



# CLEAN VEHICLES PROGRAM GUIDELINES

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Effective March 15, 2011

Administered by the Air Quality Group of the Houston-Galveston Area Council

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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 Vehicles Program.

**Bi-Fuel:** Any auto or piece of equipment which can take in two or more different external fuel sources. This includes plug-in autos/equipment that retain an internal combustion engine for extended range, but excludes non-plug-in hybrid autos/equipment which use closed battery systems to improve the fuel economy of an auto or piece of equipment.

**Category:** a particular subset of the Clean Vehicles Program, such as the "Clean Machines" category; based on project type

**Category Focus Area** or **CFA:** a particular subset of a Clean Vehicles Program category, based on auto/equipment characteristics

**Cost-effectiveness factor:** how efficient a project is at reducing a given pollutant. It is given in units of dollars/ton of pollutant reduced.

**Clean Fleet Policy:** any enforceable measure voluntarily instituted by an organization that is specifically designed to minimize auto/equipment emissions.

**Conformity:** the governmental process whereby it is assured that transportation plans do not undermine air quality goals.

**CVP:** the umbrella effort called the Clean Vehicles Program, which encompasses all categories and focus areas.

**Diesel-Based Project:** a project in which the baseline auto/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 Vehicles Program are received.

**Funding type:** monies received from a grantor, which may be allocated to CFA(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 auto/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 autos such as busses, trucks, cars, etc.

**Off-Road:** mobile autos and equipment which are generally used on unpaved surfaces, such as construction equipment, lawn-mowers, etc.

**Ozone:** a ground-level pollutant (O<sub>3</sub>) that is formed in the atmosphere through a photochemical reaction between NO<sub>x</sub> 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.

**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.”<sup>1</sup>

Ozone is produced through a photochemical (sunlight enhanced) reaction between NO<sub>x</sub> and VOCs in warm temperatures. Both NO<sub>x</sub> and VOCs are emitted from autos and equipment; NO<sub>x</sub> 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 auto emissions. Transportation projects cannot be approved, funded, or implemented without a conforming transportation plan.

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<sup>1</sup> <http://www.epa.gov/oar/ozonepollution/health.html>

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 autos and off-road equipment. Excess greenhouse gas emissions can cause the climate to destabilize and change rapidly relative to typical natural cycles, with potentially negative impacts to both human societies and species in ecosystems throughout the world.

### 1.3 The Clean Vehicles-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 CVP to solicit funding, raise awareness, and provide consultative and technical support for Clean Vehicles project evaluation and implementation as needed. In exchange, the program 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](http://www.houston-cleancities.org), or email [cleancities@h-gac.com](mailto:cleancities@h-gac.com) for more information.

### 1.4 Other Funding Opportunities

The Clean Vehicles Program 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](mailto: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 CVP 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 auto 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](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 sometimes set-aside for special focus areas, and are administered by the Railroad Commission of Texas ([http://www.propane.tx.gov/rebate\\_program/index.html](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](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 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 autos, 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 Purpose & Structure of the Clean Vehicles Program

The CVP is an auto 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.

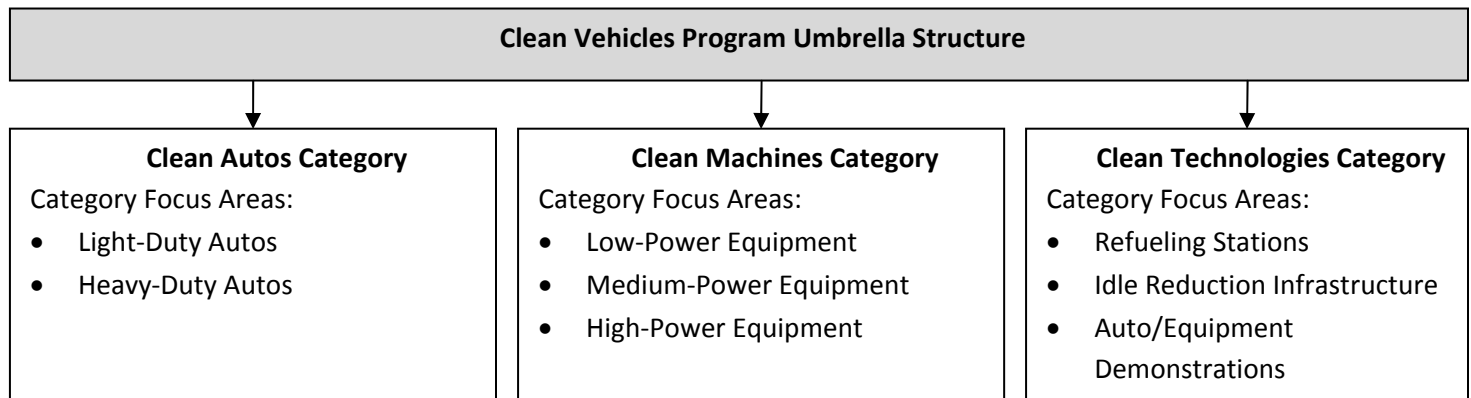
Private entity applicants may receive a grant package to cover *up to* 75% of the total eligible project costs. Public and non-profit entities may receive a grant package that covers *up to* 100% of the total eligible project costs.

