

-DRAFT COST ANALYSIS-
PROPOSED COMPLIANCE ASSURANCE PROGRAM
FOR LIGHT-DUTY VEHICLES AND LIGHT-DUTY
TRUCKS

Cost Analysis for the Cap 2000 Proposal

I. Emission Benefits

The Agency is not quantifying or claiming direct emission benefits as a result of this rule because no new emission standards are being proposed. Nevertheless, the Agency expects that the new compliance procedures will result in fewer noncomplying vehicles in use, thereby reducing, to some degree, ambient emission levels. Such a reduction is virtually impossible to quantify. The reason for this potential reduction is linked to the proposed in-use verification testing. We expect that the proposed requirement for manufacturers to provide EPA with in-use emission data will have the effect of motivating manufacturers to design cleaner, more durable vehicles in order to avoid potential recall situations. This in-use data will also allow the Agency to better target recall investigations and to help identify in-use emissions problems earlier in the vehicle's life, thus making recalls more effective. Consequently, the Agency believes that there are several indirect emission benefits associated with this rulemaking.

II. Cost Analysis

The Agency is proposing this rule because it will be

both more effective in controlling emissions from light-duty vehicles and trucks and also because it will achieve these benefits at a lower cost for the regulated industry.

The cost analysis is broken into six areas. In each area the current program is evaluated and compared to the expected costs for the proposed CAP 2000 program. Both a maximum and minimum projection of costs are calculated.

Savings are calculated using the associated costs of the current procedures and the CAP 2000 procedures. The savings under the "Using Maximum Costs" heading are calculated as maximum current costs minus the maximum CAP 2000 costs. The savings under the "Using Minimum Costs" heading are calculated as minimum current costs minus the minimum CAP 2000 costs. A cross product calculation of savings using the maximum minus minimum and minimum minus maximum costs was not calculated since these calculations would either overstate savings or overstate costs beyond a reasonable basis.

A summary is provided which combines the costs from all the separate areas. In total, the Agency has calculated an annual cost savings of about \$55 million (depending whether high or low projections are used). Details of the calculations in the six areas are explained below.

Beyond the numbers, a key intangible benefit for manufacturers of the proposal is the transfer of control over the timing of the certification review process from EPA

to the manufacturer. This was accomplished by delegating most Agency decision to manufacturers (with appropriate Administrative oversight for the quality of the manufacturer decision). The proposal will also allow manufacturers to obtain a certificate of conformity based on manufacturer-generated test data while an Agency confirmatory test is pending (with the proviso that if the Agency test fails the manufacturer must recall any vehicles produced and the certificate becomes void *ab initio*). For manufacturers who plan their certification programs closely to their production schedules, such a benefit is clearly quite valuable but not easily quantifiable.

A. Durability Program Savings

One of the principal areas of cost savings is the proposed new durability process. The cost savings will be achieved by allowing manufacturers to reduce the number of durability demonstrations (by means of changing the grouping procedures from "engine families" to "durability groups"). The agency estimates that the proposed new durability grouping procedures will result in most manufacturers performing 75 to 80% fewer durability demonstrations.¹

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To be conservative, a 75% percent reduction is used in the cost calculations. A study of the 1997 vehicle fleet indicates that the overall savings are 80% for the 10 largest manufacturers.

Savings are also achieved by replacing the costly and somewhat outdated AMA mileage accumulation procedures with less costly and more effective alternative types of durability demonstrations. The CAP 2000 proposal allows manufacturers to design their own durability process to simulate the emission deterioration they expect their vehicles to experience in actual use. This provision allows manufacturers to use any of the following durability demonstration options:

(1) Accelerated whole-vehicle track procedures, where the mileage accumulation is faster than the AMA, thereby reducing labor costs;

(2) Compressed whole-vehicle track procedures where a fewer number of miles accumulated under more severe conditions would be equivalent to the full useful life (e.g., 40,000 miles run on the severe schedule equals 100,000 miles in-use). The severity could be achieved by a combination of such driving techniques as extreme accelerations and decelerations, extremely high speed, and other techniques which have the effect of rapidly aging the emission components; or

(3) Bench-aging procedures where key emission components (such as the catalyst and oxygen sensor) are removed from a stabilized test vehicle, aged on an engine dynamometer for the equivalent of 100,000 miles of use, then re-installed on the same vehicle. This vehicle is tested both before and

after the bench aging to obtain the rate of emissions deterioration. The bench-aging approach significantly saves the cost and time of either of the whole-vehicle mileage accumulation methods (accelerated or compressed). It also saves the cost of mileage accumulation past the stabilized mileage point (e.g. 4000 miles) and leaves the test vehicle with more residual value.

