The Gateway Cities Air Quality Action Plan

EARLY ACTION PLAN

Final Report

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## Acronyms

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<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>APU</td>
<td>auxiliary power unit</td>
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<tr>
<td>AQAP</td>
<td>Air Quality Action Plan</td>
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<tr>
<td>ATCMs</td>
<td>Airborne Toxic Control Measures</td>
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<tr>
<td>B20</td>
<td>20% biodiesel</td>
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<tr>
<td>BACT</td>
<td>Best Available Control Technology</td>
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<tr>
<td>Caltrans</td>
<td>California Department of Transportation</td>
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<tr>
<td>CARB</td>
<td>California Air Resources Board</td>
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<tr>
<td>CEQA</td>
<td>California Environmental Quality Act</td>
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<tr>
<td>CHE</td>
<td>Cargo Handling Equipment</td>
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<tr>
<td>CNG</td>
<td>Compressed natural gas</td>
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<tr>
<td>CUP</td>
<td>conditional use permit</td>
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<tr>
<td>DECS</td>
<td>Diesel Emissions Control Device System</td>
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<tr>
<td>DERA</td>
<td>Diesel Emission Reduction Act</td>
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<tr>
<td>DGS</td>
<td>Department of General Services</td>
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<tr>
<td>DPF</td>
<td>diesel particulate filter</td>
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<tr>
<td>E85</td>
<td>85% ethanol</td>
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<td>EAP</td>
<td>Early Action Plan</td>
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<td>EE CBG</td>
<td>Energy Efficiency and Conservation Block Grants</td>
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<td>EIR</td>
<td>environmental impact report</td>
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<td>EIS</td>
<td>environmental impact statement</td>
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<tr>
<td>EPA</td>
<td>U.S. Environmental Protection Agency</td>
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<tr>
<td>EV</td>
<td>electric vehicle</td>
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<td>EVSE</td>
<td>electric vehicle support equipment</td>
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<td>GCCOG</td>
<td>Gateway Cities Council of Governments</td>
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<tr>
<td>GPS</td>
<td>global positioning system</td>
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<tr>
<td>GVW</td>
<td>gross vehicle weight</td>
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<td>GVWR</td>
<td>gross vehicle weight rating</td>
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<tr>
<td>hp</td>
<td>horsepower</td>
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<tr>
<td>HVAC</td>
<td>heating, ventilation, and air conditioning</td>
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<td>HVIP</td>
<td>Hybrid Truck and Bus Voucher Incentive Program</td>
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<tr>
<td>I-</td>
<td>Interstate</td>
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<tr>
<td>LNG</td>
<td>liquefied natural gas</td>
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<td>LRAPA</td>
<td>Lane Regional Air Protection Agency</td>
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<td>Metro</td>
<td>Los Angeles County Metropolitan Transit Authority</td>
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<td>Mobile Source Air Pollution Reduction Committee</td>
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<tr>
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<td>National Ambient Air Quality Standards</td>
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<tr>
<td>Term</td>
<td>Definition</td>
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<td>--------</td>
<td>------------------------------------------------</td>
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<tr>
<td>NOx</td>
<td>nitrogen oxides</td>
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<tr>
<td>PLACE</td>
<td>Providing Loan Assistance for California Equipment</td>
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<tr>
<td>PM</td>
<td>particulate matter</td>
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<tr>
<td>RHAMC</td>
<td>Respiratory Health Association of Metropolitan Chicago</td>
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<td>SCAG</td>
<td>Southern California Association of Governments</td>
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<td>Southern California Gas Company</td>
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<td>SOON</td>
<td>Surplus Off-Road Opt-in for NOx</td>
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<tr>
<td>TRUs</td>
<td>transportation refrigeration units</td>
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<tr>
<td>ULSD</td>
<td>ultra low sulfur diesel</td>
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<tr>
<td>WCTC</td>
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Executive Summary

In order to address concerns about air quality in the Gateway Cities sub region, the Los Angeles County Metropolitan Transportation Authority (Metro) and the Gateway Cities Council of Governments (GCCOG) are developing an *Air Quality Action Plan* (AQAP) that will quantify health risks associated with air pollution and identify measures that can reduce such risks through 2035. This report, the *Early Action Plan* (EAP), is the first component of the AQAP. Its purpose is to identify near-term strategies that cities can employ to reduce emissions and air pollution exposure in advance of long-term air quality action strategies developed through the AQAP process.

This EAP was developed through consultation with local governments and other stakeholder groups that focused on how the early action strategies can be successfully implemented at the local level. In the 2007 *Preliminary Report on the Development Plan for the I-710 AQAP* (2007 Preliminary Report), community groups expressed a desire for early actions that could create rapid improvements and put forward several recommendations for strategies that cities and local communities could implement in the near future.

The EAP evaluates six strategies for improving air quality within GCCOG, and emphasizes challenges, opportunities, and roadblocks that are specific to local cities, including issues surrounding jurisdiction, funding, and coordination with other agencies. The six strategies are:

- Reduce Truck Idling.
- Implement Clean Construction Equipment and Strategies.
- Reduce Exposure of Sensitive Receptors to Diesel Exhaust.
- Reduce Emissions at Warehouses and Distribution Centers
- Maximize Cleaner Transportation Technology.
- Implement Air Quality Monitoring along the I-710 Corridor.

For each strategy, the EAP identifies several implementation methods that a city can use to apply the strategy. This approach was chosen to recognize the fact that while cities may lack the regulatory authority or large budgets of state or federal agencies, they have several unique tools at their disposal, including local outreach, coordinating funding opportunities, long-range planning, and city ordinances.

Lastly, the EAP presents several recommended actions for cities and local community groups to take, which would most effectively achieve near-term local air quality benefits. These recommendations identify several implementation opportunities for each Early Action strategy.
1. Introduction

This report presents a set of early action strategies that Gateway Cities communities can implement early to directly improve air quality. The Early Action Plan (EAP) is one component of the Gateway Cities Air Quality Action Plan (AQAP), and is intended to complement long-term air quality action strategies. These early action strategies are not dependent on outputs from the AQAP analysis, and can be implemented independently of, earlier than, or in parallel with, other strategies recommended through the AQAP process. This EAP was developed through consultation with local governments and other stakeholder groups that focused on how the early action strategies can be successfully implemented at the local level.

The 2007 Preliminary Report on the Development Plan for the I-710 AQAP (2007 Preliminary Report) identified recommendations for early action items for local cities from representatives of the environmental community. Because of the long timeline of the AQAP and Interstate 710 Corridor Project Environmental Impact Report /Environmental Impact Statement (I-710 EIR/EIS) processes, there was a desire for strategies that could be implemented earlier while the AQAP and I-710 EIR/EIS remained underway. These strategies would target local air quality concerns and could be implemented by local cities and agencies.

In evaluating each strategy, the EAP emphasizes the unique implementation challenges and opportunities at the local level. In order to fully understand the strategies available to cities and local agencies, it is essential to consider the jurisdictional authority and budgetary power available at the local level. While cities are often not in the position to implement environmental regulations or launch significant funding programs, they are uniquely positioned to interact with their communities and craft strategies that work best within their communities. A city government’s connection with local stakeholders, businesses, and residents can be a powerful mechanism to improve local conditions in ways that state or federal programs often cannot.

This report includes detailed information on the background and implementation of six Early Action Strategies. The reader is provided contextual information on each strategy, including best practices as applied in other jurisdictions, and funding sources that may be available at the regional, state, or federal level.

1.1. Summary of Early Action Strategies

The 2007 Preliminary Report recommended nine early action strategies. Through the AQAP participation process, six were selected by cities and community groups for inclusion in this EAP. The remaining three strategies were not selected for further assessment either because they have already been implemented or because they are not likely to be effective, as discussed below.
The six strategies chosen for inclusion in the EAP are:

- **Reduce Truck Idling**

  Diesel emissions are produced when trucks idle while parked or queued for long periods. State regulations restrict truck idling to a maximum of 5 minutes, but enforcement of this regulation is limited relative to the large amount of truck activity in the Gateway Cities.

  An early action item recommends that municipalities in the I-710 corridor enact strategies to target the idling of any diesel-fueled medium-duty trucks (e.g., commercial vans, local trucks) or heavy-duty trucks (e.g., long-distance trucks, tractor-trailers) vehicle for longer than 5 minutes. These strategies can include education campaigns, incentives for truck facilities to reduce idling, and anti-idling ordinances.

- **Implement Clean Construction Equipment and Strategies**

  Equipment from construction activities can contribute to local air pollution near sites with heavy construction. Construction equipment generates emissions from the combustion of fuel as well as fugitive dust during earthmoving and demolition construction activities. Historically, emissions standards for off-road construction equipment have been less stringent than for on-road vehicles. In 2011, the Los Angeles County Metropolitan Transportation Authority (Metro) adopted a Green Construction Policy that will require equipment used for Metro-funded projects to meet emissions performance standards.

  Local governments can employ several methods to promote clean construction equipment for construction projects under their control. These methods could be implemented independently or in conjunction with other regional agencies.

- **Reduce Exposure of Sensitive Receptors to Diesel Exhaust**

  Sensitive receptors are groups of people that are especially at risk for illnesses from air pollution, including children and the elderly. Sensitive receptor locations include facilities such as schools, daycare centers, hospitals, and eldercare facilities. It is often infeasible to relocate sensitive receptor sites away from pollution sources, or move polluting facilities away from sensitive receptors.

  However, a number of strategies and technologies can reduce the impact of this pollution on sensitive populations.

  Through this early action measure, local governments would take steps to reduce the exposure of sensitive populations to air pollution. This could involve retrofitting buildings to include filters on heating, ventilation, and air conditioning (HVAC) systems, restricting activity that causes emissions near sensitive receptors, and new land use restrictions to minimize exposure.

- **Reduce Emissions at Warehouses and Distribution Centers**

  The goods movement industry is one of the largest employers in southern California, and warehouses and distribution facilities are prevalent in the Gateway Cities. These facilities are frequented by heavy-duty trucks and often employ cargo-handling equipment to carry goods. Both these emission sources contribute to air pollution and can affect public health.
Local governments can impose restrictions on new or improved warehouses and distribution facilities through their zoning and approval processes. With a conditional use permit (CUP), local approval of a project is contingent upon satisfying certain conditions intended to mitigate negative impacts of the project. Local governments can use this process and other strategies to encourage measures that will reduce emissions from trucks and cargo handling equipment.

- **Maximize Cleaner Transportation Technology.**

Numerous efforts are underway in southern California to accelerate the introduction of low-emission transportation technologies. The Clean Truck Program at the Ports of Long Beach and Los Angeles has resulted in cleaner trucks serving the ports and will continue to do so. Two alternatives in the I-710 EIR/EIS contain a zero-emission freight corridor, for use by trucks with zero tailpipe emissions. The South Coast Air Quality Management District (SCAQMD) and California Air Resources Board (CARB) offer a variety of incentive programs for buyers of low-emission vehicles and equipment. Metro, school districts, and local governments have converted all or a portion of their vehicles to cleaner burning transportation technologies such as natural gas.

Despite this progress, there are additional near-term actions that can be taken by Gateway Cities to increase usage of cleaner transportation technologies. These include actions to deploy cleaner vehicles and fuels in municipal fleets, as well as city actions to support the purchase and use of low-emission technologies (such as electric vehicles [EVs]) by local residents and businesses.

- **Implement Air Quality Monitoring along the I-710 Corridor.**

Several studies by SCAQMD and CARB have pointed to the effects of poor air quality in the I-710 corridor communities. However, many of the conclusions in these studies are extrapolated from relatively limited sets of air quality monitoring data that have been collected from a handful of monitoring stations scattered throughout the South Coast Air Basin.

This recommendation for early action involves the development of a partnership between the I-710 corridor communities and SCAQMD for the development of a new and expanded air quality monitoring system in the I-710 corridor. This would strengthen future environmental studies by providing a more robust air quality data set for the I-710 corridor.

### 1.2. Strategies Not Included in Early Action Plan

The three strategies not included in the EAP are listed below, with additional information on the reasons for exclusion:

- **Develop Funding Plan for the AQAP.**

The 2007 Preliminary Report outlined the scope and components of the AQAP and identified funding needs for development and implementation of the plan.

Funding for the AQAP has now been secured and the study is underway, so this recommendation has been completed. While funding still needs to be identified for continuing actions developed through the AQAP process, this next step is beyond the scope of the EAP.
Support Legislation Establishing Container Fees

For several years during the period 2005–2008, legislation was introduced at the state level to implement a fee on each import container at the Ports of Long Beach and Los Angeles to be used for projects related to port security, infrastructure, and air quality improvement. The Gateway Cities Board of Directors voted to support this legislation; while the legislation passed both houses of the state legislature, it was vetoed by the Governor.

However, the ports of Los Angeles and Long Beach directly implemented fees on containers passing via truck through their facilities. The fees vary from $0 up to $85 per container, depending on time of day and drayage truck model year. No fees are levied on containers traveling through on-dock rail. These container fees are partially used to support other measures of the ports’ Clean Air Action Plan.

While state legislation was not successful, the port container fees achieve the goals of the early action strategy outlined in the 2007 Preliminary Report. The need for state legislation establishing container fees is now considered a lower priority, and therefore not considered for the EAP.

Encourage Communities to Buy Local

The 2007 Preliminary Report included a recommendation for I-710 corridor cities to “buy local,” which would involve adopting local resolutions that establish preferences for domestic goods rather than those imported through the Ports of Long Beach and Los Angeles. The hope was that by reducing demand for imported goods, a “buy local” initiative would reduce truck traffic along the corridor and ease the associated air quality burden. It would also create economic benefits for local and domestic suppliers.

A preliminary assessment by ICF International, together with feedback received from AQAP stakeholder groups, suggests that this strategy would produce only negligible air quality benefits. The volume amount of goods imported through the ports is far greater than potential reductions that could be achieved through a “buy local” initiative. Therefore, the “buy local” strategy is not included in the EAP. However, while the air quality benefits would be minimal, this strategy may provide economic benefits to local communities, and could be considered as part of a separate economic development analysis.

