

Connecticut Clean Diesel Plan
Transit Subcommittee Meeting 8/29/05
Minutes

- I. Introductions: *(see attendance sheet)*
- II. Minutes of August 1 meeting: review and action: approved with correction of the reference to Detroit Diesel 50 engines, adding “with exhaust gas recirculation (EGR)” to Section V.2.d.
- III. Cost estimate tables: review and action *(spreadsheet attached)*
 - A. Cost of Filters
 1. With increase in production volume to meet new federal standards, cost may go down by 2008.
 2. Economies of scale indicate that greater use of filters may decrease cost over time. However, with inflation and demands on limited supplies of raw materials, costs could increase.
 3. CT Transit will probably supply labor for the retrofits so installation costs should be predictable and consistent.
 4. Resolution: Report should express costs as a reasonable estimate based on current information and include an annotation explaining the factors that may affect the price over the period covered by the legislation.
 - B. Operating Cost
 1. Annual cleaning, based on experience with retrofitted transit buses in Stamford, is \$350.00 plus \$150 labor; a few filters may need additional cleaning during the year.
 2. The cleaning process, referred to as “cooking,” cleans filters, one or two at a time. Concerns were expressed that this takes too long and ovens are expensive (\$20,000). A less expensive system is being developed that blows out the particulate for collection and proper disposal.
 - C. Fuel Cost:
 1. Issue: Table shows increase in cost of ULSD over current fuel price though alternative fuel will not be available in the future.
 2. Report needs to reflect the increased cost of doing business related to higher fuel costs for ULSD even though this is not an effect of the CT Clean Diesel Plan.
 - a. Federal law requires change to ULSD in 2006. New buses purchased by CT Transit on or after 01/01/07 must be operated on ULSD regardless of the outcome of the CT Clean Diesel Plan.

- b. A new floor or ceiling will be established for ULSD after 2007, cost will probably be higher.
 - c. The costs will affect the ability to carry out mission in transit; will affect the budget.
 - 3. State Clean Diesel Plan adds DPF filters that cannot function without ULSD. The state plan will not result in an increase in cost of fuel, but the increase will be there and must be noted.
 - 4. Resolution: Remove the fuel increase entry from the table, but include a discussion of the impact of fuel cost increases on transit in addition to the costs stemming from CT Clean Diesel.
 - D. Capital Cost
 - 1. Capital cost of equipment is going up because of federally mandated technology changes (\$8,000 per bus for MY2007 and beyond). These increases are not reflected in the current, fiscally constrained transit capital budget.
 - 2. The Diesel Plan's capital plan assumes one replacement filter after 2007; the first will come installed on the new bus.
 - 3. Anticipated purchases up to 2010:
 - a. '97 MY or newer: filters for retrofit
 - b. '05-'06 MY: filters for new buses
 - c. '07 MY and later: filter comes with bus (capital cost of filter is absorbed in cost of bus)
 - 4. Federal law requires that buses be used for at least 12 years prior to replacement. However, if the budget is tight:
 - a. Replacement may be delayed or
 - b. Oldest buses may not get retrofitted.
 - 4. Resolution: Leave capital cost budget as is, with replacement filter cost included, but higher cost of "new" buses not included. This approach to cost allocation is based on a distinction between Federal and state requirements. Include costs that are based on state requirements; do not include costs that result from Federal requirements. Discuss this distinction and its underlying impact on transit budgets.
 - E. Cost Effectiveness: Transit represents a fraction of diesel emissions in the state and the cost per ton of PM reduced for the transit portion of the Clean Diesel Plan will have to be folded into a discussion of exposure and numbers of people directly affected (passengers, people at bus stops, plus residents of cities where the buses run) by diesel emissions.
- IV. Emissions estimate tables: review & action (*spreadsheet attached*)

