

Clean Tech Vouchers: An Effective Tool for All Regions

A Model to Build a National Network of Clean Vehicle Incentives



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CALSTART is a non-profit organization that works with the public and private sectors to develop advanced transportation technologies and foster companies that will help clean the air, lessen our dependence on foreign oil, reduce global warming, and create jobs.



TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
Supporting Clean Commercial Vehicles	1
The Voucher – A Powerful Incentive	1
A National Incentive Network Based on Regional Vouchers	1
A Call to Action	2
1. INTRODUCTION AND BACKGROUND – WHY VOUCHERS?	3
1.1 The Need for Incentives	3
1.2 Vouchers: An Effective Commercial Incentive.....	3
2. VOUCHER PERFORMANCE & SUCCESS TO DATE: THE CALIFORNIA EXAMPLE	5
2.1 Background.....	5
2.2 Growing the Market with Incentives	5
2.3 Framework of the HVIP Program.....	5
2.4 Initial Response from Fleets	7
2.5 Program Enhancements	7
2.5.1 Expansion to New Regions.....	7
2.5.2 Enhanced Voucher Amounts.....	8
2.5.3 Inclusion of Additional Technology Offerings	8
2.6 Lessons Learned.....	8
2.7 Overview of Program Results	9
2.8 Conclusions and Key Takeaways.....	9
3. A TOOL FOR ALL REGIONS: THE CMAQ MODEL FOR FUNDING VOUCHER INCENTIVE PROGRAMS 11	
3.1 Congestion Mitigation and Air Quality (CMAQ): Federal Funds Available Today	11
3.2 Clean Vehicle Voucher Programs Funded through CMAQ	11
3.3 CMAQ Funding Process and Considerations	13
4. RECOMMENDATIONS	16
4.1 Recommendations for Voucher Program Design	16
4.2 Call to Action.....	16

EXECUTIVE SUMMARY

Supporting Clean Commercial Vehicles

The need for clean technology vehicles is greatly expanding in the United States and is being actively encouraged in many regions of the nation. Vehicle production and product choice have been expanding rapidly as well. However, in the early market many of these vehicles are still much more expensive than the conventional vehicles they replace, often due to low volume production and early stages of engineering design.

These added incremental costs can slow early market uptake at the very time when higher volume production and growth is needed. This is particularly a problem for commercial vehicles, where it is critical to have a compelling business case to justify purchasing a vehicle. To short circuit this “chicken or egg” dilemma and to compensate for added costs in the early market , many regions of the country are starting to adopt a powerful new incentive tool to drive clean commercial vehicle adoption: clean tech voucher incentives.

The Voucher – A Powerful Incentive

The voucher – a point-of-sale purchase incentive – has been identified by fleet users and manufacturers as the preferred tool for helping support faster deployment of clean commercial vehicles. By providing incentive funds at the point of purchase, the voucher directly lowers capital costs for fleets. Vouchers also can be secured at the time of vehicle order, providing fleets with price certainty. This contrasts sharply with more traditional incentives such as tax credits, which involve a long delay and a tax filing, or a grant program, which involves complicated proposals and no certainty of outcome.

Several states and regions have started to adopt the voucher model for their incentive programs based in part on the success of the first voucher model example in California. California has deployed more than 1,200 vehicles to date via its Hybrid and Zero Emission Truck and Bus Voucher Incentive Project (HVIP), and has spurred sales of hundreds of natural gas and propane vehicles via a parallel effort. In the virtual absence of clean tech commercial vehicle incentives at the federal level, and with such federal incentives unlikely in the near term, the importance of an expanding base of smart regional and state incentives is critical. Although vouchers have clear benefits in regions where they are implemented, no one state or region alone can fully support the need to reach critical volumes in the early market.

A National Incentive Network Based on Regional Vouchers

There is now the potential to create such a critical state and regional incentive network. Beyond using their own local resources, several innovative regions are using existing federal funds for clean tech vouchers. A promising funding source for this is the Congestion Mitigation and Air Quality (CMAQ) program, which is already provided to most regions in the U.S. to support local measures that can reduce congestion and improve air quality. CMAQ language specifically allows for clean vehicle purchase and incentive programs, and jurisdictions including New York, Chicago and Oregon have created or are creating programs based on CMAQ.

Such programs are best when they include all clean vehicle technology and fuel options. However, the CMAQ structure also allows for regions to focus on the options of most importance and use to their jurisdictions.

While undertaking such a program using CMAQ or other funds requires focus and work, there is now an established voucher model to follow. This model presents an unparalleled opportunity to build out a smart network of clean tech voucher programs in states and regions across the nation, helping to better support expanded national deployment and increased production volumes of commercial clean vehicles.

A Call to Action

Expanding voucher incentives to additional states and cities will benefit all clean truck stakeholders – fleets, manufacturers, suppliers and the government and nonprofit groups focused on air quality and energy security. A broader network of incentives will increase the size and scope of the early market. This leads directly to additional air quality and petroleum reduction benefits. It also leads to increase vehicle sales, creating and retaining jobs in this industry. Perhaps most importantly, a broader network of incentives will help boost volumes and drive down costs through economies of scale. This, in turn, will increase deployment, further driving down costs. The effect of incentive programs as a market catalyst will grow as the reach of these incentives expands beyond just a few early adopter regions.

