

In addition to the options presented on the Green Pact for *Greening Public Fleets*, the following are easy to accomplish options to consider for reducing emissions and to include in a green fleet policy:

- * Review arrangements for staff traveling to meetings and ensure that staff do not travel in separate vehicles to the same meetings or functions
- * Actively encourage and promote video or teleconferencing as alternatives to meetings
- * Encourage and provide guidance/assistance on the use of public transport
- * Encourage and provide guidance/assistance with route/journey planning to avoid unnecessary miles traveled
- * Regular maintenance of vehicles will ensure optimal efficiency and environmental performance.
- * Smooth driving helps save fuel. Avoid harsh acceleration and heavy braking.
- * Don't "warm-up" the car- it wastes fuel and is unnecessary if vehicle is tuned
- * Do not fill the tank past the first 'click'
- * Remove excess weight from the vehicle
- * Reduce idling time. Idling for over 30 seconds uses more gas than it takes to restart the engine.
- * Plan trips to have one linked trip rather than multiple trips
- * Travel at moderate, steady speeds and avoid high speeds as they result in greater emissions and fuel economy loss (and are illegal!).
- * Ensure proper tire inflation and keep wheels in proper alignment
- * Park in the shade

Reducing diesel emissions will cut down on hazardous air pollutants.

Emission control equipment

Diesel particulate filters (DPFs)

- Cost: \$5,000-\$9,000
- Benefits: reduces particulate matter by 60-90%
- DPFs need to be cleaned every 100,000 miles
- Lasts 7-15 years, most have a warranty of three years
- Must be used with ULSD fuel on engines built after 1994

Diesel oxidation catalyst

- Cost: \$1,000-\$2,500
- Benefits: reduces particulate matter emissions by 20-30%
- Does not require special maintenance
- Lasts 7-15 years
- Can be used with regular diesel fuel, but most effective with ULSD

Closed crank case filter

- Cost: \$500-\$1000
- Benefits: eliminates 90%+ of in-cabin crank case emissions of fine particulate matter pollution
- Filter needs to be changed at every oil change or after 500 hours of operation (whichever is first)
- Lasts 5 years

Compressed natural gas

- Reduces particulate matter by 70-90% if using catalyst technology to reduce ultra fine matter
- Used only with new CNG Engines
- Costs \$30,000 more than a diesel bus (cost of fuel is 2/3 lower than diesel)



Anti-Idling is a simple and cost-effective way to reduce emissions and protect students' health.

Idling reduction

Anti-idling policy

Anti-Idling is a simple and cost-effective way to reduce emissions and protect students' health (as well as your own). Below are easy steps you can take to develop and implement an anti-idling policy:

- Reduce idling by turning off engines stopped for more than a few minutes-saves money and lives
- Replace older buses with new, low-emission buses
- Position buses at school so tail pipes are not blowing directly towards another bus
- Position buses away from the school air intake vents
- Reward drivers for adhering to the policy
- Having a formal anti-idling policy can aid in securing funding



Diesel emissions have been linked to asthma, lung and heart disease, cancer, and breathing ailments.



Diesel particulate filters reduce particulate matter by 60-90% and last 7-15 years.



B20 Reduces particulate matter by 10%; B100 reduces particulate matter by 40%.

Idling reduction

Heaters

- Accelerates and maintains window defrosting and defogging
- Reduces emissions and eliminates idling
- Stops white smoke
- Extends the life of the engine
- Substantial fuel cost savings by reducing idling time
- Roughly \$1,000.00 to purchase
- Cut down on warm-up time by preheating the engine

Engine Plug-ins

- Reduces idling time by warming engine over night
- Saves fuel cost
- Reduces harmful emissions
- One person can plug in several buses
- Saved fuel translates into higher utility bill (weigh options)

For more information on diesel clean-up options, please visit www.theOEC.org or contact Staci R. Putney McLennan at staci@theOEC.org or (614) 487-7506.

Cleaner alternative fuels

Ultra low sulfur diesel (ULSD)

- Reduces particulate by 10% with no other emission control equipment
- Will replace current diesel fuel
- ULSD only allows 15 parts per million of pollution-causing sulfur compared to 500 parts per million with regular diesel
- Can be used in new or old diesel engines with no cleaning of tank
- ULSD is available in Ohio
- Incremental cost is \$.10-.25 cents more per gallon, projected to level off at \$.04 per gallon

Biodiesel

- B20 Reduces particulate matter by 10%; B100 reduces particulate matter by 40%
- B20 (20% pure Biodiesel/80% conventional diesel) can be used in any conventional diesel engine
- Typically \$.10 to \$.20 more per gallon than diesel
- No extra maintenance required
- Most tailpipe emissions reduced compared with conventional diesel with the exception of a slight increase of NOx
- Federal tax incentive may now cover the incremental cost





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State to start using more fuel-efficient vehicles

POSTED: January 24, 2008

From staff, wire reports

COLUMBUS — The state of Ohio is cutting back on big, gas-guzzling vehicles.

Ohio plans to replace many state employees' midsize sedans with smaller, more fuel-efficient vehicles, such as the Ford Focus.

The switch should save taxpayers about \$242,000 a year. Ohio's vehicle fleet numbers about 2,700, not including State Highway Patrol cruisers and construction equipment.

Some employees aren't happy about switching to smaller cars, but Department of Administrative Services Director Hugh Quill says he's putting cost over comfort.

Quill's policy doesn't apply to everyone, however. Attorney General Marc Dann and Gov. Ted Strickland are among those keeping their Chevy Suburbans.

"In this first year of new guidelines, we estimate that the state fleet will purchase 200-250 cars," said Ron Sylvester, spokesperson for the Department of Administrative Services, who pointed out that the savings is calculated from the difference in purchase price and operational expenses, including fuel consumption, associated with smaller, midsize vehicles.

Sylvester explained that some of the vehicles go into state agencies' motor pools and can be driven when an agency employee needs to conduct business that involves considerable travel. Take-home vehicles are also issued to employees for whom official business consists of being on the road often. Sylvester noted that rigorous procedures exist whereby state agencies must prove that take-home vehicles are essential to the performance of the employee's job.

Keith Dailey, press secretary for Gov. Strickland, says that safety procedures mandate the use of a certain type of vehicle for the protection of the governor.

"The state's Executive Protection Unit (think Ohio's Secret Service detail) includes three leased Chevy Suburbans equipped with the required communications, first aid and protection items. They are leased on a yearly basis through GM's government lease program. The Highway Patrol pays for the vehicles out of the executive protection budget line item," commented Dailey, who added that DAS considers these vehicles to be "exempt" because they are law enforcement vehicles. The policy surrounding the protection of the governor is outlined in Ohio Revised Code 5503.02e1a.

Sylvester explained that DAS policies apply to any state agency that is under the direction of the governor's office, including cabinet agencies. Any statewide elected official would not be included.

Quill's case, because he's an elected official and not under anyone's authority administratively, can go his own way."