Another cost savings option which is being proposed would allow manufacturers to bypass the process of calculating deterioration factors by installing the bench-aged components described in option 3 above on emission data vehicles, which, when tested with these components, represent vehicles at their full useful lives. This approach saves the cost of building a DDV. It also saves the cost of the mileage accumulation required on the DDV.

The attached analysis estimates the savings using both a high and low line of assumptions. The sources of the cost and activity numbers used in the analysis are explained in the comments accompanying the table. The analysis estimates the savings associated with the durability process to be between \$24 to \$45 million annually depending on the assumptions used.

B. Emission Data Vehicle (EDV) Reductions

Cost savings are being claimed which will result from the proposal to replace the current "Engine Family" concept

with "Test Groups" for the purposes of emission testing and certificate coverage. The Agency estimates that this proposal will reduce the number of certifications required by about 20% compared to the number of the current engine families². Also, the Agency is proposing that only one vehicle per test group undergo emission testing rather than the current two per engine family. The proposal also allows a greater opportunity to reconfigure and re-use test vehicles by removing some restrictions present in the current program. The proposal also allows the expanded use of development vehicles³ as EDV's.

Another cost of the certification process is the cost of shipping a vehicle to EPA for confirmatory testing. The Agency is proposing a manufacturer-conducted confirmatory testing program which will eliminate the need for some agency confirmatory testing⁴. The proposed cost analysis

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Based on confidential projections submitted by individual manufacturers for 1997 vehicles.

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Development vehicles are vehicles currently used by the manufactures to develop their calibrations. EPA's proposal to allow the use of development vehicles for emission data purposes saves the manufacturer the cost of building a unique EDV.

4

The Agency will retain a confirmatory test program to assure the validity of manufacturer test results and conduct testing on vehicles of concern.

accounts for the costs saved by not shipping vehicles to the Agency's test facility and the added cost to the manufacturer of running the confirmatory test program.

The attached analysis estimates the savings using both a high and low line of assumptions. The sources of the cost and activity numbers used in the analysis are explained in the comments accompanying the table. The analysis estimates an annual savings of \$2 to \$4 million for emission testing requirements depending on the assumptions used.

C. Information Submission

The CAP 2000 proposal contains requirements for manufacturers to collect and report information to support their requests for certification and for fuel economy compliance. The same types of information are required in the current certification and fuel economy programs. However, the CAP 2000 proposal significantly reduces the amount of information which manufacturers are required to submit in the application for certification. Most information would only be submitted by the manufacturer upon Agency request. EPA estimates that about 75 percent of the information required to be submitted currently will not be required to be submitted under CAP 2000. However some of this information may be requested by the Agency at a later time. EPA conservatively estimates the net information reporting, including the later Agency requests for information, to be 50 percent of the current level.

Although manufacturers may be required to submit certain information upon request, recordkeeping costs will be reduced since EPA is not requiring manufacturers to compile or retain the information in a specified format. Moreover, the type of information which EPA would request is information that the Agency believes the manufacturer would have for reasons other than for emission compliance. The Preamble to this proposal contains a more detailed discussion about EPA's proposed information requirements. Some manufacturers have questioned EPA's conclusion that information kept by the manufacturer will result in large recordkeeping and submittal cost savings. They contend that they will still be expending the nearly the same effort to maintain information which EPA may or may not request. EPA acknowledges that there may be some information which the Agency may later request that requires specific recordkeeping costs for the manufacturer. In most cases the information that the Agency may request is normal business information that will be retained by the manufacturer for other reasons. Consequently, the reduction in recordkeeping costs used in this analysis is less than the proportional reduction based on the savings of reporting requirements. The minimum cost estimate uses an estimated savings of 35 percent and the maximum cost estimate uses an estimated savings of 20 percent.

1. Highlighted Areas of Information Costs and Savings

Test Groups: The proposal for test groups as the unit of

testing and certification has a number of ramifications for information savings. First, there are fewer test groups than the current number of engine families this fact alone will reduce the number of reports. Also, the reduced number of tests per test group (as compared to number of tests per engine families) will reduce that reporting burden.

Durability Groups: Significantly fewer durability demonstrations will be required in this proposal, which results in a corresponding information savings related to durability tests and durability vehicles. It should be noted that EPA's proposal requires manufacturers to submit only one application per durability group. However, since much of the information is likely to be specific to each test group, EPA's cost analysis assumes that manufacturers will submit applications on a test group basis.

In-Use Testing: The current certification program contains an optional element of in-use testing (known as RPD-1). The CAP 2000 program takes this element and makes it mandatory for all manufacturers except for the very smallest. Therefore there are added costs for reporting in-use vehicles and in-use tests.

Running changes: The CAP 2000 proposal includes changes to the requirements for reporting running changes and application updates which are expected to result in significant savings in burden-hours. Rather than requiring updated application pages with each running change (a

practice which frequently results in redundant submissions), EPA is proposing to require that manufacturers submit updates to the Application twice during the model year.