Creating and implementing voucher incentive programs for trucks in additional regions around the country will require a large team effort. This paper highlights the fact that there are existing program models that can inform future directions, there exists a funding framework upon which to build, and there are experts willing to help develop what works best in each unique planning authority and region.

CALSTART strongly encourages an industry and fleet coalition to join together with it to identify regions that would be most interested in potentially implementing this effective voucher model. CALSTART also stands ready to support regions with questions about effectiveness, design and how best to structure a clean tech voucher program that drives their regional vision while also supporting a national clean vehicle industry.

We hope this paper is the beginning of a national movement, and we are ready and willing to play a coordinating and catalyzing role.

1. INTRODUCTION AND BACKGROUND – WHY VOUCHERS?

At a pace never seen before, tremendous investment and rapid technology improvements are taking place in transportation today. These accelerated changes are driven by a combination of factors, including more rigorous fuel economy and carbon reduction requirements for passenger cars and commercial trucks and buses, the increasingly high cost of fuel, regional needs for further reductions in criteria pollutants (such as oxides of nitrogen) and energy security and diversity concerns, at both the fleet operator and national levels.

In this context, many regions of the country are working to encourage the use of more-efficient, cleaner vehicles and fuels. Yet in this highly dynamic environment, policy makers, manufacturers and end users are struggling with finding the right tools to help spur action – the early purchase of clean fuels and vehicles now moving into the market.

This report provides an overview of a proven incentive model that can and should be implemented in forward-thinking regions throughout the U.S. Section 1 explains the need for incentives and the benefits of a voucher incentive program. Section 2 reviews program design elements and lessons learned from the existing voucher model in California. Section 3 looks at incentive programs outside of California, with a focus on those that are leveraging existing federal funding. Finally, Section 4 is a call to action with recommendations for program design and suggested next steps for interested stakeholders.

1.1 *The Need for Incentives*

Because of the low volume production inherent with new and early stage technologies, these clean technology and alternative fuel vehicles tend to be more expensive than conventional vehicles. High incremental cost is cited by fleet purchasers and industry as the prime barrier slowing clean vehicle purchase.¹ While these higher costs should diminish as production volume increases, it is an impediment to early market growth – hence the need for effective incentive structures.

Traditionally incentives have taken the form of tax credits because these were the most politically viable incentive structures at the federal level and generally required no direct funding. Rather than appropriating funds, a given tax credit simply reduces future government revenue. In other words, if the credit is used, less tax is paid.

Tax credits have been useful in the consumer marketplace, though incentives that reduce purchase price, such as “cash-for-clunkers”, have had much higher utilization rates. However, tax credits have not been effective in the commercial vehicle segment. The reasons are myriad. The primary reason is that a tax credit has no immediate financial impact at the time the purchase decision is being made. Other reasons tax credits have not been successful in the commercial vehicle segment include the fact that many fleets do not benefit from the credits. In some cases, they do not have sufficient tax liability or the credit is used elsewhere in the company and does not “flow down” to the fleet manager’s budget. In other cases, they are tax-exempt public or municipal fleets, so cannot take advantage of a tax credit.

1.2 *Vouchers: An Effective Commercial Incentive*

¹ Speeding High-Efficiency Truck Adoption: Recommended Policies, Incentives and Investments, CALSTART, 2010

To remedy this, several years ago, a team of fleet, government and industry representatives designed an alternative approach – the point of purchase incentive or voucher. Streamlined vouchers that reduce vehicle purchase cost ranked highest on the list of incentives and support policies for advanced truck technologies² and have become the preferred incentive for purchasers of clean vehicles.³ In a voucher program, public funds are used to reduce technology costs at the point of purchase. Vouchers can encourage the purchase of new vehicles, as well as certified retrofits that provide similar benefits and meet the relevant standards and criteria. Fleets see a lower purchase cost, while dealers receive full price for the vehicles or retrofits because public funds make up the difference between the original price and the reduced voucher price.

Vouchers are preferable to tax credits, grants, loans, accelerated depreciation and other purchase incentives because they are simple, direct and immediate.

- Vouchers directly lower the incremental price of the advanced technology at the point of purchase. This approach is valuable for fleet managers who are working with fixed budgets and may never see the benefits of tax credits.
- The administrative burden is small and there is minimal delay, with no involved grant writing needed.
- Vouchers can easily be established to include a range of alternative fuels and technologies.
- The purchasing organization does not need to have tax liability in order to take advantage of a voucher. Tax-exempt entities such as government fleets are able to take advantage of the voucher, whereas they cannot take advantage of tax credits.
- There is no question as to whether or not a fleet will receive the voucher based on some subjective judgment of their project or grant proposal. Set up properly, vouchers have clear rules and pre-set amounts for truck types, so the voucher provides certainty of outcome for requesters.