Actions that may be considered for funding under the CVP are:

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

The CVP is intended to achieve its objectives through technological, rather than operational changes in fleets. It is not intended to expand or reduce the size of fleets and/or auto/equipment usage (miles traveled or hours operated). Rather, its focus is to accelerate the deployment of solutions such that given the same level of usage, existing operations will occur more cleanly.

The CVP is an umbrella effort that encompasses three categories: Clean Autos (on-road), Clean Machines (off-road), and Clean Technologies (auto/equipment support). Within each category, particular focus areas represent different types of autos, equipment, and support. A structural diagram of the Clean Vehicles Program along with brief descriptions defining the scope of each Category Focus Area (CFA) is provided on the following pages.



## 2.1 Clean Autos Category Focus Area Descriptions

The Clean Autos Category is designed to assist fleets in upgrading cars, trucks, buses, and motorcycles. Based on the auto weight and type, actions may be classified under either of the following two category focus areas:

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

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

## 2.2 Clean Machines Category Focus Area Descriptions

The Clean Machines category 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 equipment. Category focus areas are divided according to the size of the engine.

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

Medium-Power Equipment CFA – Includes equipment powered by engines between 101-750 horsepower (75-560 kW).

High-Power Equipment CFA – Includes equipment powered by engines with more than 751 horsepower (>560 kW).

### 2.3 Clean Technologies Category Focus Area Descriptions

The Clean Technologies category is designed to assist applicants in fostering a market environment that promotes the adoption of advanced auto 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.

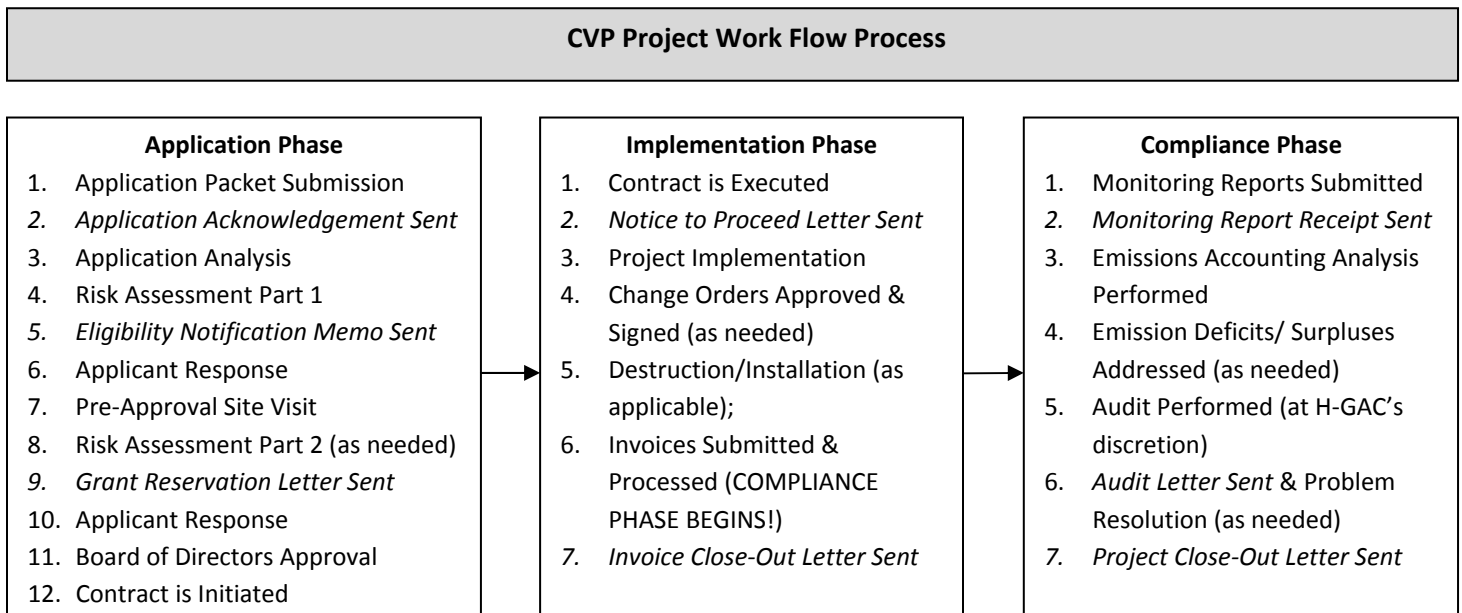
Refueling Stations CFA – eligible actions are those involving the installation of alternative fuel tanks and pumps at any new or existing stations.

