

2015 CLEAN FLEET POLICY

CLEAN FLEET POLICY

WHEREAS, the North Central Texas Council of Governments (NCTCOG) has been designated as the Metropolitan Planning Organization (MPO) for the Dallas-Fort Worth (DFW) Metropolitan Area by the Governor of Texas and in accordance with federal law; and,

WHEREAS, the Regional Transportation Council (RTC), comprised primarily of local elected officials, is the regional transportation policy body associated with NCTCOG and has been and continues to be the regional forum for cooperative decisions on transportation; and,

WHEREAS, NCTCOG has been designated as a Clean Cities Coalition for the DFW region by the US Department of Energy in accordance with federal law and the NCTCOG Executive Board authorized NCTCOG to serve as the host organization for the DFW Clean Cities (DFWCC) Coalition and its efforts; and,

WHEREAS, the U.S. Environmental Protection Agency (EPA) has designated the DFW area as a nonattainment area for the pollutant ozone, and air quality impacts the public health of the entire region; and,

WHEREAS, emissions inventories from the Texas Commission on Environmental Quality (TCEQ) indicate that in 2012, approximately 76 percent of the nitrogen oxides (NO_x) emissions and 25 percent of the volatile organic compounds (VOC) emissions in the DFW ozone nonattainment area are attributable to mobile sources; and,

WHEREAS, the RTC is responsible for transportation conformity; and the Clean Air Act Amendments of 1990 require that transportation plans and improvement programs in air quality nonattainment areas conform to the adopted State Implementation Plan (SIP); and,

WHEREAS, the RTC has adopted a resolution supporting the adoption and implementation of a Clean Fleet Policy by organizations with fleet operations in the DFW area; and reserves all future vehicle funding for entities that adopt and comply with a policy consistent with the provisions outlined below,

WHEREAS, the <adopting entity> will set goals and provide workable, cost-effective solutions to improve air quality and reduce petroleum consumption in the DFW area, and implement those measures as practicable.

NOW, THEREFORE, BE IT HEREBY RESOLVED:

Section 1. <adopting entity> will reduce emissions from fleet activities by performing the following actions as practicable:

- 1.1** Implement an idle-reduction policy/standard operating procedure (SOP) that applies to all of the entity's vehicles and equipment, except where exempted as determined by <adopting entity>; communicate idle-reduction expectations to staff, vendors and visitors; and utilize idle-reduction technology.
- 1.2** Maximize use of vehicles and equipment with the lowest emissions wherever possible.

- 1.3 Ensure all conversions are EPA and/or California Air Resources Board (CARB) certified; ensure that aftermarket technologies are EPA and/or CARB verified, or are listed as an emerging technology by the EPA or a state environmental agency; and both conversions and aftermarket technologies are compatible with Texas Low Emission Diesel Program (TxLED) requirements.
- 1.4 Establish a plan to modify non-essential fleet activities on high ozone days to reduce air quality impacts.
- 1.5 Implement vehicle and equipment disposal strategies which minimize negative impacts on air quality.
- 1.6 Implement vehicle and equipment emissions inspection practices which meet or surpass the standards required by statute, including prompt resolution of any illuminated malfunction indicator lamp (MIL).

Section 2.

<adopting entity> **will reduce overall fuel consumption, particularly the use of conventional petroleum fuels, by performing the following actions as practicable:**

- 2.1 Pursue low-emission vehicles and equipment for acquisition, with an emphasis on alternative fuel, advanced technology, and/or SmartwaySM certified vehicles and equipment.
- 2.2 Improve overall fleet fuel efficiency.
- 2.3 Establish practices to reduce vehicle miles traveled, passenger miles traveled, engine hours, and/or ton miles traveled, as appropriate.

Section 3.

<adopting entity> **will partner with the NCTCOG and DFWCC by performing the following actions as practicable:**

- 3.1 Maintain membership and active participation in DFWCC and submit timely Clean Fleet Policy reporting.
- 3.2 Evaluate and consider participation in programs to test/commercialize/demonstrate new technologies to improve efficiency, reduce emissions, and/or increase fuel efficiency.
- 3.3 Pursue activities which support peer fleets' efforts to implement fuel- or emissions-reducing activities by sharing and maximizing resources.
- 3.4 Encourage fleet activities which minimize water, solid waste, or other environmental impacts of fleet activities, as appropriate.