1.3. Summary of Implementation Tools

The six early action strategies identified above each target a particular source of pollution that can be reduced in the near-term, or specify sensitive populations whose protection from poor air quality can be enhanced. However, there are a wide variety of methods that a city can use to implement these strategies. These implementation tools are introduced and described in this section.

These implementation tools are methods by which cities can implement an early action strategy. They include a variety of mechanisms available to local agencies, from education through regulation. For each

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early action strategy, the EAP identifies a selection of tools that can be used to implement that strategy. Not all tools are used for all strategies, and some strategies have a more limited range of options than others.

The combination of early action strategies and implementation tools identified in this report form the *Early Action Plan*, which decision makers at cities and local agencies can use to inform choices of possible actions that can be taken to improve local air quality.

The implementation methods in the EAP are introduced and summarized below.

- **Education and Outreach**
  
  This implementation tool includes methods that increase knowledge of air quality problems and solutions, or create education and outreach opportunities either within a city or among the community.

  *Education* refers to background research and information about each city’s unique environmental, goods movement, and demographic characteristics. This information is required to determine whether an early action strategy would be effective for a particular city, and in which locations within the city it should be applied. This data is crucial for making the best use of limited funding and city staff time.

  *Outreach* refers to the task of outreach on the impacts of air pollution and how an early action strategy could improve the environment within the city. This outreach is required not only with the community and business stakeholders, but also within a city government, to explain to city staff and elected officials the importance of pursuing a new policy.

- **Support and Coordination**
  
  This implementation tool includes methods that cities and local agencies can use to influence regulations or programs in other agencies, or to support actions occurring in other agencies. If the Education and Outreach tool can be considered “reaching out” to the community, then the Support and Coordination tool can be considered “reaching up” to other regional, state, and federal agencies.

  *Support* refers to actions a city can undertake to enhance the support of measures from other cities or agencies. Examples may include a city resolution in support of regional policy from Metro or SCAQMD, or a local agency participating in regional committees or stakeholder events.

  *Coordination* refers to the cooperation or organizing of several cities (either within or outside the Gateway Cities Council of Governments [GCCOG]) to address problems that are larger than a single city. Examples of coordination include forming a stakeholder group of cities, regional agencies, and community groups.

- **Incentives and Funding**
  
  This implementation tool includes methods that cities or local agencies can use to fund air quality improvement programs and projects. It is assumed that a city’s ability to directly finance large air
quality programs is limited; instead, the EAP places a focus on leveraging funding that is available from other agencies.

**Incentives** include funding that is made available to elicit the adoption of green technologies or green practices in the local region. Examples may include cleaner drayage trucks, or anti-idling equipment at warehouses. Incentive programs can leverage funding available in California from Proposition 1B or Carl Moyer grants, among others. In these cases, a city’s most powerful role may be one of coordinating applications and implementations from local businesses and groups.

**Funding** refers to financial support of regional air quality or environmental programs to improve local cities. These include programs such as the AQAP, which is financed through several funding partners. In this way, a city can leverage its own funding investment by combining with several stakeholders.

- **Planning and Regulations**

This implementation tool refers to actions that a city agency can take to improve air quality in its jurisdiction. Planning and regulation implementation tools are generally not available to local agencies outside of government.

**Planning** refers to actions taken by city planners either in the short term (through permits, for example) or in the long term (by incorporating into long-range plans, for example). These planning methods are a natural fit for the planning activities currently undertaken by city agencies, and are potentially powerful tools for implementing early action strategies.

**Regulations** include requirements, licenses, and ordinances that a city has the authority to issue. These regulatory items can be used to further early action strategies, such as requirements on warehouses to utilize anti-idling equipment. When considering these implementation tools, it is necessary to be cognizant of the limitations imposed on cities for the scope of any initiative.

1.4. **Structure of the Early Action Plan**

The following six sections of the EAP include a chapter for each strategy that provides a description of the strategy, a discussion of each implementation tool that can be applied for this strategy, and examples of jurisdictions that have already implemented the strategy (highlighted with call-out boxes). The last section of the document contains recommendations for implementation tools that would be effective for achieving the goals of the early action strategies.
2. Early Action Strategies

2.1. Reduce Truck Idling

Idling of trucks contributes to pollutant emissions and air quality problems in the Gateway Cities. Trucks idle while waiting to pick up or deliver a load, sometimes to provide heat or cooling, to power other cab amenities, or simply out of habit. In some cases, a driver may be unable to avoid idling if the truck is stuck in a slow moving queue. But in many instances, extended truck idling is unnecessary. A Class 8 (tractor-trailer) truck emits about 2.5 grams of particulate matter (PM) and 105 grams of nitrogen oxides (NOx) for every hour of idling.

The practice of truck idling is not necessary for the operation of most heavy-duty diesel trucks, and often comes from driver habits established at a time when diesel engines were difficult to restart once they had been turned off. Since the 1994 model year, however, virtually all diesel engines have electronic controls that enable trucks to restart instantly from either a warm or cold start.

In recognition of the health threat posed by unnecessary idling, in 2006 CARB imposed a state-wide 5-minute restriction on truck idling. However, enforcement of this rule is limited, particularly in comparison to the large amount of truck activity around the Ports of Los Angeles and Long Beach. Strategies to reduce truck idling can include driver education and training, increased enforcement of idling limits, and the deployment and use of technologies that offer alternatives to truck idling.

Education and Outreach

To effectively address the problem of truck idling in the Gateway Cities, more information is needed on the current extent of idling. Although there is extensive anecdotal evidence that truck idling remains a problem despite the CARB regulations, there has been little effort to document the location and duration of truck idling. The last CARB study of truck idling was conducted in 2002 using global positioning system (GPS) data from a sample of 84 instrumented vehicles. The study found that the heavy-duty truck fleet averaged 105 minutes of idling per day, or 21 minutes per trip.\(^2\)

A comprehensive study of truck idling is beyond the resources of most individual cities, but such a study could be supported by SCAQMD, the GCCOOG, and/or local universities. While not focused on idling per se, individual cities can increase their knowledge of the location of truck activity by documenting truck routes, warehouses, and other nodes of truck activity. Several of these research areas overlap with other strategies, and are discussed later in this report. For example, an understanding of truck routes is also needed to reduce exposure to sensitive receptors, and the location of distribution facilities is needed to better target mobile source emissions at warehouses.

Public outreach campaigns are a powerful tool to inform local residents about regulations on truck idling, and what they can do to help enforce the regulations. In 2007, the State legislature passed

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Assembly Bill 233, the Healthy Heart and Lung Act, requiring ARB to set up a framework for outreach campaigns regarding diesel regulations. Because of this law, the materials and information for a campaign are already created and available to local cities. Cities can leverage this information to launch a local campaign without “starting from scratch.” Among other issues, residents should be informed about the tools available for them to report violators in their neighborhoods.

In order to effectively enforce anti-idling regulations, an education and training program can be rolled out to local public safety officers, providing information on idle limitations and the options available for enforcement and citations. This action can be combined with ordinance actions described below, which provides city workers the power to enforce idling regulations.

Public outreach is an important component of local anti-idling programs. Outreach can consist of both education campaigns (e.g., newsletters, seminars) as well as involving local residents directly in anti-idling enforcement.

A number of cities have instituted anti-idling education and outreach campaigns, focusing both on local truck operators and residents. For example, the city of Dallas, Texas, has placed an emphasis on trucker education as part of its Green Dallas campaign. The city has produced a brochure that gives background on the ordinance and provides options that truck drivers have for maintaining the use of their air conditioners and heaters while saving money on fuel and simultaneously reducing idling time. In addition to these suggestions, the brochure also outlines the importance of reduced idling for maintaining environmental health, improving air quality, and saving money.

Local residential reporting programs can be modeled after the similar program operated by CARB, in which citizens can directly report truck idling through the CARB website. Participants report the following information: license plate number, observation date, time and location, and vehicle make, model, and company name label. Once CARB is alerted to a possible idling commercial vehicle, the agency will contact the vehicle owner to provide more information on anti-idling regulations. Citations are not directly issued based on the citizen reports. Citizen alerts can also help steer CARB’s truck enforcement staff to locations of idling rule violations. CARB also operates a website where residents can report passenger cars with smoking exhaust, although there are no regulations in place for a citation. Instead, owners are sent a courtesy letter on maintaining their vehicles.

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The city of Aspen’s Department of Environmental Health maintains an anti-idling program, and citizens of Aspen are encouraged to report instances of idling vehicles to the Aspen Police Department or a city construction mitigation officer if the violation occurs on a construction site. The city of Aspen has taken efforts to increase awareness of the anti-idling campaign by way of an informative flyer campaign on car windshields, increased signage, and a small incentive program to city residents consisting of coffee coupons.

The city of Philadelphia, Pennsylvania, has created a similar self-reporting mechanism on the city level, designed to both provide residents the tool for reporting and give feedback on locations of truck idling throughout the city. The website serves as a portal to educate residents and encourage involvement in the program.

The website, IdleFreePhilly.org, enables users to drop a pin on a map where they have seen a truck(s) idling that they believe are not in compliance with state and federal laws. Philadelphia can use their smart phones or computers to mark instances of truck idling in the city and provide a brief explanation of what they see. Once a pin is dropped, Air Management Services and the Clean Air Council receive emails and can address the potential violation. The website map interface is shown in Figure 2-1.

![Figure 2-1. IdleFreePhilly.Org Map Interface](image-url)
GCCOG has an opportunity to play a lead role in educating local residents about the dangers of idling and the role of anti-idling policies. Because truck idling is an issue that has an impact on all cities in the region, coordinated education campaigns operated by a group of cities has the ability to create a significant impact. By taking charge of an education campaign, GCCOG can provide a single program across the entire region.

**Support and Coordination**

An effective anti-idling program in the Gateway Cities will support and coordinate with the existing anti-idling program maintained at the state level by CARB. Individual cities or multi-city coalitions should coordinate with agencies to identify in which areas anti-idling regulations are well enforced and in which areas enforcement could be supplemented. By targeting their own enforcement funds at gaps in existing coverage, cities make the most use of the existing CARB program.

The CARB regulation specifies a 5-minute idling limit for a truck’s primary diesel engine. In addition, restrictions on a truck’s auxiliary power unit (APU) are in effect when within 100 feet of a school or residence. All new heavy-duty trucks sold within the state must be packaged with an automatic start-stop device, which cut off truck engines after a short period of time (varies depending on device and truck settings). The anti-idling regulation applies to all trucks within California, whether or not they are registered in the state.

This anti-idling rule is enforced primarily through the CARB inspection program, which also targets trucks and buses for smoke violations and engine maintenance violations. Complimentary programs include CARB’s Heavy Vehicle Inspection Program, which examines trucks for excessive smoke, engine tampering, and compliance with U.S. Environmental Protection Agency (EPA) engine emission standards. In addition, Through AB 233, described above, CARB empowers local law enforcement agencies and the California Highway Patrol to also issue citations.

The inspection /enforcement program has been deployed throughout northern and southern California as well as the US/Mexico border region. In 2010, CARB inspectors examined 6,881 trucks and issued 983 citations for violating the state’s anti-idling rule, corresponding to a 14% failure rate. As of the end of 2010, inspectors have issued 3,389 idling citations and assessed idling penalties in excess of 1 million dollars. Full statistics for 2010 idling enforcement are shown in Table 2-1.

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Table 2-1. CARB Anti-Idling Enforcement Statistics (2010)

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<th>Southern California</th>
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<th>Total</th>
<th>Program Total (2007-2010)</th>
</tr>
</thead>
<tbody>
<tr>
<td># Inspections</td>
<td>3,580</td>
<td>1,256</td>
<td>2,045</td>
<td>6,881</td>
<td>29,297</td>
</tr>
<tr>
<td># Citations</td>
<td>179</td>
<td>411</td>
<td>393</td>
<td>983</td>
<td>3,389</td>
</tr>
<tr>
<td>Failure Rate</td>
<td>5%</td>
<td>33%</td>
<td>19%</td>
<td>14%</td>
<td>12%</td>
</tr>
<tr>
<td>Penalties Assessed</td>
<td>$53,700</td>
<td>$123,300</td>
<td>$117,600</td>
<td>$294,600</td>
<td>$1,016,700</td>
</tr>
</tbody>
</table>

CARB operates two additional anti-idling programs, targeting school buses and off-road equipment. Unlike the heavy-duty truck program, the school bus program is no longer actively enforced due to a high compliance rate. When the program was in operation, compliance was high, and resident complaints remain low for school buses.

The off-road idling regulations are part of CARB’s In-Use Off-Road Vehicle Regulation, enacted in 2007. While much of this regulation has been placed on hold indefinitely due to court challenges (specifically, portions relating to emission standards for in-use equipment), the anti-idling component remains in effect.  

In addition to these CARB regulations, the agency operates an extensive outreach program to local cities in order to enlist their help in reducing idling in their communities. As part of AB 233, described above, CARB’s Mobile Source Enforcement Branch has programs to team with other state and regional agencies and cities to help reduce idling. For example, CARB operates a signage program to place anti-idling signs in locations with repeat violations. This signage program requires cooperation from Caltrans and cities in order to install the signs. CARB also has budget available to assist local agencies with sign installation.

There is an opportunity for GCCOG to play a coordination role between local cities and CARB anti-idling enforcement teams to ensure that CARB efforts are effectively deployed within the region. Specifically, by inviting a representative from the Mobile Source Enforcement Branch to present information at an AQAP or GCCOG committee meeting, the COG can jump-start cooperative efforts to reduce truck idling.

Incentives and Funding

Because truck idling is already restricted by existing regulations (e.g., CARB’s Airborne Toxic Control Measures [ATCMs]), there are limited funds available to incentivize truck owners to install advanced technologies to restrict truck idling. The most prominent source of funding is the Carl Moyer Program. Truck idling technologies are eligible for Carl Moyer funding; however, the funding opportunities are “very limited” according to CARB documentation.  


truck idling technologies are eligible and can receive up to 100% of funding. Eligible applicants include heavy-duty trucks using electric APUs.