Vouchers are preferable to tax credits, grants, loans, accelerated depreciation and other purchase incentives because they are simple, direct and immediate.

The result is a lower purchase price for fleets and an increase in sales for manufacturers and suppliers, leading to reduced environmental emissions and improved air quality, support for domestic jobs and increased energy security benefits.

² Speeding High-Efficiency Truck Adoption: Recommended Policies, Incentives and Investments, CALSTART, 2010

³ Best Fleet Uses, Key Challenges and the Early Business Case for E-Trucks: Findings and Recommendations of the E-Truck Task Force, CALSTART, 2012

2. VOUCHER PERFORMANCE & SUCCESS TO DATE: THE CALIFORNIA EXAMPLE

2.1 *Background*

The best early model of the function, flexibility and effectiveness of a voucher-based incentive program for commercial vehicles is the California Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP). HVIP was developed and funded by the California Air Resources Board (CARB) and is administered by CALSTART on its behalf. The project started in February 2010, using state funds from license fees specifically dedicated to supporting advanced vehicle and fuel demonstration and deployment. HVIP is a key component of CARB's Air Quality Improvement Program (AQIP), which is focused on supporting development and deployment of the advanced technologies needed to meet California's longer-term, post-2020 air quality goals.

In its first two years, HVIP has been a strong example of success for the advanced vehicle industry and has even adapted to up and down sales cycles. Thanks to the program, more than 1,200 advanced trucks and buses realized early deployment and have hit the state's roads. By itself, this program has generated nearly half of all purchases nationwide for hybrid and zero-emission trucks and buses from 2010-2012. Its success as a powerful tool for rapid deployment has encouraged regional adaptions of the voucher program in other states and air districts.

2.2 *Growing the Market with Incentives*

Because of market dynamics at the time, HVIP was initially structured to help speed the early market introduction of clean, low-carbon hybrid trucks and buses by addressing the biggest barrier to their purchase – the high incremental cost of these vehicles in the early market years when production volumes are too low to realize volumetric or design improvement price reductions. It had been demonstrated that modest volumes can move prices to within the business case needs of fleets and manufacturers, but this requires sales of 3,000 to 5,000 units per year. HVIP was developed to facilitate this market increase by providing financial incentives to bridge the gap between today's prices and the lower prices expected in the future. That said, HVIP was always envisioned as being California's contribution to achieving those numbers, but that additional national or other major state incentive programs were needed to reach this goal.

In 2010, HVIP was funded at \$19.4 million for voucher funding of hybrid trucks and buses. Voucher amounts varied from \$10,000 for smaller vehicles to \$45,000 for the largest and most expensive trucks (Class 8 tractors and refuse trucks). Recognizing that market growth for new technology takes time and consistency, CARB planned HVIP to be a multi-year program. In 2011, it provided an additional \$18 million in voucher funding. CARB's investment in HVIP over this period has played a significant role in initial fleet penetration of hybrid trucks, while supporting initial manufacturers. Also, as additional technology entered the early market, such as battery-electric trucks and buses, HVIP has adapted, adding those products into the voucher structure.

2.3 *Framework of the HVIP Program*

Based on initial industry research by CALSTART and the feedback of fleets and manufacturers, the HVIP voucher system was designed to offset about half the incremental cost of eligible hybrid and battery-electric medium- and heavy-duty vehicles. This amount was deemed critical by fleets and manufacturers to assist the early market.⁴

The HVIP voucher request and redemption process was designed to be as clear and easy as possible. At the time a truck order is made, the voucher is requested by the dealer on behalf of a fleet purchaser. The administrative team tracks the voucher and upon vehicle delivery, the voucher is approved for payment. The fleet pays for the truck, reduced by the value of the voucher. The dealer is paid for the voucher amount immediately following completion of documentation.

To become an approved applicant for the project, each dealer begins by taking the HVIP dealer training class. The dealer then works with purchasers to complete the web-based voucher request forms and submit them online. Each voucher request is delivered electronically to the processing team for review. Voucher requests are processed on a first-come, first-served basis after the dealer has placed orders with the manufacturer. An approved voucher includes all of the key information for the dealer, the purchaser and the vehicle. The dealer manages the voucher through every phase of the program, including redeeming the voucher once the vehicle is ready for delivery to the customer.

The voucher redemption process begins upon delivery of the vehicle to the purchaser. The dealer completes the voucher redemption data and submits all of the required sales documentation through the HVIP website. Once all the information is verified, the administrator (CALSTART, in this case) pays the voucher to the dealership. Once the incentive vehicles are purchased and operating, the operator must submit an annual mileage report for three years. Below are tables that list the voucher amounts for the two different groups of HVIP technologies: hybrid and zero-emission vehicles.