Section 4.

<adopting entity> **will ensure drivers/operators and fleet personnel are familiar with air quality and petroleum reduction goals by performing the following actions as practicable:**

- 4.1 Provide in-house training and/or attending training administered by NCTCOG for fleet personnel and other staff involved in fleet decisions to

review policy elements and provide recommendations for achieving objectives.

- 4.2 Consider other mechanisms to increase understanding and awareness among fleet personnel and others.

<adopting entity> acknowledges that adoption of the Clean Fleet Policy, adoption of an idle reduction policy/SOP as outlined in section 1.1, submittal of both policies, and submittal of Clean Fleet Policy reporting is required to be eligible for future clean fleet funding from the RTC, and may be considered when determining other funding actions. The extent of Clean Fleet Policy implementation, as documented through reporting, will also be a factor in receiving DFWCC fleet recognition.

[Following additional example statement to be included as applicable for adopting entity:]
This policy shall be in effect immediately upon its adoption and replaces the prior Clean Fleet Vehicle Policy of the adopting entity.

I hereby certify that this policy was adopted by the <adopting entity> on <date of adoption> , _____.

Signature

Printed Name

Title

Adopting Entity

Clean Fleet Policy Guidance

This document is provided as a tool to assist fleets who adopt the Clean Fleet Policy (CFP) with implementing policy elements by outlining tips and best practices for meeting policy goals. The CFP is intended to provide adopting entities with implementation flexibility while also encouraging fleets to make additional efforts.

Fleets may choose from the suggestions provided or may take other steps toward fulfilling CFP objectives. Fleets are encouraged to "think outside the box" and notify NCTCOG staff of additional ways in which policy goals have been met. At a minimum, such practices should be submitted during CFP reporting but are welcome year-round.

Section 1. Adopting entity will reduce emissions from fleet activities by performing the following actions as practicable:

- 1.1 Implement an idle-reduction policy/standard operating procedure (SOP) that applies to all of the entity's vehicles and equipment, except where exempted as determined by <adopting entity>; communicate idle-reduction expectations to staff, vendors and visitors; and utilize idle-reduction technology.

Suggested practices:

A. Idle-reduction policy/SOP elements

- 1) Requirements should be at least as strict as the TCEQ Idling Limitations Rule as published in the Texas Administrative Code, Chapter 114, Subchapter J, Operational Controls for Motor Vehicles, Division 2, Locally Enforced Motor Vehicle Idling Limitations:
 - Applies to all gasoline and diesel vehicles > 14,000 lbs GVWR
 - Limits idling to 5 minutes
 - No driver using the vehicle's sleeper berth may idle the vehicle: in a residential area as defined by Local Government Code, §244.001; in a school zone; within 1,000 feet of a hospital; or within 1,000 feet of a public school during its hours of operation
 - Provides for the following exceptions:
 - a) traffic conditions over which the operator has no control
 - b) vehicle operated by the United States military, national guard, or reserve forces, or as an emergency or law enforcement motor vehicle
 - c) vehicle engine providing a power source necessary for mechanical operation, other than propulsion, and/or passenger compartment heating, or air conditioning
 - d) vehicle operated for maintenance or diagnostic purposes
 - e) vehicle engine operated solely to defrost a windshield
 - f) vehicle engine used to supply heat or air conditioning necessary for passenger comfort and safety in vehicles intended for commercial or public passenger transportation, or passenger transit operations, in which case idling up to a maximum of 30 minutes is allowed
 - g) vehicle engine used to provide air conditioning or heating necessary for employee health or safety while the employee is using the vehicle to perform an essential job function related to roadway construction or maintenance
 - h) vehicle used as airport ground support equipment

