CLEAN FLEETS INITIATIVE AWARD GUIDELINES

AN OVERVIEW OF THE PROGRAM, APPLICATION CRITERIA, CONTRACT PROCEDURES, AND REPORTING REQUIREMENTS

DRAFT VERSION

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1.0 GENERAL INFORMATION

1.1 DEFINITIONS

Terminology used throughout this document includes the following:

Alternative Fuels: technologies and fuels such as: natural gas, ethanol blends (higher than E10), biodiesel blends (B5 or higher blends), electricity, fuel cells, and hybrids (with a fuel economy improvement of at least 25% over the baseline non-hybrid model)
Application: the total packet of information required for an organization's funding request to be considered by the Clean Fleets Initiative.
Cost-effectiveness factor: how efficient a project is at reducing a given pollutant. It is given in units of dollars/ton of pollutant reduced per year.
CFI: the umbrella effort called Clean Fleets Initiative, which encompasses all programs and focus areas.
Clean Fleet Policy: any enforceable measure voluntarily instituted by an organization that is specifically designed to minimize vehicle emissions
Conformity: the governmental process whereby it is assured that transportation plans do not undermine air quality goals
Diesel-Based Project: a project in which the baseline vehicle/equipment under consideration for retrofit or replacement is powered by diesel.
EPA: the United States Environmental Protection Agency, the federal agency with jurisdiction over outdoor air quality issues
Funding source: the granting organization from which monies for the Clean Fleets Initiative are received.
Funding type: monies received from a grantor, which may be allocated to PFA(s) according to grantor preferences and/or by pre-set allotment schedules. Funding types may or may not carry eligibility/evaluation criteria beyond those listed in this document.
Gasoline-Based Project: a project in which the baseline vehicle/equipment under consideration for retrofit or replacement is powered by gasoline.
HGB: includes Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller counties, as well as any additional counties the EPA may designate as part of the region's ozone non-attainment area in the future. Also referenced as the "Houston-Galveston-Brazoria" region.
Innovative Project: a project in which new technologies/fuels are introduced, such as hybrids, natural gas, biofuels, or hydrogen fuel cells.
NOx: nitrogen oxide pollutants, a precursor of ozone
On-Road: road-capable mobile vehicles such as busses, trucks, cars, etc.

Off-Road: mobile vehicles and equipment which are generally used on unpaved surfaces, such as construction equipment, lawn-mowers, etc.
Ozone: a ground-level pollutant (O_3) that is formed in the atmosphere through a chemical reaction between NOx and VOCs
Ozone non-attainment area: an area that does not comply with the National Ambient Air Quality Standard for ozone
PM: particulate matter (soot) pollutants which are small in size and may be harmful to human health
Program: a particular subset of the CFI, such as the "Clean Machines" program; based on project type
Program Focus Area or **PFA:** a particular subset of a CFI Program, based on project type and/or sector
Project: a proposed action (i.e. installation of a fuel station) or group of proposed actions (i.e. retrofit of 20 vehicles)
SIP: the Texas State Implementation Plan, which describes how the region will come into attainment for ozone
TCEQ: the Texas Commission on Environmental Quality, the state agency with jurisdiction over outdoor air quality issues
Traditional Project: a project in which gasoline or diesel fuel will continue to be used after the project is completed, and no advanced fuel saving technologies will be introduced.
VOCs: Volatile Organic Compound pollutants, a precursor of ozone

1.2 REGIONAL AIR QUALITY

Presently, the HGB region is in "severe" non-attainment of the federal ground-level ozone standard. This means that our air contains unhealthy levels of ozone pollution multiple times throughout the year. According to the EPA, "Numerous scientific studies have linked ground-level ozone exposure to a variety of problems, including:

- lung irritation that can cause inflammation much like a sunburn;
- wheezing, coughing, pain when taking a deep breath, and breathing difficulties during exercise or outdoor activities;
- permanent lung damage to those with repeated exposure to ozone pollution; and
- aggravated asthma, reduced lung capacity, and increased susceptibility to respiratory illnesses like pneumonia and bronchitis."[1]

[1] http://www.epa.gov/oar/ozonepollution/health.html

Ozone is produced through a photochemical (sunlight enhanced) reaction between NOx and VOCs in warm temperatures. Both NOx and VOCs are emitted from vehicles and equipment; NOx is emitted in higher quantities from diesel-powered engines, while VOCs are emitted in higher quantities from gasoline-powered engines.

In accordance with the Federal Clean Air Act, the TCEQ has submitted a legally-binding SIP describing how our region (and other non-attainment regions in Texas) will reduce ozone pollution to safer levels. Currently, our deadline to demonstrate attainment is 2019. If we do not reach this goal, then the region may be penalized for its failure to comply with federal requirements; these penalties may include restrictions on transportation funding and stricter controls on industrial facilities.

Additionally, the Clean Air Act mandates that regional transportation plans must demonstrate "conformity" in the non-attainment areas. Conformity is a process designed to ensure that transportation projects do not undermine air quality goals by inadvertently promoting strategies that will result in increasing vehicle emissions. Transportation projects cannot be approved, funded, or implemented without a conforming transportation plan.

Finally, it is important to note that ozone is not the region's only air quality problem. Recently, concerns have been raised regarding the levels of PM and air toxics (compounds such as benzene, 1,3-butadiene, trichloroethylene, and hydrochloric acid) in our region, which have been measured at unhealthy concentrations in localized areas. PM and air toxics can cause serious health problems, including cancer, and both types of pollution are emitted by on-road vehicles.

1.3 THE CLEAN FLEET-CLEAN CITIES PARTNERSHIP

Also housed at H-GAC is the Greater Houston Clean Cities Coalition (GHCCC). The GHCCC is a chapter of the U.S. Department of Energy's national Clean Cities program, and its mission is to reduce petroleum consumption through the promotion of alternative fuels, technologies and fuel conservation measures. The GHCCC works closely with the CFI to solicit funding, raise awareness, and provide consultative and technical support for Clean Fleet project evaluation and implementation as needed. In exchange, the Initiative may provide fleet data and applicant contact information to GHCCC staff if requested for outreach or information purposes.

The GHCCC consists of supporters and stakeholders with diverse backgrounds and interests, and is always looking for more participants. If you or your organization would like to learn more about GHCCC membership, please visit www.houston-cleancities.org, or email cleancities@h-gac.com for more information.

1.4 OTHER FUNDING OPPORTUNITIES

The Clean Fleets Initiative is not the only source for information and funding. H-GAC staff encourages you to explore other opportunities, including the following:

Special Grant Projects: On occasion, H-GAC becomes aware of special grant opportunities through RFPs announced by federal and state agencies as well as other private and public organizations. They vary widely in scope, funding availability, and evaluation criteria. Often, applications for these grant opportunities are enhanced through the collaboration of public and private entities. If you or your organization would be interested in partnering with H-GAC on a special grant project, please email cleancities@h-gac.com. Please provide details on the nature of your organization, who the appropriate contact person is, and what your specific interests and/or constraints are in working on a special project with H-GAC. H-GAC staff will retain this information for future reference, and as appropriate opportunities arise, may contact you to explore a potential collaboration. Depending on the type of the special grant opportunity and the restrictions listed therein, organizations may also be able to apply for and receive a CFI grant to provide additional support to the project.

Federal & State Tax Incentives & Credits: A number of tax incentives and credits exist for projects involving the research and/or deployment of alternative fuels and advanced vehicle technologies. The U.S. Department of Energy maintains a comprehensive and up-to-date listing of available credits and incentives, as well as any applicable laws, through the Alternative Fuels Data Center website, located here: http://www.afdc.energy.gov/afdc/incentives_laws.html.

Texas Emission Reduction Program: The State of Texas regularly allocates funding to the Texas Emission Reduction Plan program designed to reduce emissions in non-attainment areas such as the Houston-Galveston-Brazoria region. The Texas Commission on Environmental Quality is the primary administrator of these funds, and their main program website is located here: http://www.tceq.state.tx.us/implementation/air/terp/index.html. Smaller portions of TERP funds are set-aside for particular alternative fuel options, and are administered by the Railroad Commission of Texas (http://www.propane.tx.gov/rebate_program/index.html), the Texas General Land Office (http://www.glo.state.tx.us/energy/altfuels/NGIPG.html), and the Houston-Galveston Area Council (http://www.houston-cleancities.org/terp_overview.htm).

Drayage Loan Program: The Houston-Galveston Area Council also administers a revolving loan fund for fleets that do business with the Ports of Houston, Galveston, Texas City, and Freeport. The revolving loan program provides affordable interest rates to owners and operators who

may not qualify for loans through the private sector, but who wish to upgrade their trucks to cleaner technologies. For more information, please visit the program's website at: http://www.h-gac.com/taq/airquality/drayageloans/default.aspx.

