CMAP FY 2016-2020 CMAQ PROJECT APPLICATION
DIRECT EMISSIONS REDUCTION PROJECTS

I. PROJECT IDENTIFICATION

Project Sponsor
Illinois Environmental Protection Agency

Other Agencies Participating In Project
City of Chicago, Chicago Area Clean Cities Coalition, Illinois Clean Diesel Workgroup

New Project
X Existing CMAQ Project
Add CMAQ to Existing Project

TIP ID if project already has one
13-14-0001

Contact Information – Name, Title, Agency, Address, Phone, Fax,E-Mail
Darwin Burkhart, Manager
Clean Air Programs
Illinois EPA
10231 N. Grand Avenue East, PO Box 19276
Springfield, IL 62794
Phone: (217) 524-5008 Fax: (217) 557-2559
E-mail: Darwin.Burkhart@illinois.gov

II. PROJECT LOCATION

- Projects not readily identified by location must provide a title on the last line of this section
- Attach a map sufficient to accurately locate this project in a GIS system

Location of Equipment or Facility to be Improved — Marked Route #
Northeastern Illinois Region

Other Project Location Information or Project Title
CHICAGO AREA GREEN FLEET GRANT PROGRAM

III. PROJECT FINANCING & CMAQ FUNDING REQUEST

Please review the instructions.

	Starting Federal Fiscal Year*	Total Phase Costs	(New) CMAQ Funds Requested	Other Federal Funds Including prior CMAQ awards	
				Fund Type	Amount
Engineering (For Implementation Projects)		**$**	**$**		**$**
Implementation	**2016**	**$ 14,000,000**	**$ 7,000,000**		**$**
*Phase must be accomplished within 3 years		**$ 14,000,000**	**$ 7,000,000**		
Total Project Costs:					

Source of Local Matching Funds: **Subgrantees will provide 50% match**

Indicate if sponsor intends to apply for Transportation Development Credits.

If soft matching funds are intended to be used, please contact CMAP staff.

Have Matching Funds Been Secured? (Provide Details):

IV. PROJECT EMISSIONS BENEFIT DATA

Complete this section for each group of vehicles (type, engine, technology, etc.). Use additional sheets as needed.

Vehicle Type: (check one)
☐ School Bus ☐ Transit Bus ☐ Refuse Hauler ☐ Short Haul ☐ Long Haul ☐ Delivery Truck
☐ Emergency Vehicle ☐ On-Highway ☐ City/County Vehicle
☐ Passenger Locomotive ☐ Switch Engine ☒ Other: **Various types and sizes of gasoline and diesel engines**

See Attachment 1 for all information requested in this section.

Vehicle Size: (check one)
☐ Class 2b (8,501 - 10,000 lbs.) ☐ Class 3 (10,001 - 14,000 lbs.) ☐ Class 4 (14,001 - 16,000 lbs.)
☐ Class 5 (16,001 - 19,500 lbs.) ☐ Class 6 (19,501 - 26,000 lbs.) ☐ Class 7 (26,001 - 33,000 lbs.)
☐ Class 8a (33,001 - 60,000 lbs.) ☐ Class 8b (60,001 and over) ☐ School Bus ☐ Transit Bus

Horsepower (check one)
☐ 0 ☐ 1 ☐ 3 ☐ 6 ☐ 11 ☐ 16 ☐ 25 ☐ 40 ☐ 50 ☐ 75 ☐ 175
☐ 300 ☐ 600 ☐ 750 ☐ 1000 ☐ 1200 ☐ 2000 ☐ 3000

Current Fuel Type: (check one)
☐ LPG ☐ LNG ☐ CNG ☐ Biodiesel 100 ☐ Biodiesel 20 ☐ Biodiesel 10 ☐ Biodiesel 5
☐ E85 ☐ Diesel, 3,400 ppm sulfur ☐ Diesel, 500 ppm sulfur ☐ Diesel, 15 ppm sulfur ☐ Emulsion

Model Year (all vehicles in a group should have the same model year): _____

Before project: Fuel Consumed (gallons per year of current fuel type for all vehicles in the group combined): _____ gallons

After project: Fuel Consumed (gallons per year of current fuel type for all vehicles in the group combined): _____ gallons

Before project Annual Vehicle Miles/vehicle in group: _____ miles Annual Idling Hours/vehicle in group: _____hours

After project Annual Vehicle Miles/vehicle in group: _____ miles Annual Idling Hours/vehicle in group: _____hours

CMAP FY 2016-2020 CMAQ PROJECT APPLICATION
DIRECT EMISSIONS REDUCTION PROJECTS – PAGE 2

Technology to be Applied	# veh	Technology to be Applied	# veh
Diesel Oxidation Catalyst		Recalibration	
Diesel Oxidation Catalyst + Closed Crankcase Ventilation		Selective Catalytic Reduction	
Diesel Particulate Filter		Exhaust Gas Recirculation + Diesel Particulate Filter	
Hybrid Electric Replacement with Diesel Particulate Filter		Emissions Control Devices	
Partial Flow Filter		Other	
Compressed Natural Gas (CNG) Replacement		Engine Repower	
Lean NOx Catalyst/Diesel Particulate Filter		Engine Replacement	

Post-Implementation Fuel Type: (check one)
☐ LPG ☐ LNG ☐ CNG ☐ Biodiesel 100 ☐ Biodiesel 20 ☐ Biodiesel 10 ☐ Biodiesel 5
☐ E85 ☐ Diesel, 3,400 ppm sulfur ☐ Diesel, 500 ppm sulfur
☐ Diesel, 15 ppm sulfur (non-road only) ☐ Emulsion ☐ Electricity

Diesel Vehicle Replacement Applicants
Expected remaining life of vehicles being replaced (years):_____

Total Number of Vehicles (all groups combined): _____ vehicles

Indicate on the map the location of where vehicles will be in service.

Time of day that vehicles will be in operation (hour): From_____to _____.