- i) vehicle rented or leased to a person that operates the vehicle and is not employed by the owner
 - j) vehicle engine used to power a heater or air conditioner while a driver is using the vehicle's sleeper berth for a government-mandated rest period and is not within two miles of a facility offering external heating and air conditioning connections at a time when those connections are available
- 2) Suggested additional applicability:
 - All on-road vehicles (regardless of GVWR or fuel type)
 - All non-road equipment
- 3) Suggest a 3-minute limit
- 4) Suggested additional exceptions:
 - Exemptions stated in 30 Texas Administrative Code (TAC) 114, Subchapter J, Division 2, the Motor Vehicle Idling Limitations
 - Idling as needed for animal transport
 - Idling as needed for cargo/supply refrigeration
- B. Communication Strategies
 - 1) Place signage that is visible and clearly communicates the idle reduction policy/SOP
 - 2) Place stickers in vehicles
 - 3) Have key chains with reminder
 - 4) Send memo/email to staff and vendors
 - 5) Reward policy adherence
 - Driver of the week or other recognition program
 - Incentives for lowest idle time
 - 6) Monitor/enforce policy/SOP compliance
 - Pull keys (example: Coppell, Carrollton)
 - Monitor with GPS and/or telematics
 - Suspend contracts with drivers who routinely violate policy/SOP (private sector only)
 - 7) Suggested resource is DOE's IdleBox; template materials are available to DFWCC members through the member portal. This resource is a toolkit of print products, templates, presentations, and information resources to assist with idle-reduction projects for fleets with light- and medium-duty vehicles.
- C. Driver Behavior Strategies
 - 1) Avoid using a remote vehicle starter, which encourages unnecessary idling
 - 2) Avoid using drive-throughs; walk inside instead
 - 3) Obey no-idle zones at schools and other locations
- D. Technology Options (see www.afdc.energy.gov/conserve for more details on idle reduction)
 - 1) Install devices to monitor and collect data on idling
 - GPS and/or telematics
 - 2) Consider the purchase of an electric drive vehicle or one with stop/start technology, which limits idling at traffic stops and while waiting in queue
 - 3) Install devices that prevent or reduce idling
 - Battery charging systems
 - Long haul heavy-duty truck specific (Note: NCTCOG recommends choosing products which have been verified under the EPA Smartway Transport Program. See a full listing at Smartway Technology Idle Reduction and Alternative Fuels Data Center: Onboard Idle Reduction Equipment for Heavy-Duty Trucks):
 - a) Automatic shut-down/start-up systems
 - b) Auxiliary power units

- c) Coolant heaters
- d) Electrified parking spaces
- e) Energy recovery systems
- f) Fuel operated heaters
- g) Storage air conditioners
- School Bus specific:
 - a) Aftermarket auxiliary heaters
 - Fuel-operated engine block heaters
 - Electric plug-in block heaters
 - Compartment and engine block heaters
- Medium-Duty vehicle specific:
 - a) Air heaters
 - b) Battery/auxiliary power systems
 - c) Coolant heaters
 - d) Waste-heat recovery systems
- Light-duty (LDV) and Medium-Duty (MDV) vehicle specific:
 - a) Air heaters
 - b) Automatic power management systems
 - c) Auxiliary power systems
 - d) Waste-heat recovery systems

1.2 Maximize use of vehicles and equipment with the lowest emissions wherever possible.

Suggested practices:

- A. Identify vehicles and equipment with the lowest emissions. (See Section 2.1 for details.)
 - B. Require use of vehicles and equipment with the lowest emissions whenever they are available and capable of performing the required operational demands
 - 1) Place vehicles with the lowest emissions on the longest and/or highest activity routes
 - 2) Move oldest, highest-emitting vehicles to “backup” service roles
 - 3) Create low-emitting vehicle pool for employees’ use and encourage employees to use the low-emitting vehicle pool for work trips rather than personal vehicle (example: Tarrant County)
 - C. Eliminate unused/under-utilized vehicles to optimize fleet size and to reduce evaporative emissions by parked vehicles
 - D. Determine when to retire vehicles in a consistent manner, such as using a formula
- 1.3 Ensure all conversions are EPA and/or California Air Resources Board (CARB) certified; ensure that aftermarket technologies are EPA and/or CARB verified, or are listed as an emerging technology by the EPA or a state environmental agency; and both conversions and aftermarket technologies are compatible with Texas Low Emission Diesel Program (TxLED) requirements.

