

Attachment 2

Supplemental Economic Analysis

April 2004

*Note: The adjustments discussed below were incorporated into the revised Microsoft Excel spreadsheet (Appendix G of the staff report) before it was posted on ARB's Diesel Risk Reduction Plan (DRRP) website on November 19, 2003. **All economic information presented during the Board adoption hearings for this ATCM was based on the adjusted figures discussed below and in the Appendix G spreadsheet released on November 19, 2003.** This attachment explains the adjustments (and their rationale) made to the economic analysis after the release of the Initial Statement of Reasons (ISOR), and notes where these changes affect the text of the staff report. In addition, a few typographical errors are noted in this attachment.*

Three economic analysis adjustments were made in Matrices 2, 2a, 3, & 4 (all contained in Appendix G), which carry over into the staff report, particularly the Economic Impacts chapter:

1) The operator reporting cost was formerly assumed to be an annual cost; during the course of ATCM staff report development, this assumption was changed to make this a one-time cost at the beginning of the ATCM compliance period. Earlier versions of the analyses reported this cost as recurring, while later versions show it as a one-time cost. The above-mentioned matrices had not been updated to reflect the current assumption; this update has now been made.

1a) The operator reporting cost was expressed in year 2002 dollars, and was brought forward to 2008 dollars in Matrices 2, 2a, 3, & 4. An error in the future worth conversion formula and interest rate used resulted in an incorrect 2008 dollar value for this cost. This has now been corrected, with a resultant minor change in the cost estimates.

2) The most recent PM baseline and ATCM reduction emission inventory numbers (from Table D-1) were not used in preparing Matrices 3 & 4. Matrices 3 & 4 have now been updated. Note that the emission figures used do not include TRU gen sets, since the alternative technologies are not suitable replacements for gen sets.

In general, for the cost numbers, the changes discussed in sections 1 and 1a above result in little (a single digit) or no change to the previous numbers; where the change is greater than this amount, it is due to the correction of an erroneous value.

These changes affect the cost-effectiveness calculations in Matrices 2, 2a, 3, & 4, as well as the related references on the following pages of the staff report (corrections are noted in **boldfaced** type):

Page

Description

E-9 Second paragraph; "...range from \$4.85 million to \$914 million...", and, "...would be \$87 million to \$1568 million...". See sections 1 and 1a above. The lower bound of the range was also revised, but the change was not enough to affect the rounded total cost number.

E-9 Third paragraph; "...in annual costs of \$46 million to \$914 million...", and, "...from \$89 million to \$1568 million...". These changes were due to the reasons noted in sections 1 and 1a above.

VIII-1 Third paragraph; "...from \$87 million to \$1568 million...". Correction due to the reasons noted in sections 1 and 1a above.

VIII-6 Second paragraph; "Pursuant to Government Code Section 175656, any..."
Typographical error.

VIII-11 Figure VIII-1; "Facility Costs" and "Reporting" boxes on figure should be deleted. These costs are NOT included in the cost-effectiveness figures given in the report, but are discussed and quantified in this chapter (VIII).

VIII-11 First paragraph; "...the range of \$87 million - \$1568 million...". See sections 1 & 1a above for rationale for this change.

VIII-14 First paragraph; "...facility reporting cost of \$198,200 - \$5,145,13553..."
Typographical error.

VIII-14 The numbers below are revised due to the rationale given in sections 1 and 1a above. Note that the Range of Annual Estimated Cost (rounded) remains unchanged.

"The statewide total costs include the following:

	<u>Low</u>	<u>High</u>
Annual In-Use Compliance Cost (from Matrix 2, low- & high-cost scenarios) (includes in-use compliance costs, annual operator reporting costs, and 2008 adjustment)	\$4,840,771	\$9,173,485
Facility Reporting Cost		
Low End (annualized):	\$198,200	
High End (annualized):		\$5,145,153
Range of Annual Estimated Cost:	<u>\$5,038,971</u>	<u>\$14,318,638</u>
Range of Annual Estimated Cost (rounded):	\$5,000,000	\$14,000,000

This is the annual total cost range for the 13-year phase-in period (2008 – 2020) of the regulation. From Matrix 2 (Appendix G), the lifetime (2008-2020) statewide total cost range is \$87 million – \$1568 million."

VIII-15 Second paragraph; "...estimated at \$89 million to \$1568 million over...", and, "...range of \$5.86 million - \$14 million." Explanation for changes given in sections 1 & 1a above.

VIII-16 First paragraph; "...statewide operator cost range is \$4.85 million to \$9.0 million annually...", and, "...years being \$84 million - \$8991 million...". Changes due to reasons given in sections 1 and 1a above.

VIII-20 Fourth paragraph; "...operator reporting cost: \$4,834,485,840,771 - \$8,986,249,173,485 (from Matrix 2, ...", and, "...(\$4.85 million - \$9.02 million, rounded)." Corrections due to changes explained in sections 1 and 1a above.

VIII-20 Fifth paragraph; "...(electric standby), is \$26,453,81631,947,072 - \$48,894,41455,632,264...", and, "...(\$2732 million - \$4956 million, rounded)". Changed due to reasons given in sections 1 and 1a above.

VIII-21 Second paragraph; "...the range of 489,800288,000 to 748,250829,000 pounds." Revised due to explanation given in section 2 above.

VIII-21 Third paragraph; "...refrigeration at facilities, is \$405,259,952113,018,886 - \$186,955,416196,809,793 (from Matrix 4, Appendix G) (\$405113 million - \$187197 million, rounded)". Revised per discussion in sections 1 and 1a above.

VIII-21 Sixth paragraph; "...within the range of 327,040577,000 to 1,368,7501,700,000 pounds...". See section 2 above for explanation of change.

VIII-22 Table VIII-5; see below:

Cost-Effectiveness Comparison – ATCM and Selected Alternatives

	Annual PM Emission Reduction (lbs.)	Annual Cost (facility reporting cost not included) (\$)	Annual Cost Effectiveness (\$/lb. PM avoided)
ATCM - VDECS Retrofit - Engine/TRU Replacement	383,000 – 592,000	4.85 million – 9.0 million	10 – 20 (rounded)
Alternative 1 - Electric Standby	189,800288,000 – 748,250829,000	32 million – 576 million	5243 – 23127
Alternative 2 - Cryogenic Technology	327,040577,000 – 1,368,7501,700,000	113 million – 1987 million	2422 – 366124

The Table numbers are revised to reflect corrected emission inventory numbers from Table D-1 and corrected operator reporting cost, as discussed in sections 1, 1a, & 2 above. Units of measure labeling added to "Annual PM Emission Reduction" column.