- A. Data are based on plan for Hartford using information from New York City.
 - 1. PM reductions are probably based on PM₁₀ instead of PM_{2.5}; reductions seem high.
 - 2. You may get another number using EPA data and modeling; it should be consistent with data from other subcommittees.
 - 3. Results from UConn/DOT study of bus emissions will be available in time for inclusion in the appendix.
 - B. DPF Alone: Is this a reasonable entry since the filters cannot operate without ULSD?
 - 1. Provided as an attempt to show cost effectiveness of filter alone.
 - 2. ULSD alone table entry makes sense since that is an option that has some benefits.
 - C. NO_x: There is no emissions reduction for NO_x with DPFs or ULSD; NO_x increases with biodiesel.
 - 1. Biodiesel may be useful as an additive to ULSD for lubricity.
 - 2. Caterpillar accepts up to 10% biodiesel in blend, though the highly promoted blend is 20% biodiesel.
 - D. Resolution: Tables should be simplified to include a single scenario: total emissions reduction due to both ULSD and DPF. Double check numbers on total emissions. Delete last footnote (“Does not include emissions from buses to be delivered 2005-2006”). The more complex table with multiple scenarios can be included in the appendix if necessary.
- V. How to address problem with Detroit Diesel EGR buses: discussion
- A. Problem: DPF filters on Detroit Diesel 50 EGR buses plug randomly and frequently.
 - 1. The problem seems to be in the control of the EGR system, turning turbo off and on, instead of the more usual problem of insufficient heat for DPF operation.
 - 2. The Detroit Diesel buses are newest and cleanest in the fleet with EGR and Diesel Oxidation Catalyst (DOC).
 - B. Current assumption: A fix is being developed and will be available.
 - C. Resolution: Schedule the retrofits of these last and create an exemption if no technical solution is developed.
- VI. How to assure compliance with anti-idling laws: discussion
- A. Enforcement:
 - 1. CT Transit and transit districts are educating drivers and supervisors.

2. Regarding the July 2005 Notice from CT Transit: exceptions do exist despite notice. The citation from the Regulations of Connecticut State Agencies, Section 22a-174-18(b)(3)(C) is attached.
 3. EPA plans to enforce state anti-idling regulations throughout New England. (High fines in MA were due to outdoor idling during winter; CT Transit stores buses indoors.)
- B. Technical issues:
1. Timed off switch available for trucks, may not be applicable for buses.
 2. Data accessible from bus computers may provide evidence of excessive idling for operator enforcement.
 3. Lights must be left on at night at central transfer points, draining batteries when idling is prohibited.
- C. Resolution: Cite regulation and CT Transit notice to drivers as evidence of education/compliance.
1. Include benefits of fuel savings and noise reduction.
 2. Include ideas for improvement (signs, reminders, public awareness)
- VII. How to Enforce the Clean Diesel Plan: discussion
- A. Example: Do we set annual targets for numbers of buses or % of fleet retrofitted and require annual reports to the General Assembly?
- B. Resolution: Develop a schedule of retrofit targets that would not be mandatory, but would serve as general goals for planning and reporting purposes. With the possible exception of the Detroit Diesel 50 EGR engines, retrofit installations should be complete by 2010 as specified in Special Act 05-07. DOT would report to DEP by January each year with number of retrofits done that year, total retrofits to date and explanations if targets were not met. DEP would make a master report of annual progress on Diesel Plan to General Assembly in March.
- VIII. How to address the funding issue: discussion
- A. Eligible for transit formula funds, CMAQ and operating funds
1. CT currently is authorized \$44 million in CMAQ funds each year, 91% is appropriated, and about \$25 million is actually available. By practice, 80% goes to non-highway uses.
 2. CMAQ funds are well subscribed: using more for retrofits might mean less for transit services
- B. Innovative solution: Set up state clean air fund similar to California's Carl Moyer Program.