Suggested practices:

- A. Check the EPA and CARB websites prior to purchasing any aftermarket technology to ensure performance verification and current status of the technology by these agencies
 - Aftermarket technologies:
 - EPA:
 - www.epa.gov/otag/consumer/reports.htm
 - www.epa.gov/smartway/forpartners/technology.htm

- CARB:
 - www.arb.ca.gov/msprog/aftermkt/aftermkt.htm
- Verified Retrofits:
 - EPA: www.epa.gov/cleandiesel/verification/verif-list.htm
 - CARB: www.arb.ca.gov/diesel/verdev/vt/cvt.htm
- B. Check the EPA and CARB websites prior to converting or purchasing converted vehicles/engines to ensure the compliance requirements of these agencies have been met.
 - EPA:
 - Certified Clean Alternative Fuel Conversion Systems: www.epa.gov/otaq/consumer/fuels/altfuels/documents/certified-conversions.xls
 - Engine Conversion Data by Category: www.epa.gov/otaq/certdata.htm
 - Certificates of Conformity Search: iaspub.epa.gov/otaqpub/
 - CARB: www.arb.ca.gov/msprog/aftermkt/altfuel/altfuel.htm

1.4 Establish a plan to modify non-essential fleet activities on high ozone days to reduce air quality impacts.

Suggested practices:

- A. Stay informed of Air Pollution Action Days by signing up for notices from the Air North Texas program (www.airnorthtexas.org) and communicate air quality pollution alert days to personnel.
- B. Postpone activities (i.e. delay to non-ozone day or evening) such as:
 - 1) transporting vehicles from one location to another
 - 2) performing maintenance that may require vehicles to idle
 - 3) landscaping or mowing
- C. Reduce unnecessary trips by:
 - 1) carpooling
 - 2) utilizing teleconferencing and videoconferencing to avoid driving to meetings
 - 3) combining trips

1.5 Implement vehicle and equipment disposal strategies which minimize negative impacts on air quality.

Suggested practices:

- A. Ensure compliance with emissions standards at point of sale by:
 - 1) ensure the inspection sticker is current prior to sale of vehicles
 - 2) removing inspection stickers from vehicles prior to sale to force buyer to get an emissions inspection upon possession
 - 3) conducting opacity check on diesel equipment and, if needed, either completing needed repairs or communicating needed repairs to buyer
- B. Use salvagers/dismantlers that are TCEQ Drive A Clean Machine partners
- C. Eliminate unused or underused higher-emitting vehicles
- D. Use online auctions in order to reduce vehicle miles traveled instead of holding auctions in person. Examples of online auctions include, but are not limited, to:
 - 1) renewbates.com
 - 2) rbaction.com
 - 3) ironplanet.com
 - 4) ebay (DOE/Clean Cities Partner) (<http://green.ebay.com/green-driving/>)
 - 5) copart.com
 - 6) onlinevehicleauction.com

- 1.6 Implement vehicle and equipment emissions inspection practices which meet or surpass the standards required by statute, including prompt resolution of any illuminated malfunction indicator lamp (MIL).

Suggested practices:

- A. Perform annual emission and safety inspections for all vehicles, even for vehicles with no state mandated inspection requirement
- B. Perform emissions inspections every 25,000 miles for all vehicles with odometer readings over 100,000 miles
- C. Address Check Engine Light/malfunction indicator lamp (MIL) issues promptly
- D. Address smoking tailpipe issues promptly by performing needed repairs/maintenance
- E. Perform visual opacity check for non-road equipment and non-onboard diagnostics diesel on-road vehicles; address any opacity issues by performing needed repairs/maintenance

Section 2. Adopting entity will reduce overall fuel consumption, particularly the use of conventional petroleum fuels, by performing the following actions as practicable:

- 2.1 Pursue low-emission vehicles and equipment for acquisition, with an emphasis on alternative fuel, advanced technology, and/or SmartWaySM certified vehicles and equipment.

