulfill EPA's certification or fuel economy program requirements.

3. If none of the vehicles in the population in question is certified, use the DPA value determined from frontal area for all vehicles in the population and retest at that DPA value any vehicles already tested.

4. If none of the vehicles in the population in question is certified, resegment the population in question using the frontal area DPA value for the segment which includes the test vehicle that failed the dynamometer coastdown confirmation and the originally submitted DPA value for the other segment.

a. If only those vehicles which have already been tested and have passed the dynamometer coastdown confirmation are included in the segment using the originally submitted DPA value, EPA will normally not perform further confirmations of this segment.

b. If vehicles which have been selected but have not been tested are included in the segment using the originally submitted DPA value, EPA may still elect to confirm the originally submitted DPA value for vehicles in that segment.

5. If only the dynamometer coastdown time was unable to be confirmed, provide the vehicle which was unable to be confirmed, or an identical vehicle to the vehicle which the unconfirmed vehicle is intended to represent, to an EPA-approved independent contractor. The contractor will obtain, at the manufacturer's expense, coastdown data on the vehicle according to EPA's recommended practice. EPA will generally not approve such data unless it is informed in advance of the test date so EPA personnel may witness and/or inspect any or all aspects of the procedure including, but not limited to, the vehicle, equipment calibrations, measured parameters, actual coastdown(s), data acquisition, and data reduction. EPA generally will accept such data only if they are transmitted directly to EPA by the independent contractor (and <u>not</u> from the contractor to the manufacturer and then to EPA). The resultant, corrected coastdown time determined from the coastdown of the vehicle in question will be compared with the manufacturer's originally submitted corrected coastdown time. The vehicle must then be taken to the manufacturer's facility, or EPA's facility at EPA's option, placed on a dynamometer and a DPA value determined using EPA's recommended dynamometer coastdown procedure and using the target coastdown time determined from the road coastdown discussed above in this paragraph. The criteria by which EPA will judge the acceptability of the manufacturer's DPA value are discussed in section VIII, below. If the manufacturer's originally submitted DPA value is confirmed by EPA, that DPA value may be used for emission and fuel economy testing for the vehicle in question. If the manufacturer's originally submitted DPA value is not confirmed EPA, the manufacturer may:

a. Use the DPA value determined from frontal area for the untested portion of the population in question, or

b. Use the corrected coastdown time and the DPA value which were determined by EPA's confirmation procedure for the untested portion of the population in question. EPA may still elect to confirm the representativeness of this DPA value and corrected coastdown time for other members of the population in question.

6. If some of the vehicles in the population have been tested and certified, retain the emission and fuel economy test values for those vehicles; EPA will not normally elect to confirm the DPA value used for those vehicles. If EPA does not confirm the originally submitted DPA value, the manufacturer must form a new segment containing those vehicles not certified. This new segment must be treated as a separate population, and the manufacturer must follow the option in paragraph 3 or 4, above.

VIII. Acceptance Criteria for Confirmation Procedures

A. If EPA elects to confirm on the road the accuracy and/or representativeness of a DPA value and its associated target coastdown time, the acceptability of the DPA value and its associated target coastdown time will be determined in the following manner:

1. If the manufacturer's originally submitted corrected coastdown time is less than or equal to 107 percent of the corrected coastdown time determined from the EPA-specified vehicle, EPA will not reject the manufacturer's originally submitted corrected coastdown time subject to further confirmation as discussed in paragraphs VIII.A.6 and VIII.A.7, below.

2. If the manufacturer's originally submitted corrected coastdown time is greater than 107 percent of the corrected coastdown time determined from the EPA-specified vehicle, EPA will reject the manufacturer's originally submitted target coastdown time and the manufacturer may pursue the options specified in paragraph VII.E or F, above.

3. If the originally submitted corrected coastdown time is not rejected as discussed in paragraph VIII.A.1, above, the EPA-specified vehicle must be placed on a dynamometer at the manufacturer's test facility and a DPA value determined according to section VII of Attachment I to A/C No. 55B. EPA may elect to perform these coastdowns or to confirm the manufacturer's results at EPA's facility.

4. If this newly determined DPA value is less than or equal to 110 percent of the manufacturer's originally submitted DPA value, EPA will not reject the originally submitted DPA value, but will subject it to further confirmatory testing according to paragraphs VIII.A.6 and 7, below.

5. If this newly determined DPA value is greater than 110 percent of the manufacturer's originally submitted DPA value, EPA will reject the originally submitted DPA value.