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

Idle Reduction Infrastructure CFA – eligible actions are those involving the new construction or expansion of off-board 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 below.



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.

CVP 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 CVP 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 CVP 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 or five factors: 1) Basic CVP Requirements, 2) Emission Reductions, 3) Cost-Effectiveness, 4) Funding Type Criteria, and 5) Risk Assessment Part 1 (private/non-profit entities only). A memo is then drafted describing their preliminary eligibility, and this is discussed with the applicant. This portion of the 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.

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### 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 CVP.

There are no application deadlines and so organizations may submit their application at any time. Once an application is submitted, it cannot be substantively amended<sup>2</sup> 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 exhausted. Only one application is necessary per organization.

Application packets must include the following information:

- Basic Information Form (Application Form A, pages 1-2)
- Fleet Data Form(s)

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<sup>2</sup> H-GAC is not responsible for ensuring the compatibility and/or proper installation of technologies that are to 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.

- On-Road Vehicles Data (Application Form B1, if applicable)
- Off-Road Equipment Data (Application Form B2, if applicable)
- Connectivity Mapping Form (Application Form B3, if applicable)
- Attachments Checklist (Application Form C)
- Good Citizen's Incentive Form (optional, Application Form D)
- Signed Application Acknowledgement Form (Application Form E)
- Electronic Copy of Application  
(either by inclusion of a CD with the mailed application packet, or by emailing all completed forms to [cleanvehicles@h-gac.com](mailto:cleanvehicles@h-gac.com))

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

Houston-Galveston Area Council  
Attn: Clean Vehicles Program  
3555 Timmons, Suite 120  
Houston, TX 77027

Organizations may withdraw an application at any time by notifying staff in writing.

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### 3.1.2 BASIC CVP REQUIREMENTS

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

#### Autos/Equipment Eligibility

- Autos/Equipment which are included in the application must be in good working order and in current use
- Both current and future autos/equipment must spend a minimum of 75% of their operational time and/or mileage in the HGB ozone non-attainment region.
- Autos/Equipment included in the application that is intended for replacement must represent accelerated turnover rather than normal turnover. Accelerated turnover is defined to be the replacement of an auto which could have remained in operation at least as long as the length of the proposed project life, given the expected useful life of its engine, and its current rate of usage.
- Autos/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.
- Autos/Equipment fleets must have an anti-idling policy in place
- Autos/Equipment to be purchased as replacements for current autos/equipment, must be new, with no previous owners other than the original manufacturer/dealer.
- Autos/Equipment funded under the CVP cannot be used to generate credit in any emissions banking and trading program.
- Except for autos/equipment submitted for consideration under the Demonstrations & Pilot Projects CFA, 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 CVP cannot be used to generate credit in any emissions banking and trading program.

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### 3.1.3 EMISSION REDUCTION CALCULATIONS

Once it is established that the application is complete and that the project meets the Basic CVP 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 CVP 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:

$$\begin{aligned} & (\text{Emissions Rate}) \times (\text{Usage Rate}) = (\text{Emissions}) \\ & (\text{Current Emissions}) - (\text{Future Emissions}) = (\text{Projected Emission Reductions}) \end{aligned}$$

Reductions in all pollutant types are desirable, but not required. Increases in any pollutant are not desirable, but except for NO<sub>x</sub> and VOCs, will not result in a de-facto rejection.