Suggested practices:

- A. Purchase low-emissions vehicles and equipment (may include alternative fuel vehicles)
 - 1) For Light-duty vehicles:
 - As a general rule, NCTCOG considers a vehicle rated as Tier 2 Bin 0-4 to be low-emissions vehicles
 - The following websites may be helpful:
 - a) www.epa.gov/otaq/standards/light-duty/
 - b) www.epa.gov/greenvehicles/
 - c) www.epa.gov/greenvehicles/documents/420b14005.pdf
 - 2) For Heavy-duty vehicles:
 - As a general rule, NCTCOG considers vehicles powered by 2010 or newer engines to be low-emissions vehicles
 - The following websites may be helpful:
 - a) www.epa.gov/otaq/standards/heavy-duty
 - b) www.epa.gov/otaq/certdata.htm
 - 3) For Non-road equipment:
 - As a general rule, NCTCOG considers equipment rated as Tier 3 or newer to be low-emissions equipment. For a table of Tier certification by year and horse-power, see Appendix A
 - The following websites may be helpful:
 - a) www.epa.gov/otaq/standards/nonroad/
 - b) www.epa.gov/otaq/certdata.htm
- B. Purchase alternative fuel, advanced technology, and/or SmartWaySM certified vehicles and equipment.
 - 1) To find these types of vehicles:
 - For alternative fuel and advanced technology vehicles, see www.afdc.energy.gov/fuels/

- For vehicles that utilize advanced technology such as hybrid electric vehicles (HEVs), plugin hybrid electric vehicles (PHEVs) and electric vehicles (EVs), see www.afdc.energy.gov/vehicles/electric.html
- For Smartway certified vehicles:
 - (1) Light-duty vehicles: see search feature in bottom-left corner of www.epa.gov/greenvehicles/
 - (2) Heavy-duty vehicles and trailers: ask your truck dealer for SmartWay-designated tractors and trailers, or look for the SmartWay designation on the tractor or trailer when purchasing. For technical specifications and requirements, see www.epa.gov/smartway/forpartners/technology.htm
- 2) Set quantitative goals or a policy for increasing the proportion of fleet vehicles that fit into one of the above categories over time
- 3) Assess the feasibility of these types of vehicles:
 - Utilize Department of Energy (DOE) tools to evaluate and compare options. Suggested tools include:
 - a) Alternative Fuels Data Center's Petroleum Reduction Planning Tool (www.afdc.energy.gov/prep/)
 - b) Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET) (greet.es.anl.gov/afleet)
 - Consider lifecycle cost or total cost of ownership when making fleet purchases rather than only capital costs. See AFLEET above and similar tools offered by vendors
- 4) For long-haul, Class 8 fleets, purchase SmartWaySM certified technologies to improve fleet fuel economy and reduce emissions. See a listing of technologies at <http://www.epa.gov/smartway/forpartners/technology.htm>

2.2 Improve overall fleet fuel efficiency.

Suggested practices:

- A. Reduce vehicle size by acquiring the smallest class of vehicle possible that can achieve the fleet's objectives while maximizing fuel economy and lowering emissions
- B. Track and analyze vehicle fuel consumption and miles traveled to target individual vehicles and routes for fuel and emissions reduction
 - Install telematics or similar technology to help streamline data collection and identify opportunities for improvement
- C. Keep vehicles and equipment properly maintained and tires properly inflated
- D. Use the recommended motor oil grade and one that contains friction-reducing additives (look for "Energy Conserving" on the American Petroleum Institute Service Symbol)
- E. Park in shaded areas or install shaded parking to minimize evaporative emissions/fuel losses
- F. Install low rolling resistance tires
- G. Implement 'eco-driving' that includes driving practices such as
 - 1) avoid unnecessary idling
 - 2) eliminate the use of drive-thrus (such as at restaurants and banks)
 - 3) turn off engine if stopped for more than a minute, except while in traffic
 - 4) avoid aggressive driving such as speeding and aggressive accelerating and braking
 - 5) drive defensively
 - 6) use the air conditioner sparingly
 - 7) choose 'economy' setting or 'recirculation' setting when practical
 - 8) open the window when going less than 40 mph

- 9) avoid carrying unneeded equipment (especially heavy items)
 - 10) plan routes to avoid hills, traffic congestion and low speeds
 - 11) use economy mode if applicable for hybrids, plug-in hybrids and EVs
 - H. Optimize routes with right-hand turns whenever possible to reduce idling time
- 2.3 Establish practices to reduce vehicle miles traveled, passenger miles traveled, engine hours, and/or ton miles traveled, as appropriate.