In addition to acquiring funding for truck retrofits, cities may be able to self-finance or at least reduce the financial burden of anti-idling enforcement through revenue from fines and citations. However, it is not certain that an anti-idling program could be completely self-financed, due to the manpower costs and the number of citations that would be issued to meet costs.

The District of Columbia has taken steps to grow funding for anti-idling programs through prohibitive fines assessed on idling violators. The city has implemented a regulation aimed at eliminating vehicle idling, in order to increase compliance with the National Ambient Air Quality Standards (NAAQS) for PM2.5 and ozone. The fines levied for such a violation range from $1,000 to $8,000 and are imposed on the vehicle owner. The anti-idling efforts of the District of Columbia have been very successful, as measured by the number of tickets issued since the law’s enactment and the number of repeat offenses. The fines received as a result of this regulation feed back into further anti-idling outreach programs.

A challenge with city-funded idling programs is ensuring that the benefits of truck upgrades accrue within the city’s boundary. Because trucks are mobile across a regional (i.e., port drayage trucks) or national (i.e., long-haul trucks) area, the benefits of an upgrade are likely to occur primarily outside a city’s boundaries. Because of this, there is little benefit in a city directly investing in truck-upgrade programs, unless the city is large enough that it contains a captive fleet of trucks.

Instead, cities can work with local fleet owners to assist companies in searching and applying for state and federal funds. Alternatively, anti-idling measures focused at truck facilities (such as warehouses) will likely benefit a city more than measures that target trucks directly; these strategies are discussed in Chapter 5.

**Planning and Regulations**

As discussed in the prior section, CARB has taken the lead in regulation and enforcement of truck anti-idling. However, the CARB regulation contains gaps that do not capture all idling activities, and they have limitations in enforcement both in terms of manpower and in terms of the location of enforcement activities. For the case of the Gateway Cities, CARB may not effectively enforce anti-idling within city boundaries.

This gap in enforcement provides local cities the opportunity to step up their own enforcement activities, either through local ordinances or through enforcement programs with local agencies or police departments. Fines can provide funding for local enforcement activities.

Currently, many cities cannot locally enforce idling regulations because of jurisdictional authority limitations placed on city workers such as parking enforcement. In many locations, these workers are not empowered to enforce the State regulation. In order to surmount this problem, cities can pass
municipal ordinances that extend enforcement power to local authorities. In many cases, once the city workers are empowered to write tickets for idling offenses, the fines from idling accrue directly to the city, providing an additional revenue stream. Examples of successful city enforcement programs can be found both within California and nationwide.

- The city of Auburn, California, has developed a comprehensive anti-idling ordinance to reduce vehicle emissions within the city. Vehicles are prohibited from idling for more than five consecutive minutes with reasonable exceptions, including stops due to traffic, servicing or diagnostics, and situations in which idling is critical to the function of the vehicle or equipment. The ordinance specifically addresses the issue of ownership vs. operation, mandating that owners of on-road and off-road vehicles must ensure that those who operate their vehicles are aware of the prohibition on engine idling and any issues of compliance are corrected. For violations of Auburn’s idling rule, the minimum civil penalty to be applied to a driver is $50 with criminal penalties applicable to the maximum extent provided by law. For violations by owners of vehicles, the first offense results in a warning and penalties for subsequent offenses are $100 for the second violation and $200 for the third and all subsequent violations. The regulation is specifically written so that it does not preclude more stringent anti-idling rules under relevant California regulations, vehicle codes, or local ordinances.

- New York City goes further in its program, combining a local ordinance with empowerment of several city agencies to enforce the ordinance. New York City has focused on increased enforcement to improve anti-idling compliance. Although the law against idling more than 3 minutes within New York City has been in place since 1971, it has not been strictly enforced and is not well known. In 2007, there were only 526 idling violations issued. In conjunction with strengthened state laws, the enforcement of anti-idling laws on school buses has improved, and idling has been reduced. In 2009, New York City strengthened the law by allowing the Department of Parks and Recreation and the Department of Sanitation in addition to the Police Department and Department of Environmental Protection to enforce the anti-idling law by issuing summonses, appearance tickets, and notices of violation. Citizens can also report idling violations by reporting to the city’s 311 phone line. Fines for violation of the law range from $220 to $2000. In addition, the New York City has undertaken public awareness campaigns to specifically increase awareness of the law among drivers.

GCCOG can contribute to local regulation and enforcement in several ways. First, the GCCOG can provide model ordinances for local cities, which lower the development costs and accelerate the regulation process at the local level. Second, GCCOG can coordinate anti-idling enforcement across several cities in the region, reducing the costs of an enforcement program to an individual city.
2.2. Implement Clean Construction Equipment and Strategies

Although individual construction projects are temporary in nature, they can contribute to local and regional air pollution. Construction equipment generates emissions from the combustion of fuel as well as fugitive dust during earthmoving and demolition construction activities. CARB estimates that off-road construction equipment was responsible for 12% of all NOx emissions and 5% of PM2.5 emissions in Los Angeles County in 2008.

Construction equipment is subject to emissions regulations at the state and federal levels. However, emissions standards for off-road equipment, such as construction and maintenance equipment, have generally lagged behind those for on-road vehicles, such as trucks and passenger cars. The most stringent EPA emission standards for non-road equipment, designated Tier 4, are phasing in between 2008 and 2013 (note: the EPA terminology “non-road equipment” is equivalent to and interchangeable with the CARB terminology “off-road equipment.” Both terms are used in this report, depending on context). EPA regulations only apply to new engines and equipment. Since construction equipment can remain in the fleet for many years, the full benefits of these standards will not accrue until after 2020.  

To accelerate the benefits from cleaner construction equipment, CARB adopted the 2007 In-Use Off-Road Diesel Vehicle Regulation, which required retrofits and upgrades to existing equipment in order to meet stringent NOx and PM emission standards. However, the agency indefinitely postponed the rule in 2010, due to industry feedback on economic impacts as well as conflicting jurisdictional issues with EPA.

Local governments can encourage the use of clean construction equipment through their contracting procedures. An example is Metro’s Green Construction Policy, adopted in 2011. The policy will be phased in over several years for both off-road construction equipment and on-road vehicles, and includes guidelines for generators as well as idling restrictions. The Metro policy is discussed in more detail below.

Projects that repower, retrofit, and replace construction equipment are eligible for funding from several regional, state, and federal agencies. EPA provides retrofit funding under the National Clean Diesel Funding Assistance Program, totaling $100 million annually through 2016. CARB provides $5 million in funding for small, local construction companies with primary operations in California. The SCAQMD administers the Surplus Off-Road Opt-In for NOx (SOON) program in the South Coast Air Basin for upgrades of larger construction fleets.

Numerous opportunities exist to further clean up construction-related emissions. Strategies that accelerate the introduction of new or upgraded construction equipment, or strategies that encourage the use of clean construction practices, can reduce construction emissions within the Gateway Cities.


Education and Outreach

Gateway Cities have an opportunity to accelerate the adoption of clean construction equipment by conducting outreach programs with local businesses. Several construction industry members remain hesitant about clean construction equipment due to reports of excessive cost or maintenance troubles. While these issues may have been applicable for earlier models (notably, issues when using biodiesel in old diesel equipment), current-generation equipment has largely overcome these barriers.

Engagement with industry can alleviate these concerns. City pilot projects offer one tool for expanding public awareness of green construction projects and enabling contractors to demonstrate the effectiveness of clean construction technology. Depending on the availability of project grants or funding, Gateway Cities can lead or participate in a clean construction equipment pilot project, partnering with a local private contractor.

The city of Dallas, Texas, implemented a clean construction pilot project in an effort to improve the metropolitan area’s air quality. Nearly 40% of non-road emissions of NOx in the Dallas-Fort Worth metropolitan area is attributable to construction and 95% of the existing diesel construction equipment is rated as less than Tier 3. The pilot clean construction project seeks to change this situation by gathering information, by way of estimates, about what the costs would be to contractors of implementing clean construction specifications through public works bids. The specifications being considered in this pilot project apply to vehicles and equipment with Tier 2 engines, those subject to grant requirements, low use equipment, and emergency situations. The specifications also cover fuel, idling limits, and minimizing the use of equipment. The pilot program requires reporting of the equipment used on site. This project aims to evaluate how such a clean construction requirement would improve the air quality in the region and aid in meeting more stringent ozone standards in the future.

The efforts and investment in outreach can be maximized by organizing outreach programs through GCCOG, through which a single program can be presented to all member cities. Benefits can be further magnified through direct engagement with industry organizations such as the Associated General Contractors of America, which then can disseminate lessons learned to member companies.

Support and Coordination

State and regional agencies are already taking the lead in regulating clean construction equipment. Gateway Cities can leverage these regional efforts to achieve local benefits. Instead of creating local ordinances for clean construction equipment, cities can provide support and endorsement for regulations at the regional and state levels, and take actions to ensure that these regulations fully benefit the local community. Relevant regulations include green construction policies from Metro and equipment emission standards from CARB.
The Metro Green Construction Policy commits Metro to using less polluting construction equipment and vehicles for construction projects performed on Metro properties and rights-of-way. Effectively, the policy accelerates the deployment of low-emissions equipment that will be required under CARB and EPA regulations. The policy also outlines the best management practices that are required to be incorporated into all construction projects performed on Metro properties and rights-of-way.

**Off-Road Construction Equipment.** All construction equipment with more than 50 horsepower (hp) are affected by the Metro policy. Prior to 2012, equipment must meet the EPA Tier 2 emission standards and be retrofitted with a CARB-verified Level 3 Diesel Emissions Control Device System (DECS), all of which contain a diesel particulate filter (DPF). In 2012–2014, the standard is raised to EPA Tier 3. Beginning in 2015, equipment must meet the EPA Tier 4 standards and, if not already supplied with a factory-equipped DPF, must be outfitted with best available control technology (BACT) devices certified by CARB.

**On-Road Vehicles.** The Metro Green Construction Policy sets emissions requirements for on-road equipment with a gross vehicle weight rating (GVWR) greater than 19,500 pounds (i.e., Class 6, 7, and 8 trucks). The requirements are introduced in two phases, as shown in Table 3-1. Prior to 2014, trucks must meet the EPA 2007 standards for PM or be installed with a CARB-verified Level 3 DPF. Beginning in 2014, trucks must meet the 2007 EPA standards for both PM and NOx. Note that the policy does not require compliance with the most stringent EPA NOx standards, which took effect beginning in 2010.

### Table 3-1. Metro Green Construction Program: Requirements for Vehicles with a GVWR Greater than 19,500 Pounds

<table>
<thead>
<tr>
<th>Phase</th>
<th>Enforcement Date</th>
<th>Applicability</th>
<th>Required EPA Emission Standards</th>
<th>Required Control Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Off-Road Vehicles</td>
</tr>
<tr>
<td>1</td>
<td>Before Dec 31, 2011</td>
<td>&gt; 50 hp</td>
<td>Tier 2</td>
<td>Level 3 DECS</td>
</tr>
<tr>
<td>2</td>
<td>Jan 1, 2012–Dec 31, 2014</td>
<td></td>
<td>Tier 3</td>
<td>Level 3 DECS</td>
</tr>
<tr>
<td>3</td>
<td>Jan 1, 2015 +</td>
<td></td>
<td>Tier 4</td>
<td>BACT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>On-Road Vehicles</td>
</tr>
<tr>
<td>1</td>
<td>Before December 31, 2013</td>
<td>&gt; 19,500 lbs. GVWR</td>
<td>2007 PM Std</td>
<td>Level 3 DPF</td>
</tr>
<tr>
<td>2</td>
<td>January 1, 2014 +</td>
<td></td>
<td>2007 PM and NOx Std</td>
<td></td>
</tr>
</tbody>
</table>

The policy restricts idling of vehicles and equipment to 5 minutes, which duplicates the idling limits established by CARB as part of the In-Use Off-Road Diesel Vehicles Regulation.\(^\text{14}\) The policy also requires any trucks or vehicles hauling fill material or debris to be covered fully while operating at, to, and from Metro construction projects.

An alternate approach to implementing green construction programs is to bring several stakeholders together to support or advocate for policies and regulations at the regional, state, or federal level. Environmental groups in Cook County, Illinois, are undertaking such a program. In 2009, the Illinois Campaign to Clean up Diesel Pollution, a coalition led by Citizen Action/Illinois and the Respiratory Health Association of Metropolitan Chicago (RHAMC), worked with Cook County to support a green construction ordinance. The coalition is made up of over 70 public health, environmental, labor, and community organizations. As a group, these organizations work to reduce diesel pollution in Illinois by advocating for the use of cleaner fuel technologies, and by partnering with state and local governments to pass policies requiring cleaner construction sites.  

Both the Gateway Cities and GCCOG have potential roles in supporting regional legislation, and working together for larger stakeholder groups. The AQAP participation framework is one example of a stakeholder group intended to influence the process of other agencies, in this case, the California Department of Transportation (Caltrans) as it conducts the I-710 EIS/EIR.

**Incentives and Funding**

A significant hurdle to cleaning up construction fleets is the costs that may be imposed on contractors, many of whom are small businesses with limited capital funds. The cost of adding catalysts and filters to existing equipment may exceed $10,000, and the cost to upgrade engines in large construction equipment may exceed $100,000. Typically, a local government will not be able to support construction equipment upgrades using its own funds. Instead, local cities can assist local contractors in applying for funding programs, effectively leveraging investments made at the regional, state, and federal level.

There’s an opportunity for GCCOG to play the role of a clearinghouse, collecting information on funding opportunities, and consolidating project funding announcements and requests for proposals in one location. This information can be disseminated to the cities for use with local contractors.

A number of funding sources exist for retrofitting existing construction equipment or purchasing new construction equipment. These programs, administered by EPA, CARB, and SCAQMD, together provide more than $100 million for upgrades.

Three primary programs are available. Projects that repower, retrofit, and replace construction equipment are eligible for funding by EPA under the National Clean Diesel Funding Assistance Program, as part of the Diesel Emission Reduction Act (DERA). The program provides $100 million annually through 2016, but was cut from the FY 2012 budget. The Providing Loan Assistance for California Equipment (PLACE) program, administered by EPA via the American Recovery and Reinvestment Act, provides $5 million in funding for small, local construction companies with primary operations in California. Lastly, the SCAQMD administers the SOON program in the South Coast Air Basin for upgrades of larger construction fleets.