Bi-Fuels: Bi-fuel vehicles and equipment are eligible for funding if they fulfill all other applicable program requirements. Emission reductions will be developed for five different scenarios, based on variable fuel usage assumptions (Fuel 1/Fuel 2: 100%/0%, 75%/25%, 50%/50%, 25%/75%, 0%/100%), and the applicant will be allowed to select the scenario that best meets their needs for business operations and project compliance purposes.

Uneven Ratios: Replacement projects occurring in uneven ratios (i.e. “2-for-1”) may be considered at the discretion of H-GAC staff. Where evaluated, usage levels must remain consistent (+/- 30%) between the baseline and future cases such that the emission reductions are claimed on the basis of technological rather than operational changes. For example, if Truck A travels 3,000 mi/yr and Truck B travels 5,000 mi/year, replacement Truck C must travel 8,000 mi/year in order to be considered a replacement for both autos.

Tiered Analysis: Often, H-GAC staff receives inquiries from fleet managers regarding the eligibility of extremely old back-up autos/equipment for replacement. The suggestion is that they should qualify for funding because the replacement auto 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 autos/equipment currently assigned to the highest-usage tier will be shifted to middle-usage routes/roles, 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 auto/equipment with a new auto/piece of equipment, but that indirect emission benefits will result when other autos/equipment are shuffled in order to maximize the use of the new and minimize the use of the old. H-GAC staff concurs.

Accordingly, autos/equipment which would otherwise be considered ineligible for replacement under CVP due to its low-usage patterns may be considered eligible if the auto/equipment is still in good working order, is still minimally 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 Vehicles Program 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 Form B3). Any number of autos may be included in the tiered analysis, so long as their connection to the project can be mapped, and so long as each of the autos/equipment included for retrofit, conversion, or replacement represent accelerated turnover. Collectively, the usage patterns between the current autos/equipment and the future autos/equipment should not significantly change; in other words, this type of project is not intended to accommodate major operational expansions or reductions. All autos/equipment included in the tiered analysis will be subject to CVP 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 #1.

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#### 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 CVP 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:

$$\begin{aligned} &\text{Eligible Project Costs} \times \text{Capital Recovery Factor} = \text{Annualized Project Costs} \\ &\text{Annualized Project Costs} / \text{Projected Annual Emission Reductions} = \text{Cost-Effectiveness} \end{aligned}$$

Generally, the greater the emission reduction achieved, the more efficient it is for CVP 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.

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### 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 3.3.1 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)

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### 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, the grant award may be increased by an additional \$3,000.

Eligible items to qualify for the CVP 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 auto emissions; this may include an 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 autos).

- Being a Commute Champion’s organization for at least 1 year, recognized under H-GAC’s regional Commute Champions program.  
(<http://www.commutesolutionshouston.org/commutechampionprogram/commutechampionprogram.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](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 during 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 item(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, autos, or equipment primarily located within the HGB ozone non-attainment region. Participation in these activities using facilities, autos, or equipment located in other parts of the country does not qualify.

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### 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 (for bi-fuels, five grant packages will be developed [see Section 3.1.3 for more information]). 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 CVP website on a monthly basis; to see the current funding availability, please visit [www.houston-cleancities.org/FAQs.htm](http://www.houston-cleancities.org/FAQs.htm).

The specific criteria associated with each funding type consist of a number of “attributes” such as project life, 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. Attributes for each funding type are compiled into a “Funding Attribute Matrix”, which are a series of tables that list the applicable criteria. Attribute matrices for regularly available funding types such as Congestion Mitigation/Air Quality (CMAQ) funds are available on-line; see the “Project Scope of Work” forms at [www.houston-cleancities.org/documents.htm](http://www.houston-cleancities.org/documents.htm) for further information.

Beyond the funding 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 autos/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 autos/equipment submitted in the application, 2) move forward for grant approval with selected autos/equipment, and withdraw others from the application, or 3) withdraw the entire application. Autos/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 total grant funding will not be accepted into the program.