Ridership Demographics (If vehicle is for transit service):% over 65 in age _____, % under 5 in age _____, median household income _____, % minority _____

V. PROGRAM MANAGEMENT INFORMATION

Is Right-Of-Way Acquisition required for this project? ☐ Yes ☐ No If so, has it been acquired? ☐ Yes ☐ No

Estimated Completion Year/Year Vehicles in Service: **__Beginning in 2016____**

VI. PROJECT DESCRIPTION

1. Please describe improvements. Include links or other reference to the US EPA/CARB certification or verification.

The primary purpose of the Chicago Area Green Fleet Grant Program is to provide an incentive for the purchase of, or conversion to, vehicles that operate on alternative fuels. These cleaner fuels include natural gas and propane, as well as electricity for off-road engines, and will significantly reduce emissions of particulate matter, oxides of nitrogen and volatile organic compounds compared to their diesel or gasoline-powered counterparts. The types of vehicles the Illinois EPA is targeting include delivery trucks, school buses, refuse trucks, shuttle buses, public works trucks, law enforcement vehicles, and park district vehicles. The off-road equipment would be certain types of new construction, rail yard, quarry, and similar heavy-duty units. Conversions would involve the use of USEPA-certified conversion systems.

The funding is being provided to businesses, local governments, and other government agencies that operate these vehicles in the Chicago nonattainment area. The $7 million additional funding request, combined with the $3 million already awarded, would provide a total of $10 million for this program. The attached February 2013 application and work plan identifies and quantifies the project outline, related benefits, and cost-effectiveness for this program utilizing a total of $10 million. The additional $7 million in requested funding would be allocated over the next four federal fiscal years: $1 million in FFY 2016, $2 million in FFY 2017, $2 million in FFY 2018, and $2 million in FFY 2019.

CHICAGO AREA GREEN FLEET GRANT PROGRAM

I. Program Background and Summary

The Illinois Environmental Protection Agency (Illinois EPA) is requesting an additional $7 million in funding for federal fiscal years (FFY) 2016-2019 for the Chicago Area Green Fleet Grant Program. In February 2013, the Illinois EPA applied for $10 million in Congestion Mitigation and Air Quality Improvement Program (CMAQ) funds to establish this program, and was selected and awarded $3 million to launch this new initiative (TIP ID 13-14-0001). The original application is attached.

The primary purpose of the Chicago Area Green Fleet Grant Program is to provide an incentive for the purchase of, or conversion to, vehicles that operate on alternative fuels. These cleaner fuels include natural gas and propane, as well as electricity for off-road engines, and will significantly reduce emissions of particulate matter, oxides of nitrogen and volatile organic compounds compared to their diesel or gasoline-powered counterparts. The types of vehicles the Illinois EPA is targeting include delivery trucks, school buses, refuse trucks, shuttle buses, public works trucks, law enforcement vehicles, and park district vehicles. Off-road equipment would be certain types of new construction, rail yard, quarry, and similar heavy-duty units.

The funding is being provided to businesses, local governments, and other government agencies that operate these vehicles in the Chicago nonattainment area. The $7 million additional funding request, combined with the $3 million already awarded, would provide a total of $10 million for this program. The attached February 2013 application and work plan identifies and quantifies the project outline, related benefits, and cost-effectiveness for this program utilizing a total of $10 million. The additional $7 million in requested funding would be allocated over the next four federal fiscal years: $1 million in FFY 2016, $2 million in FFY 2017, $2 million in FFY 2018, and $2 million in FFY 2019.

II. Current Program Status

The Illinois EPA's intent for the originally-envisioned program was to expend $2 million per year for the five-year life of the program. Based on the FY 2014-2018 CMAQ award amount, the program was revised to expend $1 million per year for three years. Due to the time necessary to negotiate and execute the required Intergovernmental Agreement with the Illinois Department of Transportation and the time to receive the required Federal Highway Administration (FHWA) Buy America waiver, the Illinois EPA agreed with the FHWA to delay any expenditure of funds until FFY2015. Since the beginning of the program, the Illinois EPA has received applications requesting over $2.3 million. To date, the Illinois EPA has issued sub-grants allocating a total of $765,000. The sub-grantees include the City of Warrenville, DuPage County, City of Chicago, R & D Bus Company (school bus service for Chicago Public Schools), Lakeshore Recycling Systems, and Chicago Cement Transportation. The types of vehicles involved in these projects include school buses, refuse trucks, delivery trucks, and public works trucks.

The Illinois EPA has additional applications under review and continues to receive inquiries. Based on the number of grant applications and inquiries, we expect an increasing level of interest and submission of qualified project applications. With this request for additional funding, the Illinois EPA believes that it has established the interest in the use of clean, alternative fuels and the viability of the Green Fleet Grant Program.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217)782-2829
PAT QUINN, GOVERNOR JOHN J. KIM, DIRECTOR

217/782-3397

February 6, 2013

Mr. Doug Ferguson, CMAQ Program
Chicago Metropolitan Agency for Planning
233 South Wacker Drive, Suite 800
Chicago, Illinois 60606

Re: Federal FY 2014-2018 CMAQ Funding

Dear Mr. Ferguson:

This letter and attached application is to request Congestion Mitigation and Air Quality Improvement (CMAQ) funding for $10 million in FY 2014-2018 for the Illinois Environmental Protection Agency's "Chicago Area Green Fleet Grant Program." As described in the proposal, the Illinois EPA would use this funding to provide grants for the purchase of new natural gas or propane vehicles, for the conversion of a conventional vehicle to operate on natural gas or propane, and for the purchase of new off-road equipment that operates on natural gas, propane, or electricity. We are estimating that nearly 900 alternate fuel vehicles, including delivery trucks, shuttle buses, school buses, waste haulers, transit buses or transit support vehicles, public works vehicles, and taxis would be implemented during the project period. This program would help the Illinois EPA reduce particulate matter and other pollutants from diesel engines in the Chicago area.