2. Discussion of Modifications to EPA's Information Collection Request (ICR) 2060-0104.

Two actions concerning EPA's ICR 2060-0104 are occurring which impact EPA's information cost analysis. The first is an ICR update, which is required every three years in accordance with the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. EPA is scheduled to update ICR 2060-0104 in 1998. (The purpose of regular ICR updates is to account for any changes which may have occurred in the interim period regarding information collection.) The second action is the amendment of the ICR to account for changes in information collection specifically brought about by the CAP 2000 proposal. During the process of updating the current ICR, EPA identified several areas in the current certification process where reporting burdens appear to be generally overstated. This conclusion was based on EPA's assessment of the current information submittal practices, which indicates that, in general, reporting burdens are less than those stated in the current ICR. The burden-hours for large and small engine families and large and small evaporative families are reduced by 20%.

In addition, three areas have been identified where EPA believes even larger reductions are appropriate: First, the

ICR reporting burden-hours for running changes, which are currently estimated at 110 burden-hours per action, would be more accurately stated at 20 hours per running change action. This conclusion is based on the running change information which manufacturers have submitted to EPA in the past few model years. Second, the current ICR reporting burden of 4 hours per test for the in-use tests required by the Alternate Durability Program ("ADP"), would more accurately be estimated at 2 hours per test. At the time that the 1995 ICR was approved, EPA and industry had little or no experience with in-use testing requirements. In the intervening years, more experience in this area has been gained which has led EPA to reach this new estimate. Third, the reporting burden hours for an emission data vehicle (EDV) which is estimated in the current ICR as 76 hours per vehicle, would be more accurately represented at 10 hours per vehicle. Again, EPA bases this conclusion on manufacturers' EDV information submitted over the past few model years.

EPA believes it is important that the certification ICR reflect as much as possible the current actual reporting burdens so that savings brought about by the CAP 2000 proposal are not artificially overstated. Because a major goal of this program was to reduce burden to manufacturers, EPA was particularly concerned that any savings shown would be overstated by comparing the current ICR figures to those EPA estimated for CAP 2000. Therefore, in its cost analysis, EPA has chosen to use the revised figures, as discussed above, for a comparison basis.

3. Explanation of "Annual Information Cost Analysis" table

The table "Annual Information Cost Analysis" is organized as follows. At the top are 2 joined boxes labeled "Current Information Process". Within this, the box on the right headed "ICR 2060-0104 (1995)" contains burden-hours per action from that ICR. This information is included for informational purposes, and is not used in the actual analysis. The box on the left headed "Current EPA Estimates (To be listed in 1998 ICR)" contain the burden-hours per action which reflect the changes discussed in paragraph 2. above. The bottom boxes are headed "CAP 2000 Information Process". The right box, "Maximum Cost Estimate", reflects the maximum cost, using only minor burden-hours reductions from the "Current EPA Estimates". It is included to reflect the industry contention that certain aspects of EPA's information collection proposal present much less savings in burden-hours per action than would be predicted based on the amount of information which is no longer required to be submitted under the CAP 2000 proposal. The box on the left headed "Minimum Cost Estimate" reflects burden-hours per action revised according to EPA staff's best estimates. The number of actions are based on the minimum estimates from the corresponding program cost table as listed in the comments section of the information cost table.

The sources of the cost and activity numbers used in the analysis are explained in the comments accompanying the table. The analysis estimates an annual savings of \$22 to \$35 million depending on the assumptions used. The

revisions to the ICR reflecting these changes are being submitted to OMB for approval concurrently with this proposal.

In the ICR which accompanies this proposal, the Agency used the figures from the "EPA Estimate" column of the information cost analysis table.

D. Cost of New In-Use Verification Program

The Agency is proposing to require that all manufacturers⁵ perform an in-use verification test program. This program will require the manufacturer to procure and test a number of customer owned vehicles for the purpose of determining the level of actual emission performance in use. Currently there are about 40 engine families certified to the revised durability (RDP-1) procedures which require up to 15 in-use vehicles per engine family (some carryover of in-use test data is currently permitted) for a total of about 600 vehicles. In order to present worst-case cost estimates, the cost analysis does not subtract the cost of these vehicles from the total cost of the proposed in-use verification program.

The analysis considers high and low estimates for all the inputs. Although the higher test cost assumes the use of a contractor testing facility, both levels of the

⁵Small volume manufacturers may be exempt depending on sales levels

analysis consider the costs for building new testing cells. The number of testing cells required is based on a contractor supplying the service, consequently the number of cells needed assume full utilization. Smaller utilization rates would increase the number of cells built and their cost but would have minimal effect on the overall analysis.