Leo Jennings, communications director for Attorney General Marc Dann, maintained that Dann's Chevy

Suburban is not yet due to be replaced. According to the DAS, most state vehicles are replaced after three to four years of use.

“I haven’t even begun to consider his next vehicle,” said Jennings.

Jennings added that the attorney general’s vehicles must meet certain criteria.

“The attorney general will always have a vehicle that meets his security needs and that can transport his staff, since he often has three or four people in the car with him.”

At the beginning of his administration, Dann also insisted that his vehicle be flex fuel capable and be manufactured by General Motors, according to Jennings.

The Suburban will also prove useful after Dann has finished driving it. Jennings said it is one of the few vehicles that is large enough to accommodate surveillance equipment for the Bureau of Criminal Identification and Investigation.

Tribune Chronicle reporter Christopher Kromer contributed to this report.

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1.4 Project Background

The Ohio Department of Development proudly announces the Diesel Emissions Reduction Grant (DERG). Invited to apply are all public fleets and private diesel engine fleets with a public sponsor (Public-Private Partnerships) that will undertake machinery/vehicle replacement, repower, retrofit, or installation of anti-idle equipment for the purpose of emissions reduction. Public-Private Partnerships (PPP) are defined in the Congestion Mitigation and Air Quality Program Guidance October 31, 2006 page 12 at <http://www.fhwa.dot.gov/environment/cmaqpgs/index.htm>.

Funds will be made available through the Ohio Department of Development (ODOD), from the Ohio Department of Transportation's (ODOT) Congestion Mitigation and Air Quality Improvement (CMAQ) moneys. The CMAQ Program is authorized through the federal Safe, Accountable, Flexible and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

The DERG Committee makes all project selections and funding decisions. The Committee consists of selected employees from ODOD, ODOT, and the Ohio Environmental Protection Agency (OEPA).

The total funding available for this competitive funding opportunity is \$9,817,105 Million in federal CMAQ funds through June 30, 2008. Each application must contain a request for at least Twenty Thousand Dollars (\$20,000) to be considered.

SECTION 2: FUND REIMBURSEMENT POLICY

DERG is a reimbursement program and applicants must provide non-federal funding to cover expenses as they are incurred. Projects selected for funding will be reimbursed *up to the amount approved for that project* upon proper documentation of payment for eligible expenses. For projects that are selected, up to eighty percent (80%) of project costs may be eligible for reimbursement from CMAQ moneys. Applicants are required to provide a minimum twenty percent (20%) match. Matching funds cannot be from federal funds or from in-kind services.

SECTION 3: APPLICATIONS

3.1 Project Application

To apply for an award through the DERG Program, submit one original and two copies of the attached application corresponding to your project type and return to:

Diesel Emissions Reduction Grant Program
Advanced Energy Manager
Ohio Energy Office
77 S. High St. 26th Floor
P.O. Box 1001
Columbus, OH 43216-1001

Applications must be received no later than February 1, 2008 at 5:00 p.m. The Proposals must be submitted in hard copy. No fax or e-mail submittals will be accepted. Late submittals will not be considered.

3.2 Communication and Inquiries

Prior to the deadline for submission, oral communication regarding this RFP with any of the staff or reviewers is not permitted. Applicants may submit written questions to the Ohio Energy Office until 5 p.m. EST on January 18, 2008. Questions should be submitted to the e-mail address or fax number indicated below.

Fax: (614) 466-1864

E-mail: dieselgrant@odod.state.oh.us

The OEO accepts no responsibility for faxes or e-mails that are not delivered. The questions and answers will be posted on the OEO website at <http://www.odod.state.us/cdd/oeo>.

SECTION 4: ELIGIBILITY

4.1 Project Type

Project types eligible for funding under DERG include retrofit, repower, installation of anti-idle equipment, and replacement of public fleets¹ and PPP fleets². Projects financed under this program must affect surface transportation system travel consistent with the Federal Highway Administration's (FHWA) October 31, 2006 CMAQ Program Guidance (See <http://www.fhwa.dot.gov/environment/cmaq06gd.pdf>). Projects must result in a reduction of mobile source NOx and/or PM2.5 pollutant emissions. Projects will receive additional points during the selection process if a commitment is made to conduct the majority of their activity in a US EPA designated Ohio PM2.5 and/or Ozone nonattainment area. Projects will also receive additional points if applicant or private sponsor, in the case of a PPP, makes a commitment to use biodiesel and, in the case of retrofits, if the applicant provides evidence that the changes are necessary for contract compliance.

In addition, all projects must be advertised and awarded consistent with all competitive bid standards and, with the exception of anti-idle equipment, must utilize a verified technology as determined by the United States Environmental Protection Agency (US EPA) or the California Air Resources Board (CARB) as agreed to by US EPA. Applicants must employ technologies included in the bid process as approved by ODOT and EPA as detailed in Section 5. Due to the competitiveness of the program, not all eligible projects will receive awards.

4.2 CMAQ Program Eligibility

Prior to final project selection by ODOD, the FHWA must issue a formal CMAQ program eligibility determination on each proposed project submitted by ODOT. FHWA's eligibility determinations are based on the documentation project sponsors prepare describing the project scope, its consistency with FHWA's CMAQ program eligibility guidance, and an analysis of the mobile source emission reductions that will result from project implementation.

FHWA's CMAQ program guidance is available at <http://www.fhwa.dot.gov/environment/cmaq06gm.htm>.

¹ Including but not limited to: school buses, mass transit vehicles, trash trucks, government fleets.

² Including but not limited to: long and short haul trucks, switcher locomotives and nonroad construction equipment. Nonroad vehicles or construction equipment must be working on a surface transportation construction project (Title 23) within an Ohio nonattainment or maintenance area to be eligible.

CMAQ program eligibility documentation includes the following items:

- Narrative description of the project scope
- Narrative description of project consistency with FHWA CMAQ eligibility guidance (see page 22 of CMAQ Guidelines)
- Project location
- Project cost
- Project sponsor
- Quantitative analysis of mobile source emission reductions resulting from project implementation



Adams (p)	Franklin	Mahoning
Allen	Gallia (p)	Medina
Ashtabula (p)	Geauga	Miami
Belmont	Greene	Montgomery
Butler	Hamilton	Portage
Clark	Jefferson	Scioto
Clermont	Knox	Stark
Clinton	Lake	Summit
Columbiana	Lawrence	Trumbull
Coshocton (p)	Licking	Warren
Cuyahoga	Lorain	Washington
Delaware	Lucas	Wood
Fairfield	Madison	p= partial county for Ozone

Ohio PM 2.5 Standard Area Map:

http://www.epa.state.oh.us/dapc/SIP/Nonattain/pm25_041205.pdf

Ohio 8 Hour Ozone Standard Area Map:

<http://www.epa.state.oh.us/dapc/SIP/Nonattain/Ohio8HourNonattainmentAreas.pdf>

4.3 Ineligible Costs

Ineligible costs include but may not be limited to:

- Operating expenses and fuel costs, including incremental costs of fuel
- Any project required by any law or other agreement is ineligible for DERG funding
- Work done or purchases made prior to official notice of project funding approval or for costs incurred for work or purchases not included in the approved project costs
- Installation costs incurred from in-kind services or by an unauthorized vendor

SECTION 5: PROJECT TYPES

TYPE	DESCRIPTION	VERIFICATION	MAXIMUM FUNDING
Vehicle/Machinery Replacement	Replacing old vehicles/machinery with new vehicles/ machinery that are hybrid, use biodiesel, or use alternative fuels identified in section 301 of the 1992 Energy Policy Act	Verification that old vehicles/machinery have not been returned to service	80% of incremental cost of an alternative fueled vehicle, as compared to a conventionally fueled vehicle; less core or scrap value and less other governmental financial purchase contributions
Repower (Engine Replacement)	Removing the engine from a piece of equipment and replacing it with a new, rebuilt, or remanufactured engine	Engines must meet a higher emission standard; verification that old engine remanufactured or permanently destroyed	80% of cost less core value or scrap value
Retrofit	Adding on emission reduction technologies to reduce pollution	Retrofit technology must be verified by US EPA or CARB	80% of cost
Anti-Idle	Adding anti-idle technologies to reduce pollution		80% of cost

5.1 Vehicle/Machinery Replacement

Vehicle or machinery replacement involves permanently removing an old vehicle or machinery from service, and replacing it with a new vehicle or machinery that is hybrid, uses biodiesel, or uses an alternative fuel identified in section 301 of the 1992 Energy Policy Act. Because construction equipment tends to have a very long life span, and in the past decade the federal government has implemented increasingly stringent emission standards for both on-road and off-road diesel equipment, upgrading to new model year diesel equipment has a significant air quality benefit. To be eligible for funding, technologies must be verified by US EPA or CARB as agreed to by US EPA.

In order to be eligible for funding for vehicle or machinery replacement, the award recipient must verify that the machinery to be replaced is currently in proper working order with at least five (5) years of remaining life. Additionally, the replacement vehicle/machinery must be used for the same or similar purpose as the retired equipment. Before receiving reimbursement, the award recipient must document that the engine was removed and shipped to an original equipment manufacturer (OEM) authorized remanufacturing center, or that the engine in the old equipment has been permanently destroyed so that it cannot be sold or reused. Documentation must be maintained verifying that the old machinery/vehicle has not been returned to service.

Eligible expenses for reimbursement for replacements under this program include:

- Invoice cost of an alternative fueled vehicle/machinery including delivery charges, less the cost of a conventionally fueled vehicle;
- Costs to remove and dispose of fluids in the decommissioned vehicle/machinery less any payments received for reuse of such fluids; and
- Other costs directly related to the project, subject to prior approval.

The incremental cost of the new vehicle/machinery minus any core or scrap value and any other governmental financial purchase contributions will constitute the total cost of vehicle/machinery replacement.

5.2 Equipment Repower

An equipment repower involves removing the engine from a piece of equipment and replacing it with a new, rebuilt, or remanufactured engine (including clean natural gas or propane repowers). Because new engines meet more stringent emission standards than older engines, a repower can provide a significant air quality benefit without the cost of replacing an entire piece of machinery.

To be eligible for funding, new engines must be verified by US EPA or CARB as agreed to by US EPA. Information on verified engines may be found at:

<http://www.epa.gov/otaq/retrofit/verif-list.htm>

<http://www.epa.gov/otaq/retrofit/nonroad-list.htm>

<http://www.arb.ca.gov/diesel/cv.htm>

Eligible rebuilt or remanufactured engines must use OEM components only and must be purchased from an OEM or its authorized dealers or distributors.

In order to be eligible for funding for equipment repower, the award recipient must verify that the equipment to be repowered is currently in proper working order. Before receiving reimbursement, the award recipient must document that the engine was removed and shipped to an OEM authorized remanufacturing center, or that the engine in the old equipment has been permanently destroyed so that it cannot be sold or reused.

Eligible expenses for reimbursement for repower under this program include:

- Invoice cost of new engine including delivery charges less the replaced engine's core or scrap value;
- Invoice cost of additional equipment that must be installed with the new engine;
- Costs to remove and dispose of hazardous fluids less any payments received for reuse of such fluids;
- Installation costs if installed by an authorized outside vendor;
- Reengineering costs by an authorized outside vendor, if the vehicle or equipment must be modified for the new engine to fit; and
- Other costs directly related to the project, subject to prior approval.

The cost of purchasing and installing the new engine and required equipment minus the core value will constitute the cost of the equipment repower.

5.3 Equipment Retrofit

An equipment retrofit involves installation of an emission-reduction technology in an existing piece of equipment. To be eligible for funding, retrofit technologies must be verified by US EPA or CARB as agreed to by US EPA. Information on verified technologies may be found at:

<http://www.epa.gov/otaq/retrofit/verif-list.htm>

<http://www.epa.gov/otaq/retrofit/nonroad-list.htm>

<http://www.arb.ca.gov/diesel/cv.htm>

Eligible expenses for reimbursement for retrofits under this program include:

- Invoice cost of retrofit kit or add-on device including delivery charges;
- Invoice cost of additional equipment that must be installed;
- Installation costs if installed by an authorized outside vendor;
- Reengineering costs by an authorized outside vendor, if the vehicle or equipment must be modified for the retrofit less any scrap or resale value; and
- Other costs directly related to the project, subject to prior approval.

5.4 Anti-Idle Equipment

Anti-idle equipment consists of installation of idling reduction technologies in order to reduce pollution. Information on some available but **unverified** technologies may be found at:

<http://www.epa.gov/smartway/idlingalternatives.htm>

Unverified technologies that have provided demonstrated emissions reductions may be eligible under this RFP upon approval by the FHWA as submitted by ODOT. Applicants must submit information that supports the emissions reduction benefits of unverified technologies.

Current available but unverified technologies include but are not limited to:

- Auxiliary power units (APU)
- Battery powered HVAC units (BP HVAC)
- Direct fired heater/ bunk heater unit (DFH)
- Energy recovery systems (ERS)

Eligible expenses for reimbursement for anti-idle equipment under this program include:

- Invoice cost of anti-idle kit or add-on device including delivery charges;
- Installation costs if installed by an authorized outside vendor;
- Reengineering costs by an authorized outside vendor, if the vehicle or equipment must be modified for the anti-idle technology; and
- Other costs directly related to the project, subject to prior approval.

SECTION 6: PROJECT SELECTION CRITERIA

The Committee will consider the following criteria in selecting projects for funding:

- Estimated emissions reductions over the lifetime of the chosen emission reduction strategy.
- Cost-effectiveness (e.g., cost per kilogram or cost per ton) of emission reductions to be achieved.
- Overall cost-effectiveness of the project (total project cost); however, proposals should include the cost-effectiveness of specific equipment proposed for retrofit.