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#### 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 Autos actions, Clean Machines actions, and for Clean Technologies actions which involve the field testing or demonstration of a auto, 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 autos/equipment are functioning and in good working order (by start-up and by a qualitative assessment of the auto/equipment and/or the maintenance records)
- Written Auto/Equipment Operating Procedures document, or equivalent protocols
- Written Workplace Drug Policy
- Written Anti-Idling Policy
- Proof of current insurance/liability policy
- Proof of current ownership of the auto/equipment
- Current financial statement demonstrating long-term financial liability/stability/growth<sup>3</sup>
- Proof of length of time in operation<sup>4</sup>

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<sup>3</sup> Only required for Part 2 Risk Assessments, see Section 3.1.9

<sup>4</sup> Public entities are not required to provide this documentation

- Verification (if applicable) of policies, procedures, and/or certifications associated with the Good Citizen's Incentive

For Clean Technologies actions 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 autos/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
- 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<sup>5</sup>
- Proof of length of time in operation<sup>6</sup>
- Verification (if applicable) of policies, procedures, and/or certifications associated with the Good Citizen's Incentive

For Clean Technologies actions 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<sup>7</sup>
- Proof of length of time in operation<sup>8</sup>
- 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

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<sup>5</sup> Only required for Part 2 Risk Assessments, see Section 3.1.9

<sup>6</sup> Public entities are not required to provide this documentation

<sup>7</sup> Only required for Part 2 Risk Assessments, see Section 3.1.9

<sup>8</sup> Public entities are not required to provide this documentation

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.

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### 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
- Profitability
- Best Management Practices

Part 2 Risk Assessments are conducted during the pre-approval 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 3.3.3 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 remaining autos/equipment included in the application or 2) withdraw the entire application. Autos/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 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 CVP work flow process.

### 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 CVP.

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 Proceeds (if applicable, see below)
- Project Scope of Work (one Funding Attributes Matrix for each type of funding included in the grant)
- Project Specifications (one Specifications for each project approved under the application)
- Supplemental Requirements Form (if applicable, see Section 3.3.3)
- Sample Invoice Billing Form
- Sample Quarterly Monitoring Form

Participants working with a lending firm in connection with the project **must** have the financial institution fill out and submit the Assignment of Proceeds form, which delineates the lender's responsibilities to H-GAC in case of contractor default, and 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 upper management and/or attorneys for review. A complete set of shell contract documents and sample forms are posted at [www.houston-cleancities.org/documents.htm](http://www.houston-cleancities.org/documents.htm).

Under NO circumstance should the participant begin ordering or purchasing new autos/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 remain in use with current registration/inspection stickers until at least 30 days prior to their destruction, and 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 CVP website here: <http://www.houston-cleancities.org/documents.htm>. The participant and/or their vendor may request that H-GAC add a destruction vendor to the approved list – prospective vendors must review the Destruction Vendor Guidelines, submit an application form, and enable program staff to conduct a site visit 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. If approved, the grant recipient will be fully 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 auto 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 (destruction, equipment installation, retrofit installation, etc.; destruction documentation will be submitted directly to H-GAC staff by the vendor)
- Completed Invoice Billing Form (see [www.houston-cleancities.org/documents.htm](http://www.houston-cleancities.org/documents.htm))
- Proof of payment to the vendor(s)

All invoices submitted must present the appropriate level of match at the time of billing, in accordance with the proportions specified in the contract. For example, if the contract specifies that 40% of the project is to be funded through CVP, and 60% of the project will be funded by the participant, each invoice submitted must maintain this 40%/60% ratio. Future payments to a lender or other party that have not been actualized at the time of the invoice, do not count as match towards the billing.

Allowable costs may vary by funding types included in the grant package; please review each applicable Funding Attributes Matrix 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 [cleanvehicles@h-gac.com](mailto:cleanvehicles@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 CVP work flow process.

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### 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 auto/equipment purchased/utilized
- changes in the usage patterns of the auto/equipment
- an extension of the invoicing period
- changes to the fuel type utilized
- changes to the contract amount
- change in project manager
- change in organizational status (i.e. mergers, name change, etc.)

If the changes relate to the usage patterns, engine type, or fuel type of any autos, equipment, or infrastructure, a reanalysis of the project may be needed, and the approved 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](http://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 CVP. The change order will then become part of the contract.

## 3.3 Compliance Phase

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### 3.3.1 QUARTERLY MONITORING REPORTS & USAGE REQUIREMENTS

Once participants have invoiced H-GAC for the autos, 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 15<sup>th</sup>, the first monitoring report should be submitted for the period April 1 – June 30<sup>th</sup>). Current monitoring reports forms are available on the CVP website at: <http://www.houston-cleancities.org/documents.htm>. Completed quarterly monitoring reports should be emailed to [cleanvehicles@h-gac.com](mailto:cleanvehicles@h-gac.com) or mailed to the attention of the staff using the information listed in Section 3.1.1.