Suggested practices:

- A. Employ route optimization for vehicles that operate on fixed routes. Generally, all routes should be planned to optimize the route to reduce travel time and distance. Consider using technology to aid in route optimization effort, such as telematics or other appropriate technology
- B. Reduce unnecessary trips by
 - 1) carpooling
 - 2) utilizing teleconferencing/videoconferencing to avoid need to drive to meetings
 - 3) combining trips
 - 4) using public transportation

Section 3. Adopting entity will partner with NCTCOG and DFWCC by performing the following actions as practicable:

- 3.1 Maintain membership and active participation in DFWCC and submit timely Clean Fleet Policy reporting.

Suggested practices:

- A. Become a DFWCC Stakeholder at Dallas Fort Worth Clean Cities - Get Involved. If a fuel/vehicle/technology provider, create a listing in the vendor directory
- B. Attend at least one DFWCC meeting or event per calendar year
- C. Assist DFWCC by
 - 1) Presenting at meetings/events when requested
 - 2) Bringing display vehicles/technologies to events when requested
 - 3) Sponsoring DFWCC when and where applicable/feasible
- D. Consider participating in a DFWCC Committee (Stakeholder Advisory Committee or Fuel Subcommittee, etc.)
- E. Assist DFWCC with identifying potential members and other fleets who may be interested in using alternative fuels
- F. Encourage fellow fleets and vendors to adopt the Clean Fleet Policy and join/support DFWCC

- 3.2 Evaluate and consider participation in programs to test/commercialize/demonstrate new technologies to improve efficiency, reduce emissions, and/or increase fuel efficiency.

Suggested practices:

- A. Partner with vendors to collect data and utilize technology undergoing evaluation in the EPA Emerging Technologies Program
- B. Meet with vendors and/or DFWCC as appropriate to learn about new technologies
- C. Participate in pilot programs established or supported by NCTCOG, such as a diesel inspection and maintenance program

- 3.3 Pursue activities which support peer fleets' efforts to implement fuel- or emissions-reducing activities by sharing and maximizing resources.

Suggested practices:

- A. Partner with other organizations through mutually beneficial agreements to facilitate sharing of refueling stations, equipment, maintenance facilities, and training materials
 - B. Arrange to share maintenance facilities which are retrofitted to accommodate alternative fuels
 - C. Engage fellow fleets in cooperative purchasing efforts (example: Fort Worth fuels contract; Tarrant County cooperative purchasing agreement)
- 3.4 Encourage fleet activities which minimize water, solid waste, or other environmental impacts of fleet activities, as appropriate.

Suggested practices:

- A. Recycle vehicle fluids or dispose of fluids as hazardous materials
- B. Recycle tires
- C. Conserve water when washing vehicles by either reclaiming or using rain water
- D. Use environmentally-friendly products (soy-based cleaners, etc.)

Section 4. Adopting entity will ensure drivers/operators and fleet personnel are familiar with air quality and petroleum reduction goals by performing the following actions as practicable.

- 4.1 Provide in-house training and/or attending training administered by NCTCOG for fleet personnel and other staff involved in fleet decisions to review policy elements and provide recommendations for achieving objectives.

Suggested practices:

- A. Provide new-hire training as employees come on board. NCTCOG assistance is available, if desired
 - B. Provide annual training for all employees
 - C. Attend NCTCOG-hosted training
 - D. Share training resources with fellow fleets and/or with NCTCOG
- 4.2 Considering other mechanisms to increase understanding and awareness among fleet personnel and others.