The attached analysis estimates the costs using both a high and low line of assumptions. The sources of the cost and activity numbers used in the analysis are explained in the comments accompanying the table. The analysis estimates an annual cost of \$6 to nearly \$16 million depending on the assumptions used.

E. Cost of New In-Use Confirmatory Program

If the results of the in-use verification program reach a trigger point which shows a significant level of noncompliance with the standards in use, EPA is proposing to require the manufacturer to conduct a recall-quality testing program called the In-Use Confirmatory Program. There is a wide spread in cost estimates, because of the uncertainty of how much of this type of testing will be performed. At best, no testing will be required, hence a low estimate of \$0. EPA has proposed to cap a manufacturer's potential annual confirmatory testing liability at 50% of the number of that manufacturer's test groups. This assumption was used as the worst-case cost estimate. In actuality, EPA believes that very few test groups will reach the trigger point, so

the cost estimates will likely fall on the lower side.

The vehicle procurement costs are based on EPA's 1997 recall test costs. The attached analysis estimates the costs using both a high and low line of assumptions. The analysis estimates an annual cost of \$0 to about \$600,000 depending on the assumptions used.

F. Fuel Economy Program Costs

1. Costs to Replace Emission Data Vehicles for the Fuel Economy Program.

Some emission data vehicle (EDV) tests are ultimately used in the CAFE calculations performed at the end of the year. While EPA is proposing to reduce the amount of EDV testing, it is not proposing to reduce the required fuel economy testing. Consequently a reduction in EDV testing would lead to an increase in testing for fuel economy (that is, the data no longer collected for emissions purposes may still be needed for fuel economy purposes.) However, since manufacturers make production changes throughout the course of the year, some EDV configurations are not actually put into production and their tests are not used in the CAFE calculations. Furthermore, manufacturers have complete discretion to determine which vehicles they will test to meet the 90% data coverage requirements of the CAFE calculation regulations, so several EDV calibration tests may not need to be replaced in some cases if a single higher selling calibration is tested in their place.

This analysis quantifies the cost of replacing the EDVs saved in the certification program in the CAFE calculation. The minimum and maximum values are based on assumptions of 50 to 100 percent replacement of EDVs and the minimum and maximum number of EDVs saved according to the EDV cost analysis described above. The effects of the use of analytically derived data (data which is calculated on a theoretical, rather than actual test vehicle basis) are considered. The costs of confirmatory EPA testing and shipping test vehicles are considered as well.

The attached analysis estimates the cost of running fuel economy vehicles to replace the EDVs saved in the certification program to be between \$250 thousand and \$1.6 million per year, depending on the assumptions used.

2. CAFE Reporting to NHTSA

The cost of the proposed requirement for manufacturers to submit their annual CAFE reports to the National Highway Traffic and Safety Administration as well as to EPA has been included in the analysis, and is estimated to be \$900 annually for the entire automotive industry. This amount covers the cost of reproducing and sending the report to NHTSA. The cost of developing the CAFE report and submitting it to EPA is not accounted for in the analysis because that cost is unchanged from the current ICR.

General Assumptions:

In the attached cost analysis for information

requirements, the number of units given for the current compliance program information process (e.g. number of tests, vehicles, engine families, etc.) are taken from actual 1996 model year numbers. The labor cost of \$70 per hour is taken from EPA's ICR 2060-0104.

Estimates of Annual CAP 2000 Savings

Savings	Using Minimum Costs	Using Maximum Costs
Net Information Savings	\$35,701,176	\$22,775,760
Net Durability Savings	\$24,573,478	\$45,791,125
Net Emission Vehicle Savings* <i>* accounts for the added cost of the new mfr confirm test program</i>	\$2,487,890	\$4,044,683

Costs		
Cost of New In-use Verif Program	\$6,461,605	\$16,245,249
Cost of In-use Conf Program	\$0	\$604,000
Cost of New FEDV's	\$249,951	\$1,629,975
Cost of Submission of CAFE to NHTSA	\$900	\$900

Total Annual Savings	\$56,050,088	\$54,131,444
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Durability Annual Cost Analysis -- Current Program