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 Funding Attribute Matrix forms at [www.houston-cleancities.org/documents.htm](http://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 15<sup>th</sup>, 2000, and the project life was 7 years, the final monitoring report should cover the period October 1-December 31<sup>st</sup>, 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 auto, 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 application and contract include, but are not limited to:

- Extending of the project contract for the time deemed appropriate to achieve the contracted reductions
- Refunding of grant money in proportion to the loss in emission reductions
- Transfer ownership of the auto or equipment to an entity committed to comply with the contract terms (See Section 3.3.4 for information on transfer of ownership requirements)

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 CVP work flow process.

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### 3.3.2 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 over the course of the project's life.

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 and/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 autos, 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 autos, equipment, and/or infrastructure
- The completion and submission of all monitoring reports (See also Section 3.3.1)
- Continued use of operational protocols including the Auto/Equipment 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 resolution plan.

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 3.3.3).

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### 3.3.3 SUPPLEMENTAL REQUIREMENTS & SANCTIONS

Program participants which have a poor compliance history with the CVP (see Section 3.3.2) 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 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 auto/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 autos/equipment at the participants’ own expense, and the provision of GPS data to H-GAC staff for review. A list of H-GAC approved GPS vendors will be posted on the program website: [www.houston-cleancities.org/documents.htm](http://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](http://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.

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#### 3.3.4 EARLY RELEASE & VEHICLE LOSS

From time to time, circumstances arise which may call for the voluntary (“early release”) or involuntary (“vehicle loss”) removal of funded autos/equipment/infrastructure from service and/or the transfer of contractual obligations to a new party. In both cases, participants will need to pro-actively work with H-GAC staff to ensure the appropriate actions are taken and documentation submitted.

For **early release requests**, H-GAC requires a 30-day advanced notice prior to the participant selling, relocating, or otherwise removing funded autos/equipment/infrastructure from usage. If H-GAC approves the change, the participant may select one of three options to satisfy their contractual obligations:

Termination: Terminate the agreement as applicable to the item that was released, and provide a pro-rated reimbursement to H-GAC of the grant funds provided for that item. The reimbursement will be calculated based on:

- the number of quarterly reports not submitted as a result of the premature termination of the agreement as a fraction of the total required, AND
- shortfalls in emissions benefits due to the item not achieving at least 70% of the projected usage, which are evident from reports that have been submitted (see Section 3.3.1)

Substitute Equipment: Select a comparable item that may serve as a substitute and fulfill the remaining contractual requirements as they originally applied to the item that was released. The substitute item must meet the following requirements in order to be approved:

- The substitute item must be acquired within six months of the release; substitute items may not have been purchased prior to the release or more than six months after the release. “Purchased” is here defined as when the contractor makes payment for the item. In the event that a lender is involved with the purchase of the substitute, the lender will be required to agree to H-GAC’s third party provisions relating to default and repossession.
- achieve at least as many documented emission reductions as was originally projected
- achieve emission reductions as a result of technological rather than operational changes

Substitute Contractor: Conveyance of contractual obligations to a new party which would take possession of the item and be willing to fulfill the remaining requirements as they originally applied to the primary grant recipient. The substitute contractor must meet the following requirements in order to be approved:

- The substitute must become a party to the H-GAC contract for the item and meet all applicable eligibility requirements (i.e. 75% travel in-region)
- Achieve at least as many documented emission reductions as was originally projected
- Achieve emission reductions as a result of technological rather than operational changes

Please note that option #3 is only available to contractors that have completed at least 2 years of satisfactory reporting (see Section 3.3.1)

**In the event the funded autos/equipment/infrastructure is destroyed or lost** through fire, theft, accident, or an act of God (i.e. hurricane), the participant is required to notify H-GAC as soon as possible and to submit a Vehicle Loss Documentation Form (available on our website at [www.houston-cleancities.org/documents.htm](http://www.houston-cleancities.org/documents.htm)) describing the occurrence and attach the appropriate documentation. Participants will then be required to choose one of two options to satisfy their contractual obligations:

Termination: Terminate the agreement as applicable to the item that was lost, and provide a pro-rated reimbursement to H-GAC of the grant funds provided for that item. The reimbursement will be calculated based on:

- the number of quarterly reports not submitted as a result of the premature termination of the agreement as a fraction of the total required, AND
- shortfalls in emissions benefits due to equipment not achieving at least 70% of the projected usage, which are evident from reports that have been submitted (see Section 3.3.1)

Substitute Equipment: Select a comparable item that may serve as a substitute and fulfill the remaining contractual requirements as they originally applied to the item that was lost. The substitute must meet the following requirements in order to be approved:

- The substitute item must be acquired within one year of the incident; substitute items may not have been purchased prior to the incident or more than one year after the incident which caused the loss. "Purchased" is here defined as when the contractor makes payment for the item. In the event that a lender is involved with the purchase of the substitute, the lender will be required to agree to H-GAC's third party provisions relating to default and repossession.
- achieve at least as many documented emission reductions as was originally projected
- achieve emission reductions as a result of technological rather than operational changes

A gap in equipment usage longer than 6 months (2 quarters) due to delays in acquiring the substitute item may require a corresponding extension of the required reporting period.