Table 1: HVIP **hybrid truck and bus voucher amounts**

GVWR (lbs)	Voucher
6,001 – 8,500 (plug-in hybrids only)	\$8,000
8,501 – 10,000 (plug-in hybrids only)	\$10,000
10,001 – 19,500	\$15,000
19,501 – 33,000	\$20,000
33,001 – 38,000	\$25,000
> 38,000	\$30,000

⁴ Speeding High-Efficiency Truck Adoption: Recommended Policies, Incentives and Investments, CALSTART, 2010

Table 2: HVIP zero-emission truck and bus voucher amounts

GVWR (lbs)	Voucher
5,001 – 8,500	\$12,000
8,501 – 10,000	\$18,000
10,001 – 14,000	\$30,000
14,001 – 19,500	\$35,000
19,501 – 26,000	\$40,000
> 26,000	\$45,000

2.4 Initial Response from Fleets

In its first year of operation, HVIP sold out faster than any program in CARB history and was recognized in a prestigious award as the number one emerging state energy project by the American Council for an Energy Efficient Economy. Year 1 of HVIP accounted for 662 new hybrid trucks and buses, which utilized \$19,330,000 in incentive funding for an average of \$29,200 per vehicle.

In that first year the HVIP website opened on February 3, 2010 and reached its full voucher subscription capacity by the end of August 2010. The South Coast Air Quality Management District (SCAQMD) agreed to add another \$1.4 million to HVIP for vouchers used in its region. This leveraged the CARB funding and allowed an additional 41 hybrids to be deployed.

Of the total number of voucher applications in the first year, private corporations received the overwhelming majority. The most popular vehicle weight class, at 50 percent of the total vouchers, was Class 8 vehicles, mostly beverage delivery tractors. The second most popular, at 23 percent, was the Class 4 and Class 5 delivery vans. Uniform and linen delivery vehicles were third at 16 percent.

Vouchers were distributed across ten air basins in the state.

2.5 Program Enhancements

Once the initial demand of Year 1 was satisfied, vehicle purchases declined in Year 2. There were several reasons for this, including the economic recession and the need for fleets to gain further experience with the vehicles they had already purchased. For example, it was found that appropriate deployment of the vehicles in the best duty cycles was very important. In addition, some nationally-operating fleets had reached a limit of what they could easily deploy in California, pointing out the need for programs in other regions. As a partial response to these issues, the following series of program enhancements were developed to stimulate further demand.

2.5.1 Expansion to New Regions

HVIP's initial success attracted other agencies to begin looking at it as a means to deploy hybrid and other advanced, clean medium- and heavy-duty vehicles (including electric and natural gas) in their jurisdictions. Within California, the SCAQMD finished implementing its own HVIP with \$1.4 million in funding to place 41 hybrid-electric vehicles in its air basin. Also, the California Energy Commission joined with CARB in the FY11 HVIP to create a \$4 million in extra funding, in addition to the CARB funds, for purchases of battery electric vehicles. Both projects sold out quickly. In parallel, the California Energy

Commission also created its own modified voucher to speed deployment of natural gas and propane commercial vehicles.

The San Joaquin Valley Air Pollution Control District (SJVACPD) has also launched its own “plus-up” HVIP project with \$1.9 million in funding to add to the state funds for vehicles purchased in its air shed. Vouchers requested for vehicles that will be domiciled in the San Joaquin Air Basin 100% of the time for three years automatically receive the extra funding from the SJVAPCD, and each “plus-up” voucher can reach up to \$30,000 on top of the original CARB HVIP voucher.

Currently, CALSTART is in discussions with other air districts and state agencies to leverage the existing HVIP infrastructure to further deploy HVIP vehicles across the state.

2.5.2 Enhanced Voucher Amounts

Another example of a program enhancement was implemented in Year 3, in which the rule allowing an increased incentive amount for the first vehicle purchased was extended to the first three vehicles and also increased from \$5,000 to \$10,000 for each of the first three vehicles. This created a net of \$25,000 in additional incentive funding for fleets that purchased three vehicles. This change has had an especially large impact on small fleets, which have greatly increased participation in the program and are now requesting vouchers in groups of three. This policy refinement is helping introduce these clean technologies to new fleets, setting the stage for broader adoption, assuming these fleets are satisfied with early results.

2.5.3 Inclusion of Additional Technology Offerings

In the second funding year of the HVIP, the vehicle eligibility list was updated to include eligible electric and plug-in electric vehicles. Further incentives were included for the purchase of plug-in or hydraulic hybrids, school buses and for vehicles that received California ARB certification. The table below breaks out some of these extra incentives by weight class and type of incentive.

Table 3: Other HVIP voucher enhancements

Gross Vehicle Weight Rating (lbs)	Plug-in or Hydraulic Hybrid	School Bus	ARB Certification (full vehicle)
6,001 – 10,000 (plug-in hybrids only)	NA	\$5,000	NA
10,001 – 14,000	\$5,000		
14,001 – 19,500			
19,501 – 33,000			\$15,000
33,001 – 38,000		\$10,000	
> 38,000			\$20,000

2.6 Lessons Learned

Throughout the program CALSTART with and on behalf of CARB has performed a series of outreach meetings with fleets and dealers to take the pulse of the industry from time to time, and to identify

potential and existing roadblocks to hybrid and zero-emission truck purchases. Included in key lessons learned are the following:

- **Business case and data.** Despite the success of the program, many fleets and dealers are still under misconceptions regarding technology performance and costs. The technologies are changing quickly, so this knowledge gap is to be expected but must be addressed. The largest misconceptions for hybrid and electric vehicles were based on battery life and costs. Many fleets and even medium-duty salespersons believe that battery life is approximately five years, when it is now actually eight to ten years. This misperception greatly affects the calculations for return on investment and residual value.
- **Incentives needed in more than one state.** For large, national fleets each state/region is often viewed as its own market, so the large national fleets may be fully invested in hybrids in California, but are hungry for vehicle placement in other states. Because of this, there is a clear need to expand these voucher programs to new states to get vehicles into those markets.
- **Longer-Term Certainty.** Market penetration takes time. Therefore, fleet adoption is enhanced from voucher incentives that are predictable and available over a longer time period. For example, the California HVIP program was initially envisioned as a three to five 5 year effort. By increasing program funding and timelines to longer periods, fleets will have added assurance in their adoption of new technologies that volume and scale points can be reached to create sustainable cost reductions.
- **Outreach.** Finally, work with dealers and fleets has shown that uncertainty around technology benefits —both real and perceived — and voucher accessibility is also slowing market penetration, and that increased outreach and market education are needed so that the purchase commitments of the early fleets can be extended to a much broader base.

Market certainty is a key enabler for increasing vehicle placements, and programs like HVIP can provide the certainty necessary to move these technologies forward, particularly if expanded into other regions and for extended time periods.

2.7 Overview of Program Results

After the great success of the HVIP in the first year, the program encountered some challenges in the market. However, with the adaptations that were implemented to the program and the entry of the next generation of lower-cost hybrid technology, the program is experiencing a very strong increase in vouchers over the past seven months. Voucher requests have tripled over the period from August, 2012 to February, 2013.

The California HVIP program has been highly successful. By itself, *it has generated almost half of all hybrid and electric truck sales in the United States for the period from 2010 to 2012*, a total of 1,200 of the approximately 2,500 hybrid or electric trucks that were purchased during that time. And now, other states are beginning to adopt their own versions of the HVIP program. New York and Chicago have patterned their programs after the California approach and other CMAQ-funded programs are being considered around the country.

2.8 Conclusions and Key Takeaways

The voucher approach used by HVIP has several major advantages over the more commonly used tax incentives and grant programs. First, the voucher directly reduces capital costs at the point of purchase.

This is the equivalent of reducing the purchase price. This approach is valuable for fleet managers who are working with fixed budgets and may never see the advantages of tax credits. Tax-exempt entities such as government fleets are unable to take advantage of tax credits, but are able to benefit from voucher programs.

Additionally, fleets appreciate the simplicity of the program, which has clear rules and set incentive amounts. The program does not require a time-consuming grant-writing and approval process and, unlike the grant process, voucher programs provide certainty of outcomes.

CALSTART recommends that additional state and regional government agencies use a structure similar to HVIP to build their own programs and recommends that the ideal voucher program be multi-fuel and multi-technology to allow the market to decide the outcome. Each region should focus on their technologies and fuels of highest interest inherent to their region. Organizations such as CALSTART can serve as a resource to help regions implement their voucher programs.

3. A TOOL FOR ALL REGIONS: THE CMAQ MODEL FOR FUNDING VOUCHER INCENTIVE PROGRAMS

3.1 Congestion Mitigation and Air Quality (CMAQ): Federal Funds Available Today

New voucher incentive programs around the country have developed a new model – they leverage existing federal dollars. Unlike the California program, which required state-level legislation, many of the new voucher programs are simply reprogramming existing funding from the Congestion Mitigation and Air Quality (CMAQ) program. This eliminates the need to pass any new state or federal legislation or to levy new taxes or fees to pay for the programs.

CMAQ is a federally funded program designed to improve air quality and reduce congestion. The Program was created in 1991 as part of the Intermodal Surface Transportation Efficiency Act (ISTEA), and has been reauthorized in subsequent transportation bills including Moving Ahead for Progress in the 21st Century (MAP-21) in 2012.

All 50 states plus the District of Columbia receive CMAQ funds. MAP-21 continued CMAQ funding at an average annual funding level of \$3.1 billion.⁵ For the most part, these funds must be spent on projects to improve air quality in regions that do not meet the National Ambient Air Quality Standards for ozone, carbon monoxide, or particulate matter (non-attainment areas), or in areas that are newly in compliance (maintenance areas).⁶

CMAQ is a flexible funding source. Funds are allocated to planning organizations and state departments of transportation. These state and local government entities have a large degree of autonomy in deciding what to fund, so long as projects meet federal guidelines and further the goals of the program. Key decisions on how to spend CMAQ dollars are therefore made at the state and local level, and processes differ by region. Clean vehicle incentives and vouchers are an eligible use of CMAQ dollars, as demonstrated by the existing CMAQ-funded voucher programs.