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EPA DERA Program

Although incentives have largely been targeted at on-road vehicles (e.g., trucks and buses), incentives for more efficient and cleaner burning construction equipment has been introduced more recently. For instance, projects that repower, retrofit, and replace construction equipment are eligible for funding under the National Clean Diesel Funding Assistance Program, as part of the DERA.\textsuperscript{16} There are four primary aspects of the DERA national program that EPA administers.

- State component: Funds are allocated on a non-competitive basis for grant and low-cost loan programs. In recent years, the money allocated to California has generally been allocated to school bus retrofit and replacement programs, freight projects (e.g., locomotives and tractor-trailers), and port projects (e.g., shore power or cargo handling equipment). Construction equipment, however, is eligible.
- National Clean Diesel Funding Assistance Program: Grant applications are accepted and selected through Regional Clean Diesel Collaborative.
- SmartWay Clean Diesel Finance Program: A competitive grant program intended to establish innovative finance mechanisms or loans that have better than market terms. EPA solicits applicants and manages the grants. CARB received funds via the SmartWay Clean Diesel Finance Program and has initiated the PLACE Program (see Section 3.3.2 for more details).
- Clean Diesel Emerging Technologies Program: Competitive grants are awarded by EPA for projects that will use technologies not yet verified and/or commercialized but on EPA’s Emerging Technology List.

CARB PLACE Program

CARB recently received $5 million by EPA via the American Recovery and Reinvestment Act to introduce the Providing Loan Assistance for California Equipment (PLACE) Program. It is unclear how much funding is actually available after accounting for program administration. The eligibility for the program includes:

- Companies with diesel vehicles or portable diesel equipment used in construction, agriculture, mining, or industrial operations.
- Small businesses with 500 or fewer employees.
- Business with a primary economic effect in California, i.e., most employees live in California and most business operations are in California.

Fleets of all sizes for off-road vehicles are eligible as long as they meet the requirements above. Portable diesel equipment with a rating of 50 hp or greater is eligible. Some examples of portable diesel equipment include: air compressors, generators, concrete pumps, tub grinders, wood chippers, water pumps, drill rigs, rock drills, abrasive blasters, aggregate screening and crushing plants, concrete batch plants.

\textsuperscript{16} The initial legislation from 2005 was extended by President Obama in 2010; however, DERA funding was most recently cut from the President’s FY2012 budget. The DERA 2010 was signed with the intention of providing about $100 million of funding annually, up to $500 million, through 2016. At this point, the future funding for the program is unclear.
plants, and welders. Loans can be used for a) engine repower, b) vehicle or portable diesel equipment, or c) emission control devices.

CARB forecasts 320 loans will be issued through the PLACE program to small businesses who cannot obtain financing for upgrading their off-road vehicles through conventional methods.

**SCAQMD SOON Program**

California also has the *Surplus Off-Road Opt-In for NOx (SOON) Program*; an opt-in provision of the in-use off-road diesel vehicle regulation (July 2007) allows districts to achieve additional NOx reductions beyond the state’s base regulation. The SOON provision applies to large fleets with a total maximum power greater than 20,000 hp on a statewide level consisting of more than 40% Tier 0 and Tier 1 vehicles and operating in respective air districts. These fleets must apply for funds for implementing a sufficient number of projects (e.g., repowers) to meet the SOON NOx targets and must implement these projects if awarded funding. The SCAQMD opted into the SOON program in 2008.

The SOON Program at the SCAQMD is designed to achieve additional NOx reductions above those that would be obtained from the State In-Use Off-Road Vehicle Regulation. These reductions are critical to meeting the PM 2.5 ambient air quality standard in the South Coast Air Basin by 2014 (NOx is a driver of secondary PM formation). Desirable projects must strive to meet a cost-effectiveness of $5,000 (maximum of $16,400) per ton of NOx emissions reduced and other criteria defined by the SCAQMD.

All eligible projects must use certified technology or technology that has been verified by CARB for real and quantifiable emission reductions that go beyond any regulatory requirement. Off-road projects fall into three distinct categories: 1) repower with an emission-certified engine, 2) retrofit with a verified diesel emission control strategy, and 3) replace with a vehicle with an engine certified as meeting the current off-road emission standards.

The SOON Program was initially envisioned as a $120 million program with a lifetime of about 4 years—spending roughly $30 million per year. However, the economic recession in 2008 and into the beginning of 2009 drastically affected applications for funding. As of its most recent commitments, the SOON Program at the SCAQMD has committed just over $50 million in funds, about 40% of the originally identified funds. The program is likely to continue into the foreseeable future until the original target of $120 million is spent. The life of the program is dependent on SCAQMD’s Board.

**Planning and Regulation**

Gateway Cities can use their planning and regulatory actions to introduce clean construction equipment and practices in their jurisdictions. First, cities can upgrade the construction and maintenance equipment in their city-owned fleets. Second, by instituting clean provisions in city contracts and bid specifications, cities can improve the construction emissions from projects that are city-funded. Gateway Cities have much less control over construction projects that are not city-financed; in this case, other tools described above would better influence contractor behavior.
Fleet Management

City fleet managers can introduce low-emission technologies and alternative fuels into their construction and maintenance fleets through equipment retrofits and new equipment purchases. Equipment run on natural gas, for example, can reduce criteria pollutant emissions by 70–90% and greenhouse gases by 20%. Compressed natural gas (CNG) equipment, as well as CNG/liquefied natural gas (LNG) fueling equipment, is increasingly mainstream in city yards.

In 2006, the city of Berkeley upgraded its maintenance fleet with the purchase of two CNG street sweepers. The equipment, with a cost of $212,000 per unit, replaced two diesel units that were 8 and 10 years old. The upgrade greatly reduced equipment emissions, not only by introducing alternative fuels but also by removing old, uncontrolled diesel engines from service. Because the city was already operating a natural gas service station, CNG was a viable alternative fuel choice.\[17\]

In expanding alternative fuel in city fleets, fleet managers must consider the availability of fueling infrastructure. The city of Los Angeles has taken a leading role in municipal CNG infrastructure. In 2009 the city broke ground on its fifth and largest CNG/LNG fueling station. With a storage capacity of 15,000 gallons, the facility at the time was the largest in the world. The North Central natural gas facility supports the city’s growing fleet of LNG refuse trucks, CNG street sweepers, and other medium-/ heavy-duty vehicles. The city has already upgraded half of its 750-vehicle refuse fleet to LNG, and with the construction of this station has the fueling capacity to upgrade the remaining trucks.\[18\]

Bid Specifications

In addition to municipal fleets, Gateway Cities have a degree of control over the fleets of construction equipment that private contractors use when working on city projects. Cities can write clean construction requirements into the bid specifications, requiring contractors to use cleaner equipment, adopt cleaner construction practices, or take other steps to mitigate construction emissions.


Several cities have incorporated clean construction mandates in their ordinances. The city of San Francisco amended its administrative code in early 2007 to include a provision for clean construction practices. This addition to the administrative code focuses mostly on the requirement to use biodiesel in public works contracts for major construction projects in the city. The amending ordinance is enforced through the bidding process for public construction projects. In this way, the city must alert contractors of the clean construction requirement in any requests for bids and contractors must provide information about their compliance plans. The city is authorized to make contract decisions on the basis of the contractor’s degree of compliance with the clean construction requirement.

San Francisco’s clean construction ordinance requires that construction equipment that will be used for 20 or more hours during any part of the project must meet the emissions-control requirements. These emissions-control requirements consist of two parts: contractors must use fuel that is at least 20% biodiesel (B20) and use construction equipment with engines (only those 25 hp or more) that either meet EPA Tier 2 standards for off-road engines or which use the BACT for controlling PM and NOx emissions from diesel engines. The city offered a grant program to contractors to subsidize the cost of equipment upgrades in order to reduce the cost of compliance. This grant program was an effective incentive for San Francisco-based contractors because it funded upgrades that would be required in the near future of all construction equipment due to CARB regulations.

New York City, anticipating significant reconstruction activities in lower Manhattan, adopted requirements that construction equipment use ultra-low sulfur diesel (ULSD) and best available technology for emissions reduction. This law originally applied to public projects in lower Manhattan and was expanded to include all of New York City and then adopted by New York State. The New York City Department of Environmental Quality has been given the authority to assess fines for non-compliance with this law and to ensure compliance in city works projects. Unlike the San Francisco clean construction ordinance, the New York City law does not provide grant funding to offset the cost of retrofits.
The city of Santa Monica’s Environmental Purchasing Program provides a strong model that Gateway Cities can follow in incorporating green construction requirements in the bid process. A case study of the city’s program, written by EPA, demonstrates the structure of the program, best practices in integrating green requirements in the bid process, and lessons learned in coordinating with bidders.\textsuperscript{19}

The Environmental Purchasing Program is built on the city’s municipal code language for bid selection. Instead of requiring that the lowest bid be chosen for a project, the city requires “the lowest and most responsible bid.” In 2001 the city amended its bidding criteria with an additional criterion which allows consideration of environmental impacts in reviewing bid options. The amended language adds the criterion “(h) Any other factor which will further the intent set forth in Section 608 of the City Charter.”\textsuperscript{20} This catch-all criterion gives the city flexibility in selecting environmentally-friendly bids.

GCCOG has the opportunity to provide leadership by developing model bid specifications that incorporate concepts of clean construction equipment and practices.


\textsuperscript{20} City of Santa Monica Municipal Code Section 2.24.072. Available at: http://qcode.us/codes/santamonica/
2.3. Reduce Exposure of Sensitive Receptors to Diesel Exhaust

Although exposure to diesel exhaust is not good for anybody, there are certain segments of the population for whom breathing pollution from diesel vehicles is especially damaging. These sensitive populations include children, seniors, and people with respiratory problems. Unfortunately, facilities where these sensitive populations congregate, such as schools, senior centers, clinics, and hospitals, are often near major transportation corridors. Recent studies have demonstrated that the incidence of asthma increases significantly the closer a child is to a freeway. Other studies have linked increased mortality to days where particulate pollution is particularly high. It is therefore important to limit the exposure of these sensitive receptors to diesel exhaust.

CARB defines sensitive individuals as “[T]hose segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality). Land uses where sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities (sensitive sites or sensitive land uses).”21 As part of the AQAP, the locations of sensitive receptor sites have been identified in all cities within GCCOG.

It is often infeasible to relocate sensitive receptor sites away from pollution sources, or move polluting facilities away from sensitive receptors. However, a number of strategies and technologies can reduce the impact of this pollution on sensitive populations. Options include:

- Limiting truck travel on certain routes or within sensitive neighborhoods.
- Using a HEPA filter retrofit program for HVAC systems where other mitigation strategies are not practical. This option should be implemented in conjunction with energy efficiency upgrades to ensure the filters would be effective.
- Requiring new sensitive receptors to evaluate proximity to high-emitting locations (freeways, warehouses, rail yards, ports).
- Developing new land use/zoning restrictions that minimize conflicts between sensitive receptors and high-emitting sources.
- Evaluating the additional retrofit of school buses and senior transport vehicles to reduce exposure in vehicle cabins.

Education and Outreach

In order for a city to develop effective programs to reduce exposure of sensitive receptors, it is necessary to know the location of sensitive receptors within city boundaries. The number of sensitive receptor sites within a city—schools, hospitals, parks, daycare centers—will illustrate the magnitude of this problem, and the location of these sites will inform the selection of geographic areas for focus. The more sensitive a receptor site in a city, the greater the potential benefit of a sensitive receptor exposure program.

One component of the AQAP is an analysis of sensitive receptor locations throughout the Gateway Cities. This report reveals the location, number, and type of receptors in each city.\(^{22}\) The report contains maps of each city within GCCOG, and is an invaluable resource for agencies who wish to reduce exposure.

Both the number and location of sites should be taken into account for sensitive receptor plans. The number of sites varies considerably across cities. As an example of the extent that these sensitive receptors can vary amongst local cities, the number and location of sensitive receptors for the cities of Artesia, Cerritos, and Norwalk are shown in Table 4-1 and Figure 4-1. As can be seen, the city of Norwalk, with the highest number of receptors (109), may benefit the most from an exposure reduction plan.

<table>
<thead>
<tr>
<th>City</th>
<th>Childcare</th>
<th>Hospital</th>
<th>Retirement</th>
<th>Park</th>
<th>School</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artesia</td>
<td>10</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>12</td>
<td>26</td>
</tr>
<tr>
<td>Cerritos</td>
<td>10</td>
<td>1</td>
<td>1</td>
<td>20</td>
<td>32</td>
<td>64</td>
</tr>
<tr>
<td>Norwalk</td>
<td>20</td>
<td>8</td>
<td>11</td>
<td>12</td>
<td>58</td>
<td>109</td>
</tr>
</tbody>
</table>

Gateway Cities should use the existing research and maps developed for the AQAP to evaluate the extent and location of sensitive receptor sites within their jurisdictions.

Gateway Cities have additional opportunities to gather data on the significance of exposure to sensitive receptors. For point sources of emissions, such as refineries and manufacturing plants, information is available on the location of these sources and the pollution hot-spots that result from these sources. Such an analysis is a part of the AQAP, which contains data on emission inventories and hot spots. Instead of developing their own analyses, local cities should leverage this AQAP work.

In addition to point sources, significant levels of diesel PM emissions are caused by heavy-duty trucks traveling through the region. Unlike refineries and manufacturing centers, which can be separated from residential areas through the planning and zoning process, truck routes often crisscross residential centers within the city. In order to evaluate the potential benefits of designated truck routes, it is first necessary to understand current truck patterns.

Many cities have studied truck travel and proximity to sensitive receptors. One example is a study in New Haven, Connecticut, by the South Central Regional Council of Governments.\(^{23}\) This study incorporated an analysis of sensitive receptors along roadways and made the point of attempting to identify and eliminate exclude those truck routes that had a significant proportion of sensitive land use categories in a 500-foot buffer on either side of the roadway. The study specifically focused on schools, libraries, museums, parks, residential areas, and religious and cultural facilities as sensitive receptor

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The proposed trucking network does not exclude routes that are adjacent to sensitive receptors but it does attempt to select the routes that have a minimum of sensitive receptor exposure.