- Commitments to operate upgraded equipment a majority of the time in an eligible nonattainment area (listed on page 4) will be awarded more points.
- Commitment to use upgraded equipment in the nonattainment areas (listed on page 4) for a longer period of time will be awarded more points.
- Greater matching funds as a percentage of the costs will be awarded more points.
- Evidence of commitment by public entity or sponsor to use biodiesel or other alternative fuels in diesel engine fleets will be awarded more points.

The Committee reserves the right to reject all applications and make no awards under this program or make fewer awards than anticipated or to fund partial projects.

SECTION 7: PROPOSAL REVIEW CRITERIA

The evaluation of applications to the DERG will consider various components of the submittal and the nature of the project itself. As described below, the reviewers will evaluate the completeness of the application and the potential costs and benefits associated with the specific proposal. While this program is open to projects which can benefit both nonattainment and maintenance areas, criterion "e" and "i" described below assign additional points for projects reducing emissions in the areas with the worst air quality.

The minimum requirements are that equipment is operated in nonattainment or maintenance areas for a minimum sixty-five percent (65%) of the time and that PPPs are documented. If this information is not supplied the application will not be scored.

For PPPs, partnerships must have a legal, written agreement in place between the public agency and the private or non-profit entity before a CMAQ-funded project may be implemented. These agreements should be developed under relevant State contract law and should specify the intended use for CMAQ funding; the roles and responsibilities of the participating entities; and how the disposition of land, facilities, and equipment will be carried out should the original terms of the agreement be altered (e.g., due to insolvency, change in ownership, or other changes in the structure of the PPP). If an applicant is a PPP and does not provide evidence of the required agreement that the application will not be scored.

The evaluation of eligible applications will be based on the following parameters:

- Application completeness:** While general information (e.g., number, type and age of vehicles) is acceptable, specific information (e.g., vehicle VIN) assists in the confirmation of emission reductions as well as provides the basis for more precise project tracking, or project PM 2.5 and/or Knox emission reduction analyses, etc. Greater points will be allocated to those applications with greater detail. **(0-5 Points)**
- Annual emission reductions of particulate matter and/or oxides of nitrogen:** The project score will be based on ranking NOx and PM 2.5 reductions separately. It costs more to reduce a ton of PM than it does to reduce a ton of NOx. Moreover, the health benefits of reducing a ton of PM are significantly greater than the benefits of reducing an equal amount of NOx. There is a potential for ten points related to NOx reductions and a potential for twenty points related to PM reductions. **(0-30 Points)**
- Cost effectiveness of the emission reductions:** The total reimbursable cost requested in the application will be divided by the estimated total emission reduction of PM and NOx to determine the 'cost effectiveness' of the project, in dollars per ton of reduced emissions. The applications will be ranked on cost effectiveness and the project score

based on that ranking. The total requested dollar amount will be divided by the total of PM and NOx emission reductions to determine the overall cost effectiveness. **(0-10 points)**

- d). **Percent of funds matched on the project:** The minimum is twenty percent (20%) and will receive no points. Greater points will be awarded to those who provide a higher percent matching funds; there is no maximum for matching funds. **(0 – 10 Points)**
- e). **Percent of emission reductions that will occur in nonattainment areas:** Emission reductions would be more beneficial if realized in the state's current PM and Ozone nonattainment areas (nonattainment maps are available at <http://www.epa.state.oh.us/dapc/SIP/Nonattain/nonattain.html>).

Accordingly, this section will only provide points for projects in nonattainment areas. The percent of the emission reductions that can be expected to occur in a nonattainment area will be scored as follows:

- i. If the area is nonattainment for both PM and Ozone, there is a maximum of 20 points available. (ex., seventy percent (70%) in a PM nonattainment area = 7 points. 100 percent (100%) in an area that is nonattainment for both PM and Ozone, 20 points). **(0-20 Points)**.
 - ii. If the applicant commits to utilizing the improved equipment in a nonattainment area for greater than the initial five years, additional points are available. For every ten percent (10%) of years six through ten that the affected vehicles are utilized within a PM or Ozone nonattainment area the application will be given **one point**. A maximum of **50 Points** are available.
- f). **Project duration:** Evidence of commitment to continue operations in a nonattainment area after the initial five year implementation period will receive additional points. Projects will be awarded two points per year after the first five years. A maximum of **10 points** are available. No points are given for the first five years.
- g). **Use of biodiesel:** Evidence of commitment by the public entity or public sponsor to use biodiesel in a diesel engine fleet(s) will receive **Five Points**.
- h). **Anti-idle equipment:** Evidence of necessary installation of anti-idle equipment in order to facilitate existing contract compliance will receive **10 Points**.
- i). **Emission reductions near a PM 2.5 hot spot:** Regional air quality modeling for future PM 2.5 concentrations in Ohio indicates that significant improvement will occur throughout the state due to regional control measures such as the Clean Air Interstate Rule. There are, though, three areas within the state that are projected to have the highest residual concentrations of PM 2.5. These three areas are geographically localized and are impacted by local transportation sources, including diesel from on-road, off-road and rail sources. (Applications will receive **6 Points** if a majority of the equipment use is within the white zone; or **3 Points** if within the yellow zone but outside of the white zone). The three areas are:

1. **Mingo Junction near the Wheeling Pittsburgh Steel facility**
2. **The Cleveland 'Flats' area**
3. **The I-75 corridor in Hamilton County near Ivorydale and Saint Bernard**

Maps of these areas are in Attachment F.

SECTION 8: GENERAL REQUIREMENTS

8.1 Cost of proposal

The cost of preparing and submitting proposals in response to this RFP are solely the responsibility of the applicant. The program shall not reimburse or contribute, in any way, to the cost of the preparation and delivery of the proposal.

8.2 Confidentiality

All information submitted in response to this RFP shall be public information unless a statutory exception exists which would thereby determine that the information cannot be released to the public. Any information submitted with the proposal, which the applicant feels is a trade secret must be conspicuously designated as such and shall be treated accordingly if the information is determined to be a trade secret under the laws of the State of Ohio. It is the applicant's sole duty to identify and mark such passages it deems trade secrets. All submitted proposals will become the property of OEO and any information submitted in response to this proposal will not be returned to the applicant.

SECTION 9: APPENDICES

- Appendix A: Diesel Emissions Reduction Anti-Idle Application
- Appendix B: Diesel Emissions Reduction Equipment Replacement Application
- Appendix C: Diesel Emissions Reduction Equipment Repower Application
- Appendix D: Diesel Emissions Reduction Equipment Retrofit Application
- Appendix E: Required Forms
- Appendix F: PM 2.5 Hot Spot Maps

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2003 MAY 29 PM 1:41

RESOLUTION NO. 77842 C.M.S.