	Minimum	Maximum	Comments
<i>Vehicle Buildup & Mi Accum</i>			
Accelerated Track Proc: DDV Vehicle cost	\$25,000	\$25,000	Assume \$25,000 vehicle cost completely lost
Cost for mileage accumulation	\$125,000	\$160,000	Based on AMA estimates below and anticipated savings for accelerated accum
Percentage using accel track proc	10%	10%	Estimate, based on 1997 Data
Bench: DDV Vehicle cost	\$6,250	\$6,250	Assume 75% recovery on \$25,000 outlay
Cost range for Mi accum + Bench	\$6,400	\$8,000	Max: estimate Min: from a mfrs 4k accumulation estimate
Percent using bench proc	10%	10%	Estimate, based on 1997 Data
AMA: DDV Vehicle cost	\$25,000	\$25,000	Assume \$25,000 vehicle cost completely lost
Cost range for accumulation: AMA100k	\$152,000	\$225,000	Max: estimate Min: from a mfrs submittal and RDP analysis
Percent using AMA	80%	80%	Estimate, based on 1997 Data
Small Volume: DDV Cost & Mi Accum	\$0	\$0	Use Assigned DF's, costs are information only
<i>Test Costs</i>			
Cost per test for FTP (no SFTP)	\$800	\$1,200	Estimates
Tests per DDV Vehicle	4	20	
<i>Number of Vehicles</i>			
LDV-Large Volume			
# of Vehicles/year	44	44	1996 Certification data, (large-sm vol) 235-14 = 221, assume 80% C/O = 44
Optional Backup Vehicles for AMA	88	132	(Manufacturers opt to build 2-3 backup vehicles)
Optional backup for Accel Track	44	88	1-2 backup vehicles
LDT-Large Volume			
# of Vehicles / year	33	33	1996 Certification Data (large - sm volume) 173-6 = 167, 80% C/O = 33
Optional backups	0	33	Use 0-1 backups (LDT does not usually have any backups)
<i>Small Volume Engine Families</i>	20	70	Low 1996 Total, High 70 families based on current ICR
Required Cost	\$12,402,005	\$18,782,225	Prorated costs based on type of durability, LDT vs LDV and rate of occurrence
Optional Backup cost	\$13,360,160	\$38,696,900	
TOTAL ANNUAL COST (current)	\$25,762,165	\$57,479,125	

Durability Annual Cost Analysis -- CAP 2000

	Minimum	Maximum	Comments
<i>Vehicle Buildup & Mi Accum</i>			
<i>Full Mileage, Accelerated Procedures:</i>			
Cost per DDV vehicle Full Mi Acell	\$25,000	\$25,000	Assume \$25,000 vehicle cost completely lost
Cost range for accumulation: Accelerated	\$125,000	\$160,000	Estimate
Percentage accumulation: Accelerated	25%	25%	Estimate
Tests per DDV	4	20	
Optional Backups Vehicles	14	128	1-2 Backups per Durability Group
<i>Bench Procedures:</i>			
Engine Aging plus mi accum cost/DDV	\$6,400	\$8,000	Max: estimate Min: from a mfrs 4k accumulation estimate
Percentage using Bench procedures	75%	75%	Estimate
<i>DF calculated for EDV's</i>			
Cost of DDV	\$6,250	\$6,250	75% recovery because car does not lose all of its value
Tests per DDV	2	8	1-4 tests before and after aging
Percent of Bench aging with DF calc	50%	50%	Initial estimate, less as program matures and mfrs switch to less expensive aged components
<i>No DF's - Aged components on EDV's</i>			
Cost of DDV (or components for Min)	\$1,500	\$6,250	No DDV necessary if only aging components; Component cost for min
Tests per DDV	0	2	Don't need tests if sole purpose is aged catalyst
Number of aged catalysts / Dur group	1	3	May need to age several catalysts in Dur Group
Percent of Bench aging w/o DF's	50%	50%	Initial estimate, higher as program matures & mfr switch to less expensive aged components
<i>Test Costs</i>			
Cost per test for FTP (No SFTP for DF)	\$800	\$1,200	Estimate
<i>Number of Vehicles</i>			
# of Large volume Dur Groups	70	80	Based on 75% - 80% reduction from current families, less for small volume
Percent of Durability carryover	80%	20%	80% is current estimate based on 1997 data, 20% is worst case
# of Large volume Vehicles/year	14	64	#Families x (1- percent C/O)
# of Small Volume Dur Groups	10	20	Estimate
# Small volume Vehicles /yr	0	0	Use assigned DF's so no vehicle or test cost
Required Cost	\$652,488	\$5,000,000	Prorated costs based on type of durability, LDT vs LDV and rate of occurrence
Optional backup for Track Procedures	\$536,200	\$6,688,000	No backups for Bench tests
Total Annual Cost	\$1,188,688	\$11,688,000	
Net Annual Durability Savings	\$24,573,478	\$45,791,125	Min-Min or Max-max