Business Loans & Assistance: Frequently, H-GAC staff receives questions about starting or relocating an alternative fuels or clean air technologies business in the greater Houston area. Qualifying businesses may be eligible to receive a small business loan through a separate H-GAC economic development program; more information about this program is available here: http://www.h-gac.com/community/community/sba/default.aspx. Also, resources and information are available through the Greater Houston Partnership's "Opportunity Houston" program, located here: http://www.houston.org/relocationAndExpansion/.

Drive a Clean Machine: For individuals who are looking to repair or replace their older personal vehicles, vouchers may be available through the Drive A Clean Machine program. This program is overseen by the Texas Commission on Environmental Quality, but is administered in this region by H-GAC. For more information about funding availability, eligibility, and application guidelines, please visit: http://www.h-gac.com/human-services/airchecktexas/default.aspx.

2.0 GENERAL PURPOSE & STRUCTURE OF THE CLEAN FLEET INITIATIVE

The CFI is a vehicle and equipment grant program designed to:

1. help improve HGB's regional air quality & fulfill regional SIP and conformity requirements
2. help reduce petroleum consumption and enhance energy independence and diversity
3. help stimulate the local economy

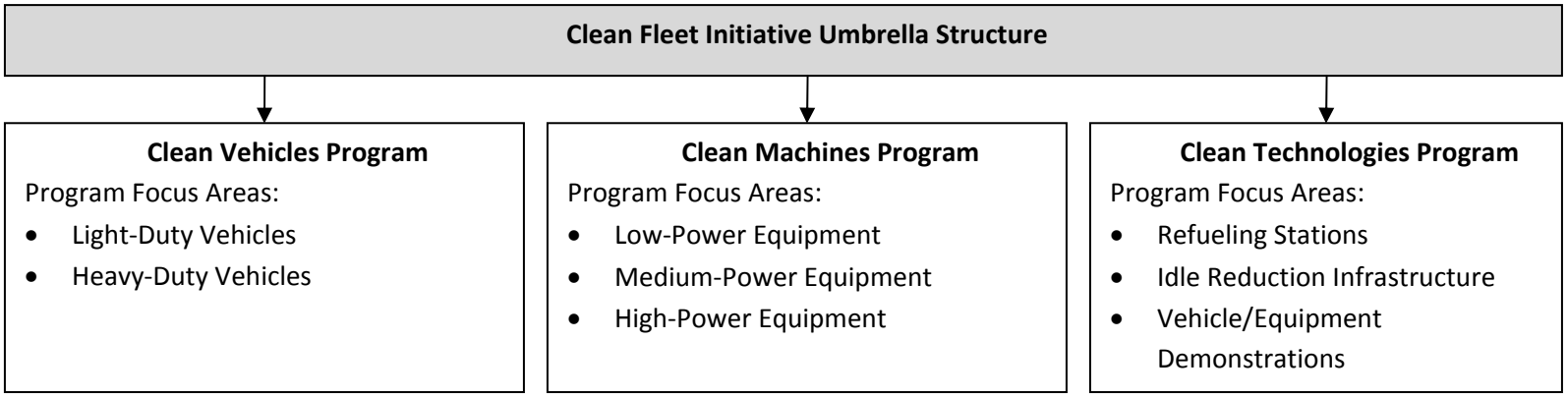
The Initiative is open to any private, public, or non-profit organizational entity with a base of operations in the HGB region. Individuals may not apply for or receive funding.

Private entity applicants may receive a grant package to cover *up to* 75% of the total eligible project costs. Public and non-profit entities may receive a grant package that covers *up to* 100% of the total eligible project costs.

Projects that may be considered for funding under CFI are:

- vehicle/equipment retrofit (includes on-board anti-idling devices)
- conversion of engines to operate on alternative fuels
- engine replacement
- installation of alternative fuel and anti-idling infrastructure
- deployment of non-certified or commercialized vehicles/equipment for field testing and demonstration

The CFI is an umbrella effort that encompasses three programs: Clean Vehicles (on-road projects), Clean Machines (off-road projects), and Clean Technologies (vehicle/equipment support projects). Within each program, particular focus areas represent different project types. A structural diagram of the Clean Fleets Initiative along with brief descriptions defining the scope of each PFA is provided on the following pages.



2.1 CLEAN VEHICLES PROGRAM FOCUS AREA DESCRIPTIONS

The Clean Vehicles Program is designed to assist fleets in upgrading cars, trucks, buses, and motorcycles. Based on the vehicle weight and type, projects may be considered under any of the following two program focus areas:

Light Duty Vehicles PFA – Includes any passenger car, pick-up truck, SUV, or motorcycle with a gross vehicle weight of 8,500 lbs or less.

Heavy-Duty Vehicles PFA – Includes any passenger or cargo-carrying on-road truck with a gross vehicle weight of 8,501 lbs or more. This category also includes all transit and school buses.

2.2 CLEAN MACHINES PROGRAM FOCUS AREA DESCRIPTIONS

The Clean Machines program is designed to assist fleets in upgrading commercial and industrial equipment primarily utilized off of highways, arterial streets, and other local roads. Equipment sectors included are: construction, agriculture, facilities maintenance, port equipment (air, sea, or railyard), marine vessels, and locomotives. Equipment sectors excluded are: aircraft, stationary generators, and recreational vehicles. Program focus areas are divided according to the size of the engine.

Low-Power Equipment PFA – Includes equipment powered by engines with less than 100 horsepower (75 kW).

Medium-Power Equipment PFA – Includes equipment powered by engines between 100-750 horsepower (75-560 kW).

High-Power Equipment – Includes equipment powered by engines with more than 750 horsepower (75-560 kW).

2.3 CLEAN TECHNOLOGIES PROGRAM FOCUS AREA DESCRIPTIONS

The Clean Technologies program is designed to assist applicants in fostering a market environment that promotes the adoption of advanced vehicle designs and the use of cleaner fuels. It is not intended to fund a full-scale research program or to support other up-stream activities more removed from the immediate operational aspects of fleet management and utilization.

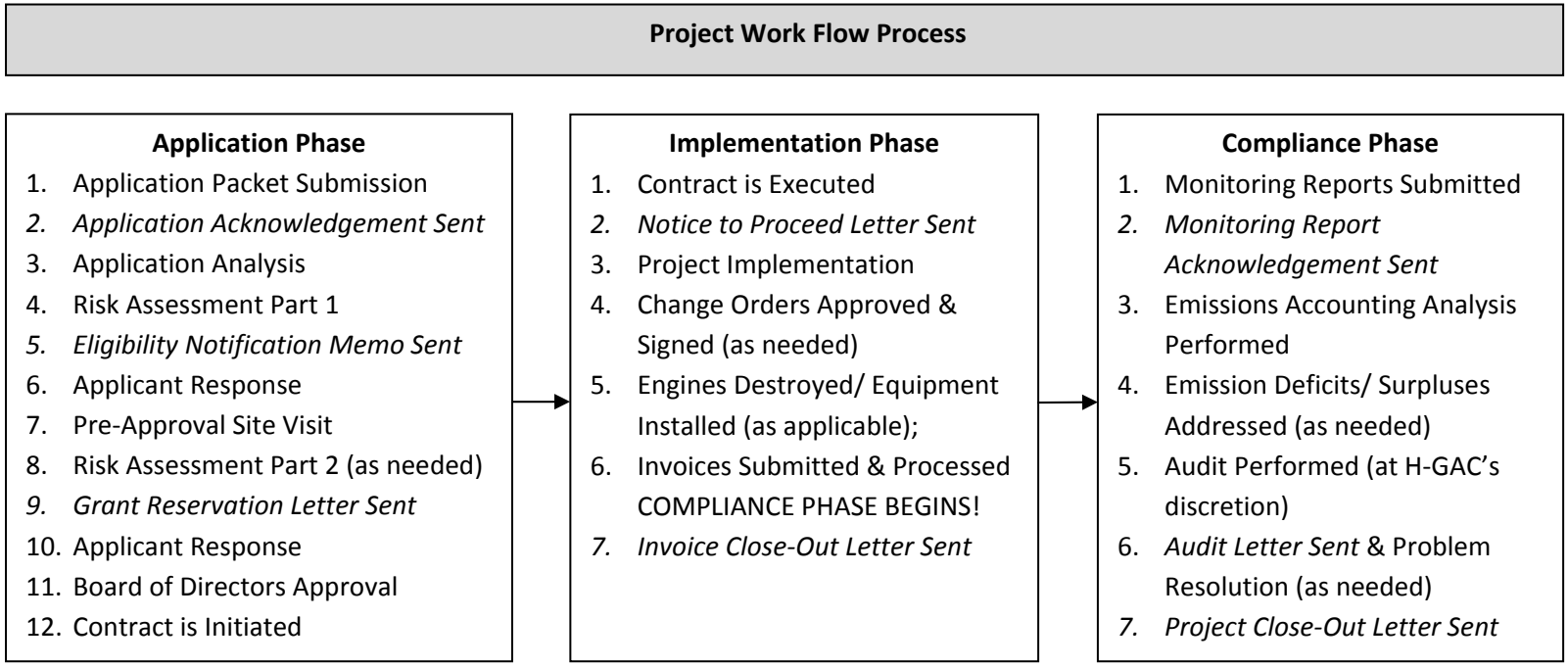
Refueling Stations PFA – eligible projects are those involving the installation of alternative fuel tanks and pumps at any new or existing stations.