6. EPA may require the manufacturer to take the vehicle to EPA's facility where EPA will verify the appropriateness of the newly determined DPA value according to EPA's recommended procedure in Attachment II to A/C No. 55B. If the dynamometer coastdown time at EPA is less than or equal to 107 percent of the newly determined target coastdown time determined on the track with this vehicle, EPA will normally accept the manufacturer's originally submitted DPA value.

7. If this average coastdown time determined at EPA's facility is greater than 107 percent of the newly determined target coastdown time from the track, as determined in paragraph VIII.B.6, above, EPA will not accept the manufacturer's originally submitted DPA value or the newly determined DPA value until the discrepancy between the manufacturer's facility and EPA's facility has been investigated.

B. The acceptability of the manufacturer's supplied target coastdown time for a particular test vehicle, using the dynamometer coastdown confirmation procedure as described in Attachment II, will be determined in the following manner:

1. If the EPA-determined average coastdown time obtained on the dynamometer for an emission-data, running change, or fuel economy data vehicle is less than or equal to 107 percent of the manufacturer-supplied dynamometer target coastdown time on the coastdown vehicle, EPA will normally accept the DPA value for the test vehicle unless otherwise disallowed under paragraph 4, below. This allowable difference in coastdown times is intended to account for reasonable test-to-test differences which would not preclude the representativeness of test results determined at a single DPA value.

2. If the EPA-determined average coastdown time on a test vehicle is greater than 107 percent of the manufacturer-supplied dynamometer target coastdown time on the coastdown vehicle, the DPA value for the vehicle may be determined to be unrepresentative for that vehicle and all other vehicles in that population using that DPA value which have not been certified by EPA.

3. For vehicles required to have a DPA value increased to account for air-conditioning usage, as explained in paragraph V.D.5, the coastdown time determined with the DPA set at the appropriate adjustment as discussed in section VI.D, above, will be compared with the coastdown time determined on the coastdown vehicle with the DPA value similarly adjusted. Therefore, if a manufacturer intends to use a coastdown vehicle to represent both vehicles requiring and

not requiring this increased DPA value, the coastdown vehicle should be evaluated according to "EPA's Recommended Dynamometer Coastdown Procedure" with the DPA adjusted to both values and those coastdown times reported to EPA.

4. If EPA is consistently unable to confirm the manufacturer's alternatively determined DPA values or dynamometer coastdown times on his test vehicles, or if, within the normal allowable 7 percent deviation criterion, there is a consistent bias in the manufacturer's favor that affects a number of vehicles, EPA may postpone confirmatory testing of the manufacturer's test vehicles until the cause of the discrepancy is identified and resolved.

5. Manufacturers are to similarly determine the dynamometer target coastdown time on each emission-data, running change, and fuel economy data vehicle tested at an alternatively determined DPA value. This determination of coastdown time is to be performed at the manufacturer's facility prior to submission of the data to EPA and prior to shipment, if required, of the vehicle to EPA for confirmatory testing. The procedure to follow is that used at EPA, that is, the "EPA Recommended Dynamometer Coastdown Procedure", described in Attachment II. These coastdown time data must be provided to EPA in the application for certification, preferably on the "Vehicle Log Sheet" (see, e.g., Section 12.01.04.00 of the Application Format for Certification of Light-Duty Motor Vehicles -- 1980 Model Year Recommended Procedures).

6. If the results of this dynamometer coastdown confirmation at the manufacturer's facility exceed 107 percent of the target coastdown time, thereby suggesting that the vehicle will not meet the criteria when evaluated at EPA as in paragraph 1, above, the manufacturer must notify EPA. EPA may then elect to proceed with emission or fuel economy confirmatory testing at EPA or elect to confirm on the road the appropriateness of the DPA value and target coastdown time for that vehicle design.

IX. Fuel Economy Program Considerations

A. Section 600.206-80(a)(2) of the regulations requires that, within a vehicle configuration, combined fuel economy values determined at different DPA values within equivalent test weights be harmonically averaged according to relative production volumes. Within a VRLD/equivalent test weight/vehicle configuration, different tires (e.g., radial vs. bias) could result in different DPA values. If otherwise identical vehicles were evaluated with both such tires, manufacturers would be required to establish a production accounting system to determine production volumes of specific vehicle/tire combinations for otherwise identical vehicles. Since EPA does not now intend to require manufacturers to establish such a production accounting system, EPA will not require testing, within a vehicle configuration, of vehicles which differ only due to the installed tires.