Emission Data Vehicle Annual Cost Analysis

Current Program

<i>Vehicle Cost</i>	Minimum	Maximum	Comments
Cost range per EDV	\$6,250	\$6,250	Assume \$25,000 vehicle 75% recovery
# of Vehicles/year	600	800	MIN: 1.5x, MAX: 2x families, 400 families based on 1997 data
% Vehicles reconfigured	20%	20%	
Labor cost for reconfiguration	\$350	\$850	Estimates
Total Vehicle Costs	\$3,000,070	\$4,000,170	
<i>Test Cost</i>			
FTP/SFTP cost per test	\$1,440	\$2,700	MIN: estimate MAX: from a mfrs submittal
FTP/SFTP tests performed	600	800	1 per Emission Data Vehicle
Cold CO cost per test	\$500	\$700	MIN: estimate MAX: from a mfrs submittal
Cold CO tests performed	370	370	1 test per Engine Family
Evap/ORVR cost per test	\$2,100	\$5,000	MIN: estimate MAX: from a mfrs submittal
Evap/ORVR tests performed	200	200	1 test per Evap family
Cert Short Test cost per test	\$500	\$700	MIN: estimate MAX: from a mfrs submittal
Cert Short Test tests performed	370	370	1 test per Engine Family
Total Test Costs	\$1,654,000	\$3,678,000	
<i>Cert Confirmatory Costs</i>			
Domestic cost shipment	\$50	\$250	Shipping costs from manufacturer to EPA: estimate
Domestic vehicles sent	117	156	30% of tests (current confirm test rate) , 65% Domestic
Foreign cost per shipment	\$1,000	\$4,000	Shipping costs from manufacturer to EPA: estimate
Foreign vehicles sent	63	84	30% of tests (current confirm test rate) , 35% Import
Total Confirmatory Shipment Costs	\$68,850	\$375,000	
TOTAL ANNUAL COST	\$4,722,920	\$8,053,170	

CAP 2000

<i>Vehicle Cost</i>	Minimum	Maximum	Comments
Cost of New EDV minus recovery	\$6,250	\$6,250	
# of Vehicles/year	360	360	1 per Test group, Test group = 80% Engine Family, EF=400
% of EDV that are reconfigured	50%	25%	Allows reconfig from existing EDV and Develop vehicles
Labor cost to reconfigure	\$350	\$850	Estimates based on mfr discussions
Total Vehicle Costs	\$1,125,175	\$1,687,713	
<i>Test Cost</i>			
FTP/SFTP cost per test	\$1,440	\$2,700	MIN: estimate MAX: from a mfrs submittal
FTP/SFTP tests performed	360	360	1 per Emission Data Vehicle
Cold CO cost per test	\$500	\$700	MIN: estimate MAX: from a mfrs submittal
Cold CO tests performed	100	100	1 test per durability group (75% reduction)
Evap/ORVR cost per test	\$2,100	\$5,000	MIN: estimate MAX: from a mfrs submittal
Evap/ORVR tests performed	200	200	1 test per Evap family
Total Test Costs	\$988,400	\$2,042,000	
<i>Cert Confirmatory Costs</i>			
Domestic cost shipment	\$50	\$250	Shipping costs from manufacturer to EPA: Estimate
Domestic vehicles sent	35.1	35.1	15% of vehicles tested. 65% domestic
Foreign cost per shipment	\$1,000	\$4,000	Shipping costs from manufacturer to EPA: Estimate
Foreign vehicles sent	18.9	18.9	15% of vehicles tested
Cost of Confirm tests by Mfr	\$100,800	\$194,400	20% of EF Tested FTP+SFTP, min \$1440, max \$2700/test
Total Confirmatory Costs	\$121,455	\$278,775	
TOTAL ANNUAL COST	\$2,235,030	\$4,008,488	
Net Annual EDV Savings	\$2,487,890	\$4,044,683	Min-Min, Max-Max

Annual In-Use Verification Costs

	Minimum	Maximum	Comments
<i>Procurement Costs per Car including:</i>			
Admin. Costs, Loaner cars & cash incentives	\$1,000	\$1,900	max1996 FY emission factors, min in-house recruitment Difference is based on 100% overhead cost for contractor
<i>Testing Costs</i>			
FTP/SFTP	\$1,440	\$2,700	From SFTP rulemaking
<i>Rejected Vehicles</i>			
Vehicle Rejection Justification	\$70	\$70	1 hour at \$70/hr
Total for justification for rejection	\$8,400	\$10,500	5% X total number of vehicles X the cost/rejection
<i>FTP/SFTP Testing</i>			
Total procur + FTP/SFTP testing Costs	\$2,440	\$4,600	
Number of In-Use test groups	300	300	80% of 400 Families - Sm vol
Number of In Use testing vehicles	2400	3000	8 - 10 test vehicles each
Total for FTP/SFTP Tests	\$5,856,000	\$13,800,000	
<i>Test Cells</i>			
New Facility Cost - Tests/cell/yr	750	750	at 3 tests/day, 250 days/yr.
Total tests needed	2160	2560	Tests-EDV saved --- DDV savings would reduce further estimate
% of Testing requiring new cells built	50%	100%	
No of New cells	1.44	3.41	
Cost of Test Cell	\$2,000,000	\$4,000,000	estimate for FTP emission cell
Total Cost	\$2,880,000	\$13,653,333	
Cost/yr for 10 yr life	\$429,205	\$2,034,749	Assume 10 years, 8% interest/year
<i>Evap Testing</i>			
Enhanced Evap/ORVR	\$2,100	\$5,000	min: staff estimate; max: from a mfrs submittal
Evap/ORVR Tests	80	80	
Total for Evap/ORVR	\$168,000	\$400,000	
Annual Cost of New In-use Program	\$6,461,605	\$16,245,249	