Vehicle/Equipment Demonstration PFA – eligible projects are those involving the deployment of non-certified/non-commercialized vehicles or equipment. Infrastructure demonstration projects should apply under the Refueling Stations PFA or the Idle Reduction Infrastructure PFA, whichever is applicable.

Idle Reduction Infrastructure PFA – eligible projects are those involving the new construction or expansion of off-vehicle infrastructure designed to reduce idling, such as truck stop electrification and marine shore-power.

3.0 FUNDING AWARD PROCESS

The Funding Award Process includes three stages: application phase, implementation phase, and compliance phase. These stages are detailed in the diagram shown on the following page.



Throughout each phase, project managers should expect to receive a formal communication from H-GAC staff at certain milestones within the process. These milestones are shown in italics above. For additional details on each phase, see Sections 3.1-3.3.

CFI participants will coordinate with two primary contacts within H-GAC throughout the course of project: the program coordinator and a project specialist. The program coordinator represents the CFI to the general public and works with individuals both internally and externally

to ensure all projects are handled effectively and efficiently. The program coordinator will assign a project specialist to each project that will be responsible for working with the participant to move each project through the CFI work flow process. The project specialist will handle all of the day-to-day tasks and questions related to the project.

3.1 APPLICATION PHASE

The Application Phase consists of a series of steps which advances a project from its initial application submission to the initiation of a new contract. When an application is originally received, it is first checked for completeness; more information about application packet requirements and submission are included in Section 3.1.1. Once an application is deemed complete, it is evaluated according to four factors: 1) Basic CFI Requirements, 2) Emission Reductions, 3) Cost-Effectiveness, 4) Funding Type Criteria, and 5) Risk Assessment Part 1 (private/non-profit entities only). A grant estimate letter is then drafted describing their preliminary eligibility, and this is discussed with the applicant. This evaluation process is further described in Sections 3.1.2-3.1.7. Following this, a pre-approval site visit is completed and a Part 2 Risk Assessment is conducted (if needed; private/non-profit entities only), and the applicant is then notified of their final award eligibility. The project moves forward for final approval and initiation, completing the application phase. These steps are further described in Sections 3.1.8-3.1.9.

3.1.1 APPLICATION PACKET & SUBMISSION

Potential applicants are encouraged to contact staff prior to submitting an application with any questions they may have regarding program requirements and/or to receive a qualitative assessment of their prospects for receiving funding under the CFI. Applicants may also estimate[2] emission reductions and cost effectiveness factors using the calculator on the CFI website located at http://www.houston-cleancities.org.

Organizations may submit applications at any time. Once an application is submitted, it cannot be substantively amended[3] with the exception of the correction of inadvertent errors (i.e. typos, etc.). Awards will be granted on a first-come, first-serve basis until funds are

[2] Please note: values returned by the calculator are ONLY estimates and may differ from staff calculations and grant awards.

[3] H-GAC is not responsible for ensuring the compatibility and/or proper installation of technologies that are to be included in the application. H-GAC strongly encourages participants to discuss any questions relating to the operation and/or compatibility of equipment with the product vendor and other qualified personnel prior to including it in the application.

exhausted. Only one application is necessary per organization. Organizations may submit multiple projects in a single application; however, for each project, applicants must specify which program their project is being submitted under, and must submit the appropriate program-specific form(s) and documentation. For example, a fleet could submit one application for two projects – a project involving the purchase of off-road equipment and a project involving the purchase of on-road vehicles; in this case, the applicant would need to specify that their application is being submitted both to the Clean Machines and Clean Vehicles programs, and the appropriate forms for each would need to be completed and included in the overall application packet.

An application fee is required to cover the cost of application processing and contract management for the CFI. The fee should be paid by including a check with the hard copy application; the check can be made out to the "Corporation for Regional Excellence". The application fee schedule is as follows:

Clean Fleets Initiative Program	No Application Fee for H-GAC Member Governments & School Districts	Application Fee for other Public & Non-Profit Entities	Application Fee for Private Entities
Clean Vehicles		$50	$100
Clean Machines		$150	$300
Clean Technologies		$250	$500

If you are submitting projects under multiple programs (i.e. replacement under Clean Vehicles and infrastructure under Clean Technologies), the application fee is the sum of the applicable program fees.

Application packets must include the following information:

- ☐ General Information Sheet (Application Form A)
- ☐ Fleet Inventory(ies)
  - ☐ On-Road Vehicles Fleet Inventory (Application Form B1, if applicable)
  - ☐ Off-Road Equipment Fleet Inventory (Application Form B2, if applicable)

☐ Program Form(s)

- ☐ Clean Vehicles Program Form (Application Form C1, if applicable)
- ☐ Clean Machines Program Form (Application Form C2, if applicable)
- ☐ Clean Technologies Program Form (Application Form C3, if applicable)

☐ Good Citizen's Incentive Form (optional, Application Form D)

☐ Signed Application Acknowledgement Form (Application Form E)

☐ Application Fee

☐ Electronic Copy of Application

(either by inclusion of a CD with the mailed application packet, or by emailing all completed forms to cleanfleets@h-gac.com)

Submit the hard-copy application packet to H-GAC at the following address:

Houston-Galveston Area Council
Attn: Clean Fleets Initiative
3555 Timmons, Suite 120
Houston, TX 77027

Organizations may withdraw an application at any time; however, application fee refunds will be granted only at the discretion of H-GAC staff, based on consideration of any extenuating circumstances beyond the control of the applicant.

3.1.2 BASIC CFI REQUIREMENTS

Regardless of the PFA or funding source, ALL projects must fulfill the following **Basic CFI Requirements** to be eligible for a grant:

Vehicles/Equipment Eligibility

- Vehicles/Equipment which are included in the application must be in good working order and in current use

- Vehicles/Equipment must have been operating within the HGB ozone non-attainment area under their current owner/operator for at least 2 years prior to their inclusion in an application.
- Bi-fuel vehicles/equipment funded by CFI will be required to utilize the alternative fuel for a minimum of 75% of the vehicle's operating hours.
- Vehicles/Equipment funded under the CFI cannot be used to generate credit in any emissions banking and trading program.
- Except for vehicles/equipment submitted for consideration under the Demonstrations & Pilot Projects PFA, ALL retrofits, conversions, and engines must be EPA- or CARB-certified, verified, or otherwise approved.

Infrastructure Eligibility

- Infrastructure included in the application must be located within the HGB ozone non-attainment area
- Infrastructure funded under the CFI cannot be used to generate credit in any emissions banking and trading program.

3.1.3 EMISSION REDUCTION CALCULATIONS

Once it is established that the application is complete and that the project meets the Basic CFI Requirements, an analysis is performed to determine the projected emission reductions and how cost-effective the project is relative to the air pollution benefits that would be achieved by its implementation.

Emission reductions for CFI projects will be calculated based on information provided in the application and use of the most appropriate, up-to-date EPA or CARB approved emissions modeling programs (such as MOBILE6.2 or NONROAD) and/or applicable guidance documents and certifications. The analyst will also incorporate as many current local parameters and corrections as possible, in accordance with current SIP and conformity modeling protocols.

A more detailed discussion of calculation methodology is included in Technical Supplement #1. In its most simple form, calculations are performed as follows:

(Emissions Rate) x (Usage Rate) = (Emissions)

(Current Emissions) – (Future Emissions) = (Projected Emission Reductions)

Reductions in all pollutant types are desirable, but not required. Increases in any pollutant are not desirable, but except for NOx and VOCs, will not result in a de-facto rejection.

Emission calculations for replacement projects will only be performed for 1-to-1 exchanges. Replacement projects occurring in uneven ratios (i.e. "2-for-1") will not be considered due the complexity of the analysis and the difficulty in assuring proper compliance.

Often, H-GAC staff receives inquiries from fleet managers regarding the eligibility of extremely old back-up vehicles/equipment for replacement. The suggestion is that they should qualify for funding because the replacement vehicle will not be assigned to back-up duties, but will instead be placed on the highest-usage "tier". Moreover, as a consequence of the project, that this would result in a cascading effect in which the vehicles/equipment currently assigned to the highest-usage tier will be shifted to middle-usage route/role, and those currently assigned to the middle-usage tier will be shifted to the back-up tier. The argument is that not only will emission benefits result directly from the replacement of the current back-up vehicle/equipment with a new vehicle/piece of equipment, but that indirect emission benefits will result when other vehicles/equipment are shuffled in order to maximize the use of the new and minimize the use of the old. H-GAC staff concurs.