RESOLUTION ESTABLISHING "GREEN FLEET" POLICIES AND PROCEDURES TO REDUCE GREENHOUSE GAS EMISSIONS AND IMPROVE AIR QUALITY IN THE CITY OF OAKLAND, AND TO INCREASE THE ENERGY EFFICIENCY OF THE CITY'S FLEET

WHEREAS, the City can play a role in improving air quality, and reducing greenhouse gas emissions by adopting policies and practices that diminish City fleet emissions; and

WHEREAS, the establishment of a green fleet policy is a result of the leadership of the American Lung Association, Vice Mayor Nancy Nadel, and Public Works Agency Equipment Services Manager Bruce Saunders; and

WHEREAS, the Mayor has committed to converting the City's automotive fleet to natural gas or other forms of alternative fuel; and

WHEREAS, air pollution is a major public health concern in Oakland; and

WHEREAS, a recent federal study found that air pollution in the four Bay Area counties could cause 208 additional cases of cancer for every million residents, which is 208 times greater than the acceptable risk of cancer caused by air pollution as established by the Clean Air Act of 1990; and

WHEREAS, motor vehicle use is the single largest source of air pollution in the Bay Area, and the top three contributors to potential cancer risk come primarily from motor vehicles; and

WHEREAS alternative fuel vehicles produce significantly lower amounts of greenhouse gas and other emissions; and

WHEREAS, the City faces high and fluctuating gasoline prices; and

WHEREAS, the City of Oakland recognizes that by improving the energy efficiency of its fleet, savings may result in the long term, and

WHEREAS, 75 of the 264 automobiles in the City's non-emergency fleet are powered by compressed natural gas, and these vehicles over time have proven to be cost effective and easily integrated into the City's fleet operations; and

WHEREAS, the City currently replaces 3 - 5% of its gasoline-powered fleet annually with alternative fuel vehicles; and

WHEREAS, the City of Oakland wishes to exercise its power in the marketplace by ensuring that purchases and expenditures of public monies are made in a manner consistent with the desire to reduce greenhouse gas emissions; and

WHEREAS, the City, as a public body, has an opportunity to provide a positive example to its citizens about environmental actions such as recycling, and using environmentally sound and sustainable technologies and practices; and

WHEREAS, the City's long-term intent is to have a fleet that is 100% clean and green, which means using clean fuels and vehicles that are the most fuel efficient low emission vehicles available that meet the business needs of the City; and

WHEREAS, clean-burning alternative fuel vehicles can be purchased without exceeding the existing Equipment Services budget; now, therefore, be it

RESOLVED, that the City of Oakland will develop and implement "Green Fleet" administrative policies that address the management, operation and procurement of fleet vehicles in order to continue improving the energy efficiency of its fleets, reduce emissions from the fleet, and increase the capacity of the fleet to save the City money; and be it

FURTHER RESOLVED, that the City of Oakland will develop performance measures related to fuel expenditures and vehicle emissions, to help monitor how effective the City's efforts have been; and be it

FURTHER RESOLVED, that the City of Oakland will purchase vehicles powered by alternative fuel sources for its non-emergency automotive fleet whenever possible without exceeding the amount budgeted for vehicle acquisitions; and be it

FURTHER RESOLVED, that the City of Oakland will continue to actively pursue federal, state, and other incentive programs related to clean air and energy efficiency.

In Council, Oakland, California, JUN 03 2003, 2003


Passed By the Following Vote:

AYES- BROOKS, BRUNNER, CHANG, NADEL, QUAN, REID, WAN, AND
PRESIDENT DE LA FUENTE

NOES-

ABSENT-

ABSTENTION-

ATTEST 
CEDA FLOYD
City Clerk and Clerk of the Council
of the City of Oakland, California

Green Fleet Policy Ordinance

Section 1 Basis for ordinance

1. The total energy bill in ____ for the City and/or County of ____ was \$ ____ million and is projected to increase by ____ percent to about \$ ____ million by ____.
2. Public agencies and/or departments in the City and/or County of ____ operate vehicle fleets that account for about ____ percent of the City and/or County's total energy bill.
3. The City and/or County of ____ recognizes that energy use associated with the operation of its motor vehicle fleets exacerbates local air quality problems and results in greenhouse gas emissions that contribute to global climate change.
4. The City and/or County of ____ recognizes that its agencies and/or departments have a significant role to play in improving local air quality and reducing greenhouse gas emissions by improving the energy efficiency of its fleets and reducing emissions from fleet operations.
5. The City and/or County of ____ recognizes that by improving the energy efficiency of its fleets significant monetary savings will result in the long term.
6. The City and/or County of ____ wishes to exercise its power as a participant in the marketplace to ensure that purchases and expenditures of public monies are made in a manner consistent with the policy of improving local air quality and reducing greenhouse gas emissions.
7. The City and/or County of ____ wishes to establish a "Green Fleets" policy addressing the management, operation, and procurement of fleet vehicles under the control of the City and/or County of ____ in order to improve the energy efficiency of its fleets and reduce emissions from its fleets.

Section 2 Definitions

1. "Passenger Vehicle" means any motor vehicle designed primarily for the transportation of persons and having a design capacity of twelve persons or less.
2. "Light Duty Truck" means any motor vehicle, with a manufacturer's gross vehicle weight rating of 6,000 pounds or less, which is designed primarily for purposes of transportation of property or is a derivative of such a vehicle, or is available with special features enabling off-street or off-highway operation and use.
3. "Medium Duty Vehicle" means any vehicle having a manufacturer's gross vehicle weight rating of 14,000 pounds or less and which is not a light-duty truck or passenger vehicle.
4. "Heavy Duty Vehicle" means any motor vehicle, licensed for use on roadways, having a manufacturer's gross vehicle weight rating greater than 14,000 pounds.
5. "Zero-Emission Vehicle" means (i) any motor vehicle that produces zero exhaust emissions of all criteria pollutants, as defined by 35 Illinois Administrative Code §241.104 (or precursors thereof) under any and all possible operational modes and conditions or (ii) any vehicle that has been certified as a zero-emission vehicle.
6. "Inherently Low Emission Vehicle" means any motor vehicle that meets or exceeds the standards set forth in 35 Illinois Administrative Code §241.104 for Inherently Low Emission Vehicles (ILEV).

7. "Ultra Low Emission Vehicle" means any motor vehicle that meets or exceeds the standards set forth in 35 Illinois Administrative Code §241.104 for Ultra Low Emission Vehicles (ULEV).
8. "Low Emission Vehicle" means any motor vehicle that meets or exceeds the standards set forth in 35 Illinois Administrative Code §241.104 for Low Emission Vehicles (LEV).
9. "Electric Drivetrain Vehicle" means any vehicle that employs an electric drivetrain and motor as its primary means of motive force. The vehicle can be powered by fuel cells, electric batteries, petroleum- or alternatively-fueled electric generators, or any combination thereof.
10. "Alternative Fuel" means any fuel that is substantially non-petroleum in nature, is not gasoline or diesel, and is defined as an alternative fuel by the U.S. Department of Energy through the authority granted by the Energy Policy Act of 1992.
11. "Bi-Fuel Vehicle" means any motor vehicle designed to operate on two (2) fuels, one of which is an alternative fuel, but not on a mixture of fuels.