In total, the combination of these three information sources—map of sensitive receptor sites, map of pollution hot-spots, and map of current truck routes—provide insight into the magnitude of concern surrounding sensitive receptor exposure. In addition, the combined data set indicates which sensitive receptor sites are most affected by emissions, indicating the places where exposure strategies should be focused.

Before exploring the strategies in this chapter, Gateway Cities can develop this data set to understand the magnitude and location of concerns within their communities. Because much of this information has already been developed for the AQAP, GCCOG can coordinate with cities to disseminate the information.
Figure 4-1. Sensitive Receptor Map for the Cities of Artesia, Cerritos, and Norwalk
Because the challenges surrounding sensitive receptor sites are so large and potential strategies for addressing these challenges so broad, several agencies have created information clearinghouses and compendia for local governments. Before embarking on a sensitive receptor mitigation program, Gateway Cities can consult these data sources for more information on potential strategies and their effectiveness.

- CARB maintains a clearinghouse of information focused on community health, including case studies of mitigation measures utilized by state agencies and local municipalities.²⁴ Several of the case studies illustrate how sensitive receptor plans are compatible with the California Environmental Quality Act (CEQA) environmental permitting process.

- SCAQMD provides a clearinghouse of information regarding regional and local long-range general plans, specifically plans that incorporate air quality elements into the document. For each city included in the clearinghouse, links to the general plan and city contact information are provided.

- Several guidebooks have been created for cities to explore these issues, including:
  c) Several components of the AQAP contain information on sensitive receptor exposure levels, or strategies to reduce exposure.

Support and Coordination

Many problems related to sensitive receptor exposure, such as emissions from freeways and large point sources, extend across several city jurisdictions and may be difficult to address by individual cities. In these circumstances, coalitions of regional agencies and private parties can effectively address sensitive receptor issues. Local governments benefit from working with partner organizations because:

- Local governments often lack the modeling tools for a full air quality assessment, which can be needed to support wide-ranging policies to improve the exposure of sensitive receptors. This expertise can be found by partnering with SCAQMD or CARB.

- Planning and land use decisions can affect other agencies and private parties, such as Caltrans or utility companies. Proactive coordination with these agencies will minimize any conflicts that occur as part of the planning process.

- Regional partnerships with private parties and industry groups will minimize conflicts in developing environmentally beneficial policies.

Throughout California, several agencies and companies have joined a coalition to improve home energy efficiency. Home upgrades funded by this project can also target indoor air quality, improving sensitive receptor health. The initiative, called Energy Upgrade California™, is an alliance among California

counties, cities, non-profit organizations, the state's investor-owned utilities (Pacific Gas and Electric, Southern California Edison (SCE), Southern California Gas Company (SCG), and San Diego Gas & Electric Company), and publicly owned utilities. Funding for this effort comes from the American Recovery and Reinvestment Act, California utility ratepayers, and private contributions. Energy upgrade rebates are administered by participating utilities. The goals of Energy Upgrade California are to:

- Help residential and commercial consumers and the building industry become knowledgeable about the many energy and water efficiency programs and financing options that will be available during the next several years, including the state energy programs, utility company home upgrade programs, local rebates, appliance and renewable energy rebates, and energy financing programs.

- Provide a consistent and clear message regarding how consumers can choose the best energy-efficient measures and the right contractors to provide those services.

- Drive consumers and contractors to a central resource that provides educational information that links all the state energy efficiency upgrade, rebates, and incentive programs.

- Educate the building trades and home improvement industry on jobs, training, and required certifications.

Gateway Cities have a partner in GCCOG to coordinate larger groups of public and private stakeholders. These working groups have the most leverage for addressing sensitive receptor issues that cut across several city jurisdictions.

**Incentives and Funding**

Gateway Cities have several options for incentives and funding for sensitive receptor retrofits, which can reduce exposure without requiring new facilities. In addition to state and federal funding sources, local governments should investigate the possibility of directly funding specific types of projects. In some situations, a project to reduce exposure can be in line with city resources.

The focus of funding sources and incentives to reduce exposure of sensitive receptors to diesel exhaust is on HVAC systems. Replacing HVAC systems is an effective way to improve indoor air quality and reduce exposure to sensitive receptors to diesel emissions. Incentives to replace older HVAC systems with more efficient systems using better filtration are generally part of bundled incentives to upgrade the energy efficiency of homes. At the state level, these incentives are part of *Energy Upgrade California™*, described more fully above.

The whole home upgrades are effectively the only way to get HVAC replacements in southern California under the *Energy Upgrade California™* program. There are generally three levels of upgrades—basic, advanced, and enhanced; the HVAC upgrades are bundled into the advanced upgrade. The current incentive in Los Angeles County runs from about $1,000 to $6,000 per household. The money is a combination of funds from the local utilities and the county. The money from the local utilities is collected from ratepayers; the money from the county largely comes from Energy Efficiency and Conservation Block Grants (EECBG) as part of the American Recovery and Reinvestment Act.
The program started in earnest at the beginning of 2011 and has not seen much activity to date. The lack of activity and heightened awareness of summertime energy use prompted Los Angeles County to increase its contribution to whole home retrofits, bringing the total amount of money available to qualified residents to $6,000, up from $4,500. The county funds are available on a first come first served basis at least through September 2012.

The program is eligible to residents of single-family homes (with funding for multi-family housing available through the Better Building Grants) in Los Angeles County. Residents are entitled to at least the funds from the county; however, residents must be in the service territory of SCE and/or SCG to claim the remainder of the incentives. County staff indicated that the county may increase the amount that it contributes to the whole house program, bringing the entire value of the program to $8,000 per home.

Many Californians will soon be able to take advantage of PowerSaver Loans, a financing product for energy efficiency improvements. PowerSaver Loans will provide eligible homeowners with up to $25,000 for energy saving measures including insulation, air sealing, HVAC systems, and solar panels. These loans will be available to borrowers with good credit and reasonable debt-to-income levels who have some equity in their homes. Any loans over $7,500 will be secured by a second lien on the property and, consequently, the underwriting process will closely resemble that of obtaining a home equity line of credit.

The program will first launch as a 2-year pilot. The lenders in the pilot program will partner with established energy efficiency retrofit programs including the Better Buildings Programs, of which California is one. Because the number of lenders is limited, the loans will only be available in certain areas and will likely serve roughly 30,000 homeowners.

**Planning and Regulation**

The city planning and permitting process offers several opportunities to reduce exposure to sensitive receptors. The primary mechanism for reducing exposure is to separate sensitive receptor locations from emission sources. This can be accomplished at several stages of planning—long-range planning, zoning, and development permitting.

However, this approach contains a major limitation—it is best applied to new land developments, either developments of sensitive receptor sites or pollution-creating sites. For existing facilities, fewer options exist to regulate or enforce reduced exposure. However, cities can enact strategies that change the pattern of truck routes, identify diesel-free zones, and require building retrofits (HVAC systems, for example) to reduce the health impacts of emissions.

**Land-Use Guidelines**

Cities should look to CARB and SCAQMD for technical information on air quality and sensitive receptors. CARB’s *Air Quality and Land Use Handbook: A Community Health Perspective* provides information to assist local governments with land use decisions. The report focuses on sensitive receptors, a characterization of emission sources, and land use mechanisms to control exposure. Recommendations
cover appropriate siting around mobile sources—freeways, railyards, and ports—as well as stationary point sources—refineries, dry cleaners, and gasoline dispensing facilities. Throughout the report, the primary focus is on diesel PM, with a secondary emphasis on mobile source air toxics.

CARB provides guidelines for the separation of pollution-emitting facilities and sensitive receptors (Table 4-2). The agency emphasizes that these guidelines are advisory, and are one source of information when specific data (e.g., health risk assessment) is unavailable.

**Table 4-2. CARB Recommendations for Land Use Siting**

<table>
<thead>
<tr>
<th>Source Category</th>
<th>Advisory Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freeways and High-Traffic Roads</td>
<td>• Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles per day – week- or month?</td>
</tr>
</tbody>
</table>
| Distribution Centers             | • Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week).  
• Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points. |
| Rail Yards                       | • Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard.  
• Within 1 mile of a rail yard, consider possible siting limitations and mitigation approaches.                                                                 |
| Ports                            | • Avoid siting new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the CARB on the status of pending analyses of health risks.                                  |
| Refineries                       | • Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.                                                   |
| Chrome Platers                   | • Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.                                                                                                                                               |
| Dry Cleaners Using Perchloroethylene | • Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with 3 or more machines, consult with the local air district.  
• Do not site new sensitive land uses in the same building with Perchloroethylene dry cleaning operations.                                                                 |
| Gasoline Dispensing Facilities   | • Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities. |

While this information is advisory, Gateway Cities should consider this information when evaluating locations of concern for sensitive receptor exposure.

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Planning Mechanisms

Gateway Cities can use planning and permitting to guide the growth of new developments and influence the location of sensitive receptor sites as well as pollution sources. General plans and specific plans are a longer-term mechanism. The general plan provides guidance for the policies and future growth in a city, and includes plans for housing, industrial development, and transportation. When updating long-range plans (in many cases, every 5 years), Gateway Cities should consider provisions or recommendations that place larger focus on the location of sensitive receptors. These considerations are compatible with other forms of recommended land use development, including higher density infill development.

The city of Murrieta developed a general plan that includes a chapter on air quality and highlights the importance of considering land use compatibility relative to sensitive receptors. The general plan suggests that reducing potential negative air pollution impacts on sensitive populations can be achieved through appropriate siting prior to constructing buildings such as schools or retirement homes. The plan includes a list of policies that will help Murrieta avoid siting sensitive receptors near high pollution areas. To address the city’s goal that “the relationship between land use and air quality be considered in policy decisions in order to protect public health and improve air quality,” the Murrieta general plan lists five policies that specifically address the siting of sensitive receptor sites. The policies state that sensitive receptors should be located away from significant pollution sources; developers should avoid building homes, schools, childcare, eldercare, or health care facilities within 500 feet of freeways; and the construction of sensitive receptor sites should be in compliance with CARB’s Land Use and Air Quality Handbook.

Cities use zoning as a tool for implementing the policies developed in the long-range planning process. Specific or community plans created in conjunction with a specific project also perform many of the same functions as a zoning ordinance. Gateway Cities are encouraged to use the zoning process to maximize the separation of sensitive receptors from land uses that are sources of pollutant emissions (manufacturing, warehousing, etc.).

A city’s development permitting process provides a short-term mechanism to minimize air pollution exposure through the use of variances and conditional use permits. Cities can encourage developments with specific provisions for low-emission strategies, such as anti-idling provisions at warehouses. The role of conditional use permits at warehouses is discussed in Chapter 5. In order to take advantage of these benefits, Gateway Cities should make environmental considerations a required component of the permitting process. While most permitting applications will not require additional environmental

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requirements, a comprehensive environmental component in the process will help identify projects that can benefit from conditional use permits.

Additional Opportunities

A variety of other programs implemented at the city level can help to minimize sensitive receptor exposure. Gateway Cities should consider which types of programs would be most effective in their communities, and explore ways to implement similar actions.

Some cities have specifically targeted school buses as sensitive receptor hot-spots, recognizing that school children can sometimes be exposed to high levels of air pollution within buses.

- Washington State has one of the largest state-funded voluntary school bus retrofit programs in the country\(^\text{27}\), but the Puget Sound Clean Air Agency’s Diesel Solution Program was the foundation for this larger statewide resource. The Puget Sound Clear Agency sponsors this and other diesel retrofit projects in their four-county region.

- In Virginia Beach, Virginia, the Middle Peninsula Clean School Bus Project funded the installation of fuel operated heaters in 24 school buses, which allow the compartments inside the bus to stay heated while the bus is turned off. As part of this program, the Virginia Clean Cities outreach coordinator organized an educational program to teach the community about the benefits of anti-idling regulations, especially around sensitive receptors.

Modifying the location of truck routes is another potential mitigation strategy. Cities can identify and designate preferred truck routes. These truck routes may deviate from the “fastest” route through the community, but they are designed to provide access to industrial areas while avoiding, to the extent possible, residential areas. Such plans could include requirements that trucks be rerouted away from schools, senior centers, medical facilities, etc., or specify regions that are diesel truck-free zones.

The city of San Jose has incorporated ideas for reducing air pollution exposure to sensitive receptors into its development plan, *San Jose Envision 2040 General Plan*. This plan has not been implemented yet, but includes several relevant provisions related to truck traffic and routing. Truck traffic is encouraged to use freeways, highways, and county expressways and primary truck routes designated in the Envision 2040 General Plan. In addition, future industrial and commercial development will be planned to avoid truck traffic through residential streets and truck circulation routes will be reviewed for projects that generate significant heavy-duty truck traffic in order to minimize exposure of sensitive receptors to toxic air contaminants and PM\(^\text{28}\).

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Outside of California, Tampa and broader Hillsborough County, Florida, have established guidelines for creating and modifying truck routes around the city and county. These guidelines are reviewed every three years and modified as necessary. When reviewing truck routes, the city analyzes land uses; flags sensitive land uses such as schools, hospitals, parks, and cultural and religious facilities; and makes an effort to route trucks away from such sensitive receptors. The ongoing review of truck routes has also incorporated positive signage to increase awareness of trucking routes. The latest citywide study released in 2011 revealed that the trucking community felt the trucking routes established by the city were inadequate for the majority of their needs and did not accommodate the needs of modern trucking, which utilizes vehicles that are too large for some roads identified as trucking routes. There is also a need for greater awareness among truckers of the trucking routes, which increased signage and publication of maps should address.

2.4. Reduce Emissions at Warehouses and Distribution Centers

Because of its proximity to the Ports of Los Angeles and Long Beach, rail yards, and manufacturing facilities, the Gateway Cities sub region is home to numerous warehouses and other distribution centers. These facilities can be locations for emissions due to trucking idling, transportation refrigeration units (TRUs), and cargo handling equipment such as yard hostlers and forklifts. Warehouse and distribution centers are sometimes located near residential neighborhoods and sensitive receptors and, therefore, can contribute to adverse public health impacts.