If you have any questions, please contact Darwin Burkhart, Division of Mobile Source Programs, Bureau of Air, at 217/524-5008.

Sincerely,

Laurel L. Kroack, Chief
Bureau of Air

Enclosure

4302 N. Main St., Rockford, IL 61103 (815) 987-7760
595 S. State, Elgin, IL 60123 (847) 608-3131
2125 S. First St., Champaign, IL 61820 (217) 278-5800
2009 Mall St., Collinsville, IL 62234 (618) 346-5120
9511 Harrison St., Des Plaines, IL 60016 (847) 294-4000
5407 N. University St., Arbor 113, Peoria, IL 61614 (309) 693-5462
2309 W. Main St., Suite 116, Marion, IL 62959 (618) 993-7200
100 W. Randolph, Suite 10-300, Chicago, IL 60601 (312) 814-6026

CMAP FY 2014-2018 CMAQ PROJECT APPLICATION
DIRECT EMISSIONS REDUCTION PROJECTS

I. PROJECT IDENTIFICATION

Project Sponsor	Contact Information – Name, Title, Agency, Address, Phone, Fax,E-Mail
Illinois Environmental Protection Agency	Darwin Burkhart, Manager Clean Air Programs Illinois EPA 1021 N. Grand Avenue East, P.O. Box 19276 Springfield, IL 62794-9276 Phone: (217) 524-5008 Fax: (217) 557-2559 Darwin.Burkhart@illinois.gov
Other Agencies Participating In Project **City of Chicago, Chicago Area Clean Cities coalition, Illinois Clean Diesel Workgroup**	
x New Project ☐ Existing CMAQ Project ☐ Add CMAQ to Existing Project	TIP ID if project already has one

II. PROJECT LOCATION

- Projects not readily identified by location must provide a title on the last line of this section
- Attach a map sufficient to accurately locate this project in a GIS system

Location of Equipment or Facility to be Improved	Marked Route #	
Project Limits: North/West Reference Point/Cross St/Intersection	Marked Route #	Municipality & County
Project Limits: South/East Reference Point/Cross St/Intersection	Marked Route #	Municipality & County
Other Project Location Information or Project Title		

III. PROJECT FINANCING & CMAQ FUNDING REQUEST

Please review the instructions.

	Starting Federal Fiscal Year*	Total Phase Costs (Thousands)	(New) CMAQ Funds Requested (Thousands)	Other Federal Funds Including prior CMAQ awards	
				Fund Type	Amount
Engineering Phase 1		**$**	**$**		**$**
Engineering Phase 2		**$**	**$**		**$**
Right-Of-Way Acquisition		**$**	**$**		**$**
Construction (Including Construction Engineering)		**$**	**$**		**$**
Engineering (For Implementation Projects)		**$**	**$**		**$**
Implementation	2014	**$20,000**	**$10,000**		**$**
Alternatives Analysis		**$**	**$**		**$**
*Phase must be accomplished within 3 years Total Project Costs:		**$20,000**	**$10,000**		

Source of Local Matching Funds:	**Sub-grantees will be required to provide 50% match**
If soft matching funds are intended to be used, please contact CMAP staff.	
Have Matching Funds Been Secured? (Provide Details):	

CMAP FY 2014-2018 CMAQ PROJECT APPLICATION
DIRECT EMISSIONS REDUCTION PROJECTS – PAGE 2

IV. PROJECT EMISSIONS BENEFIT DATA

Complete this section for each group of vehicles (type, engine, technology, etc.). Use additional sheets as needed.

Vehicle Type: (check one)
☐ School Bus ☐ Transit Bus ☐ Refuse Hauler ☐ Short Haul ☐ Long Haul ☐ Delivery Truck
☐ Emergency Vehicle ☐ On-Highway ☐ City/County Vehicle
☐ Passenger Locomotive ☐ Switch Engine **X** Other:

See Attachment 1 at end of proposal for all information requested in this section

Vehicle Size: (check one)
☐ Class 2b (8,501 - 10,000 lbs.) ☐ Class 3 (10,001 - 14,000 lbs.) ☐ Class 4 (14,001 - 16,000 lbs.)
☐ Class 5 (16,001 - 19,500 lbs.) ☐ Class 6 (19,501 - 26,000 lbs.) ☐ Class 7 (26,001 - 33,000 lbs.)
☐ Class 8a (33,001 - 60,000 lbs.) ☐ Class 8b (60,001 and over) ☐ School Bus ☐ Transit Bus

Horsepower (check one)
☐ 0 ☐ 1 ☐ 3 ☐ 6 ☐ 11 ☐ 16 ☐ 25 ☐ 40 ☐ 50 ☐ 75 ☐ 175
☐ 300 ☐ 600 ☐ 750 ☐ 1000 ☐ 1200 ☐ 2000 ☐ 3000

Current Fuel Type: (check one)
☐ LPG ☐ LNG ☐ CNG ☐ Biodiesel 100 ☐ Biodiesel 20 ☐ Biodiesel 10 ☐ Biodiesel 5
☐ E85 ☐ Diesel, 3,400 ppm sulfur ☐ Diesel, 500 ppm sulfur ☐ Diesel, 15 ppm sulfur ☐ Emulsion

Model Year (all vehicles in a group should have the same model year): _____

Before project: Fuel Consumed (gallons per year of current fuel type for all vehicles in the group combined): _____ gallons

After project: Fuel Consumed (gallons per year of current fuel type for all vehicles in the group combined): _____ gallons

Before project Annual Vehicle Miles/vehicle in group: _____ miles Annual Idling Hours/vehicle in group: _____hours

After project Annual Vehicle Miles/vehicle in group: _____ miles Annual Idling Hours/vehicle in group: _____hours