Section 3 Fleet Inventory

1. In order to establish a baseline of data so that the "Green Fleets" policy can be established, implemented, and monitored each department and/or agency fleet manager shall develop an inventory and analysis of the fleet vehicles within that department or agency as of the close of fiscal year _____. This inventory shall include:
 - a. Number of vehicles classified by the model year, make, model, engine size, vehicle identification number (VIN), and drivetrain type (2-wheel drive, 4-wheel drive), and the rated vehicle weight and classification (light-duty, medium-duty, heavy-duty);
 - b. Miles per gallon (or gallon equivalent) per vehicle;
 - c. Type of fuel (or power source, e.g., electricity) used;
 - d. Average cost per gallon (or gallon equivalent) of fuel;
 - e. Average fuel cost per mile;
 - f. Annual miles driven per vehicle;
 - g. Total fuel (or power) consumption per vehicle;
 - h. Vehicle function (i.e. the tasks associated with the vehicle's use);
 - i. Estimated emissions per mile for each pollutant by vehicle type/class based on EPA tailpipe standards for the following: Carbon Monoxide (CO), Nitrogen Oxides (NOx), and Particulate Matter (PM).
 - j. Carbon Dioxide (CO₂) calculations based on gallons (or gallon equivalent) of fuel consumed.
2. Fleet managers from City and/or County departments and/or agencies shall be responsible for providing these baseline data in a reliable and verifiable manner.

Section 4 "Green Fleets" Policy

1. It shall be the policy of the City and/or County of _____ to purchase, lease, or otherwise obtain the most energy efficient vehicles possible that meet the operational needs of the department or agency for which the vehicles are intended.

2. It shall be the policy of the City and/or County of _____ to manage and operate its fleets in a manner that is energy efficient and minimizes emissions.
3. The City and/or County of _____ shall decrease energy expenditures for its vehicle fleets by a total of ____ percent by the year ____, adjusting for inflation and relative to the baseline data established for year ____ through the fleet inventory taken in compliance with Section 3 above.
4. The City and/or County of _____ shall reduce the emission of carbon dioxide (CO₂) from its fleet by a total of _____ percent by the year ____, relative to the baseline data established for year _____ in the fleet inventory taken in compliance with Section 3 above.

Section 5 "Green Fleets" Policy Strategies

1. In order to accomplish the goals stated in Section 4 above, the City and/or County of _____ shall modify procurement procedures, implement policies, conduct reviews, and take other actions as outlined in sub-sections (2) through (13) below.
2. Include a minimum efficiency standard in miles per gallon (or gallon equivalent) for each vehicle class for which the City and/or County has a procurement specification for and include such a standard in any new vehicle procurement specification.
3. Include a minimum emissions standard for each vehicle class for which the City and/or County has a procurement specification for and include such a standard in any new vehicle procurement specifications. This emission standard shall be based on Illinois EPA designations of LEV, ILEV, ULEV, and ZEV.
4. Ensure that a minimum of ____ percent of the passenger vehicles purchase, leased, or otherwise obtained within a fiscal year by the City and/or County of ___ are zero-emission vehicles. Zero-emission vehicles purchase, leased, or otherwise obtained that quantify in another vehicle weight class may, for the purposes of this requirement, qualify as a passenger vehicle ZEV on a one vehicle for one vehicle basis.
5. Review all vehicle procurement specifications and modify them as necessary to ensure that the specifications are written in a manner flexible enough to allow the purchase or lease of alternatively fueled or electric drivetrain vehicles.
6. Review every new vehicle purchase request and modify them as necessary to ensure that the vehicle class to which the requesting vehicle belongs is appropriate for the duty requirements that the vehicle will be called upon to perform.
7. Review the fleet inventory taken in Section 3 above to identify older vehicles that are used infrequently (or not at all), as well as those vehicles that are disproportionately inefficient, and schedule their elimination or replacement.
8. Implement an anti-idling policy prohibiting City or County employees from idling City or County owned or operated vehicles for an excessive period of time.
9. Implement an incentive program for City or County employees to drive efficiently and utilize efficient vehicle operating techniques.
10. Implement an employee fleet trip reduction program by purchasing transit passes for all City or County employees and establishing reimbursement procedures for City or County employees that use transit or bike instead of using fleet vehicles for work-related travel.

11. Prohibit the use of non-alternative fuels in bi-fuel vehicles for more than ___ percent of the time that they are operated within the City or County.
12. Maintain vehicle at optimal efficiency by reviewing current maintenance schedule for all fleet vehicles and increasing maintenance wherever cost-effective benefits will accrue as a result.
13. Purchase route optimization computer software and train City or County employees to use the software to utilize City or County vehicles in the most efficient manner possible.

Section 6 Monitoring of the "Green Fleets" Policy

1. In order to ensure compliance with the goals outlined in Section 4 above, as well as to monitor the actions outlined in Section 5 above, a "Green Fleets" Review Committee is to be formed. The Office of the Mayor/County Executive will appoint the members of this review committee, with one representative from each of the following Departments and/or Agencies:
 - a. Budget/Fiscal Planning Department/Agency
 - b. Energy Department/Agency
 - c. Public Works Department/Agency
 - d. Transportation Department/Agency
 - e. Public Health Department/Agency
 - f. Purchasing Department/Agency
 - g. Environmental Department/Agency
 - h. Public Safety Department/Agency
2. The "Green Fleets" Review Committee shall also include a City or County Council Member, as determined by the City or County Council. The Council Member will be a non-voting member of the Review Committee.
3. On an annual basis, Department or Agency fleet managers shall submit a draft "Green Fleets" plan to the Green Fleets Review Committee detailing how vehicle procurement, fleet operations, and employee travel activity are intended to conform to the "Green Fleets" policy and the "Green Fleets" strategies outlined in Section 5. The "Green Fleets" plan will also include, as an appendix or addendum, an updated fleet vehicle inventory list in the same format as the fleet vehicle inventory completed in Section 3.
4. Each "Green Fleet" plan shall be reviewed by the Review Committee for overall conformity with the "Green Fleets" policy and for completeness in addressing the "Green Fleets" strategies outlined in Section 5. Inadequate plans shall be returned to the submitting Department or Agency for revisal and discussion with the Review Committee.
5. Any appeal of the Review Committee's decisions must be made in writing to the Committee accompanied by appropriate documentation. Valid reasons for an appeal include unavailability of appropriate fleet vehicles, incremental costs in excess of the full life-cycle savings that would accrue from the acquisition of a given vehicle, and the primacy of a given vehicle's mission to public safety or a similar area judged to be applicable by the Review Committee.