There are few requirements placed on warehouse and distribution centers regarding their operations, the infrastructure that they must provide, and how they manage the trucks that call on their facilities. In the absence of rules governing their development, these facilities will contribute to the inventory of toxic air contaminants that impact the I-710 corridor communities.

Local governments can help to reduce emissions from mobile sources at warehouses by imposing additional conditions on the operation of new or existing facilities. Depending upon the nature of the operation and its proximity to sensitive receptors, the types of conditions to be imposed could include:

- Onsite signage regarding truck idling.
- Provision of electrical hookups for hybrid vehicles or electric APUs.
- Signage or other restrictions on truck routes through neighborhoods.
- Placement of driveways/loading docks away from residential or other sensitive receptors.
- Use of alternate-fueled cargo handling equipment.

While there are examples of successful implementation of this strategy, it should be recognized that the ability of local governments in the Gateway Cities to influence emissions at warehouses is limited. Cities can impose restrictions on warehouse operations only when issuing a permit for a new or expanding warehouse. In coming years, most new warehouse development is expected to occur in the Inland Empire and other areas with available land, with relatively little new warehouse development expected for the Gateway Cities.

Education and Outreach

Knowledge of warehouse locations and trends allows Gateway Cities to create effective warehouse permitting policies. Warehousing and logistics is a significant industry in Southern California, with 837 million square feet of warehousing space in the Southern California Association of Governments (SCAG) planning area. Current warehouse-related zoning allows for an additional 185 million square feet of warehouse space in the SCAG region.

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Much of the warehouse activity is related to the Ports of Los Angeles and Long Beach, especially along the I-710 corridor to inland rail yards. Throughout the SCAG planning area, 15% of warehouse activity is associated with the ports. This activity is clustered within GCCOG, while facilities for broader regional and national distribution tend to be located in the Inland Empire.

Demand for warehousing space is anticipated to continue to increase through 2035, driven by increased shipment volumes through the ports and a greater amount of imports consumed throughout the southwest. While demand for port-related warehousing is expected to grow faster than demand for other activities, the location of many new distribution centers will migrate to the Inland Empire, as warehousing space within the I-710 corridor becomes tapped-out. In addition, limitations on warehouse developments within GCCOG will accelerate this trend.\textsuperscript{31}

For further information on the land use challenges and air quality opportunities of new warehouse space, cities can consult a document entitled \textit{Good Neighbor Guidelines for Siting New and/or Modified Warehouse/Distribution Facilities}, released by the city of Riverside.\textsuperscript{32} The document highlights the ways in which diesel emissions associated with warehouse and distribution centers can be minimized, especially with respect to the conditional use permit process. This guidance document recommends several key strategies for minimizing emissions from warehouse activities:

- Warehouse properties should be designed to provide on-site truck queues,
- Driveways and loading docks should be located away from residential areas and sensitive receptors,
- Truck routes to and from warehouse facilities should be appropriately published and entry and exit points should be marked on site,
- On-site signage should be provided to remind drivers of idling restrictions, and
- Electrical hookups should be installed at truck parking so that truckers can turn off their main engines and APUs while loading and unloading, especially when TRUs are in use.

**Support and Coordination**

Knowledge of CARB and EPA programs can assist Gateway Cities in coordinating efforts without duplicating programs. Many technical standards for warehouse equipment and trucks have been enacted or will come into effect in the near future. CARB has instituted several programs, both regulatory and voluntary, that target truck and truck accessory emissions at delivery points, including warehouses and distribution centers. Additional regulations target cargo handling equipment used in distribution centers and elsewhere.


CARB’s TRU Airborne Toxic Control Measure Program, adopted in 2004, targets both TRUs and facilities where TRUs operate. New performance standards are defined for TRUs, similar to zero emissions vehicle performance standards for light-duty vehicles. Starting in 2015, TRUs will need to meet the Ultra-Low Emission Standard, which reduces diesel PM by 85% from 2008 standards.\(^{33}\)

CARB’s Stationary Refrigerant Equipment Management Program institutes regulations on large refrigerated systems found in warehouses and stores. Unlike the agency’s diesel emission programs, the Stationary Refrigerant program focuses on minimizing leaks of refrigerant, which have a large greenhouse gas as well as air toxic impact.\(^{34}\)

CARB operates a voluntary information and outreach program targeting truck APUs, which are used to provide electricity to truck systems while the vehicle is parked at the loading dock. This includes distributing information not only on advanced-diesel APUs, focusing on new engines and low-emission technology, but also on battery-electric systems, which can maintain up to 12 hours of charge. CARB provides truck owners a list of verified equipment packages to meet TRU requirements.\(^{35}\)

The CARB Cargo Handling Equipment (CHE) Regulatory Activities consist of several complimentary regulations and voluntary programs for equipment such as forklifts and loaders found at warehouses. The CHE regulations define emission standards or after-treatment requirements for yard trucks and non-yard-truck equipment.\(^{36}\)

**Incentives and Funding**

The focus of funding sources for warehouses and distribution facilities is related to advanced technologies to reduce emissions attributable to TRUs. Similar to truck idling technologies (see Section 2), TRUs are eligible for Carl Moyer Program funding; however, the funding opportunities are also very limited due to existing regulations. The technologies must effectively be a zero-emission solution. Transport refrigeration units are eligible for up to 100% funding reimbursement. New zero emission electric standby and cryogenic systems purchases are eligible; approval for projects occurs on a case-by-case basis.

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The Lane Regional Air Protection Agency (LRAPA), which includes Springfield Oregon, implemented a program called “Everybody Wins” with the goal of reducing emissions from heavy-duty truck idling in the area. The funds for this project were initially provided by loans available through the Oregon Department of Energy and the goal was to provide 100 truckers with APUs. The project has been renewed and expanded using a grant from the EPA. LRAPA has also made efforts to provide truckers in the program with APUs that allow for an electrical connection to be used when in a warehouse, distribution center, or truck stop that is equipped with electrified parking spaces. By reaching out to the trucking industry and APU manufacturers as primary actors in this project, LRAPA hopes to achieve broad understanding of the issue and promote increased participation in APU purchasing.

**Planning and Regulation**

Gateway Cities can take advantage of the permitting process to reduce the environmental impact of distribution centers by placing conditional use restrictions on the permit approval. Local authorities (city and county governments) maintain control of the permitting process and can issue CUPs for new applicants. CUPs are intended as a tool for the city to review and provide input on a facility’s design and place restrictions on its operations, prior to project approval. CUPs are conventionally used to address environmental concerns in new land uses.

CUPs place performance standards on a new land development in order to ensure compliance with general plan policies and local ordinances. CUPs can be applied to a wide variety of land uses, including refineries, manufacturing centers, gas dispensing facilities, and dry cleaners. The performance standards embedded in the CUPs mitigate the environmental impact these facilities have on local residents and sensitive receptors.

For warehouses and distribution centers, performance standards in CUPs can target several major emission sources, effectively reducing public health risks. Applicable performance measures include:

- Plans for idle restrictions on trucks. State and regional regulations restrict truck idling to 5 minutes. The design of a distribution center can minimize the amount of idling needed by trucks by supplying sufficient parking and loading bays.

- Signage for truck parking, idle limits, and truck routes entering and exiting the facility. By supplying this information, operators of the distribution center can minimize the impacts that trucks have on the neighboring residents.

- Electrical infrastructure to accommodate electrified TRUs (discussed in the prior section).

- Requirements on warehouse cargo handling equipment, either to reduce emissions or adopt alternative fuel. Such equipment includes yard hostlers, forklifts, reach stackers, and other equipment used to move trailers, containers, and cargo within the subject property.
In order to mitigate the environmental impacts of distribution centers, Gateway Cities can apply these environmental performance standards in their permitting process. An example of this approach has been implemented by the city of Vernon, California, which requires that all property used for an activity that could potentially be detrimental to the environment or the residents and community in the surrounding area must comply with CEQA. To enforce compliance, the Vernon City Council issues CUPs only to those properties that have filled out an extensive application that must be evaluated and approved by the city’s Planning Division. Each CUP application must include an operations plan, hazardous waste inventory plan, traffic report, CEQA application, and an environmental checklist. Once the application has been submitted and reviewed by the planning division, it is presented at a public hearing and voted on by the Vernon City Council. Requiring these permits ensures that all properties, including warehouses and distribution facilities, are in compliance with state environmental quality regulations.

The benefits of CUP performance standards only apply to new or expanding warehouse developments, and therefore are not applicable to existing warehouse stock. Thus, opportunities for applying CUPs may be limited, depending on the growth of warehouse space in a city. The City of South Gate has taken a more aggressive approach towards licenses of distribution centers. To balance land use and traffic needs within the city, South Gate currently is not approving permits for new warehouses unless the warehouses are directly connected to a manufacturing facility within the city.

2.5. Maximize Cleaner Transportation Technology

New vehicles sold today are dramatically cleaner than those sold 10–15 years ago, due primarily to federal and state emissions regulations. For heavy-duty vehicles, the current allowable PM and NOx emission levels are 90% lower than vehicles sold prior to 2007. For light-duty vehicles, the current EPA Tier 2 standards reflect a 70–90% reduction in emissions compared to the Tier 1 standards in force prior to 2004. These cleaner vehicles have been steadily entering the southern California fleet due to normal turnover, and the introduction of cleaner trucks is now being accelerated by CARB’s In-Use Truck and Bus Rule.

Alternative fuels and advanced technologies are now available that enable even lower vehicle emissions than required by the standards. For example, many truck and bus fleets have been converted to cleaner burning natural gas. Plug-in hybrid and battery EVs offer better fuel economy while reducing or even eliminating pollutant emissions. Because these low-emission options are not required under existing regulations, and because they may cost more than conventional vehicles, their market share is generally low.

If the cities of the I-710 corridor are going to seek to maximize the use of clean fuels and technologies on vehicles that operate in the corridor, it is important that they lead by example. Local governments can play an important role in maximizing the deployment of cleaner transportation technologies. By adding these vehicles to municipal fleets, cities help to reduce emissions, develop markets for the clean technologies, and demonstrate their environmental stewardship to the private sector. Cities can also encourage adoption of clean transportation technologies by their residents and businesses through education, planning, and investments in infrastructure. This strategy encourages the use of the best available emission reduction technology to reduce emissions from vehicle fleets, with an emphasis on municipally owned vehicles.

Government fleets contain just a small fraction of the total vehicle population that operates in the Gateway Cities. For example, in all of Los Angeles County, government fleet vehicles make up about 1.7% of all registered vehicles. But government fleets have historically been leaders in the use of low-emission fuels and vehicles. Table 6-1 shows Los Angeles County government vehicles by fuel type as of 2008; more than 12% of these vehicles use alternative fuels, a much higher share than among the privately owned vehicle fleet.

<table>
<thead>
<tr>
<th></th>
<th>Gasoline</th>
<th>Diesel</th>
<th>Hybrids</th>
<th>Flex Ethanol</th>
<th>Natural Gas</th>
<th>Electric</th>
<th>Propane, Other</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light-Duty Vehicles</td>
<td>53,152</td>
<td>1,130</td>
<td>2,710</td>
<td>2,617</td>
<td>1,803</td>
<td>1,393</td>
<td>43</td>
<td>62,848</td>
</tr>
<tr>
<td>Heavy-Duty Vehicles</td>
<td>17,129</td>
<td>18,312</td>
<td>0</td>
<td>0</td>
<td>3,648</td>
<td>184</td>
<td>245</td>
<td>39,518</td>
</tr>
<tr>
<td>Total</td>
<td>70,281</td>
<td>19,442</td>
<td>2,710</td>
<td>2,617</td>
<td>5,451</td>
<td>1,577</td>
<td>288</td>
<td>102,366</td>
</tr>
</tbody>
</table>
Education and Outreach

A first step in local government fleet greening is to document the city’s current fleet, including the number of vehicles of each type and fuel, vehicle annual mileage, and fuel consumption. Establishing a baseline for fuel use and fuel expenditures will help a city identify opportunities for improvement and allow the city to track progress over time. If city vehicles do not re-fuel at a centralized location, the city might need to implement new record-keeping procedures to track fuel purchasing.

A city can then explore opportunities to introduce low-emission vehicles into its fleet. Many alternative fuel and vehicle technology options work well in some applications but not in others. The decision to deploy these vehicles should consider the required performance characteristics, such as range, power, and payload capacity.

When upgrading their own fleets, understanding the cost implications of fleet greening is critical. Many alternative fuel vehicles carry a higher up-front purchase price, but may have lower operating costs. A city should conduct a lifecycle cost analysis of the low-emission vehicles under consideration, as well as conventional vehicle alternatives, taking into account purchase price, resale value, fuel costs, and maintenance costs. Even if they have higher costs, a city may ultimately choose to deploy cleaner vehicles because of interest in protecting public health, reducing petroleum dependency, and leading by example for other fleets.

Because local governments typically keep their vehicles for at least 6 years, the savings from purchasing highly fuel efficient vehicles can easily outweigh the purchase price premium. For example, as shown in Table 6-2, EPA estimates that over a 6-year vehicle life, the operating and maintenance costs of a conventional passenger car (Honda Accord) can be expected to exceed those of a battery EV (Nissan Leaf) by $13,700, which would fully compensate for the incremental up-front cost of the battery EV.38

<table>
<thead>
<tr>
<th>Cost Component</th>
<th>Honda Accord</th>
<th>Nissan Leaf</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Cost</td>
<td>$11,967</td>
<td>$3,672</td>
</tr>
<tr>
<td>Routine Service and Engine Wear</td>
<td>$6,000</td>
<td>$2,000</td>
</tr>
<tr>
<td>Insurance</td>
<td>$6,000</td>
<td>$5,000</td>
</tr>
<tr>
<td>DMV Smog Check</td>
<td>$400</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$24,367</strong></td>
<td><strong>$10,672</strong></td>
</tr>
</tbody>
</table>

Source: Fuel costs from www.fueleconomy.gov, assumes 15,000 miles per year and average gasoline price of $3.59 per gallon; other costs from Ready, Set, Charge California! A Guide to EV Ready Communities, Association of Bay Area Governments.