3.2 Clean Vehicle Voucher Programs Funded through CMAQ

Several states and regions, including New York, Chicago and Oregon have tapped CMAQ funds for innovative clean vehicle voucher programs. The new programs starting up in New York and Chicago are especially promising because of their large scale and innovative designs tailored to their particular needs. Total funding amount, eligible technologies, and per-vehicle incentive levels differ across these programs, but each uses federal funding to provide a simple, streamlined purchase incentive to reduce upfront costs for clean trucks.

New York Truck-Voucher Incentive Program (NYT-VIP)

New York is launching a \$19 million program to expand the use of diesel emissions controls, compressed natural gas (CNG), hybrid and battery electric medium- and heavy-duty trucks within fleets in New York

⁵ <http://www.fhwa.dot.gov/map21/summaryinfo.cfm>

⁶ For additional details on CMAQ funding under MAP-21, see: <http://www.fhwa.dot.gov/map21/cmaq.cfm>

City and parts of New York State.⁷ The program has three separate elements, each of which aims to cover 80% of incremental cost for cleaner technologies:

- **New York State Electric Vehicle-Voucher Incentive Fund (\$9 million):** offers incentive vouchers for the lesser of \$60,000 or 80% of net incremental cost for the purchase or lease of battery electric trucks in non-attainment and maintenance areas of New York State.
- **New York City Private Fleet Alternative Fuel Vehicle-Voucher Incentive Fund (\$6 million):** offers incentive vouchers for the lesser of \$40,000 or 80% of the net incremental cost for CNG, hybrid electric and battery-electric trucks in New York City.
- **New York City Private Fleet Diesel Emission Reduction-Voucher Incentive Fund (\$4 million):** offers incentive vouchers for up to 80% of the cost of purchasing and installing emission reduction equipment on medium and heavy-duty diesel vehicles in New York City.

The NYT-VIP is designed to deploy 800-1,000 cleaner vehicles throughout heavily-polluted areas of New York, reducing emissions and petroleum usage. The broad focus on several different clean technologies allows users to choose the best option for their operation and ensures that a wide variety of fleets can take part and benefit. The program is launching in early 2013.

Chicago E-Truck Voucher Program

The City of Chicago announced a \$15 million voucher program for electric trucks in late November 2012. Like New York, Chicago is using CMAQ funding and providing the incentive in the form of a simple purchase voucher. Unlike New York, Chicago appears to be focusing exclusively on battery electric trucks.. One interesting and innovative twist is that Chicago plans to base voucher amounts on battery size, with larger batteries being eligible for larger vouchers. This is one way of starting to make the vouchers performance-based, while also ensuring that voucher amounts are appropriately sized. Program details and per-vehicle funding amounts are still being finalized.

Other Voucher Programs

Oregon also launched a \$4 million CMAQ-funded Commercial Electric Truck Incentive (CETIP) voucher program in 2012. The program focused entirely on electric trucks, offering \$20,000 per new truck in non-attainment areas of Oregon. The program was recently terminated for a variety of reasons, but the Oregon experience does offer lessons learned, as well as being another example of a CMAQ-funded program.⁸ The state of Colorado is currently considering a CMAQ-funded program to drive clean vehicle purchase, but the program was still in the concept stage at the time of finalizing this publication.

Looking beyond CMAQ to state-level funding sources, California's Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) has a strong track record as discussed earlier. Maryland provides yet another example. In 2011, Maryland launched an electric truck voucher program using State

⁷ For more information, see <https://truck-vip.ny.gov/>

⁸ For more information, see <http://www.oregon.gov/ODOT/HWY/OIPP/docs/cetiproadmap5.pdf>. The Oregon program was recently canceled because of several complications, including low demand for vehicles at the \$20,000 level, competition from other advanced vehicle technologies, and problems with federal "Buy America" requirements. For more on the "Buy America" issue, see page 15.

Highway Trust Fund (not CMAQ) dollars.⁹ In late 2012, Maryland launched a nearly identical program to drive CNG vehicle purchase, this time using revenues from the state's Strategic Energy Investment Fund.¹⁰ Maryland showcases that motivated regions can find other innovative sources of funding for voucher incentive programs.

Demand for vouchers in the electric truck programs in Maryland and Oregon has been slower than hoped. This may be due to that fact that the voucher amounts (limited to \$20,000 per truck) may not have been enough to entice fleets to try a new technology, particularly given the availability of much larger incentives in California. Because of the changing dynamics in the early market for new technologies, it is valuable to calibrate voucher amounts to market needs and, where possible, to maintain program flexibility and implement modifications based on results. These programs offer valuable lessons in terms of the ability to get a program up and running, and also the ins and outs of program design and implementation.

3.3 CMAQ Funding Process and Considerations

While new and existing programs show that it is possible to use CMAQ funding for voucher programs without having to pass any new legislation, the CMAQ funding process carries with it its own technical and political challenges. Decisions are made at the state and local level. Stakeholder priorities are extremely important as newly proposed programs must go through a complicated approval process that varies by region. Working closely with regional stakeholders is critical. Below is a high level primer on the CMAQ funding process, along with some insights from existing programs.