Technology to be Applied	# veh	Technology to be Applied	# veh
Diesel Oxidation Catalyst		Recalibration	
Diesel Oxidation Catalyst + Closed Crankcase Ventilation		Selective Catalytic Reduction	
Diesel Particulate Filter		Exhaust Gas Recirculation + Diesel Particulate Filter	
Hybrid Electric Replacement with Diesel Particulate Filter		Emissions Control Devices	
Partial Flow Filter		Other	
Compressed Natural Gas (CNG) Replacement		Engine Repower	
Lean NOx Catalyst/Diesel Particulate Filter		Engine Replacement	

Post-Implementation Fuel Type: (check one)
☐ LPG ☐ LNG ☐ CNG ☐ Biodiesel 100 ☐ Biodiesel 20 ☐ Biodiesel 10 ☐ Biodiesel 5
☐ E85 ☐ Diesel, 3,400 ppm sulfur ☐ Diesel, 500 ppm sulfur
☐ Diesel, 15 ppm sulfur (non-road only) ☐ Emulsion ☐ Electricity

Diesel Vehicle Replacement Applicants
Expected remaining life of vehicles being replaced (years):_____

Total Number of Vehicles (all groups combined): _____890_____ vehicles

V. PROGRAM MANAGEMENT INFORMATION

Is Right-Of-Way Acquisition required for this project? ☐ Yes ☐ No If so, has it been acquired? ☐ Yes ☐ No

Preliminary Design Status: ☐ Not Applicable ☐ Design approval granted ☐ Engineering Underway ☐ Not Begun

Estimated completion year: _____

VI. PROJECT DESCRIPTION

The primary purpose of the Chicago Area Green Fleet Grant Program is for the purchase of new natural gas or propane vehicles, for the conversion of conventionally-fueled vehicles to operate on natural gas or propane, and for the purchase of new off-road equipment that operates on natural gas, propane, or electricity. The funding would be provided to business and government fleets, or companies that operate diesel-powered off-road equipment, located and operating in the Chicago nonattainment area. The types of vehicles will include delivery trucks, school buses, waste haulers, transit buses or transit support vehicles, shuttle buses, public works vehicles, and taxis. The off-road equipment would be various types of new construction, rail yard, quarry, and similar heavy-duty units. This program will advance the objectives of the Direct Emissions Reduction Focus Group in the GO TO 2040 plan by reducing diesel particulate emissions and other pollutants with the deployment of more clean alternate fuel vehicles. This program will also benefit local government fleets, many of which are looking at alternate fuel options but need financial assistance.

CHICAGO AREA GREEN FLEET GRANT PROGRAM

I. Summary of Project

The Illinois Environmental Protection Agency (Illinois EPA) is requesting $10 million in Congestion Mitigation and Air Quality Improvement Program (CMAQ) funds to establish the Chicago Area Green Fleet Grant Program. The primary purpose of this program would be for the purchase of new natural gas or propane vehicles, for the conversion of conventionally-fueled vehicles to operate on natural gas or propane, and for the purchase of new heavy-duty off-road equipment that operates on natural gas, propane, or electricity. The funding would be provided to business and government fleets, or companies that operate diesel-powered off-road equipment, located and operating in the Chicago nonattainment area. The $10 million funding request would be allocated in increments of $2 million per year in each of federal fiscal years 2014-2018. The types of vehicles will include delivery trucks, school buses, waste haulers, transit buses or transit support vehicles, shuttle buses, public works vehicles, light-duty trucks, and taxis. The off-road equipment would be various types of new construction, rail yard, quarry, and similar heavy-duty units.

II. Background

Current Illinois EPA Green Fleets Programs

The following are currently part of the Illinois Green Fleets Program:

1. Alternate Fuels Rebate Program

   Since 1998, the Illinois EPA has administered the Alternate Fuels Rebate Program that provides rebates for 80 percent of the incremental cost in purchasing an alternate fuel vehicle versus the conventional version of the vehicle, or 80 percent of the cost to convert a vehicle to an alternate fuel vehicle, up to $4,000. The program funds natural gas, propane, and electric vehicles. Fuel rebates are also available for those that regularly use ethanol (E85) or higher blends of biodiesel in their vehicles. The program has resulted in nearly 10,000 alternate fuel vehicles from 5,000 applicants, with rebates issued to date totaling over $8 million.

2. Illinois Clean Diesel Grant Program

   This program provides grants to school districts, mass transit districts, businesses, long-haul truck owners/operators, delivery fleets, marine tug operations, and others that operate on-road or off-road diesel-powered vehicles and equipment. Since 2008, $15 million in grants have been issued for over 300 projects to clean-up more than 5,200 diesel vehicles and off-road equipment. The types of clean diesel technology options implemented with clean diesel funding include idling equipment, particulate filters, oxidation catalysts, closed crankcase ventilation systems, new higher tier cleaner engines, and new diesel hybrid vehicles.

Need to Establish Funds for a New Illinois Green Fleet Grant Program

The Illinois EPA is experiencing a significant increase in applications and inquiries for both the Alternate Fuels Rebate and Clean Diesel Grant programs from various companies and types of fleets, including local governments, waste haulers, those operating delivery trucks, park districts, taxi fleets, and school districts in the Chicago area. Many of the inquiries are with regards to available funding for natural gas and propane trucks and buses. We have also received a few inquiries regarding alternate fuel off-road equipment. Without additional revenues, the current funding levels for the Alternate Fuels Rebate Program are insufficient to process all applications in a timely manner.

In addition, the rebate program is not ideally suited for medium- and heavy-duty vehicles. For example, the maximum $4,000 rebate amount per alternate fuel vehicle is an insufficient incentive for larger vehicles in which the alternate fuel engine and fuel system may cost $15,000 to $50,000 more than the equivalent diesel model. Furthermore, off-road equipment powered by an alternate fuel is not eligible for a rebate.