Accordingly, vehicles/equipment which would otherwise be considered ineligible for replacement under CFI due to its spent useful life may be considered eligible if the vehicle/equipment is still in good working order, is still in use, and if its replacement will result in a reshuffling of the "usage tiers" in the manner characterized in the previous paragraph. In this special case, a "tiered analysis" will be performed in order to capture both the direct and the indirect emission benefits resulting from the project. As this is a non-traditional methodology designed to accommodate participants, it is limited at this time to *organizations which have previously participated in the Clean Fleets Initiative and are in good-standing*; new participants to the program and previously "flagged" participants will not be considered for this type of analysis.

Applicants requesting the tiered analysis must be able to document the connections between the actual project and the incidental actions (shuffling) taking place as a result of the project by filling out and submitting the "Connectivity Mapping Tab" included in the fleet survey (see Application Forms B1 and B2 for more details). Any number of vehicles may be included in the tiered analysis, so long as their connection to the project can be mapped, and so long as the average annual usage of all the vehicles/equipment included is greater than the minimum usage requirements for the PFA (see the Project Scope of Work forms at www.houston-cleancities.org/documents.htm for more details). Collectively, the usage patterns between the current vehicles/equipment and the future vehicles/equipment should not significantly change; in other words, this type of project is not intended to accommodate major operational expansions or reductions. All vehicles/equipment included in the tiered analysis will be subject to CFI contract and compliance requirements, even those not directly

funded. For more information on the calculation methodologies associated with this type of analysis, please review Technical Supplement #1D.

3.1.4 COST-EFFECTIVENESS CALCULATIONS

After a projected emission reduction is calculated, a cost-effectiveness (CE) analysis is performed. A CE factor is a measure of how efficient a project is at reducing a given pollutant over the course of the project's life. There are two types of CE factors. The first is an "actual" CE factor, which describes the efficiency of a project if it were to be fully funded as proposed in the application. The second is a "target" CE factor, which is defined by the CFI evaluation criteria and acts to ensure that the program as a whole maintains a minimum level of efficiency. During the CE analysis, the actual CE factor is compared to the target CE factor to determine if the project is efficient enough to be fully funded, or if a project is only eligible for partial funding.

A more detailed discussion of calculation methodology is included in Technical Supplement #2. In its most simple form, calculations are performed as follows:

Eligible Project Costs x Capital Recovery Factor = Annualized Project Costs
Annualized Project Costs/Projected Annual Emission Reductions = Cost-Effectiveness

Generally, the greater the emission reduction achieved, the more efficient it is for CFI to fund your project, and the more money your project may be eligible to receive. However, it should be noted that just because you may be eligible to receive a certain level of funding based on cost-effectiveness criteria, this does not mean you will receive that level of funding. Actual grant awards are subject to the availability of funds and any applicable match requirements.

Since emission reductions are a component of the CE factor, they will necessarily be different if calculated on the basis of one pollutant versus another pollutant. Therefore, for any cost-effectiveness factor, it is necessary to specify what pollutant(s) is being addressed. Typically, a NOx cost-effectiveness factor will be used for diesel-based projects and a VOCs cost-effectiveness factor will be used for gasoline-based projects; however, this may vary according to funding type.

3.1.5 RISK ASSESSMENT PART 1

Concurrent with the evaluation of emission reductions and cost-effectiveness, a Part 1 Risk Assessment is conducted for all private and non-profit applicants. This assessment is performed in order to gauge the reliability of the applicant in fulfilling their contractual commitments and their ability to remain operational throughout the long-term monitoring period (see section 3.3.3 for more information). The Part 1 Risk Assessment is based on the following factors:

- Number of Years in Business/Operation
- Third party credit score
- Prior History with any H-GAC air quality grant programs
- Professional experience of the prospective contract signatory
- Size of the Business/Organization

Depending on the risk level that these factors show for each applicant, H-GAC staff will determine if the project should be deemed ineligible due to high-risk or if it may move forward. Projects moving forward that are deemed "low risk" can advance without undergoing a Part 2 Risk Assessment, while those deemed "moderate risk" will require the performance of the Part 2 Risk Assessment (see section 3.1.9 for more information)

3.1.6 GOOD CITIZEN'S INCENTIVE

The "Good Citizen's Incentive" is provided to reward any applicant that has demonstrated exceptional leadership in the area of environmental stewardship. For each of the following items that the applicant has participated in/accomplished, we will increase the grant award amount by an additional $3,000.

Eligible items to qualify for the CFI Good Citizen's Incentive

- Enacting a mandatory, enforceable clean fleet policy in your jurisdiction, company or organization at least 1 year prior to application. A "Clean Fleet Policy" is defined as any enforceable measure voluntarily instituted by an organization that is specifically designed to minimize vehicle emissions; this may include an anti-idling policy, alternative fuel policy, clean air product procurement policy, etc.

This does not include policies in which emission reductions are only an ancillary benefit (i.e. a policy designed to minimize fuel costs), nor does it include policies that benefit the primary business of the applicant (i.e. a natural gas company's policy that they will only use natural gas vehicles).

- Being a Best Workplaces for Commuters organization for at least 1 year, recognized under H-GAC's regional BWC program. (http://www.commutesolutions-hou.com/bestworkplaces/bestworkplaces.htm)
- Being a recipient of TCEQ's "Texas Environmental Excellence Award" within the past 5 years (http://www.teea.org/)
- Being an EPA SmartWay Partner (http://www.epa.gov/otaq/smartway/transport/basic-information/index.htm) for at least 1 year
- Certification/Recertification of one or more facilities within the HGB region under the LEED program within the past 3 years (http://www.usgbc.org/DisplayPage.aspx?CMSPageID=64)
- Becoming an EPA GreenPower Partner (http://www.epa.gov/greenpower/) for at least 1 year
- Certification of one or more facilities within the HGB region as achieving an EnergyStar (http://www.energystar.gov/index.cfm?c=business.bus_bldgs)
- Participation in air quality research and development projects with which H-GAC has been involved in the past 3 years.

The incentive is subject to funding availability, as typical funding sources do not specifically allow for this type of expenditure. This incentive may not be used to go beyond 100% of the project cost, nor is it intended as an award that the recipient may utilize for general purposes; rather, it must be applied to the cost of the project(s) included in the application and is considered a bonus that increases the amount of the overall grant award. Also, organizations that have been "flagged" as having a history of unresolved problems with any previously received H-GAC grant funds may not claim this incentive.

Organizations wishing to qualify for and claim the incentive for one or more of the items listed above may only do so if the activities in question relate to facilities, vehicles, or equipment primarily located within the HGB ozone non-attainment region. Participation in these activities using facilities, vehicles, or equipment located in other parts of the country does not qualify.

3.1.7 GRANT PACKAGE DEVELOPMENT

Having determined both the projected emission reductions, the cost-effectiveness of the proposed project, and the estimated risk level, a grant package will be developed. The amount and type of grant funds included in this package will vary depending on a number of factors including the availability of funding and the specific criteria associated with each funding type. The availability of funding will be updated on the CFI website on a monthly basis; to see the current funding availability, please visit **www.houston-cleancities.org/cfifunding.htm.**

The specific criteria associated with each funding type consist of a number of "attributes" such as minimum usage requirements, what constitutes an "eligible cost", what county(ies) the funding is designated for, matching requirements, etc. These will vary according to the requirements of the program and the specific preferences of the funding source, and consequently, not every project will be eligible for every funding type. So, for example, a project may be eligible for SEP funding, but ineligible for CMAQ funding. Funding Type Attributes for regularly available funding types are listed in each Sample Funding Specifications Contract Attachment; see the Project Scope of Work forms at www.houston-cleancities.org/documents.htm for further information.

Beyond the Funding Type Attributes used in the grant determination process, several other qualitative factors are taken into consideration. These include:

- How the applicant performed in the Part 1 Risk Assessment (see Section 3.1.5)
- if the applicant may qualify for grant monies through the Good Citizen's Incentive (See Section 3.1.6)
- if the applicant has been awarded grants or assistance through other funding opportunities for the vehicles/equipment included in this project (See Section 1.4)

After considering these factors, the application analyst will assemble the best grant package available and provide an Eligibility Notification Memo (by email or letter) to the applicant, and discuss with them any questions they may have. The applicant will respond in writing about how they wish to proceed, choosing one of three options: 1) move forward for grant approval for all of the vehicles/equipment submitted in the application, 2) move forward for grant approval with selected vehicles/equipment, and withdraw others from the application, or 3) withdraw the entire application. Vehicles/equipment that are withdrawn from the process may be resubmitted for consideration under a new application at a later time.

Please note that in order to ensure the most efficient use of the program's administrative funding and staff time, projects qualifying for less than $1,000 in grant funding will not be accepted into the program. In the event that this is the outcome of the application analysis, H-GAC will refund the applicant's application fee.

3.1.8 PRE-APPROVAL SITE VISIT

Following notification by the applicant that they wish to proceed in response to the eligibility notification memo, H-GAC staff will conduct a pre-approval site visit. The purpose of the site visit will be to verify the accuracy of the information contained in the application, and to ensure that several operational features are in place.