Suggested practices:

- A. Post notices inside vehicles, break rooms or other common areas reminding drivers/equipment operators/personnel of good driving behaviors, such as the 'eco-driving' practices cited in 2.2, G of this document
- B. Have drivers/equipment operators sign pledges to adhere to the operational elements of the policy
- C. Incorporate drivers/operators/technicians adherence to fleet policy elements into employee performance reviews
- D. Install telematics or similar technology to monitor driving behaviors and provide feedback to drivers on individual performance
- E. Establish a reward program, such as a preferred parking spot or "Driver of the Month" or a financial incentive to recognize top performers

Appendix A
Nonroad Emissions Standards

Non-Road Diesel (CI) Engines NOx Emission Standards by Model Year									
Engine Power (HP)	Tier	Model Year	Emissions (NOx) g/bhp-hr	Emissions (NOx + NMHC) g/bhp-hr	% Reductions From Previous Requirement	% Reductions from Tier 0	% Reductions from Tier 1		
25<hp<50	Tier 0 (uncontrolled)	pre-1999	7.2	N/A	NA	NA	NA		
	Tier 1	1999-2003	6.745	7.1	6%	6%	NA		
19<kw<37	Tier 2	2004+	5.32	5.6	21%	26%	21%		
	Blue Sky Series	Voluntary NMHC+NOx	3.4	3.4	NA	53%	50%		
50<hp<100	Tier 0 (uncontrolled)	pre-1998	8.8	N/A	NA	NA	NA		
	Tier 1	1998-2003	6.9	N/A	22%	22%	NA		
37<kw<75	Tier 2	2004-2007	5.32	5.6	23%	40%	23%		
	Blue Sky Series	Voluntary NMHC+NOx	3.5	3.5	38%	60%	49%		
	Tier 3	2008+	3.325	3.5	-5%	62%	52%		
	Tier 4 (50-75 hp)	2013	3.5		91%	60%	49%		
100<hp<175	Tier 4 (75-100 hp)	2012-2013	0.3		91%	97%	96%		
	Tier 0 (uncontrolled)	pre-1997	9.5	N/A	NA	NA	NA		
75<kw<130	Tier 1	1997-2002	6.9	N/A	27%	27%	NA		
	Tier 2	2003-2006	4.655	4.9	33%	51%	33%		
	Blue Sky Series	Voluntary NMHC+NOx	3	3	36%	68%	57%		
	Tier 3	2007+	2.85	3	39%	70%	59%		
175<hp<300	Tier 4	2012-2013	0.3		89%	97%	96%		
	Tier 0 (uncontrolled)	pre-1996	9.3	N/A	NA	NA	NA		
130<kw<225	Tier 1	1996-2002	6.9	N/A	26%	26%	NA		
	Tier 2	2003-2005	4.655	4.9	33%	50%	33%		
	Blue Sky Series	Voluntary NMHC+NOx	3	3	36%	68%	57%		
	Tier 3	2006+	2.85	3	39%	69%	59%		
300<hp<600	Tier 4	2011-2013	0.3		89%	97%	96%		
	Tier 0 (uncontrolled)	pre-1996	9.5	N/A	NA	NA	NA		
225<kw<450	Tier 1	1996-2000	6.9	N/A	27%	27%	NA		
	Tier 2	2001-2005	4.56	4.8	34%	52%	34%		
	Blue Sky Series	Voluntary NMHC+NOx	3	3	34%	68%	57%		
	Tier 3	2006+	2.85	3	38%	70%	59%		
600<hp<750	Tier 4	2011-2013	0.3		89%	97%	96%		
	Tier 0 (uncontrolled)	pre-1996	9.7	N/A	NA	NA	NA		
450<kw<560	Tier 1	1996-2001	6.9	N/A	29%	29%	NA		
	Tier 2	2002-2005	4.56	4.8	34%	53%	34%		
	Blue Sky Series	Voluntary NMHC+NOx	3	3	34%	69%	57%		
	Tier 3	2006+	2.85	3	38%	71%	59%		
hp>750	Tier 4	2011-2013	0.3		89%	97%	96%		
	Tier 0 (uncontrolled)	pre-2000	9.1	N/A	NA	NA	NA		
kw>560	Tier 1	2000-2005	6.9	N/A	24%	24%	NA		
	Tier 2	2006+	4.56	4.8	34%	50%	34%		
	Blue Sky Series	Voluntary NMHC+NOx	2.8	2.8	39%	69%	59%		
	Tier 3	N/A	N/A	N/A	NA	NA	NA		
	Tier 4	2011-2015	0.50+		NA	NA	NA		

Sources: <http://www.dieselnet.com/standards/us/nonroad.php>; <http://www.epa.gov/nonroad-diesel/frm1998/nr-fr.pdf>