The Illinois EPA has received requests from various fleets and alternate fuel industry representatives to include alternate fuels in the Clean Diesel Grant Program and to provide larger incentives for vehicles and off-road equipment that would normally run on diesel fuel. While this is worth considering, our annual clean diesel funding from the U.S. Environmental Protection Agency (U.S. EPA) has been reduced each year, and is currently less than $300,000 for the entire state. Recently, the amount of available U.S. EPA funding for clean diesel projects in Illinois has ranged from $600,000 up to $6 million per year. The significantly reduced funding has resulted in fewer projects and/or having to limit projects to a relatively small amount of grant funding. In addition, it is still possible that the President or Congress may entirely negate the funding for this program, which had been proposed in the past year.

III. The Chicago Area Green Fleet Grant Program

Objectives

The main objective of the Chicago Area Green Fleet Grant Program is to provide the incentive for a government and business fleet in the Chicago area to switch to the use of cleaner natural gas or propane in on-road vehicles. During the past several years, there has been a significant increase in natural gas and propane refueling stations being implemented in the Chicago area. Fleets that are located within a reasonable distance of such facilities are looking to acquire alternate fuel vehicles and coordinate refueling activities with the facility host.

In addition, the program will provide the incentive for companies or other organizations operating diesel-powered off-road equipment to purchase new equipment that is powered by natural gas, propane, or electricity. The grants will also assist those local governments and businesses that are already using natural gas or propane in some vehicles, but require financial assistance to increase the number of such vehicles in their fleet.

Furthermore, the Illinois EPA would not select applications that requested funding for vehicles or off-road equipment in which the alternate fuel is actually the "conventional fuel" for such units. For example, the funding would not be used to assist an applicant in purchasing propane-powered forklifts, such as those commonly used in a warehouse, or for a Zamboni used to resurface the ice at a hockey rink. As with its other green fleet programs, the Illinois EPA reserves the right to fund a portion of the application request and will ensure that the new vehicle purchase, conversion, or new off-road equipment meets the intended objectives and all applicable U.S. EPA certification requirements for alternate fuel vehicles and engines.

Grant Request and Project Funding Amounts

The Illinois EPA is requesting $10 million in CMAQ funding to be allocated in $2 million increments in each of federal fiscal years 2014, 2015, 2016, 2017, and 2018 to add the Chicago Area Green Fleet Grant Program as an important component to the Illinois Green Fleets initiative. This program would only provide funding to selected grant applicants located in the Chicago nonattainment area and for those vehicles or equipment units which will primarily operate in the Chicago area.

Similar to the Clean Diesel Grant Program, interested applicants would submit an application form and cost quotes for the types of vehicles or off-road equipment they would like to purchase. Selections will be made based on those that favor greater air quality improvements. The criteria include the number of vehicles or equipment being requested, anticipated miles driven for the vehicles or annual usage rate hours for the equipment, how the vehicles or equipment are utilized, the typical routes or operating locations of the vehicles or equipment, annual gallons of diesel fuel being displaced by operating the vehicles or equipment on the alternate fuel, and the logistics of how the vehicles or equipment will be refueled.

Table 1 outlines the amount of grant funding per vehicle or off-road equipment unit that would be available for selected projects.

Table 1

Vehicle or Equipment Unit	Vehicle Description	Grant Amount per Vehicle or Equipment Unit
Purchase of new Class 1-3 natural gas or propane vehicle	Vehicles up to 14,000 GVWR, including taxis, police and public works vehicles, shuttle buses, and delivery trucks	50% of the incremental cost of the alternate fuel vehicle compared to the same gas or diesel model, up to $10,000
Purchase of new Class 4-8 natural gas or propane vehicle	Vehicles greater than 14,000 GVWR, including larger delivery trucks, utility bucket trucks, school buses, transit buses, waste hauler refuse trucks	50% of the incremental cost of the alternate fuel vehicle compared to the same diesel model, up to $20,000
Conversion of a Class 1-3 vehicle to natural gas or propane	Vehicles up to 14,000 GVWR, including taxis, police and public works vehicles, shuttle buses, and delivery trucks	50% of the cost of the conversion of a conventional vehicle to operate on natural gas or propane, up to $10,000
Conversion of a Class 4-8 vehicle to natural gas or propane	Vehicles greater than 14,000 GVWR, including larger delivery trucks, utility bucket trucks, school buses, transit buses, waste hauler refuse trucks	50% of the cost of the conversion of a conventional vehicle to operate on natural gas or propane, up to $20,000
Purchase of a new off-road equipment unit that operates on natural gas, propane, or electricity	Off-road equipment, such as track type tractors used for construction or at quarries, equipment at rail yards, and similar units	50% of the incremental cost of the alternate fuel version of the new equipment unit compared to the cost of the same type of diesel unit, up to $100,000

Consistent with our previously awarded CMAQ grants and with the objectives of the Illinois Alternate Fuels Rebate and Clean Diesel Grant programs, the eligibility criteria for project selection includes:

1. Applicant must be a local government unit, business, or organization located in the Chicago nonattainment counties of Cook, DuPage, Kane, Lake, McHenry, Will, and Aux Sable and Goose Lake Townships in Grundy County and Oswego Township in Kendall County.

2. The vehicles and off-road equipment units being purchased or converted must be located and primarily operated in the Chicago nonattainment area.

Furthermore, the grant conditions for each applicant will state that by accepting a grant under this program, those vehicles or equipment units will not be eligible to receive a rebate or grant under the Illinois EPA's Alternate Fuels Rebate or Clean Diesel Grant programs. We will also cross-reference incoming applications and coordinate with the City of Chicago and the Chicago Area Clean Cities coalition to ensure that the applicant has not or will not receive other CMAQ funding for the same set of vehicles or equipment.

The following are recent inquiries that help to illustrate the potential demand for additional alternate fuel funding sources in the Chicago area for the types of projects that are not covered or adequately addressed by existing Illinois EPA programs or other CMAQ-funded projects.

Inquiry #1:

The Illinois EPA was contacted by a park district in Will County that is requesting grants or rebates to convert eight of their current trucks to operate on propane. These trucks are less than 14,000 pounds GVWR (Class 1-3). The conversion system and installation labor will cost $8,000 per truck. From Table 1, each truck would be eligible to receive a grant for $4,000.

