

AIR RESOURCES BOARD

2020 L STREET
P.O. BOX 2815
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AGENDA ITEM 95-8-1

**ADOPTION OF AMENDMENTS TO THE CERTIFICATION PROCEDURES FOR ALL
ON-ROAD MOTOR VEHICLE RETROFITS AND ADOPTION OF OPTIONAL RETROFIT
EMISSION STANDARDS FOR HEAVY-DUTY ENGINES AND VEHICLES**

Copies of the slide presentation which supported the Air Resources Board's oral staff presentation given by Renee Kemena, as reflected on page 14 of the transcript.

Attachments

Proposed Amendments to the Retrofit Certification Procedures and Proposed Credit Standards for Heavy-Duty Vehicles

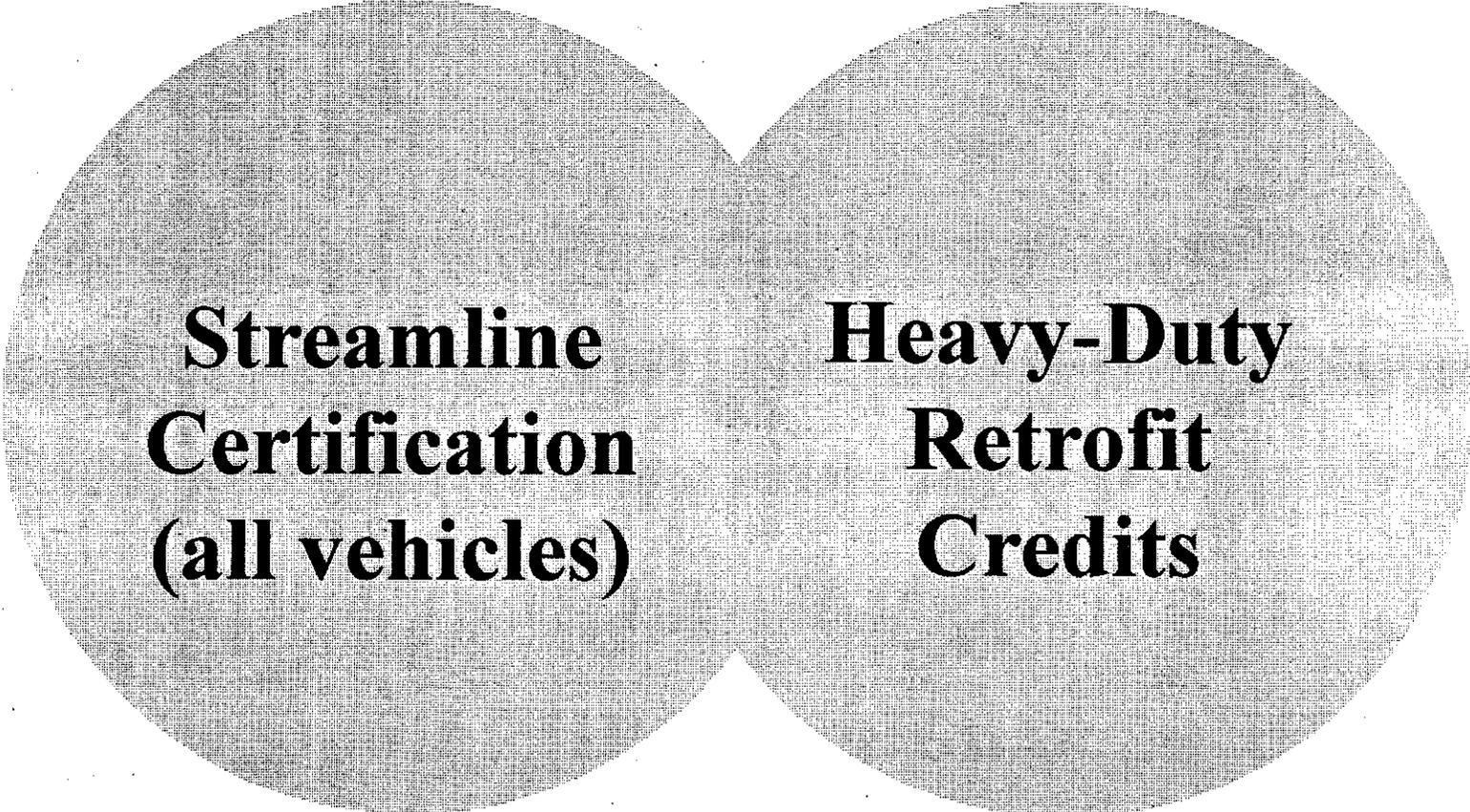
July 27, 1995

California Environmental Protection Agency



Air Resources Board

Purpose of Proposed Changes



**Streamline
Certification
(all vehicles)**

**Heavy-Duty
Retrofit
Credits**

Outline

- Background
- Changes to Streamline Certification (all)
- Credit-Related Changes (mostly HDV)
- Conclusion

Background

Recent Events Related to Retrofit Regulation

1989	ARB testing of in-use retrofits
1992	Board adopts 1994+ procedures
1993	Board adds retrofits to credit guidelines
1994	Phase-in of 1994+ procedures

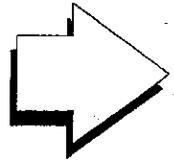
1993 and Previous Model-Year Retrofit Certification Procedures