Estimating the change in fueling costs can be challenging because of differences in units of measurement, differences in fuel economy for alternative fuel vehicles, and changes in both tax

38 Source: Fuel costs from www.fueleconomy.gov, assumes 15,000 miles per year and average gasoline price of $3.59 per gallon; other costs from Ready, Set, Charge California! A Guide to EV Ready Communities, Association of Bay Area Governments.
incentives and market prices that make it difficult to accurately forecast fuel prices. The U.S. Department of Energy's Clean Cities Alternative Fuel Price Report comes out every 3 months and provides up-to-date information on the price of alternative fuels in the United States in relation to gasoline and diesel prices.\(^{39}\) Alternatives to gasoline and diesel differ in their energy content, which also needs to be considered when evaluating fuels. For example, 85% ethanol (E85) currently costs less per gallon than gasoline, but because ethanol has about 35% less heating value than gasoline, the effective price of E85 is higher than gasoline. Table 6-3 illustrates the equivalent prices for two gasoline alternatives and two diesel alternatives.

Table 6-3. Cost Comparison of Gas, Diesel, and Alternative Fuels

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline</td>
<td>$3.77/gal</td>
<td>$3.77</td>
<td>Diesel</td>
<td>$4.06/gal</td>
<td>$4.06</td>
</tr>
<tr>
<td>CNG</td>
<td>$2.12/therm</td>
<td>$2.42</td>
<td>CNG</td>
<td>$2.12/therm</td>
<td>$2.69</td>
</tr>
<tr>
<td>Ethanol (E85)</td>
<td>$3.38/gal</td>
<td>$4.77</td>
<td>Propane</td>
<td>$3.16/gal</td>
<td>$4.87</td>
</tr>
</tbody>
</table>


Aside from understanding a city's own opportunities for adopting cleaner transportation technologies, Gateway Cities can perform outreach activities to educate local residents and businesses on the benefits of clean vehicles. One model for comprehensive public education can be found in the Wisconsin Clean Transportation Program (WCTC),\(^{40}\) an outreach program designed to educate state residents and businesses about the benefits and availability of alternative fuels and alternative fuel vehicles. The program is run by Wisconsin Clean Cities, a government-industry partnership, and is funded by a grant from the U.S. Department of Energy. The outreach and education component is implemented through published guides and online tools targeting residents and businesses. WCTC currently offers several educational guides, including:

- **WCTC Fleet Partner News** is a monthly newsletter designed to provide information to businesses interested in alternative fuels, and spotlight successful projects by fleet owners within the state. Spotlights describe the corporation’s business function, the truck technology that was implemented, and the impact in the community. In addition, the newsletter calls out upcoming alternative fuel events in the region, such as the opening of a new fueling station or workshop on biofuel use.

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The Fleet Partner Resource Guide is a directory of businesses, agencies, and organizations that operate within different facets of the alternative fuels industry. The directory provides contact information for businesses that would be helpful to fleet managers with alternative fuel vehicles. Categories include vehicle sales and maintenance, infrastructure fueling locations, and user groups for all alternative fuels.

In addition, WCTP provides links to online resources from the U.S. Department of Energy, EPA, state agencies, and private organizations throughout the alternative fuels industry. These links connect the user to information on federal and state regulations, technical knowledge on alternative fuel vehicles, and a long list of federal and state financial incentives. This information is useful to residents and fleet owners alike.

GCCOG has the opportunity to become involved in outreach efforts, since a coordinated campaign across all Gateway Cities can be more effective in reaching out to residents and businesses than several individual campaigns by individual cities.

**Support and Coordination**

All cities manage vehicle fleets. By coordinating limited resources, Gateway Cities can accelerate their fleet upgrades faster than could be accomplished individually.

Cities can often buy fuel efficient and alternative fuel vehicles at lower prices by using a state or county master contract. By piggybacking on these procurement programs, a city can take advantage of the larger state or county purchase contracts to gain more favorable pricing than it might otherwise. Cities have used the state Department of General Services (DGS) and Los Angeles County contracts for this purpose.

DGS awards master vehicle contracts to individual dealerships for specific models of vehicles within a general class of vehicles, such as hybrid sedans. Local agencies can order vehicles directly from selected dealerships under the DGS master vehicle contracts. DGS typically awards two contracts for each class of vehicle, one specifying delivery of vehicles to any agency within Sacramento County and the other specifying delivery to any agency within Los Angeles County. There is no fee to local agencies that use this contract. Local agencies can order vehicles directly from the selected dealerships under the DGS master contracts.

To learn more about leveraging master contracts for alternative fuel purchases, local cities can consult the document *Purchasing Fuel-Efficient and Alternative-Fuel Vehicles through the California Department of General Services*, published by the Institute for Local Government. The report provides information on the procurement process. More detailed information on the purchasing process can be found in the

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State Contracts Index Listing on the DGS website, which maintains a database of local dealerships and contains information necessary to find vehicles.  

The city of Lakewood has taken advantage of master procurement contracts to accelerate the rate of upgrading its light-duty vehicle fleet. Lakewood maintains a fleet of about 100 light-duty vehicles, 27 of which are CNG-fueled vehicles. The CNG vehicles include cars, vans, and pick-up trucks, and Lakewood has two CNG filling stations to serve them. The city pays for new CNG vehicles from its general fund and external funding sources that support air quality improvements. Lakewood purchases alternative fuel vehicles through Los Angeles County’s procurement program to gain access to lower prices available through the county’s larger purchase contracts. Lakewood pays for new CNG vehicles from its general fund and air quality funding sources when they are available, such as through the Mobile Source Air Pollution Reduction Committee (MSRC).

Incentives and Funding

Gateway Cities can pursue clean transportation funding for two target audiences—first, a city’s own vehicle fleet, and second, fleets and vehicles within the community at large. When cities pursue funding or purchase programs for their own clean vehicle fleets, they should consider master service contracts to maximize their “bang for the buck”; master service contracts are described in the prior section.

A variety of regional, state, and federal programs offer funding to help offset the cost of low-emission vehicles. Some programs are focused on specific fuels or technologies, while others will fund any technologies proven to reduce emissions. Gateway Cities and GCCOG have the opportunity to leverage these federal, state, and regional programs in order to supply funding to local businesses and truck owners. By providing information on the programs and assisting in the application process, local cities can help direct incentive dollars to their community. Alternatively, it is feasible for a city to operate its own incentive program. However, the costs can be high, and the program must include components of verification and tracking to ensure the incentives are being applied correctly.

Federal Funding Programs

Federal funding for emission reductions from diesel vehicles has been available through the National Clean Diesel Funding Assistance Program, as part of the DERA. Please refer to Section 3.3.1 for a

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43 The initial legislation from 2005 was extended by President Obama in 2010; however, DERA funding was most recently cut from the President’s FY2012 budget. The DERA 2010 was signed with the intention of
discussion of the four components to the DERA national program. In addition to DERA, the U.S. Department of Energy maintains a comprehensive source of alternative energy funding programs, which may be tapped by local cities. The Federal and State Incentives and Laws online database\textsuperscript{44} contains information and links to grant and incentive programs within California and from the federal level.

**State Funding Programs**

The California Energy Commission administers the Alternative and Renewable Fuel and Vehicle Technology Program, created by Assembly Bill 118. The program awards approximately $100 million per year to transportation technology and fuels projects that will reduce GHG emissions and petroleum dependency, including CNG, propane, ethanol, electric, and hybrid vehicles. Most or all projects also reduce criteria pollutant emissions. While many awards go to private companies, several have gone to local and regional governments, including $480,000 for the city of Reedley to develop natural gas fueling infrastructure and EV charging stations, $200,000 for the city of Lemoore and Lemoore School District to develop a CNG fueling station, and $415,000 for Metro and EV Connect to upgrade and expand the Plug-In EV charge network at transit locations within Los Angeles County.

CARB administers the Hybrid Truck and Bus Voucher Incentive Program (HVIP). The HVIP is designed to offset about half of the incremental additional cost of eligible hybrid medium- and heavy-duty vehicles using a simplified purchase voucher. The HVIP is also designed to assist fleets and dealers by reducing this cost right at the time of purchase, and has been designed to simplify implementation. Dealers request a voucher with their fleet customers at the time of order; the amounts are pre-set for each qualified vehicle. The HVIP vouchers range from $10,000 to $30,000 on a first-come, first-served basis for the purchase of an eligible new hybrid or electric truck or bus. For example, a $30,000 voucher is available for purchase of a hybrid school bus.

**SCAQMD Funding Programs**

SCAQMD administers discretionary funds for low-emission vehicle projects as authorized by the MSRC. Funding comes from a California motor vehicle registration surcharge (AB 2766), the Carl Moyer Memorial program, and other sources. A number of the Gateway Cities have received SCAQMD MSRC funds over the 20-year history of the program. For example, the city of Long Beach has used MSRC funds for the installation of EV chargers, the purchase of CNG vans for the Long Beach Unified School District, the purchase of CNG refuse collection vehicles, and the construction of a CNG refueling station at a Long Beach Police Department facility.

Currently, public school districts and private providers of student transportation can use MSRC buy-down incentive funds up to $45,000 per vehicle toward the purchase of CNG or propane school buses.

Planning and Regulations

While Gateway Cities have access to regional, state, and federal funding sources, they can also implement their own planning and policy strategies to encourage cleaner transportation technologies.

Municipal Fleet Strategies

Aside from deploying alternative fuels and technologies, cities can reduce emissions and fuel use from their fleets through a variety of strategies, such as downsizing of vehicles and driver training. Many public and private fleets can reduce their fuel use significantly by “right-sizing” their fleet, i.e., selecting vehicles that are no larger or more powerful than necessary for their application. While this may seem obvious, many cities fail to take advantage of this strategy for several reasons, including:

- Cities specify their entire fleet based on a worst-case (greatest power demand) scenario, when such a scenario can be served with a small number of vehicles.
- Cities specify their fleet based on driver preferences for more powerful engines.
- Cities have a tradition of using larger and more powerful vehicles, engrained during a period of low fuel prices.

For light-duty vehicles used to transport staff without cargo (e.g., a building inspector), cities can shift from sedans to compact models. Matching the duty requirements of staff to the smallest possible vehicle for the task is a critical component of a fleet greening program. Smaller vehicles should be substituted for larger vehicles by phasing them in as new vehicles are purchased or by selling larger vehicles. With a large number of hybrid electric and battery electric models commercially available today or in the next 12 years, cities can go beyond downsizing and incorporate electric-drive vehicles with very high fuel efficiency and low emissions.  

For fleets with heavy-duty vehicles, a city may be able to shift to trucks in a lower gross vehicle weight (GVW) class and achieve large gains in fuel economy. For example, shifting from a Class 4 delivery truck to Class 3 panel van can improve fuel economy by 24%. Even within a weight class, some models offer significantly better fuel economy than others (Table 6-4).

Table 6-4. Fuel Economy Effect of Truck Class Downsizing

<table>
<thead>
<tr>
<th>Truck Class</th>
<th>GVW range</th>
<th>Average Fuel Economy (mpg)</th>
<th>Fuel Efficiency Benefits of Shifting Down to this Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 3 Truck</td>
<td>10,001 – 14,000</td>
<td>10.5</td>
<td>24%</td>
</tr>
<tr>
<td>Class 4 Truck</td>
<td>14,001 – 16,000</td>
<td>8.5</td>
<td>8%</td>
</tr>
<tr>
<td>Class 5 Truck</td>
<td>16,001 – 19,500</td>
<td>7.9</td>
<td>13%</td>
</tr>
<tr>
<td>Class 6 Truck</td>
<td>19,501 – 26,000</td>
<td>7.0</td>
<td>9%</td>
</tr>
<tr>
<td>Class 7 Truck</td>
<td>26,001 – 33,000</td>
<td>6.4</td>
<td>12%</td>
</tr>
<tr>
<td>Class 8 Truck</td>
<td>33,001 +</td>
<td>5.7</td>
<td></td>
</tr>
</tbody>
</table>

A city can include a minimum fuel efficiency standard for each vehicle class in procurement specifications, which results in only the most fuel-efficient vehicles being purchased. Specifications can also be written so that the smallest and most efficient vehicle in its class is purchased. Some local agencies are requiring all their new vehicles to be low-emission models. Many agencies have set targets for fleet conversions, and have adopted “clean vehicle” policies that guide the decision-making process on all new vehicle acquisitions. For example, a city might adopt a goal to achieve a 100% alternative fuel vehicle public fleet by 2025.

A city can also minimize the fuel use and emissions from its fleet by simply ensuring that regular maintenance is performed on its vehicles. Oil should be changed regularly and tires should be kept at the correct pressure at all times. Training drivers about efficient driving practices can also have a large impact. Lastly, cities should adopt a policy against unnecessary vehicle idling.

Culver City has been working since 1998 to convert the city’s fleet vehicle to CNG. As of 2010, Culver City had 605 on-road and 15 off-road CNG vehicles, including refuse haulers, public works trucks, transit buses, and automobiles. Approximately 80% of the city’s refuse fleet is CNG-powered, and 80% of the city’s heavy-duty fleet operates on CNG fuel. All city departments use CNG vehicles, except for some police and fire vehicles used for mutual aide response in areas where CNG fuel stations are not available. Culver City owns and operates its own CNG fueling station to support the city fleet. The city used grant funding and other financial incentives to help offset the cost of CNG fueling stations. To support the conversion to CNG vehicles, the city expanded the administrative oversight of the fleet, and provided extra training on CNG vehicle and equipment maintenance to city staff. The city saves about $1.2 million annually by using CNG instead of diesel and gasoline fuel.46

Community-Focused Strategies

The emergence of mass-market EVs has the potential to dramatically reduce transportation emissions over the coming decades. However, EVs face significant hurdles for widespread adoption, including lack of public charging stations and barriers to installation of residential charging infrastructure. Gateway Cities can take proactive steps to facilitate the adoption of EVs through a variety of planning and regulatory steps. The following are areas of potential local government action that can help overcome some of the challenges with deployment of EVs and EV-related infrastructure.