Inquiry #2:

The Illinois EPA was contacted by a school district in Cook County inquiring about funding availability for their desire to purchase 20 new natural gas-powered school buses (Class 6). The school district is located near an existing public natural gas refueling station. Each natural gas bus has an estimated incremental cost of $40,000. From Table 1, the amount of the grant for each bus would be $20,000.

Inquiry #3:

A hotel management company that operates four hotels in the O'Hare area inquired about incentives for natural gas-powered shuttle buses that would transport passengers to and from their properties and the airport. They would be able to refuel their vehicles at Gas Technology Institute's natural gas station in Des Plaines. The incremental purchase cost of each new shuttle bus (Class 3) is about $14,000. Each shuttle would receive a $7,000 grant.

In addition to the above inquiries, there are two sheriff's departments in the Chicago area that are interested in acquiring natural gas or propane-powered police vehicles, as they have access to both fuels. Also, a major electronics store is interested in natural gas or propane delivery trucks, a major transit service is interested in natural gas buses, and more waste and disposal companies are looking at natural gas options for refuse trucks.

Along with new vehicle or conversion options for natural gas or propane-powered public works vehicles, school buses, shuttle buses, transit buses, delivery trucks, and similar large vehicles, there are also several alternate fuel engine options for off-road equipment. Caterpillar and Cummins manufacture natural gas and propane heavy-duty engines that can be installed in a variety of equipment, such as street sweepers and track type tractors. There are also electric motor options for certain types of equipment, such as cranes operating in a rail yard.

The Illinois EPA is aware that the CMAQ Project Selection Committee approved the City of Chicago's $15 million request for its "Chicago Area Alternate Fuels Deployment Project, Phase 2" project that includes, among other things, an Electric Truck Voucher Program to provide an incentive for fleets in the Chicago area to purchase electric trucks. To avoid duplication with the City's program, this proposal does not include electric vehicles or electric trucks. At the current time, we are not receiving many business or government fleet applications or inquiries regarding electric vehicle incentives in the Chicago area; the primary fuels of interest to fleets are strongly in favor of natural gas and propane. Also, the Illinois EPA received $5 million in CMAQ funding, to be allocated over five years, for engine repower projects. This proposal does not include engine repower projects (e.g., an existing off-road equipment unit has the older, diesel engine removed and replaced with a new cleaner, higher tier engine). This program will address the types of alternate fuels, vehicles, and equipment that are not covered by the aforementioned approved CMAQ funding programs, and will fill a significant void that government and business fleets, and companies with off-road equipment, are seeking assistance with.

IV. Annual Program Plan Budget

Table 2 represents the estimated annual work plan budget for each fiscal year. This budget is an estimate reflecting the numbers and types of vehicles and off-road equipment that we expect to implement each fiscal year. The actual budget will depend on the types of funding requests in the applications. However, similar to the Clean Diesel Grant Program and our previous CMAQ applications, we will make efforts to adhere to the budget work plan outlined below.

Table 2
Annual CMAQ Budget for the Chicago Area Green Fleet Grant Program
(Estimated Budget for each fiscal year 2014-2018)

Vehicle Equipment Unit	# of Units	Average Amount of 50% grant per unit	Estimated Budget
Purchase of new Class 1-3 natural gas or propane vehicle	50	$7,000	$350,000
Purchase of new Class 4-8 natural gas or propane vehicle	50	$14,000	$700,000
Conversion of a Class 1-3 vehicle to natural gas or propane	50	$6,000	$300,000
Conversion of a Class 4-8 vehicle to natural gas or propane	20	$12,000	$240,000
Purchase of a new off-road equipment unit that operates on natural gas, propane, or electricity	8	$50,000	$400,000
		Est.	$2,000,000

Table 3 shows the total numbers of vehicles that will be implemented over the five-year period. It is estimated that 850 on-highway vehicles will be implemented, with up to 40 off-road equipment units also being purchased that will run on natural gas, propane, or electricity in lieu of diesel fuel. We anticipate that several of the Class 1-3 vehicles will be Class 3 delivery trucks and shuttle buses.

Table 3
Estimated Total Number of Vehicles

Vehicle or Equipment Unit	Total Number over 5 Years
Purchase or Conversion of Class 1-3 natural gas or propane vehicles	500
Purchase or Conversion of Class 4-8 natural gas or propane vehicles	350
Purchase of a new off-road equipment unit that operates on natural gas, propane, or electricity	40
Estimated total for all categories	890

V. Diesel Emissions Reduction Priority and Estimated Emissions Reductions

The U.S. EPA ranks diesel exhaust among air pollutants that pose the greatest risk to public health, especially to older adults, children, and those susceptible to or experiencing respiratory-related illnesses or adverse conditions, including asthma. Particulate matter ($PM_{2.5}$) from older diesel engines in both on-road vehicles and off-road equipment is the primary pollutant of concern, often visible to the public as gray to black "sooty emissions." In addition to $PM_{2.5}$, other pollutants, such as volatile organic compounds (VOC) and nitrogen oxides (NOx), are also a by-product of the combustion of diesel fuel. In Illinois, diesel-powered vehicles account for about 50 percent of the particulates and NOx emitted from all vehicles.

The Northeastern Illinois area does not meet the national ambient air quality standards for particulate matter (specifically $PM_{2.5}$) and the 8-hour ozone standard. Diesel emissions are a significant contributor of $PM_{2.5}$ and this project will help to reduce particulate emissions. Reductions in VOCs and NOx from all vehicles will also assist the region in meeting the 8-hour ozone standard. In addition to providing overall air quality benefit, this program will advance the objectives of the Direct Emissions Reduction Focus Group in the GO TO 2040 plan by reducing diesel particulate emissions and other pollutants with the deployment of more clean alternate fuel vehicles.