Technical Supplement #1A: Introduction

Per the summary contained in Section 3.1.3, emissions are calculated using the following general form:

$$\begin{aligned} & (\text{Emissions Rate}) \times (\text{Usage Rate}) = (\text{Emissions}) \\ & (\text{Current Emissions}) - (\text{Future Emissions}) = (\text{Projected Emission Reductions}) \end{aligned}$$

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 sections describe in greater detail the calculation methodologies utilized by CVP. They are not intended to be comprehensive or exhaustive in character; for more specific technical questions, please contact [cleanvehicles@h-gac.com](mailto:cleanvehicles@h-gac.com).

Technical Supplement #1B: Traditional Analysis Procedures

*Generation of Adjusted Base Emission Rates*

1. An EPA or CARB-approved modeling program, guidance documents, and/or certification documentation will be utilized to generate pollutant **base emission rates** for the auto/equipment type(s) that are under consideration for retrofit, conversion, or replacement. For infrastructure projects, default registration distribution data and fuel type considerations will be utilized as needed to create/supplement the auto/equipment profile of facility customers.
2. The base rates will be **adjusted** for the use of Texas Low Emission Diesel (if applicable), the installation of any certified retrofits/conversions, and any differences in fuel economy that are not already reflected in the engine certification ratings.
3. The **adjusted base emission rates** are then converted to g/mi or g/hr as appropriate.

*Generation of Applicant Usage Rates*

4. Applicants will supply in their application the following information for **current** auto/equipment usage patterns:
  - Annual In-Region Mileage (Clean Autos and Clean Technologies projects only)
  - Annual In-Region Operational Hours (Clean Machines & Clean Technologies projects only)
  - Annual In-Region Fuel Consumption (all projects)
  - Approximate idling time

5. Development of the current usage profile:

- a. The current in-region mileage will be adjusted to account for idling time, which adds wear to the engine that is not reflected in the odometer data. This is done by assuming that wear is proportional to fuel consumption, that light-duty vehicles typically burn 0.5 gallons/hour of idling, and that heavy-duty vehicles typically burn 1 gallon/hour of idling. After adjusting the gallons/hour to account for differences in fuel type, “idle miles” can be approximated by:  $(\text{Idle Hours/Day}) \times (\text{Days/Year}) \times (\text{Unit of Energy/Hour}) \times (\text{Miles/Unit of Energy})$ . Therefore, the total equivalent usage in terms of mileage is idling miles + driving miles.
  - i. For bi-fuel vehicles, total equivalent mileage is then apportioned to each fuel type using fuel economy and fuel consumption data. Given that 1) the fuel economy for a given fuel is independent of whether that fuel is utilized 100% of the time or a smaller fraction of the time, and 2)  $\text{Energy Conversion Ratio} = \text{Operational Energy}/\text{Total Energy}$ , where “Operational Energy” is the amount of energy that actually does work, and “Total Energy” is the energy input, including energy that is lost as waste and energy that does work.
  - ii.  $\text{Fuel economy} = \text{Total equivalent Miles} / [(\text{Total Operational Energy}/\text{Energy Conversion Ratio of the Fuel})/\text{Energy Content of the Fuel}]$
  - iii.  $\text{Apportioned Miles} = (\text{Fuel Economy of the Fuel}) \times (\text{Actual Consumption of the Fuel})$
- b. The current in-region operational hours will be used without adjustment.
- c. The current in-region fuel consumption will be used without adjustment.