Specifically, for Clean Vehicles project, Clean Machines projects, and for Clean Technologies projects which involve the field testing or demonstration of a vehicle, equipment, or other type of on-board technology that will not involve the funding of infrastructure, H-GAC staff will review and/or collect copies of the following documentation:

- Mileage/fuel/maintenance logs which demonstrate consistency with the information contained in the application.
- The vehicles/equipment are functioning and in good working order (by start-up and by a qualitative assessment of the vehicle/equipment and/or the maintenance records)
- Written Vehicle Operating Procedures document, or equivalent protocols
- Written Workplace Drug Policy
- Proof of a current automotive insurance/liability policy
- Proof of current ownership of the vehicle (titles and/or lease agreements)
- Current financial statement demonstrating long-term financial liability/stability/growth[4]
- Proof of length of time in operation[5]
- Verification (if applicable) of policies, procedures, and/or certifications associated with the Good Citizen's Incentive

For Clean Technologies projects for which there is existing infrastructure that is to be expanded/modified, H-GAC staff will confirm:

- Contact information, usage patterns, and make/model of the vehicles/equipment that utilize the infrastructure are consistent with the information contained in the application.
- The existing infrastructure is functioning and in good working order (by demonstration of infrastructure usage and/or by a qualitative assessment of the maintenance records)
- The applicants have a written Workplace Drug Policy

[4] Only required for Part 2 Risk Assessments, see Section 3.1.9

[5] Public entities are not required to provide this documentation

- The applicants have proof of a current business insurance/liability policy, or equivalent document
- The applicants have a written training manual or document describing how it is assured that employees know how to properly maintain and utilize the existing infrastructure
- The applicants possess and are in current compliance with any building or facilities permits that are applicable (by a review of the applicant's records and by contacting the appropriate agencies)
- Current financial statement demonstrating long-term financial liability/stability/growth[6]
- Proof of length of time in operation [7]
- Verification (if applicable) of policies, procedures, and/or certifications associated with the Good Citizen's Incentive

For Clean Technologies projects for which there is no existing infrastructure, H-GAC staff will confirm by meeting personally with the applicants and/or by visiting the proposed site for the facilities that:

- Contact information is consistent with the information contained in the application.
- The applicants possess and are in current compliance with, or have made progress in obtaining, any applicable building or facilities permits (by a review of the applicant's records and by contacting the appropriate agencies)
- The applicants have performed other preliminary infrastructure development tasks, which may include the development of engineering drawings/blueprints, the performance of an environmental site assessment, the purchase of property, and/or the entrance into contracts or formal contract negotiations with suppliers and other business support vendors.
- Current financial statement demonstrating long-term financial liability/stability/growth[8]
- Proof of length of time in operation [9]
- Verification (if applicable) of policies, procedures, and/or certifications associated with the Good Citizen's Incentive

Portions of the pre-approval site visit may be waived at the discretion of H-GAC staff for any previous grant recipients who have a good history with the program. Also at the discretion of H-GAC staff, collection of some documentation required for the Clean Technologies projects for which there is no existing infrastructure may be deferred until after the contract's initial implementation is completed; however, all pre-approval site visit documentation in this case must be submitted by the time the first invoice is processed and paid.

[6] Only required for Part 2 Risk Assessments, see Section 3.1.9

[7] Public entities are not required to provide this documentation

[8] Only required for Part 2 Risk Assessments, see Section 3.1.9

[9] Public entities are not required to provide this documentation

3.1.9 PART 2 RISK ASSESSMENT & FINAL APPROVAL

For projects deemed "moderate risk" during the Part 1 Risk Assessment, a Part 2 Risk Assessment will be performed. Factors considered in the Part 2 Risk Assessment include:

- Financial trends
- Liquidity
- Ownership
- Profitability
- Best Management Practices

Part 2 Risk Assessments are conducted during the site visit through the collection of additional documentation and through staff observations of the applicants' facilities, equipment, and practices. More specifically, staff will need to review three years of financial statements and tax returns for the applicant if the business is structured as a corporation or limited liability entity. For businesses which are structured as general partnerships or sole proprietorships three years of personal tax returns as well as a detailed current budget and bank statements are needed for review. All financial information collected during this process will be stored in a secure area that is only accessible to authorized personnel.

Depending on the risk level that these factors show for each applicant, H-GAC staff will determine if the project should be deemed ineligible due to high-risk or if it may move forward. Projects moving forward that are deemed "low risk" can advance with standard requirements, while those still deemed "moderate risk" will advance only with the use of supplemental requirements (see section 3.3.2 for more information)

Following the pre-approval site visit and the Part 2 Risk Assessment (if applicable), H-GAC staff will send (by email or letter) the applicant a Grant Reservation Letter signifying that grant funds have been reserved for the applicant and describing the final determination of eligibility. The applicant will respond in writing about how they wish to proceed, choosing one of two options: 1) move forward for grant approval for all of the vehicles/equipment submitted in the application or 2) withdraw the entire application. Vehicles/equipment that are withdrawn from the process may be resubmitted for consideration under a new application at a later time.

For projects still moving forward, staff will then submit the applicant's grant information to the H-GAC Board for approval. Upon approval of the grant from the H-GAC Board, H-GAC staff will internally initiate the contract process by developing a Project Specifications reflective of the amount of the grant funds awarded and the specific work that will be performed under the contract. Participants will also be sent an optional program survey requesting feedback about the efficiency and effectiveness of the application phase of the CFI work flow process.

3.2 CONTRACT IMPLEMENTATION PHASE

3.2.1 CONTRACT EXECUTION

Once a contract has been initiated and drafted, signatures will be collected for the contract's execution. Three copies of the draft contract will be mailed to the applicant. The applicant should sign all three copies and return them to H-GAC staff using the address listed in Section 3.1.1. Upon receipt of the signed copies, H-GAC staff will circulate the contract internally for signature, and will ensure that a fully executed copy of the contract is returned to the applicant along with a Notice to Proceed letter. The other two copies of the contract will be retained by the H-GAC Finance Department and by the CFI.

The full contract will include the following components:

- General Provisions (specific to whether the participant is a public, private, or non-profit entity)
- Special Provisions
- Assignment of Contract Payments (if applicable, see below)
- Project Specifications (one Specifications for each project approved under the application)
- Funding Specifications (one Specifications for each type of funding included in the grant)
- Supplemental Requirements Form (if applicable, see Section 3.3.2)
- Sample Invoice Billing Form
- Sample Quarterly Monitoring Form

Participants working with a lending firm in connection with the project should also work with the financial institution to fill out and submit the Assignment of Contract Payments form, which enables H-GAC to send the grant reimbursement directly to the lending firm. As with the

standard contract documentation, this form will be circulated for signature and a fully executed copy will be returned to the participant. The form then becomes a part of the contract.

Should the applicant have any questions or proposed changes to the draft contract, they should contact program staff to discuss the matter. All substantive changes in the contract language will need to be referred to H-GAC's attorneys for review. A complete set of shell contract documents and sample forms are posted at www.houston-cleancities.org/documents.htm.

Under NO circumstance should the participant begin ordering or purchasing new vehicles/equipment, or destroying old engines, prior to their receipt of a fully executed contract and a Notice to Proceed letter, or the express written consent of H-GAC program staff. Failure to follow this instruction may result in a loss of grant funds.

3.2.2 PROJECT IMPLEMENTATION & INVOICING PROCEDURES

Project implementation may begin as soon as the participant receives a fully executed copy of the contract and a Notice to Proceed letter. Retrofit, engine, and infrastructure installation must be performed by qualified personnel (i.e. the vendor, certified mechanics, etc.). H-GAC is not responsible for reimbursing the costs associated with improper installation, the inadvertent installation of equipment that is incompatible with existing equipment, and/or equipment which has manufacturer defects. H-GAC strongly encourages participants to exercise due diligence in assessing and selecting the right products, vendors, and installation personnel for their needs.

For replacement projects, depending on the type of funding received, the destruction of the old engine and/or chassis may be required. Engines/chassis that are to be replaced must be destroyed by a certified destruction vendor no later than 90 days following receipt of the new engine/chassis. Complete destruction guidelines are available at: http://www.houston-cleancities.org/documents.htm**.** Engine/chassis destruction is necessary to ensure that the engine/chassis will not be resold such that it could continue producing air pollution, thus cancelling the air quality benefits of engine/chassis replacement.

A list of H-GAC currently approved destruction vendors may be found on the CFI website here: http://www.houston-cleancities.org/documents.htm. The participant may request that H-GAC add a destruction vendor to the approved list – requested vendors will be contacted by staff and a site visit will be conducted to ensure they are qualified prior to their being approved. Engines/chassis rendered useless by the destruction process may be sold as scrap; however, monies received from the sale of scrap will be deducted from the grant award. On a case-by-case basis, H-GAC staff will consider requests to resell the engine/chassis outside of the United States. In such

cases, staff will weigh the potential benefits of resale to other nations which have significantly less stringent engine standards and/or an older average fleet. H-GAC is not responsible for ensuring the proper and legal export and resale of engines outside of the United States. If H-GAC staff grants a request to resell the engine(s)/chassis outside of the United States, export and resale documentation must be provided in lieu of destruction documentation. The remainder of the vehicle body may be resold and/or scrapped at the participant's discretion.