The Illinois EPA used the U.S. Department of Energy's GREET (Greenhouse gases, Regulated Emissions, and Energy Use in Transportation) model to estimate the $PM_{2.5}$, NOx, and VOC emissions reductions from this project in kilograms per year for each annual phase of the program. The GREET model was developed at Argonne National Laboratory specifically for calculating emission reductions for various pollutants for alternate fuel vehicles.

As shown in Table 4, the vehicles and equipment units will be phased-in, reaching 100 percent effectiveness in Year 5. It is assumed that each vehicle or unit will be in service in the Chicago area for ten years. Beginning in Year 11, the vehicles acquired in Year 1 are presumed to be retired from service, and so forth for Years 12 through 14. By the end of Year 15, it is assumed that all vehicles and units have been retired from service. It is likely that some vehicles, and especially the off-road equipment units, may remain in service for several more years beyond the estimated ten years of operational life. But, since most fleet vehicles only stay in service with the fleet for about ten years, we are assuming no emission benefit after 15 years.

Table 4 includes the GREET results for the vehicles proposed in this program. The inputs estimate an average of 100 miles per day driven for each alternate fuel vehicle, with service being five days per week. Some vehicles, such as taxis, school buses, transit buses, and many delivery trucks, are likely to travel more than 100 miles per day and possibly be in service 6 days per week. Therefore, the Illinois EPA may be using conservative mileage estimates to reflect the anticipated usage of the "average" fleet vehicle or unit. At the bottom of Table 4, the total project cost of $20 million was used to calculate the cost benefit for each pollutant in cost per kilogram reduced.

Table 4
Estimated Annual and Lifetime Emission Reduction Benefits

	$PM_{2.5}$ reduced (kg)	NOx reduced (kg)	VOC reduced (kg)
Year 1 (20% implementation)	391	30,297	1,351
Year 2 (40% implementation)	782	60,594	2,702
Year 3 (60% implementation)	1,173	90,891	4,053
Year 4 (80% implementation)	1,564	121,188	5,404
Year 5 (100% implementation, all AFVs in service by end of year)	1,955	151,485	6,755
Year 6 (all AFVs in service)	1,955	151,485	6,755
Year 7 (all AFVs in service)	1,955	151,485	6,755
Year 8 (all AFVs in service)	1,955	151,485	6,755
Year 9 (all AFVs in service)	1,955	151,485	6,755
Year 10 (all AFVs in service)	1,955	151,485	6,755
Year 11 (AFVs from Year 1 now retired)	1,564	121,188	5,404
Year 12 (AFVs from Years 1 and 2 now retired)	1,173	90,891	4,053
Year 13 (AFVs from Years 1-3 now retired)	782	60,594	2,702
Year 14 (AFVs from Years 1-4 now retired)	391	30,297	1,351
All AFVs retired by end of Year 15	0	0	0
Lifetime Total Pollutant Reduced	19,550	1,514,850	67,550
Cost Benefit: Cost/kg reduced	$1,023	$13	$296

VI. Project Coordination and Administration

The Illinois EPA will coordinate with its partners, including the members of the Chicago Area Clean Cities coalition and the Illinois Clean Diesel Workgroup, the participating fleets in the Illinois Green Fleets Program, several fleet organizations in the Chicago area, local government organizations, and environmental groups, to solicit project proposals. This process has worked very well with the other green fleet programs administered by the Agency.

If selected, Illinois EPA staff administering and overseeing the Chicago Area Green Fleet Grant Program will include Darwin Burkhart, Manager, Clean Air Programs and Chair of the Chicago Area Clean Cities coalition, and Mike Rogers, Vehicle Technical Services, in the Division of Mobile Source Programs in the Bureau of Air.

Attachment 1

Vehicle Information for CMAQ Project Application Form
Direct Emissions Reduction Project

The following provides the specific information required for each vehicle type as requested on the above referenced form. The current average model year represents default values used in the GREET model. The other values for fuel consumed, annual miles, and idling hours are representative estimates based on actual vehicle information for certain types of fleets as submitted by fleet managers for the Alternate Fuels Rebate and Clean Diesel Grant programs and/or from fleet data collected by the Chicago Area Clean Cities coalition.

Vehicle Type	**Total Number of Vehicles**	**Vehicle Size**	**Current Average Model Year**	**Current Fuel to New Fuel**	**Fuel Gallons Consumed for all vehicles**	**Average Annual Miles per vehicle**	**Annual Idling Hours per vehicle**
Waste haulers	150	Class 7	2000	Diesel to Natural Gas	1,350,000	20,000	240
School buses	50	Class 6	2000	Diesel to Natural Gas or Propane	4,500,000	15,000	400
Transit buses	20	Class 7	2000	Diesel to Natural Gas	3,800,000	50,000	576
Delivery trucks and Shuttle buses	300	Class 3-5	2000	Diesel to Natural Gas or Propane	510,000	15,000	640
Taxis	100	Class 1	2006	Gasoline to Natural Gas	270,000	50,000	1150
Emergency vehicles	30	Class 1-2	2006	Gasoline to Natural Gas or Propane	32,000	20,000	850
City/County vehicles	200	Class 1-3	2006	Gasoline or Diesel to Natural Gas or Propane	90,000	10,000	480
Off-road equipment	40	Heavy-duty	2000	Diesel to Natural Gas, Propane, or Electricity	1,000,000	3,000 annual usage rate hours/engine	560/engine

Clean Cities Area of Interest 4 Emissions Benefit Tool

Notes: Data should be inserted into yellow shaded cells. Emissions benefit estimates are calculated in each of the appropriate tables.