6. Approval of vehicle procurement requests for each Department or Agency is contingent upon a satisfactory recommendation from the "Green Fleets" committee as to the merit of the Department's or Agency's "Green Fleets" plan.
7. The most innovative "Green Fleets" plan implemented shall receive recognition in an annual award to the Department or Agency submitting the winning plan. The "Green Fleets" review committee shall determine the recipient of the award during the annual "Green Fleets" plan review process.

Please post and distribute to employees that do not have access to email.

**DEPARTMENT OF PUBLIC WORKS
MINNEAPOLIS, MINNESOTA
MEMORANDUM**

TO: Public Works Employees

FROM: Klara A. Fabry
Director of Public Works

DATE: May 9, 2005

SUBJECT: Public Works Vehicle Idling Policy and Guidelines for Seasonal Idling Durations

The Public Works Management Team and I have adopted a Department-wide policy to reduce unnecessary idling of Public Works vehicles. Engine idling should only occur if it is a business necessity or requirement.

By adopting this Vehicle Idling Policy, Public Works is demonstrating environmental stewardship. The benefits of reduced engine idling are well known: reduced fuel use and related costs, reduced vehicle wear, better air quality and better public image. Your cooperation is needed for the success of this policy. Public Works will be working closely with its workforce and unions to clarify practices and educate employees. Contact your Division Director with any questions. Thank you.

Public Works Vehicle Idling Policy:

Idling of vehicles wastes fuel, creates pollution and causes premature engine wear. It is every Public Works employee's responsibility to minimize fleet operating costs while reducing harmful effects to the environment. Violators are subject to disciplinary action.

City fleet vehicles will not be parked with the engine running unless it is essential for performance of work. Exceptions are during an initial engine warm-up period and during periods of extreme cold or hot weather. If engines must be left operating for any reason, the operator shall remain with the unit.

Guidelines for Seasonal Idling Durations

Due to the diverse inventory of vehicles and equipment, please follow the attached idle duration chart that applies to specific fleet items within your operation.

Units equipped with gasoline engines

1.00 Cold Morning Starts - (vehicles parked outside)

<u>Temperatures</u>	<u>Idle time</u>	<u>Block heater</u>
95 to 32 deg. F	No Idling - check vehicle - drive	not plugged in
31 to -5 deg. F*	1 to 2 min. - check vehicle – slowly drive	plugged in previous night
-4 to -30 deg. F*	3 to 10 min. - check vehicle – slowly drive	plugged in previous night

* add 5 minutes to times, if engine block heater is not plugged in.

1.01 No idle warm up time shall occur on automotive units at temperatures above 32 degree Fahrenheit and also units parked in an indoor garage/shop.

2.00 Mid Day Use (after initial warm up)

2.01 Depending on outside temperatures and the length of time a vehicle has been shut off, it may become necessary to restart it to allow proper engine warm up. The idle warm up time shall never exceed the times listed for cold starts noted above.

2.02 If a vehicle is to be used as a remote lunch room, left unattended (but locked) except for work breaks and the outside temperature necessitates (below 45 degrees) the vehicle to be warmed up, restart the vehicle no more than 15 minutes prior to the work break, then shut off after each use.

2.03 At any temperature, if it is necessary to use a vehicle's rotating amber beacon for continuous periods of time exceeding 20 minutes in length and the vehicle does not have a secondary deep-cycle battery for the beacon, keep the engine idling. This will ensure a constant state of charge to the vehicle's battery / starting system.

2.04 At any temperature, once a vehicle has been cold started, and the vehicle will be left unattended for a period of 2 minutes or longer, shut the engine off. Restart the engine upon your return to the vehicle.

Units equipped with diesel engines

Vehicles or equipment with diesel engines must be treated differently from their automotive counterparts.

3.00 Cold Morning Starts - (equipment parked outside)

<u>Temperature</u>	<u>Idle time</u>	<u>Block heater</u>
95 to 40 deg. F	5 to 10 min. - check vehicle - drive	not plugged in
40 to -5 deg. F	10 to 15 min. - check vehicle - drive	plugged in previous night
-4 to -30 deg. F*	15 to 30 min. - check vehicle - drive	plugged in previous night

* Rule of Thumb - for every degree Fahrenheit of temperature below -16 deg. F, idle unit for 1 minute. I.e. - outside temperature is -19 degree Fahrenheit - cold morning idle time would be 19 minutes.

3.01 At temperatures of 32 degrees Fahrenheit and lower the initial start up procedures should conform to manufactures specifications and run at the lowest idle.

3.02 After 5 minutes of the engine being at the lowest idle, the operator should throttle up the engine's R.P.M. (1,000 to 1,200 rpm). The higher idle will seal the engine's turbo rings, eliminating the engine oil from clogging up the inside of turbo charger.

3.03 At this point the unit's hydraulic system should be cycled. This is achieved by fully extending and contracting each and every hydraulic cylinder. By completing this action the cold oil is warmed up, thus reducing the impact of cold, thick, oil, shock loading the unit's hydraulic pump.

3.04 Operators shall only put a piece of equipment to work if the desired idle warm up time has been achieved, vehicle check completed and the hydraulic system cycled.

3.05 Mid Day Use (after initial warm up)

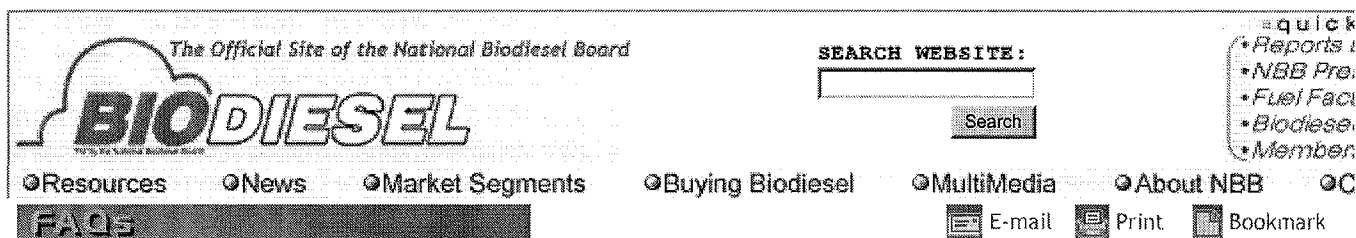
A diesel unit that is not going to be worked for short periods of time should be left to idle - in all temperatures, with some limitations:

<u>Interval</u>	<u>Result</u>
Up to 15 minutes not in use	let it run
<u>Over</u> 15 minutes not in use	shut the engine off

3.06 Once the operator determines the diesel-equipped unit is to be shut off, he or she must allow the engine to slow-idle for 1 to 2 minutes, this allows for a sufficient cool down period.

Idling in hot weather

- 4.01 In very hot weather, when heat stress due to temperature is likely and air-conditioned vehicles are needed to be used as relief stations, engine idling is permitted only when the operator stays in the vehicle.
- 4.02 If a vehicle is to be used as a remote lunch room, left unattended (but locked) except for work breaks and the outside temperature necessitates (above 80 degrees) the vehicle to be cooled, restart the vehicle no more than 15 minutes prior to the work break, then shut it off after each use.