CMAQ Process Overview and Examples

As noted above, every state receives CMAQ funding, and project funding decisions are generally made at the state and local level. In order to take advantage of CMAQ funding, projects must be included in a Transportation Improvement Plan (TIP), which is essentially a prioritized list of projects and investments for a given area over a multi-year period.

The process of getting a project such as a voucher incentive program included in the TIP and then funded and operational can be long and complicated. First, governments and sometimes nonprofit organizations submit proposed projects for consideration and possible inclusion in the TIP. These proposals must then compete against a wide array of other potential uses for CMAQ funding. Specific approval processes differ by region, as the following three examples demonstrate:

- **New York** directs a large portion of CMAQ funding to transit automatically, and has an official competitive solicitation process for all other potential projects. All CMAQ-eligible projects must compete against each other on the basis of benefits (congestion mitigation and air quality) against each dollar invested. The New York State Department of Transportation selects projects from the proposals submitted to various Metropolitan Planning Organizations. From start to finish, the process can take 18 months or more.

⁹ <http://energy.maryland.gov/Transportation/met/>

¹⁰ The Strategic Energy Investment Fund (SEIF) derives its revenue from Regional Greenhouse Gas Initiative (RGGI) auctions. For more information on the CNG program, see <http://energy.maryland.gov/Transportation/natgas/>

- **Chicago** generally solicits proposals through the Chicago Metropolitan Agency for Planning (CMAP) with a broad focus on different project types that further the goals of CMAQ. Diesel Emission Reduction projects such as truck vouchers would be ranked in terms of cost per ton of fine particulate matter reduced, and are reviewed by a focus group looking at all “direct emission reduction” projects. This group then makes non-binding recommendations to CMAP’s Project Selection Committee, who then selects CMAQ projects for northeastern Illinois. Subsequent approval is required from three separate committees and the CMAP board.¹¹
- **Oregon** launched a voucher program after four months of collaboration between the Oregon Department of Transportation (ODOT), the Department of Environmental Quality, and the Department of Energy. The key decision-making body was the Oregon Transportation Commission that oversees ODOT.

The overview and examples above provides some sense of how decisions on CMAQ funding are made at the local and state level. Every region is a little bit different and the process can be long and complicated. The “Important Considerations” section below summarizes some of the issues that must be addressed before deciding to move ahead with a CMAQ-funded voucher program.

Important Considerations for Proposing CMAQ-Funded Voucher Programs

Although the Federal Highway Administration (FHWA) has ultimate discretion over project eligibility, the real decisions are made at the state and local level and the key considerations vary from place to place. From a federal perspective, vehicle voucher programs are an eligible use of funds. The question then becomes one of state and local requirements and priorities, as well as competition and political considerations:

- **State and Local Processes and Requirements:** Eligibility, timelines and proposal requirements vary by region. Timelines and processes are particularly important as some regions may have only periodic openings for new project proposals. Developing a solid understanding of the processes and requirements in a given region is important.
- **State and Local Priorities:** Differences in state and local priorities lead to CMAQ expenditures that differ widely from region to region. In some areas, funding may go almost exclusively to traffic flow improvements or transit operations. Other areas have singled out clean vehicle deployment or bicycle/pedestrian facilities as priorities. Understanding and shaping these priorities at the local level is an important step for anyone looking to develop a vehicle voucher program.
- **Competition and Political Considerations:** CMAQ funds generally have strong competition. Therefore, funds directed to vehicle programs are funds that would not be used on other potential priorities. It is therefore important to consider the competition for these funds and to take into account political considerations when looking at the possibility of a CMAQ-funded voucher program. CMAQ programs in some states and regions have directed funding to the same sorts of projects for several years and a push for a new direction may meet with some resistance. However, where CMAQ funds have already been used for alternative fuel or clean

¹¹ http://www.cmap.illinois.gov/documents/20583/1280867/FY2014-2018_CMAQ-Application-Info-Booklet.pdf/22268526-ebea-4e79-9526-1be1ee9a42f6

transportation programs, there may be openness to simply shifting the approach to how to distribute the funds.

CMAQ Limitations

The advantage of using CMAQ funding for state and local voucher programs is clear: CMAQ gives you the ability to fund a program without passing any new legislation. However, while CMAQ is a flexible funding source, there are some strings attached that go beyond the process issues outlined above. One notable requirement is that CMAQ funds must be used in non-attainment and maintenance areas. This creates geographical limits on the program, and means that some potentially interested fleets may not be able to participate.¹²

There is also a Buy America requirement for CMAQ-funded vehicle purchase incentives. Although many of the clean vehicles targeted by these programs are indeed made by U.S. companies and assembled domestically, they still require “waivers” because of the Buy America terms. The waiver process itself can be time-consuming, adding some time and complication to the initial development and operation of a voucher program.

The CMAQ funding process is complicated, but this is a potential source of funds for voucher incentive programs that does not require legislative action. This new model currently being implemented in a few regions of the U.S. could and should be spread to other areas.

¹² For example, the CETIP program in Oregon had to turn down an interested fleet from a coastal area of the state that was not a nonattainment or maintenance area for air quality.