1. How many vehicles of each type are planned for purchase?

	Ethanol (E85) Vehicle	Natural Gas (NG) Vehicle	Liquefied Petroleum Gas (LPG) Vehicle	Hydrogen (H2) Fuel Cell Vehicle (FCV)	Electric Vehicle (EV)	Gasoline/ Diesel Hybrid Electric Vehicle (HEV)	Gasoline/ Diesel Plug-in Hybrid Electric Vehicle (PHEV)	Biodiesel Vehicle
								100%
Light Duty Vehicle	0	50	25	0	0	0	0	0
Medium/Heavy Duty Vehicle	0	78	25	0	0	0	0	0

2. On average, how many miles will each vehicle be driven per day?

	E85 Vehicle	NG Vehicle	LPG Vehicle	H2 FCV	EV	Gasoline/ Diesel HEV	Gasoline/ Diesel PHEV	Biodiesel Vehicle
Light Duty Vehicle	0	100	100	0	0	0	0	0
Medium/Heavy Duty Vehicle	0	100	100	0	0	0	0	0

3. On average, how many will days will each vehicle be driven per week?

	E85 Vehicle	NG Vehicle	LPG Vehicle	H2 FCV	EV	Gasoline/ Diesel HEV	Gasoline/ Diesel PHEV	Biodiesel Vehicle
Light Duty Vehicle	5	5	5	5	5	5	5	5
Medium/Heavy Duty Vehicle	5	5	5	5	5	5	5	5

4. Annual carbon monoxide (CO) emissions credit (pounds)

	E85 Vehicle	NG Vehicle	LPG Vehicle	H2 FCV	EV	Gasoline/ Diesel HEV	Gasoline/ Diesel PHEV	Biodiesel Vehicle
Light Duty Vehicle	0.0	12951.7	7823.6	0.0	0.0	0.0	0.0	0.0
Medium/Heavy Duty Vehicle	0.0	9728.0	3117.9	0.0	0.0	0.0	0.0	0.0
Vehicle Total	0.0	22,679.6	10,941.5	0.0	0.0	0.0	0.0	0.0

Total Annual CO Credit 33,621.2 pounds

5. Annual volatile organic compound (VOC) emissions credit (pounds)

	E85 Vehicle	NG Vehicle	LPG Vehicle	H2 FCV	EV	Gasoline/ Diesel HEV	Gasoline/ Diesel PHEV	Biodiesel Vehicle
Light Duty Vehicle	0.0	1103.9	446.9	0.0	0.0	0.0	0.0	0.0
Medium/Heavy Duty Vehicle	0.0	1080.4	346.3	0.0	0.0	0.0	0.0	0.0
Vehicle Total	0.0	2,184.3	793.1	0.0	0.0	0.0	0.0	0.0

Total Annual VOC Credit 2,977.4 pounds

6. Annual nitrogen oxide (NOx) emissions credit (pounds)

	E85 Vehicle	NG Vehicle	LPG Vehicle	H2 FCV	EV	Gasoline/ Diesel HEV	Gasoline/ Diesel PHEV	Biodiesel Vehicle
Light Duty Vehicle	0.0	1971.3	946.9	0.0	0.0	0.0	0.0	0.0
Medium/Heavy Duty Vehicle	0.0	50478.2	13396.0	0.0	0.0	0.0	0.0	0.0
Vehicle Total	0.0	52,449.6	14,342.9	0.0	0.0	0.0	0.0	0.0

Total Annual NOx Credit 66,792.5 pounds

7. Annual fine particulate matter (PM2.5) emissions credit (pounds)

	E85 Vehicle	NG Vehicle	LPG Vehicle	H2 FCV	EV	Gasoline/ Diesel HEV	Gasoline/ Diesel PHEV	Biodiesel Vehicle
Light Duty Vehicle	0.0	2.9	1.4	0.0	0.0	0.0	0.0	0.0
Medium/Heavy Duty Vehicle	0.0	650.0	208.3	0.0	0.0	0.0	0.0	0.0
Vehicle Total	0.0	652.9	209.8	0.0	0.0	0.0	0.0	0.0

Total Annual PM2.5 Credit 862.7 pounds

8. Annual greenhouse gas (GHG) emissions credit (CO2-equivalent pounds)

	E85 Vehicle	NG Vehicle	LPG Vehicle	H2 FCV	EV	Gasoline/ Diesel HEV	Gasoline/ Diesel PHEV	Biodiesel Vehicle
Light Duty Vehicle	0.0	293115.1	137936.5	0.0	0.0	0.0	0.0	0.0
Medium/Heavy Duty Vehicle	0.0	130005.2	33047.3	0.0	0.0	0.0	0.0	0.0
Vehicle Total	0.0	423,120.2	170,983.8	0.0	0.0	0.0	0.0	0.0

Total Annual GHG Credit 594,104.0 pounds

Information:
This tool has been created for the Clean Cities Funding Opportunity Announcement for Area of Interest 4: Alternative Fuel and Advanced Technology Vehicles Pilot Program. The tool is based off the AirCRED model´s methodology using EPA´s MOBILE6 model and light duty vehicle and heavy duty engine certification data to generate criteria air pollutant emission credits. However, for this tool, the GREET model is also used to generate data for vehicles not certified and well-to-wheel greenhouse gas emissions.

This tool requires the user to input the following data directly into the yellow cells:
1. The number of vehicles planned to be purchased
2. The average amount of miles each vehicle will be driven
3. The amount of days per week each vehicle will be driven

The tool will output annual carbon monoxide, volatile organic compound, nitrogen oxide, and greenhouse gas emission benefit estimates in the respective tables.

Assumptions:
For the EPA Mobile runs, we assumed new light duty vehicles would be replacing a 6 year old vehicles and new heavy duty vehicles would replace 12 year old vehicles. The GREET 1.8c.0 was used to generate results using defaults for MY2010 vehicles.

Versions:
v1.0 released 4/13/2009
v1.1 released 4/23/2009: 1. Added PM2.5 credits 2. Adjusted heavy duty HEVs and PHEVs to run on diesel not gasoline for GHG calculations 3. Adjusted the heavy duty GHG calculations to be be compared to a diesel baseline and not gasoline

Contact:
If you have questions about this tool, you can email: aburnham@anl.gov