Following engine/chassis destruction and/or the installation of retrofit or infrastructure equipment, the participant may begin invoicing H-GAC for reimbursement. Complete invoicing guidelines are available at: http://www.houston-cleancities.org/documents.htm. Invoicing must be completed within 1 year of the contract start date unless a change order is approved to extend the invoicing period (See section 3.2.3). When submitting an invoice, the participant should include:

- Original invoices from the vendor
- Implementation documentation and photos (engine destruction, equipment installation, retrofit installation, etc.)
- Completed Invoice Billing Form (see www.houston-cleancities.org/documents.htm)
- Copies of cancelled checks showing payment to the vendor(s) and/or loan/lease documentation

Participants must bill H-GAC on a monthly basis for any allowable costs unless they are subject to a delayed reimbursement schedule (see Section 3.3.2). Allowable costs may vary by funding types included in the grant package; please review the Funding Type Specifications Contract Attachment(s) (Sample Attachments for regular funding types are included in the Project Scope of Work forms at www.houston-cleancities.org/documents.htm) for more information on what are considered eligible costs. Invoices should be submitted to the address listed in Section 3.1.1 or by email to cleanfleets@h-gac.com. Participants should allow approximately 2 months for processing and reimbursement, depending on the type(s) of funding received in the grant award package. At the conclusion of the invoicing period, participants will have 60 days to submit a final invoice, after which H-GAC will send the participant a formal, written notification that the invoicing period is closed. Participants will also be sent an optional program survey requesting feedback about the efficiency and effectiveness of the implementation phase of the CFI work flow process.

3.2.3 CHANGE OF SCOPE

Participants may request a change of scope to their contract at any time by communicating to program staff in writing the changes requested, and the reason(s) for requesting the changes. These changes may include, but are not limited to:

- changes to the type of vehicle/equipment purchased/utilized
- changes in the usage patterns of the vehicle/equipment
- an extension of the invoicing period
- changes to the fuel type utilized
- changes to the contract amount

If the changes relate to the usage patterns, engine type, or fuel type of any vehicles, equipment, or infrastructure, a reanalysis of the project may need to be performed, and the funding amount may change as a result.

Upon agreement by H-GAC staff to the changes being requested, staff will draft a change order consistent with those changes and send three copies of it to the participant (A sample form is available at www.houston-cleancities.org/documents.htm). Participants should sign all three copies and return them to program staff. Staff will circulate the change order internally for signature, and will ensure that a fully executed copy of the change order is returned to the applicant. The other two copies of the change order will be retained by the H-GAC Finance Department and by the CFI. The change order will then become part of the contract.

H-GAC requires a 30-day advanced notice in the event the participant wishes to sell or voluntarily take the funded vehicle/equipment out of service. In this case, H-GAC requires that:

1) The participant replace the vehicle/equipment with vehicle/equipment that is as clean or cleaner than the H-GAC funded vehicle/equipment, such that the participant can fulfill the remaining contract requirements with the vehicle/equipment successor.
2) the participant refund a prorated amount of funds received to H-GAC within 90 days of sale or decommissioning, based on the amount of remaining emission reductions that will not be actualized OR
3) the new vehicle/equipment owner agree to fulfill the remaining contract obligations, prior to the vehicle/equipment's sale. The new vehicle/equipment owner must sign a contract directly with H-GAC, demonstrating their awareness of the requirements and their willingness to fulfill them upon taking ownership of the equipment/vehicle.

In the event the funded equipment is destroyed or lost through fire, theft, accident, or an act of God (i.e. hurricane), H-GAC requires that:

1) the participant achieve the remaining emission reductions through purchase of an equivalent or better (lower-emitting) vehicle and fulfillment of the remaining contract obligations (i.e. quarterly monitoring) utilizing that vehicle OR

2) the participant refund a prorated amount of funds received to H-GAC within 180 days of the vehicle loss, based on the amount of remaining emission reductions that will not be actualized

3.3 COMPLIANCE PHASE

3.3.1 AUDITS & PROBLEM RESOLUTION

As part of the contract, the participant may be subject to compliance reviews and/or additional site visits by H-GAC staff.

A compliance review is an internal review of the project file by H-GAC staff to identify potential problems, concerns, or areas of non-compliance. If an issue is identified, staff will notify the participant in writing to request that the matter be addressed. If the matter is not addressed to staff's satisfaction, a follow-up site visit will be conducted as described below to ensure all program requirements are being fulfilled.

Additional site visits may be conducted as part of normal auditing protocols or as the result of an unresolved compliance review (see above). If conducted, site visits will take place at a mutually agreed upon time by staff and the participant. Items that may be inspected during a site visit include:

- The proper, continued functioning of vehicles, equipment, and/or infrastructure
- Data relating to usage history (mileage, fuel consumption, operational hours, etc.)
- Administrative and financial records relating to the operation of the H-GAC funded vehicles, equipment, and/or infrastructure
- The completion and submission of all monitoring reports (See also Section 3.3.3)
- Continued use of operational protocols including the Vehicle Operating Procedures, Workplace Drug Policies, and Insurance

The program participant will be notified in writing of the results of the site visit, and of any findings which need to be addressed by the participant. The participant will have 30 days from receipt of this notification to respond in writing to any findings by 1) demonstrating that they have resolved the problem immediately and/or 2) presenting a plan that is satisfactory to H-GAC staff for how they intend to resolve the problem, including a timeframe for resolution. Participants making use of option #2 should notify H-GAC staff in writing immediately following the resolution of the problem, and/or if there is a need for a change to the plan for resolution.

If the participant fails to resolve the findings of a site visit to the satisfaction of H-GAC staff, staff will notify the participant in writing that they are in non-compliance of their contract and that enforcement processes will be initiated. Enforcement processes may ultimately result in a refund to H-GAC of any grant monies received and/or other legal remedies. Projects moving to the enforcement process will be referred to H-GAC's upper management and/or attorneys to determine the specific course of action on a case-by-case basis. At a minimum, participants involved in a project requiring enforcement will automatically be flagged and temporarily suspended from further program participation (see Section 3.3.2).

3.3.2 SUPPLEMENTAL REQUIREMENTS & SANCTIONS

Program participants which have a poor compliance history with the CFI (see Section 3.3.1) and/or are considered to be higher risk due to other factors (see Sections 3.1.5 & 3.1.9) may be subjected to greater scrutiny, suspended from program participation for a limited time, and/or excluded from future program participation at the discretion of the H-GAC staff. Factors which may lead to being "flagged" include, but are not limited to:

- Failure to submit quarterly monitoring reports in a timely manner
- Failure to notify staff of contact/organizational information changes
- Failure to notify staff of any significant changes to vehicle/equipment/infrastructure usage and/or other substantive changes in contract scope
- Evidence that participants are not making a good faith effort in following-thru with their project commitments as reflected in their application and contract
- Evidence that participants are not making a good faith effort in the resolution of audit findings
- Evidence of submitting intentionally inaccurate or fraudulent data/information to program staff

Measures providing greater scrutiny may include, but are not limited to:

- A requirement to install GPS on all funded vehicles at the participants' owns expense, and the provision of GPS data to H-GAC staff for review. A list of H-GAC approved GPS vendors is available on the program website, here: **www.houston-cleancities.org/documents.htm.**

- Becoming subject to delayed reimbursement protocols, in which grant fund payments are only made to the participant after monitoring reports and audit requirements are fulfilled satisfactorily. More specifically, the payment schedule will be as follows: 25% of the grant at the time of project implementation, 25% of the grant following the first year of reporting contingent on satisfactory performance, 25% of the grant following the second year of reporting contingent on satisfactory performance, and the remaining 25% of the grant following the third year of reporting contingent on satisfactory performance.
- More frequent site visits by program staff

In the event supplemental requirements are imposed, staff will draft a Supplemental Requirements Form describing the measures to be taken and send two copies to the participant for signature (A sample form is available at www.houston-cleancities.org/documents.htm). The participant will sign and return the forms, where it will be circulated for signature within H-GAC. At this time the Supplemental Requirements will become part of the contract and H-GAC staff will send a fully executed copy of the form back to the participant for their records.

3.3.3 QUARTERLY MONITORING REPORTS

Once participants have invoiced H-GAC for the vehicles, equipment, or infrastructure they purchased/installed, they must begin submitting quarterly monitoring reports. Specifically, the first monitoring report should be submitted for the next full quarter (calendar year schedule) following the first invoice payment (i.e. if the first grant reimbursement took place on February 15th, the first monitoring report should be submitted for the period April 1 – June 30th). Current monitoring reports forms are available on the CFI website at: http://www.houston-cleancities.org/documents.htm. Completed quarterly monitoring reports should be emailed to cleanfleets@h-gac.com. A sample monitoring report is included at www.houston-cleancities.org/documents.htm.