Annual In-Use Confirmatory Cost Analysis

	Minimum	Maximum	Comments
<i>Procurement Costs Per Vehicle including:</i> Admin. Costs, loaner cars & cash incentives	\$1,000	\$2,000	Max 97 recall, Min: in-house recruitment
<i>Restorative (set to spec) Maintenance Costs</i>	\$600	\$1,200	Max: 97 recall, Min: in-house work Note: our contractor has 100% overhead charge
<i>Testing Costs Per Vehicle</i> FTP/SFTP	\$1,440	\$2,700	From SFTP rulemaking
<i>Data Reporting Per Vehicle</i> Labor	\$140	\$140	Min/Max: 2 labor hours at \$70/hr
Total per vehicle In Use testing costs Number of In Use testing vehicles	\$3,180 0	\$6,040 100	Min: estimate, Max = 20 test groups, 5 vehicles per TG

Annual Cost of In-use Confirm Program	\$0	\$604,000
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Annual Information Cost Analysis

Current Information Process

Labor Cost (\$/Hr): \$70
Current EPA Estimates
 (To be listed in new 1998 ICR)

ICR 2060-0104 (1995)

Reporting	Current EPA Estimates				ICR 2060-0104 (1995)			
	Number of Actions	Burden-hr per action	Total Burden-hr	Total \$	Number of Actions	Burden-hr per action	Total Burden-hr	Total \$
Engine families (EF)-large	380	1,952	741,760	\$51,923,200	380	2440	927,200	\$64,904,000
Engine families-small	20	496	9,920	\$694,400	20	620	12,400	\$868,000
Evaporative families (EvF)-large	190	460	87,400	\$6,118,000	190	575	109,250	\$7,647,500
Evaporative families-small	20	80	1,600	\$112,000	20	100	2,000	\$140,000
Running Changes (R/C)	800	20	16,000	\$1,120,000	800	110	88,000	\$6,160,000
New Durability Data Vehicles (DDV)	76	76	5,776	\$404,320	76	76	5,776	\$404,320
C/O DDV's	304	10	3,040	\$212,800	304	10	3,040	\$212,800
Emission Data Vehicles (EDV)	685	10	6,850	\$479,500	685	76	52,060	\$3,644,200
New Durability Tests	912	2	1,824	\$127,680	912	2	1,824	\$127,680
Emission Tests	1695	2	3,390	\$237,300	1695	2	3,390	\$237,300
ADP In-use tests	300	2	600	\$42,000	300	4	1,200	\$84,000
Total for Reporting			878,160	\$61,471,200			1,206,140	\$84,429,800
Recordkeeping								
Large manufacturers	25	1,200	30,000	\$2,100,000	25	1500	37,500	\$2,625,000
Test vehicles	761	40	30,440	\$2,130,800	761	50	38,050	\$2,663,500
Total for Recordkeeping			60,440	\$4,230,800			75,550	\$5,288,500
ANNUAL TOTALS			938,600	\$65,702,000			1,281,690	\$89,718,300

-Max Costs using ICR #2060-0104 (1995 as modified by SFTP)
 -Numbers of actions are based on 1996 MY actual data

Burden-hr: 20% reduction from ICR
 Burden-hr: 20% reduction from ICR
 Assume 1 EvF per 2 EF-large; Burden-hr: 20% reduction from ICR
 Assume 1 EvF per 1 EF-small; Burden-hr: 20% reduction from ICR
 MIN of 20 burden hours based on staff estimate
 Assume 1 DDV per Engine Family, 80% carry-over

 Assume 1.75 EDVs per EF; Burden-hr: 10 hours -staff estimate
 Assume 12 tests per new DDV
 1 Test per vehicle: Evap+EDV+R/C. 1 vehicle per EvF and R/C
 2 hours- staff estimate