6. Development of the future usage profile:

- a. The future in-region mileage is assumed to be equal to total current equivalent mileage, minus reductions in idling miles due to the installation of anti-idling technologies. Please see Section 3.3.1 for more information regarding future usage level requirements.
  - i. For bi-fuel vehicles, total equivalent mileage is then apportioned to each fuel type using fuel economy and fuel consumption data. Given that 1) the fuel economy for a given fuel is independent of whether that fuel is utilized 100% of the time or a smaller fraction of the time, and 2)  $\text{Energy Conversion Ratio} = \text{Operational Energy}/\text{Total Energy}$ , where “Operational Energy” is the amount of energy that actually does work, and “Total Energy” is the energy input, including energy that is lost as waste and energy that does work.
  - ii.  $\text{Fuel economy} = \text{Total equivalent Miles} / [(\text{Total Operational Energy}/\text{Energy Conversion Ratio of the Fuel})/\text{Energy Content of the Fuel}]$
  - iii.  $\text{Apportioned Miles} = (\text{Fuel Economy of the Fuel}) \times (\text{Actual Consumption of the Fuel})$
- b. The future in-region operational hours will be assumed equal to the current in-region operational hours, minus reductions in idling time due to the installation of anti-idling technologies. Please see Section 3.3.1 for more information regarding future usage level requirements.
- c. The future in-region fuel consumption will be projected based on fuel-specific energy conversion ratios and fuel-specific energy content data. The calculations are performed as follows:
  - i.  $\text{Given Energy Conversion Ratio} = \text{Operational Energy}/\text{Total Energy}$ , where “Operational Energy” is the amount of energy that actually does work, and “Total Energy” is the energy input, including energy that is lost as waste and energy that does work.
  - ii.  $\text{Current Fuel Consumption} \times \text{Baseline Fuel Energy Content (per unit)} = \text{Current Total Energy Consumption}$
  - iii.  $\text{Current Total Energy Consumption} \times \text{Energy Conversion Ratio of Current Fuel} = \text{Current Operational Energy Consumption}$

- iv. Given that Future Operational Energy Consumption is equal to the Current Operational Energy Consumption minus energy conserved as a result of the installation of anti-idling technology, because the amount of work actually performed is held constant
- v. Future Operational Energy Consumption/Energy Conversion Rate of Future Fuel = Future Total Energy Consumption
- vi. Future Total Energy Consumption/Future Fuel Energy Content (per unit) = Future Fuel Consumption

*Calculation of Emission Reductions*

- 7. (Current Emissions Rate (g/mi or g/hr)- Future Emissions Rate (g/mi or g/hr))\*Current In-Region Usage (mi/year or hrs/year) = Emissions Reductions (g/year)
- 8. Emission rates are converted to tons/year by:  
Emission Reductions (g/year)\*(1 ton/907,200 grams) = Emission Reductions (tons/year)
- 9. Emission Reductions (tons/year)\*(Project Life (years)) = Total Emission Reductions over the project’s life (tons)

**Technical Supplement #1C: 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 (Funding Attribute Matrix) forms at [www.houston-cleancities.org/documents.htm](http://www.houston-cleancities.org/documents.htm) for more details).

The tiered approach will utilize the Traditional Analysis calculation procedures to generate emission reduction calculations for each auto/equipment included in the application. However, instead of using these individual emissions reduction calculations to determine corresponding grant eligibility for each individual auto/equipment, individual emission reductions are instead summed over the group to calculate a “bottom-line” emission reduction between the current and future scenarios. This group-based overall emission reduction will be used to calculate an overall cost-effectiveness for the project and to determine grant eligibility for the project as a whole. The group-based emission reduction and cost-effectiveness values will be the figures included in the contract’s Project Specifications.

**Technical Supplement #2: Cost-Effectiveness Calculation Methodology**

Per the summary contained in Section 3.1.4, emissions are calculated using the following general form:

$$\begin{aligned} \text{Eligible Project Costs} \times \text{Capital Recovery Factor} &= \text{Annualized Project Costs} \\ \text{Annualized Project Costs} / \text{Projected Annual Emission Reductions} &= \text{Cost-Effectiveness} \end{aligned}$$

“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 the Funding Attribute Matrix forms at [www.houston-cleancities.org/documents.htm](http://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:

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

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:

$$\text{Eligible Project Costs (\$)} \times \text{Capital Recovery Factor (1/year)} = \text{Annualized Project Costs (\$/year)}$$

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

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

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:

$$\text{Target Cost-Effectiveness (\$/ton)} \times \text{Projected Annual Emission Reductions (tons/year)} = \text{Annualized Project Costs (\$/year)}$$

$$\text{Annualized Project Costs (\$/year)} / \text{Capital Recovery Factor (1/year)} = \text{Eligible Project Costs (\$)}$$

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