Monitoring reports must be submitted for the duration of the project's life, which may vary depending on the type(s) of funding including in the grant, and the type of project being implemented (see the Project Scope of Work forms at www.houston-cleancities.org/documents.htm for more information on project life). Specifically, the last monitoring report to be received should correspond to the date of the final project payment, plus the project life. For example, if the last payment was made December 15th, 2000, and the project life was 7 years, the final monitoring report should cover the period October 1-December 31st, 2007.

Staff will review the forms to make sure they are complete, and to determine whether or not the project is achieving the emission reductions that were projected based on the information contained in the application. If vehicle, equipment, or infrastructure usage is more

than 30 percent below that identified in the project application, the participant will need to submit a description of any conditions (such as weather, accidents, major maintenance, economic problems, etc…) that significantly impacted usage. If the project's usage does not average out to within 70 percent of the annual usage specified in the application and contract over at least a 1 year period (i.e. no more than 30 percent below the stated usage), H-GAC will take appropriate action to ensure the emission reductions are realized. Options for addressing actual usage that is more than 30 percent below that stated in the contract include, but are not limited to:

- Extending of the project contract for the time deemed necessary to achieve the contracted reductions
- Returning of project funds in proportion to the loss in emission reductions
- Transfer ownership of the vehicle or equipment to an entity committed to comply with the contract terms

At the conclusion of the monitoring period, H-GAC staff will perform a final review of the project files to determine that all program and contract requirements have been met, and that all documentation has been submitted. Upon the completion of this review and the fulfillment of any outstanding requirements, staff will send a formal, written notice to the participant indicating the project has been closed. Participants will also be sent an optional program survey requesting feedback about the efficiency and effectiveness of the compliance phase of the CFI work flow process.

TECHNICAL SUPPLEMENT #1: EMISSION REDUCTION CALCULATION METHODOLOGIES

TECHNICAL SUPPLIEMENT #1A: INTRODUCTION

Per the summary contained in Section 4.1.3, emissions are calculated using the following general form:

(Emissions Rate) x (Usage Rate) = (Emissions)
(Current Emissions) – (Future Emissions) = (Projected Emission Reductions)

Each of the two original terms (emissions rate and usage rate) are derived from more complex calculations based on a variety of assumptions. Sources for these calculations and assumptions include EPA and CARB approved modeling programs (such as MOBILE6 or NONROAD), region-specific data used in the modeling programs, data provided by the applicant, emissions testing and certification results, applicable laws and regulations, vendor information, and academic studies. Calculations may be further complicated by variations due to desired degrees of accuracy. Simplified calculations may be preferable for efficiency but achieve this efficiency by reducing the number of variables considered, and thus, by reducing the real-world accuracy of the calculation. Conversely, some agencies and organizations prefer to use more complex, calculations which take into account as many variables as possible but in the process of enhancing specificity, reduce their efficiency.

Thus, it's important to understand that calculating emission reductions is as much an art as it is a science. It is not so much intended to be precise as it is intended to provide a reasonable approximation of real-world trends and orders of magnitude upon which effective decisions can be made. With this in mind, the following three sections describe in greater detail the calculation methodologies utilized by CFI. They are not intended to be comprehensive or exhaustive in character; for more specific technical questions, please contact cleanfleets@h-gac.com.

TECHNICAL SUPPLEMENT #1B: SIMPLE ANALYSIS PROCEDURES

The Simple Analysis may be adopted by funding sources as requested, or used in instances where the Full Analysis is not appropriate or feasible.

For projects being considered under the Clean Vehicles program, the Clean Machines program, and the Clean Technologies Demonstrations & Pilot Project PFA, reductions will be calculated according to the methodologies described below:

Generation of Adjusted Baseline Emission Rates

1. The emission ratings of both the current and future engines will be extracted from the applicable EPA or CARB certification data to provide the **baseline emission rates** for the vehicle/equipment type(s) that are under consideration for retrofit, conversion, or replacement.
2. The ratings will be **adjusted** for the use of Texas Low Emission Diesel (if applicable) and/or the installation of any certified retrofits/conversions, and then converted to g/mi, g/hr, or g/gal if needed.

Generation of Applicant Usage Rates

3. Applicants should supply in their application as much of the following information for **current and future** vehicle/equipment usage:
    - Annual Mileage (Clean Vehicles projects only)
    - Annual Operational Hours (Clean Machines projects only)
    - Annual Fuel Consumption (in gallons or gasoline gallons-equivalent; Clean Machines projects only)
    - Average Fuel Economy
    - Figures indicating the percentage of use occurring in-region

    Current usage rates will be assumed for future usage levels. Please see Section 3.3.3 for more information regarding future usage levels.
4. Applicant supplied information will be used to develop a current and anticipated vehicle/equipment activity level profile, measured in miles/year (Clean Vehicles projects), hours/year (Clean Machines projects—preferred method), or gallons/year (Clean Machines projects—alternate method).

Calculation of Emission Reductions

5. (Current Emissions Rate (g/mi or g/hr or g/gal)- Future Emissions Rate (g/mi or g/hr or g/gal))*Current Usage Rate (mi/year or hrs/year or gal/year)*Percentage use in region = Emissions Reductions (g/year)
6. Emission rates are converted to tons/year by:
   Emission Reductions (g/year)*(1 ton/907,200 grams) = Emission Reductions (tons/year)
7. Emission Reductions (tons/year)*(Project Life (years)) = Total Emission Reductions over the project's life (tons)

For projects being considered under the Clean Technologies Refueling Stations PFA and the Clean Technologies Idle Reduction Infrastructure PFA, pollutant reductions will be calculated according to the methodologies described below:

Generation of Adjusted Baseline Emission Rates

1. Applicants should supply in their application as much information regarding the **current (if applicable) and future** vehicle/equipment profile of facility customers, preferably broken down by vehicle/equipment class. Default registration distribution data and fuel type considerations will be utilized as needed to create/supplement the vehicle/equipment profile of facility customers.
2. The emission ratings of both the current and future engines will be extracted from the applicable EPA or CARB certification data to provide the **baseline emission rates** for the vehicle/equipment type(s) that are under consideration for retrofit, conversion, or replacement.
3. The ratings will be **adjusted** for the use of Texas Low Emission Diesel (if applicable) and/or the installation of any certified retrofits/conversions, and then converted to g/hr or g/gal if needed.

Generation of Applicant Usage Rates

4. Applicants should supply in their application the following information for **current (if applicable) and future** facility usage:
    - Annual Fuel Volume Sales (in gallons or gasoline gallons-equivalent; Refueling Station projects only)
    - Annual Operational Hours (Idle Reduction Infrastructure projects only)

    If future usage levels cannot be accurately estimated by the facility manager, current usage rates from comparable facilities in other locations will be assumed. **Please note that future usage level estimates provided in the application should be as accurate as possible because they contribute to the calculation of emission reductions and as such, become contractually binding should the project move forward.** Please see Section 4.3.3 for more information regarding future usage levels.

Calculation of Emission Reductions

5. (Current Emissions Rate (g/mi or g/hr or g/gal)- Future Emissions Rate (g/mi or g/hr or g/gal))*Current Usage Rate (mi/year or hrs/year or gal/year)*Percentage use in region = Emissions Reductions (g/year)
6. Emission rates are converted to tons/year by:
   Emission Reductions (g/year)*(1 ton/907,200 grams) = Emission Reductions (tons/year)
7. Emission Reductions (tons/year)*(Project Life (years)) = Total Emission Reductions over the project's life (tons)

TECHNICAL SUPPLEMENT #1C: FULL ANALYSIS PROCEDURES

The Full Analysis is the standard methodology applied to projects for the determination of grant eligibility. In contrast to the Simple Analysis, the Full Analysis captures local variations such as traffic patterns and weather patterns, through more extensive use of modeling specifically adapted for the region. However, due to its complexity and/or other existing requirements, it is not used to determine eligibility for some funding types such as TERP. Likewise, it may not be feasible to use for certain projects where the technologies being employed are particularly unique or novel; in this case, the Simple Analysis may be applied in combination with the Full Analysis, or the Full Analysis may be dropped completely in favor of the Simple Analysis.

For projects being considered under the Clean Vehicles program, the Clean Machines program, and the Clean Technologies Demonstrations & Pilot Project PFA, reductions will be calculated according to the methodologies described below:

Generation of Adjusted Baseline Emission Rates

1. An EPA or CARB-approved modeling program, guidance documents, and/or certification documentation will be utilized to generate pollutant **baseline emission rates** for the vehicle/equipment type(s) that are under consideration for retrofit, conversion, or replacement.
2. Baseline rates will be **adjusted** as needed according to applicant supplied information regarding fuel types, retrofits, etc. These adjustments will be based on EPA or CARB approved calculations and/or certified emission reduction estimates.
3. These **adjusted baseline emission rates** will be converted (if needed) to g/gal using the model-generated default fuel economy estimates.