- C. DEP plans to develop this subject for all four sectors in the Plan.
- IX. Other Issues: Small buses < 29 ft. are excluded by the statute, can they be covered under the “spirit of the law?”
- A. DOT doesn’t know the size of the fleet because it only funds part of them (DOT subsidizes about 350, others sources of funding for many)
 - B. Issues limiting applicability of Diesel Plan to small buses:
 - 1. Most are gasoline and not subject to diesel retrofits
 - 2. Small diesel vans are probably too small for retrofits.
 - 3. Short life cycle (4-5 yrs.) would not justify expense of retrofits.
- X. Assignments & date for next meeting
- A. Mike Smalec (CNG/SGC) will get data on <29 ft buses.
 - B. Tom Maziarz (CRCOG) will edit tables and spreadsheets.
 - C. Patrice Kelly (DEP) will create draft report and circulate.
 - D. Upon reviewing draft, we will decide whether another meeting is needed.

Connecticut Clean Diesel Plan, Special Act 05-7
Transit Subcommittee Meeting
Monday, August 29, 2005

Name	Organization	Present
Sarah Barbrow	EDF	
Jon Cohen	CCEJ	yes
Danae Dwyer	ENE	yes
Paul Farrell	DEP	yes
Thomas Gorman	GBTA	no
Ed Hall	Cummins	no
Margaret Japp	CCEJ	no
Orrin Johnson	HO Penn	yes
Dennis Jolly	CTDOT	yes
Patrice Kelly	CTDEP	yes
Steven Levy	Sprague	no
Peter Mariconda	GBTA	no
Tom Maziarz: Co-Chairman	CRCOG	yes
Jeff Nyanteh	Caterpillar	yes
Mike Sanders: Co-Chairman	CTDOT	yes
Patricio Silva	EDF	no
Michael Smalec	CNG/SGC	via phone
Roger Smith	Clean Water Action	yes
Michael Stoddard	ENE	no
Stephen Warren	CT Transit	yes
Madeleine Weil	ENE	yes
Samuel Wilson	GHTD	no

Section 22a-174-18. Control of particulate matter and visible emissions.

EFFECTIVE APRIL 1, 2004

(b) Visible emission standards.

- (1) Stationary sources without opacity CEM equipment. Except as provided in subsection (j) of this section, an owner or operator of any stationary source without opacity CEM equipment for which opacity is measured using visual observation shall not exceed the following visible emissions limits:
 - (A) Twenty percent (20%) opacity during any six-minute block average as measured by 40 CFR 60, Appendix A, Reference Method 9; or
 - (B) Forty percent (40%) opacity as measured by 40 CFR 60, Appendix A, Reference Method 9, reduced to a one-minute block average.
- (2) Stationary sources with opacity CEM equipment. Except as provided in subsection (j) of this section, an owner or operator of a stationary source for which opacity is measured using opacity CEM equipment shall not exceed the following visible emissions limits:
 - (A) Twenty percent (20%) opacity during any six-minute block average; or
 - (B) Forty percent (40%) opacity during any one-minute block average.
- (3) Mobile sources. Except as provided in subsection (j) of this section, no person shall cause or allow:
 - (A) Any visible emissions from a gasoline powered mobile source for longer than five (5) consecutive seconds;
 - (B) Visible emissions from a diesel powered mobile source of a shade or density equal to or darker than twenty percent (20%) opacity for more than ten (10) consecutive seconds, during which time the maximum shade or density shall be no darker than forty percent (40%) opacity; or
 - (C) A mobile source to operate for more than three (3) consecutive minutes when such mobile source is not in motion, except as follows:
 - (i) When a mobile source is forced to remain motionless because of traffic conditions or mechanical difficulties over which the operator has no control,
 - (ii) When it is necessary to operate defrosting, heating or cooling equipment to ensure the safety or health of the driver or passengers,
 - (iii) When it is necessary to operate auxiliary equipment that is located in or on the mobile source to accomplish the intended use of the mobile source,
 - (iv) To bring the mobile source to the manufacturer's recommended operating temperature,
 - (v) When the outdoor temperature is below twenty degrees Fahrenheit (20 degrees F),
 - (vi) When the mobile source is undergoing maintenance that requires such mobile source be operated for more than three (3) consecutive minutes, or
 - (vii) When a mobile source is in queue to be inspected by U.S. military personnel prior to gaining access to a U.S. military installation.