- **Plans and Specifications.** Local government engineering and planning staffs should update their standard plans and specifications for public infrastructure projects to accommodate EV infrastructure. For example, a city could include the installation of public charging infrastructure as a component of qualifying capital improvement projects.

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Information Sharing. Several regional initiatives are underway to plan for the deployment of EV infrastructure in southern California. Cities can work cooperatively as part of these planning efforts to develop 3- to 5-year short-range siting plans for high priority public charging stations. Cities are also encouraged to disseminate charge station locational information to relevant regional, state, and national plug-in EV charging mapping initiatives.

Parking. Cities can leverage their control of public and private parking decisions to provide incentives to encourage EV charge point installation. For example, a city could offer reduced parking requirements for development projects where significant investments for EV charging stations are being implemented. Cities can adopt zoning code amendments that allow for the inclusion of EV charging stations in the calculation of minimum area required for parking. Cities could also adopt zoning amendments that incentivize the installation of EV supply equipment (EVSE) in large existing parking facilities.

Signage. Local governments can post signs to identify EV charging stations intended for public use. All signs on public roadways must conform to the California Manual on Uniform Traffic Control Devices. Cities are allowed to use other types of signs in public parking facilities.

Zoning. Local governments should adopt zoning code provisions that encourage appropriate placement of EV infrastructure in various land use designations.

Residential Permitting. One of the most important actions for cities is to ensure an efficient permitting process for residential EVSE. For example, cities should provide information on their web sites defining residential EVSE requirements. Cities can enable homeowners and licensed contractors to submit EV charger permit applications online for select installations. Cities can approve standard residential charger installation with just a permit application and a sketch of the installation location, rather than require formal drawings. Some cities have created an EVSE Permit Checklist that references all required elements for approval of a permit.

EV Charging at Multi-Unit Dwellings. Based on 2003 American Housing Survey data, 22% of residents in the Los Angeles-Long Beach Metropolitan Statistical Area do not have a garage or carport at their place of residence. Such residents may be interested in purchasing an EV but unable to provide the necessary charging infrastructure. Local government support can be especially important to streamline EVSE installation at multi-unit dwellings. Cities can also adopt ordinance language requiring the installation of EVSE in new multi-unit residential developments, as well as at large office, lodging, or other land uses.

It should be recognized that the discipline of EV infrastructure planning is relatively new and real-world data on many aspects of EV infrastructure utilization is limited. As more guidance is developed, local governments will have a clearer picture of the best opportunities to support EVs.

Several cities have taken the lead in tackling EV-related issues. The city of Los Angeles has committed to a 7-day approval process for installation of EV chargers, providing the customer’s electrical system can support the charging requirement. In addition, Los Angeles has an online permitting process that greatly
expedites residential permits. The city of Riverside has developed an EV Charger Installation Guideline in order to streamline the permit and installation process.

Cities interested in supporting EV deployment through planning and regulation should consult some of the following useful resources:

- Organizations in the San Francisco Bay Area, under the leadership of the Association of Bay Area Governments, produced *Ready, Set, Charge California! A Guide to EV Ready Communities*. The document provides recommendations for local governments in several EV topics, including sample policies, actions, and incentives, development recalculation, installation streamlining for residential EV chargers, and strategies for choosing charging stations.

- Researchers at the University of California Los Angeles’ Luskin Center for Innovation have completed a number of research studies and a policy brief on plug-in EVs. Completed reports include a study of the potential Los Angeles EV market, challenges of charging infrastructure in multi-family residential buildings, and a study of subsidized parking for EVs.

- Lastly, Southern California Edison provides extensive information for cities on supporting EVs.

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2.6. Implement Air Quality Monitoring along the I-710 Corridor

Air quality in the I-710 corridor is widely believed to be among the worst in the South Coast Air Basin, which is one of the most polluted air basins the United States. Numerous studies have recently pointed to the deleterious health impacts of air pollution in the Gateway Cities, including the SCAQMD’s MATES and CARB’s *Diesel Particulate Matter Exposure Assessment Study for the Ports of Los Angeles and Long Beach*. Unfortunately, many of the conclusions in these studies are extrapolated from relatively limited sets of air quality monitoring data that have been collected from a handful of monitoring stations scattered throughout the South Coast Air Basin. For instance, for the groundbreaking MATES II study, data was collected from only three air quality monitoring stations in the Gateway Cities sub region (North Long Beach, Compton, and Huntington Park) and one nearby (Hudson School in Wilmington). In addition the Ports of Los Angeles and Long Beach operate four monitoring stations.

This early action item would seek to expand the network of air quality monitoring stations in the I-710 corridor and maximize the use of collected monitoring data. SCAQMD plays a lead role in air quality monitoring throughout the region, so this action item builds on the existing partnership between the Gateway Cities and SCAQMD.

SCAQMD is currently completing an air quality monitoring needs study for Los Angeles County, which would include the Gateway Cities region. This plan, scheduled to be released in spring or summer of 2012, will address many questions about current shortages in regional monitoring, and opportunities to improve coverage.

**Education and Outreach**

Air quality modeling systems provide on-the-ground data about pollution levels at specific places in a community. While the monitoring may only be limited to few locations, data gathered from the monitoring process can be invaluable for public messaging about air quality concerns.

In Utah, the Utah Air Monitoring Center is a state-wide system of 21 monitoring stations across 10 counties. The monitors track a variety of pollutants, with most measuring ozone and PM. The data collected is used for a public outreach campaign by the Utah Department of Environmental Quality. The department’s website provides daily information on pollutant concentrations, threshold exceedences, and air quality forecasts.

The Port of Los Angeles Air Quality Monitoring Program does not have a public education component, but does offer raw data to be downloaded. This data can be used by cities and researchers to prepare their own materials. However, because the port’s monitoring stations are limited to the port’s region of influence, the data may not be useful to cities that are not adjacent to the port.

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There is an opportunity for GCCOG to play a central role in coordinating city and community requests for additional monitoring stations. The AQMD monitoring problem often communicates with cities or community groups about monitoring concerns within their neighborhoods. However, cities and environmental organizations often produce conflicting requests in terms of monitor locations and pollutants of interest, which prevents the agency from responding with a cohesive plan. By coordinating an outreach program amongst cities and community groups (similar to the AQAP process), GCCOG can allow the Gateway city communities to “speak with one voice” about monitoring needs. GCCOG can manage the outreach and committee process, resulting in a single request for the region. This would simplify the process for expanding the AQMD monitoring network.

**Support and Coordination**

The Gateway Cities can expand the level of local air quality monitoring through partnerships with SCAQMD’s existing network. SCAQMD operates 36 permanent monitoring stations that track ozone, PM, and other pollutants. In addition, the agency operates five lead monitoring sites throughout the South Coast Air Basin (see Figure 7-1). Air monitoring sites are designed to capture a variety of data points, depending on their locations:

- **Background Level Monitoring** detects the ambient level of pollutants as they enter the air basin. These background values, typically measured far from emission sources, are used to determine the incremental addition to pollution caused by freeways, refineries, and other sources.

- **Representative / High Concentration Modeling** demonstrates the variation in pollutant concentrations across sites. Measurements are made over several time scales: 3-hour, 24-hour, and continuous monitoring.

- **Real-Time Reporting** provides data to EPA systems and is used to report air quality conditions and warnings to the public.
SCAQMD conducts an annual review of the Air Quality Monitoring Network in order to assess its effectiveness, map its coverage, and identify any gaps. In the recently-completed 5-year assessment of modeling needs, SCAQMD did not identify any new monitoring site within Gateway Cities. Further, the agency is re-evaluating the effectiveness of the South Long Beach station due to nearby construction, and is considering relocating the facility to Anaheim Street.

SCAQMD currently operates three permanent air quality monitoring stations in or near the Gateway Cities sub region: North Long Beach, South Long Beach, and Compton. In addition, the agency has erected a temporary monitoring station along the I-710 on Long Beach Boulevard. The purpose of the station along the I-710 is to monitor emissions for an ongoing study of near-roadway pollutants, including PM2.5 and Ultrafines. However, upon the completion of the study, the station will be decommissioned.

AQMD is considering a proposal to make the I-710 station permanent, partly due to community interest and partly due to EPA requirements. Now that EPA has instituted requirements for near-roadway NO2 and CO emissions, a justification for the permanent station exists.

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By coordinating with SCAQMD, the Gateway Cities (or GCCOG) can increase the number of monitors, and share the monitoring results with the community for outreach on local air quality conditions.

**Incentives and Funding**

Funding for air quality monitoring, usually associated with fixed-duration studies, is periodically available from state and federal sources. In August 2011, EPA released a request for proposals on community air toxic monitoring. The program made available $4.5 million in funding to between 15 and 20 awardees.

AQMD relies on EPA funding to operate its monitoring program. At an approximate cost of $100,000 per station for annual operation and maintenance, the AQMD monitoring program exceeds $2 million, not including capital costs for new stations. The total operating costs for a single station vary depending on the number and type of pollutants monitored.\(^{56}\)

Similarly, the capital cost for a new station ranges from $100,000 to $200,000, depending on siting requirements and choice of pollutants. Aside from the equipment itself, the primary costs relate to installing electricity supplies to the station and leasing land for use when placing the site.

If GCCOG were to reach out to AQMD in order to request the installation of additional monitoring stations, it can accelerate the application process by offering a cost-sharing for installation and operation of the site. While this cost-sharing is not a required component of the application process, it is welcomed by SCAQMD to ease the agency’s burdens for expanding the monitoring network.

**Planning and Regulation**

While it is not practical for Gateway cities to institute their own monitoring programs through a city program, there are several actions that a city can take to facilitate monitoring in its community. Cities have a large degree of control over barriers faced by AQMD when siting new installations. These include:

- **Locating installation real-estate.** By setting aside a portion of city property (e.g., parking lots or land adjacent to a city office), cities can reduce the costs and complexity of siting new stations, thus accelerating the process.

- **Easing permitting barriers for electrical infrastructure.** All monitoring stations require electricity supply from the utility grid. In order to install the electricity line, AQMD must pull permits from the cities to allow the work to proceed. By streamlining or prioritizing the permit process for AQMD, cities can reduce barriers for new installations. Currently, the city or county permitting process can take 2 or 3 months to complete.\(^{57}\)

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\(^{56}\) ICF communication with Dr. Philip Fine, Atmospheric Measurement Manager, SCAQMD, March 1, 2012.

\(^{57}\) ICF communication with Dr. Philip Fine, Atmospheric Measurement Manager, SCAQMD, March 1, 2012.
3. Summary of Recommendations for Early Action

This document identifies opportunities for local agencies to achieve near-term air quality benefits in the Gateway Cities sub region through implementation of six early action strategies. While local governments typically have limited authority over sources of air pollution, they have a variety of options to advance the six strategies using implementation tools at their disposal, including:

- Education and outreach
- Support and coordination
- Incentives and funding
- Planning and regulation

Not all early action strategies and implementation tools will be equally effective at reducing the impact of emissions on Gateway Cities residents. The following actions are recommended as the highest priorities for achieving the goals of the early action strategies.

- **Reduce truck idling:** Truck idling is already regulated at the state level by CARB, and there is little benefit to additional city idling regulations. If truck idling appears to be a problem in a particular area, the city should implement an anti-idling education and outreach campaign for both residents and truck drivers. This can be most effectively accomplished through coordination with CARB’s Mobile Source Enforcement Branch.

  The city should also encourage residents to report violations using CARB’s on-line reporting system. If violations persist, the city can also work with CARB to target state enforcement efforts by reporting locations where idling is common. Through a municipal ordinance, cities can empower municipal workers (such as parking enforcement) to write tickets for idling violations. The city can also direct its own law enforcement staff to issue citations under the state idling regulation, although police resources are often limited.

- **Implement clean construction equipment and strategies:** Cities should use contracting mechanisms to encourage the use of low emission construction equipment for municipal projects. One option is to leverage Metro’s Green Construction Policy, either by adopting similar requirements or by awarding bonus points to construction contract bidders to pledge to use cleaner equipment. Cities should also lead by example and ensure that their own construction equipment meets or exceeds the latest state and federal emission standards.

- **Reduce exposure of sensitive receptors to diesel exhaust:** Using maps of sensitive receptors, air quality hot-spots, and truck routes, Gateway cities should identify the sensitive receptor sites most at-risk from poor air quality. An outreach campaign to these sites can educate facility operators on the risks posed and options for minimizing exposure. In locations of high air pollutant concentrations, cities should help building owners apply for funding for building retrofits that will reduce exposure.

- **Reduce emissions from warehouses and distribution centers:** Gateway cities will have limited ability to influence emissions at warehouses and distribution centers unless these facilities are
being constructed or expanded. In cities that are experiencing growth in warehousing activity, conditional use permits should be employed in order implement on-site mitigation measures that can reduce emissions from trucks and other mobile equipment. Such mitigation measures can include signage regarding truck idling, signage identifying appropriate truck routes, electrical hookups for trucks and refrigeration units, and placement of driveways/loading docks away from residential or other sensitive receptors.

- **Maximize cleaner transportation technology**: Cities should lead by example by “greening” their own municipal fleets. Many Southern California cities operate natural gas vehicles, for example, and cities are increasing purchasing low emission hybrid and battery electric vehicles. Use of state and county master procurement contracts can help reduce the cost of purchasing alternative fuel vehicles. Several external funding sources are available to cities, most notably funds administered by SCAQMD. Gateway cities can also take proactive steps to facilitate the adoption and use of electric vehicles within their borders. Important steps include streamlining the permitting process for installation of residential electric vehicle charging equipment and using city control of parking to incentivize the provision of public charging stations.

- **Implement air quality monitoring along the I-710 corridor**: GCCOG should partner with SCAQMD to roll out an expanded air quality monitoring system on the I-710 corridor. Improved monitoring programs will provide more measured data on air quality in GCCOG and can be used to pursue additional funding or programs to improve environmental conditions.