If the baseline emission rates and/or necessary adjustments cannot be established using applicable modeling, guidance documents, and/or certification information, the application analyst will calculate an estimated emissions rate based on their best professional judgment of whatever information is available. Alternatively, the application analyst may require the applicant to perform emission rate testing for the vehicles/equipment in question. An inability to establish a reasonably accurate emissions rate for either current or future vehicles/equipment contained in the application may be grounds for denying funding, per the discretion of H-GAC's staff.

Generation of Applicant Usage Rates

4. Applicants should supply in their application as much of the following information for **current and future** vehicle/equipment usage:
    - Annual Mileage (Clean Vehicles projects only)

- Annual Operational Hours (Clean Machines projects only)
- Annual Fuel Consumption (in gallons or gasoline gallons-equivalent; Clean Vehicles and Clean Machines projects)
- Average Fuel Economy
- Percentage Operation in Region

If future usage levels cannot be accurately estimated by the fleet manager, current usage rates may be assumed. **Please note that future usage level estimates provided in the application should be as accurate as possible because they contribute to the calculation of emission reductions and as such, become contractually binding should the project move forward.** Please see Section 4.3.3 for more information regarding future usage levels.

5. Applicant supplied information will be used to develop a current and anticipated vehicle/equipment activity level profile, measured in gallons/year. Specifically:
    - If only Annual Mileage is provided, this will be converted to gallons/year: (miles/year)/(miles/gallon) = (gallons/year)
    - If only Annual Hours is provided, this will be converted to gallons/year: (hr/year)*(gallons/hr) = (gallons/year)
    - If only Annual Fuel Consumption is provided, no conversion is required.

    If both annual mileage and annual fuel consumption information is supplied by the applicant, only annual fuel consumption levels will be used in the subsequent calculations. Default fuel economy values (miles/gallon, gallons/hour) will be utilized if not provided by the applicant.

Calculation of Emission Reductions

6. Current and future emission rates will be adjusted proportionally if applicant-supplied fuel economy values differ significantly from model assumptions.
7. Current Emissions Rate (g/gal)*Current Usage Rate (gal/year)*Percentage Operation in Region = Current Emissions (g/year)
8. Future Emissions Rate (g/gal)*Future Usage Rate (gal/year)*Percentage Operation in Region = Future Emissions (g/year)
9. Emission rates are converted to tons/year by:
   Current or Future Emissions (g/year)*(1 ton/907,200 grams) = Current or Future Emissions (tons/year)
10. Current Emissions (tons/year) – Future Emissions (tons/year) = Emission Reductions (tons/year)

For projects being considered under the Clean Technologies Refueling Stations PFA and the Clean Technologies Idle Reduction Infrastructure PFA, NOx and/or VOCs reductions will be calculated according to the methodologies described below:

Generation of Adjusted Baseline Emission Rates

1. Applicants should supply in their application as much information regarding the **current (if applicable) and future** vehicle/equipment profile of facility customers, preferably broken down by vehicle/equipment class. Default registration distribution data and fuel type considerations will be utilized as needed to create/supplement the vehicle/equipment profile of facility customers.
2. The modeling program, guidance documents, and/or certification documentation will be utilized to generate pollutant **baseline emission rates** for the vehicle/equipment type(s) that are under consideration for retrofit, conversion, or replacement.
3. Baseline rates will be **adjusted** as needed according to applicant supplied information regarding fuel types, retrofits, etc. These adjustments will be based on EPA or CARB approved calculations and/or certified emission reduction estimates.
4. These **adjusted baseline emission rates** will be converted (if needed) to g/gal using the model's default fuel economy estimates.

If the baseline emission rates and/or necessary adjustments cannot be established using applicable modeling, guidance documents, and/or certification information, the application analyst will calculate an estimated emissions rate based on their best professional judgment of whatever information is available. Alternatively, the application analyst may require the applicant to perform emission rate testing for the vehicles/equipment in question.

Generation of Applicant Usage Rates

5. Applicants should supply in their application the following information for **current (if applicable) and future** facility usage:
    - Annual Fuel Volume Sales (in gallons or gasoline gallons-equivalent; Refueling Station projects only)
    - Annual Operational Hours (Idle Reduction Infrastructure projects only)

    If future usage levels cannot be accurately estimated by the facility manager, current usage rates from comparable facilities in other locations will be assumed. **Please note that future usage level estimates provided in the application should be as accurate as possible because they contribute to the calculation of emission reductions and as such, become contractually binding should the project move forward.** Please see Section 3.3.3 for more information regarding future usage levels.
6. Applicant supplied information will be used to develop a current and anticipated vehicle/equipment activity level profile, measured in gallons/year. Specifically:
    - Annual Operational Hours will be converted to gallons/year: (hr/year)*(gallons/hr) = (gallons/year)
    - For Annual Fuel Volume Sales, no conversion is required.

Default fuel economy values (gallons/hour) will be utilized if not provided by the applicant.

Calculation of Emission Reductions

7. Current and future emission rates will be adjusted proportionally if fuel economy values for the vehicle/equipment customer profile differ significantly from model assumptions.
8. Current Emissions Rate (g/gal)*Current Usage Rate (gal/year) = Current Emissions (g/year)
9. Future Emissions Rate (g/gal)*Future Usage Rate (gal/year) = Future Emissions (g/year)
10. Emission rates are converted to tons/year by:
    Current or Future Emissions (g/year)*(1 ton/907,200 grams) = Current or Future Emissions (tons/year)
11. Current Emissions (tons/year) – Future Emissions (tons/year) = Emission Reductions (tons/year)

TECHNICAL SUPPLEMENT #1D: TIERED ANALYSIS PROCEDURES

The Tiered Analysis is applied to projects in which the applicant wishes to quantify the indirect emission benefits from a project, for the purpose of including them in the grant award determination. It is available only to past program participants that are currently in good standing. This type of analysis may not be used to qualify for certain funding types (see the Project Scope of Work forms at www.houston-cleancities.org/documents.htm for more details).

The tiered approach may utilize either the Simple Analysis or the Full Analysis calculation procedures. However, instead of a vehicle-by-vehicle emissions reduction calculation being performed, emission reduction calculations are performed on a fleet-basis. In other words, the current emissions for all vehicles/equipment submitted in the tiered analysis will be collectively compared to the projected future emissions for all vehicles/equipment submitted, and an overall emissions reduction will be determined. This fleet-based emissions reduction will be the reduction utilized to calculate cost-effectiveness and it will be the reduction included in the contract's Project Specifications.

TECHNICAL SUPPLEMENT #2: COST-EFFECTIVENESS CALCULATION METHODOLOGY

Per the summary contained in Section 4.1.4, emissions are calculated using the following general form:

Eligible Project Costs x Capital Recovery Factor = Annualized Project Costs

Annualized Project Costs/Projected Annual Emission Reductions = Cost-Effectiveness

"Eligible" project costs may vary according to the funding types in question; generally, these projects costs include the purchase of engines, retrofits, or alternative fuel components/equipment. Please review Technical Supplement #3 and the Project Scope of Work forms at www.houston-cleancities.org/documents.htm for more information about "eligible" project costs.

The capital recovery rate reflects the amortized value of the emissions benefits over time. This factor is calculated as follows:

$$\text{capital-recovery factor} = \mathbf{[(1 + i)^n (i)] / [(1 + i)^n - 1]}$$

where i = discount rate

where n = project life

The discount rate represents the interest rate that an investment would have yielded if the funds were not expended on the project. At this time, a discount rate of 3% is being utilized. Based on this rate, the formula yields the following capital recovery factors for project life spans ranging from 1-20 years:

Project Life	1	2	3	4	5	6	7	8	9	10
Capital Recovery Factor	1.00	.5226	.3535	.2690	.2184	.1846	.1605	.1425	.1284	.1172
Project Life	11	12	13	14	15	16	17	18	19	20
Capital Recovery Factor	.1081	.1005	.0940	.0885	.0838	.0796	.0760	.0727	.0698	.0672

Once the eligible costs have been determined and the appropriate capital-recovery factor selected, annualized costs are simply calculated by multiplying the two terms:

Eligible Project Costs ($) x Capital Recovery Factor (1/year) = Annualized Project Costs ($/year)

For the pollutant of interest, the annual emission reductions are recalled and the annualized project costs are divided over this value:

Annualized Project Costs ($/year) /Projected Annual Emission Reductions (tons/year) = Cost-Effectiveness ($/ton)

Once actual cost-effectiveness has been calculated for a project, it is compared to the applicable target cost-effective factor to determine if it may be fully funded. If the actual CE factor is greater than the target CE factor, then the project is not efficient enough, and a reduced amount of the project may be eligible for funding instead. This reduced eligible amount is determined by reversing the calculation:

Target Cost-Effectiveness ($/ton)*Projected Annual Emission Reductions (tons/year) = Annualized Project Costs ($/year)

Annualized Project Costs ($/year)/ Capital Recovery Factor (1/year) = Eligible Project Costs ($)

The reduced eligible amount would be the “eligible project costs ($)” value solved for in the final equation.