CAP 2000 Information Process

Labor Cost \$/Hr: \$70 **Minimum Cost Estimate**

Maximum Cost Estimate

Reporting	Minimum Cost Estimate				Maximum Cost Estimate			
	Number of Actions	Burden-hr per action	Total Burden-hr	Total \$	Number of Actions	Burden-hr per action	Total Burden-hr	Total \$
Test Groups (TG)-Large	304	976	296,704	\$20,769,280	304	1,464	445,056	\$31,153,920
Test Groups-small	20	372	7,440	\$520,800	20	422	8,432	\$590,240
Evaporative families-large	190	368	69,920	\$4,894,400	190	460	87,400	\$6,118,000
Evaporative families-small	20	64	1,280	\$89,600	20	80	1,600	\$112,000
Running Changes	800	4	3,200	\$224,000	800	8	6,400	\$448,000
New Durability Data Vehicles	14	61	851	\$59,584	64	76	4,864	\$340,480
Carry-over Durability Data Vehicles	56	10	560	\$39,200	16	10	160	\$11,200
Emission Data Vehicles	360	10	3,600	\$252,000	360	10	3,600	\$252,000
In-Use Vehicles	2400	2	4,800	\$336,000	3000	2	6,000	\$420,000
Durability Tests	620	2	1,240	\$86,800	620	2	1,240	\$86,800
Emission Tests	660	2	1,320	\$92,400	660	2	1,320	\$92,400
In-Use Tests	3100	2	6,200	\$434,000	3100	2	6,200	\$434,000
Total for Reporting			397,115	\$27,798,064			572,272	\$40,059,040
Recordkeeping								
Large manufacturers	25	780	19,500	\$1,365,000	25	960	24,000	\$1,680,000
Test vehicles	374	32	11,968	\$837,760	424	40	16,960	\$1,187,200
Total for Recordkeeping			31,468	\$2,202,760			40,960	\$2,867,200
ANNUAL TOTALS			428,583	\$30,000,824			613,232	\$42,926,240
Net Annual Info Savings			510,017	\$35,701,176			325,368	\$22,775,760
Percent Savings			54%	54%			25%	25%

-Numbers of actions taken from other spread sheets
 -MIN & MAX are based on current estimates of burden-hrs
 -1995 ICR Numbers are not used in these calculations

Burden-hr: MIN- 50% smaller based on staff estimate, MAX- 25%
 Burden-hr: MIN- 25% smaller based on staff estimate, MAX- 15%
 Burden-hr: MIN-save 20%, MAX-0%
 Burden-hr: MIN-save 20%, MAX-0%
 Burden-hr: Savings in both MIN & MAX
 # of Actions: see Dura: Max & Min. Burd-hr: Min: 20% less, Max: 0%
 # of Actions: see Durability Sheet: Max & Min. Burden-hr: 0%
 # of Actions: See EDV sheet
 # of Actions: see In-Use Verific Sheet, MIN & MAX
 Burden-hr: Staff Estimate
 From EDV tests (Max)=1 FTP /EDV+1 Evap/EvF+1 Cold CO/Dur Group
 From In-Use Verification and Confirmatory using MAX numbers

Burden-Hr: MIN: save 35%, MAX: 20%
 Burden-Hr: MIN: save 20%, MAX: 0%

Annual Fuel Economy Costs

	Min	Max	Comments
Number of EDV tests Saved	240	440	From EDV sheet
% of EDV's which need to be replaced for FE	50%	100%	Estimate
Number of FEDV's run to replace loss of EDV's	90	330	

Vehicle Cost

Cost range per EDV	\$6,250	\$6,250	Assume \$25,000 vehicle 75% recovery
# of Vehicles/year	90	330	1/Test group, Test group = 80% EF, EF=400
% of EDV that are reconfigured	75%	50%	Allows reconfig from existing FEDV and Develop vehicles
Labor cost to reconfigure	\$350	\$850	Estimates
Total Vehicle Costs	\$140,888	\$1,031,675	

Test Cost

FTP & Hwy	\$1,000	\$1,500	Estimates
Number of Tests	90	330	One set per vehicle
Total Test Cost	\$90,000	\$495,000	

Cert Confirmatory Costs

Domestic cost shipment	\$50	\$250	shipping costs from manufacturer to EPA: Estimate
Domestic vehicles sent	8.78	32.18	15% of vehicles tested. 65% domestic
Foreign cost per shipment	\$1,000	\$4,000	shipping costs from manufacturer to EPA: Estimate
Foreign vehicles sent	4.73	17.33	15% of vehicles tested
Cost of Confirm tests by Mfr	\$18,000	\$99,000	20% of Vehicles Tested FTP, min \$1000, max \$1500/test
Total Confirmatory Costs	\$19,064	\$103,300	

Total Annual Cost	\$249,951	\$1,629,975	
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Submission of CAFE Report to NHTSA

Submission of CAFE Report to NHTSA	\$900	\$900	Assume \$.20 per page x 50 pages x 2 reports for 25 Mfrs Plus \$5 x 80 reports postage
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