The Official Site of the National Biodiesel Board

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FAQS

What is Biodiesel?

Biodiesel is the name of a clean burning alternative fuel, produced from domestic, renewable resources. Biodiesel contains no petroleum, but it can be blended at any level with petroleum diesel to create a biodiesel blend. It can be used in compression-ignition (diesel) engines with little or no modifications. Biodiesel is simple to use, biodegradable, nontoxic, and essentially free of sulfur and aromatics.

Is Biodiesel the same thing as raw vegetable oil?

No! Biodiesel is produced from any fat or oil such as soybean oil, through a refinery process called transesterification. This process is a reaction of the oil with an alcohol to remove the glycerin, which is a by-product of biodiesel production. Fuel-grade biodiesel must be produced to strict industry specifications (ASTM D6751) in order to insure proper performance. Biodiesel is the only alternative fuel to have fully completed the health effects testing requirements of the 1990 Clean Air Act Amendments. Biodiesel that meets ASTM D6751 and is legally registered with the Environmental Protection Agency is a legal motor fuel for sale and distribution. Raw vegetable oil cannot meet biodiesel fuel specifications, it is not registered with the EPA, and it is not a legal motor fuel.

For entities seeking to adopt a definition of biodiesel for purposes such as federal or state statute, state or national divisions of weights and measures, or for any other purpose, the official definition consistent with other federal and state laws and Original Equipment Manufacturer (OEM) guidelines is as follows:

Biodiesel is defined as mono-alkyl esters of long chain fatty acids derived from vegetable oils or animal fats which conform to ASTM D6751 specifications for use in diesel engines. Biodiesel refers to the pure fuel before blending with diesel fuel. Biodiesel blends are denoted as, "BXX" with "XX" representing the percentage of biodiesel contained in the blend (ie: B20 is 20% biodiesel, 80% petroleum diesel).

Is biodiesel used as a pure fuel or is it blended with petroleum diesel?

Biodiesel can be used as a pure fuel or blended with petroleum in any percentage. B20 (a blend of 20 percent by volume biodiesel with 80 percent by volume petroleum diesel) has demonstrated significant environmental benefits with a minimum increase in cost for fleet operations and other consumers.

Is it approved for use in the US?

Biodiesel is registered as a fuel and fuel additive with the Environmental Protection Agency (EPA) and meets clean diesel standards established by the California Air Resources Board (CARB). Neat (100 percent) biodiesel has been designated as an alternative fuel by the Department of Energy (DOE) and the US Department of Transportation (DOT).

How much biodiesel has been sold in the US?

The National Biodiesel Board has released the following sales volume estimates for the US:

2005 -- 75 million gallons
2004 -- 25 million gallons
2003 -- 20 million gallons
2002 -- 15 million gallons
2001 -- 5 million gallons
2000 -- 2 million gallons
1999 -- 500,000 gallons

How do biodiesel emissions compare to petroleum diesel?

Biodiesel is the only alternative fuel to have fully completed the health effects testing requirements of the Clean Air Act. The use of biodiesel in a conventional diesel engine results in substantial reduction of unburned hydrocarbons, carbon monoxide, and particulate matter compared to emissions from diesel fuel. In addition, the exhaust emissions of sulfur oxides and sulfates (major components of acid rain) from biodiesel are essentially eliminated compared to diesel.

Of the major exhaust pollutants, both unburned hydrocarbons and nitrogen oxides are ozone or smog forming precursors. The use of biodiesel results in a substantial reduction of unburned hydrocarbons. Emissions of nitrogen oxides are either slightly reduced or slightly increased depending on the duty cycle of the engine and testing methods used. Based on engine testing, using the most stringent emissions testing protocols required by EPA for certification of fuels or fuel additives in the US, the overall ozone forming potential of the speciated hydrocarbon emissions from biodiesel was nearly 50 percent less than that measured for diesel fuel.

Can biodiesel help mitigate "global warming"?

A 1998 biodiesel lifecycle study, jointly sponsored by the US Department of Energy and the US Department of Agriculture, concluded biodiesel reduces net CO² emissions by 78 percent compared to petroleum diesel. This is due to biodiesel's closed carbon cycle. The CO² released into the atmosphere when biodiesel is burned is recycled by growing plants, which are later processed into fuel. Is biodiesel safer than petroleum diesel? Scientific research confirms that biodiesel exhaust has a less harmful impact on human health than petroleum diesel fuel. Biodiesel emissions have decreased levels of polycyclic aromatic hydrocarbons (PAH) and nitrated PAH compounds that have been identified as potential cancer causing compounds. Test results indicate PAH compounds were reduced by 75 to 85 percent, with the exception of benzo(a)anthracene, which was reduced by roughly 50 percent. Targeted nPAH compounds were also reduced dramatically with biodiesel fuel, with 2-nitrofluorene and 1-nitropyrene reduced by 90 percent, and the rest of the nPAH compounds reduced to only trace levels.

Does biodiesel cost more than other alternative fuels?

When reviewing the high costs associated with other alternative fuel systems, many fleet managers have determined biodiesel is their least-cost-strategy to comply with state and federal regulations. Use of biodiesel does not require major engine modifications. That means operators keep their fleets, their spare parts inventories, their refueling stations and their skilled mechanics. The only thing that changes is air quality.

Do I need special storage facilities?

In general, the standard storage and handling procedures used for petroleum diesel can be used for biodiesel. The fuel should be stored in a clean, dry, dark environment. Acceptable storage tank materials include aluminum, steel, fluorinated polyethylene, fluorinated polypropylene and teflon. Copper, brass, lead, tin, and zinc should be avoided.

Can I use biodiesel in my existing diesel engine?

Biodiesel can be operated in any diesel engine with little or no modification to the engine or the fuel system. Biodiesel has a solvent effect that may release deposits accumulated on tank walls and pipes from previous diesel fuel storage. The release of deposits may clog filters initially and precautions should be taken. Ensure that only fuel meeting the biodiesel specification is used.

Where can I purchase biodiesel?

Biodiesel can be made available anywhere in the US. The National Biodiesel Board (NBB) maintains a list of registered fuel marketers. A current list is available on the biodiesel web site at www.biodiesel.org or by calling the NBB at (800) 841-5849.

Who can answer my questions about biodiesel?

The NBB maintains the largest library of biodiesel information in the US. Information can be requested by visiting the biodiesel web site at www.biodiesel.org, by emailing the NBB at info@nbb.org, or by calling NBB's toll free number (800) 841-5849.

For more information on the general and technical definitions of biodiesel, the distinction between the two and why those distinctions are important, [click here.](#)

MARKET SEGMENTS

- Electrical Generation
- Farming
- Fleets
- General Interest
- Heating Oil
- Marine
- Mining
- Passenger Vehicles
- Premium Diesel
- School Buses
- Transit

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