- **Problems with excess emissions**
- **No durability testing**
- **Improper installation**

1994+ Retrofit Certification Procedures

- Durability testing
- Manufacturer and installer warranty
- Certification of each engine family
- In-use compliance testing

3 Retrofit Certification Procedures



- 1994+ retrofit certification procedures
- 1993 and earlier procedures for LPG and natural gas retrofits
- 1993 and earlier procedures for alcohol/gasoline retrofits

Number of Retrofits

- Averaged 3,000 - 4,000 retrofits per year shortly before 1994 phase-in
- Number of retrofits per year dropped significantly in 1994 (to 1,500/yr)

Part I: Changes to Streamline Certification

Phase-in Schedule for 1994+ Procedures

Year	Phase-in %
1994	15
1995	55
1996	100

Manufacturer/Installer Concerns

- No kits certified in 1994 to meet required 15%
- Limited range of kits available
- Cost/time for certification
- BAR referee inspection

Staff Has Worked with Industry to:

- Resolve implementation issues
- Determine characteristics vital to demonstrating kit performance
- Streamline retrofit process

Administrative and Regulatory Changes

- **Administrative Changes**
 - technical clarification, streamlining
 - not part of this proposal

- **Proposed Regulatory Changes**
 - under consideration today

Administrative Changes

- More liberal carry-over/carry-across
 - kits available for more engines
- Qualified use of conventional fuel deterioration factors (DFs)
 - decrease cost of durability testing

Proposed Regulatory Changes to Streamline Certification

- Alternate durability test plan
- Alternate installation inspection
- Extend phase-In of 1994+ procedures

Proposed Alternate Test Plan

- **Submit proposed DFs**
- **Certify retrofit system**
- **Validate DFs after certification**

Enforcement Under Proposed Alternate Test Plan

- In-use testing, confirmatory testing to verify DFs
- Mfrs must recall retrofits and fix problems

Advantages of Alternate Test Plan

- Provides faster return on investment
- Should encourage more retrofits
- Air quality protection ensured through recall provisions

Impact of Alternate Test Plan on Air Quality

- Recall provisions would provide deterrent to emissions increase
- Potential benefits from lower emitting retrofits could outweigh risks

Changes from Staff Report

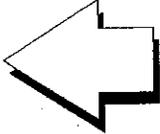
- Allow alternate durability test plan for all vehicle classes
- Two years to validate DFs
- Update reg to reflect OAL-approved provision on OBD

Proposed Alternate Installation Inspection

- 10 installations pass BAR
 - same kit, similar make and model
- Submit every tenth retrofit of same type
- Initial smog check at referee station

Proposed Phase-in Schedule for 1994+ Retrofit Certification Procedures

Year	Proposed %
1994	15
1995	55
1996	55
1997	100



Minor Proposed Changes to Streamline Certification

- Provide facility locations (all)
- OEM exemption (all)
- Remove 8 mode chassis test (HDV)
- Carry-over/carry-across test reference (all)

Changes Reflected in 1993 and Earlier Retrofit Certification Procedures

- **Alternate installation inspection**
- **Extended phase-in of 1994+ procedures**

Part II: Changes Related to Credits

Existing Credit Standards

- Light and medium-duty retrofits have LEV standards
- Board adopted optional standards for new heavy-duty vehicles in June, 1995

Need for Heavy-Duty Retrofit Credit Standards

- Mobile source credit programs
- SIP measures

Heavy-Duty Vehicle SIP Measures

- National 2.0 g/bhp-hr std. in 2004
- Engine mfrs, U.S. EPA, ARB sign SOP for comparable reductions July 11, 1995
- HDV retrofits could introduce low-emitting technology

Heavy-Duty Vehicle SIP Measures

- Reductions from existing fleet as alternative to CA-only NOx std. in 2002
- SMAQMD included reductions from HDV retrofits in SIP submittal

HDV Retrofit Credit Stds.

- **Pollutants: NO_x, PM, HC, CO**
- **First credit std at least 25% below ceiling**
- **Additional, tiered standards to 0.0**
- **Increments vary by pollutant**

Example NOx Credit Standards

• Ceiling Standard: 6.0 grams/bhp-hr

• Credit Standards: 4.5

4.0

3.5

•

•

•

1.0

0.5

0.0

Example:

1987

HDDE

Proposed HDV Ceiling Standards

- Formaldehyde for pre-1994
- PM for pre-1987
- CO and HC for diesels
- Apportion combined HC + NO_x

Other Proposed Changes to 1994+ Retrofit Certification Procedures

- Use 1994+ procedures for credit (all)
- Conventional fuel retrofits OK (all)
- Tier 1 standards OK (LDV, MDV)
- Similar standards on dual fuels (LDV, MDV)

Conclusion

Proposed Changes to Streamline Retrofit Certification

- Streamline certification process
 - decrease cost, time to complete
- Make wider range of kits available soon

Proposed Changes to Streamline Retrofit Certification

- Retain durability testing, warranties, in-use compliance
- Should protect air quality through in-use testing and recall

Proposed Credit-Related Changes

- Encourage low-emission retrofits
- Help with SIP measure reductions
- Allow credits from heavy-duty vehicle and other retrofits

Staff Recommends that the Board Adopt the Proposed:

- Amendments to retrofit certification procedures
- Heavy-duty retrofit credit standards
- Related reference changes