4. RECOMMENDATIONS

There are many compelling reasons for stakeholders in different regions throughout the country to propose and implement voucher incentive programs. We reviewed the clear benefits of vouchers over other purchase incentives earlier in this report. Voucher program successes have also been discussed. This section provides some additional guidance on program design, drawing from lessons learned in several different clean truck incentive programs. It also provides some final thoughts on next steps for navigating the CMAQ funding process and successfully launching programs.

4.1 *Recommendations for Voucher Program Design*

Voucher incentives that support multiple different technologies are preferable to single-technology vouchers for several reasons. There is no silver bullet clean truck technology. Different applications require different solutions. Hybrid or electric trucks may be perfect for urban delivery applications, but they are not currently the best option for long-haul, big rig trucks. Natural gas, however, may be a perfect near- to mid-term solution for longer distance, heavier-weight applications. A voucher incentive program that focuses just on electric trucks (or just on natural gas trucks) misses opportunities for air quality improvement and leaves some fleets unable to participate.

A more inclusive program also helps to broaden the stakeholder base and build support for the program. Programs can be specifically designed around local priorities and locally appropriate technologies. Especially for longer-term programs, it may make sense to add a provision that allows for the addition of new clean technology options that are not explicitly called out in the initial program rules.

New York provides two examples of ways to structure a multi-technology voucher. One option is to design separate programs around different technologies, as New York has done with their electric truck program and diesel emission control program. You can also design a single voucher that allows multiple technologies to participate, as is the case with the New York City Private Fleet Alternative Fuel Vehicle-Voucher Incentive, which provides incentives for hybrid, electric and natural gas trucks. Tying the incentive amount to the lesser of some percentage of alternative cost or some pre-set cap allows the voucher amounts to be right-sized for different technology applications. Chicago's decision to tie voucher amounts for electric trucks to battery size is a similarly innovative way to ensure that the voucher is appropriate for each truck.

4.2 *Call to Action*

Purchase vouchers are the preferred tool for clean commercial vehicle deployment. These simple, streamlined incentives can greatly improve the business case for new technologies, helping fleets purchase more efficient trucks and helping manufacturers and suppliers increase sales and build the production volumes needed to comply with standards and lower purchase price. Vouchers involve little uncertainty or administrative burden, can be utilized by tax-exempt fleets, and effectively lower capital costs at the point of purchase. For all of these reasons, vouchers are preferred by manufacturers and fleets. They are also relatively simple to manage, particularly when compared with grant programs that have lengthy applications and review processes.

As discussed above, voucher models at the state level have proven highly successful. However, there is a need to expand beyond early adopter states to create a larger national network of incentive programs. Expanding to additional states and cities will benefit all clean truck stakeholders – fleets, manufacturers, suppliers and the government and nonprofit groups focused on air quality and energy security. A broader network of incentives will increase the size and scope of the early market. This leads directly to additional air quality and petroleum reduction benefits. It also leads to increase vehicle sales, creating and retaining jobs in this industry. Perhaps most importantly, a broader network of incentives will help boost volumes and drive down costs through economies of scale. This, in turn, will increase deployment, further driving down costs. The effect of incentive programs as a market catalyst will grow as the reach of these incentives expands beyond just a few early adopter states and cities.

As noted above, the process for proposing new CMAQ-funded projects can be complicated. In order to improve the chances of success, interested stakeholders in a given area should work together to understand and navigate the CMAQ funding landscape in a given area, starting with answering the following questions:

- **Decision-making Process:** What is the process and timeline? What is required in a proposal? Who makes the ultimate decisions and what are the decision-making criteria?
- **Priorities:** What are the local priorities for CMAQ funding? What is eligible, and what sorts of projects have actually received CMAQ funding in this area?
- **Stakeholders:** Who are the key stakeholders? Who would support a truck voucher program and what sorts of resources can they bring to bear in designing and supporting the program? Who might oppose this idea - what other groups would be potential “competitors” for CMAQ dollars in this area?

In locations where there is a good chance to secure CMAQ funding, the next step would be to reach out to the appropriate local or state government entity. Ideally stakeholders would then work with these government entities to design a robust proposal that meets the program requirements and economic and environmental goals of the region. The existing programs outlined above are a good starting point for this discussion. However, the actual decisions around which technologies to include, how much to provide on a per-vehicle basis for a given technology, and how to administer the program require extensive discussion.

An unbiased third-party group such as CALSTART could play a useful coordinating role in understanding the landscape and requirements, as well as tapping the knowledge of all interested parties. CALSTART is also in a position to inform program design. We have extensive experience with the design and implementation of incentive programs, and have a solid understanding of the needs and priorities of industry and the fleet decision-makers. CALSTART also works with federal agencies and other partners involved with CMAQ and other funding rules, and we see value in continuing to do this work and bring in additional voices.

Creating and implementing voucher incentive programs for trucks in additional regions around the country will require a large team effort. This paper highlights the fact that there are existing program models that can inform future directions, there exists a funding framework upon which to build, and there are experts willing to help develop what works best in each unique planning authority and region.

We hope this paper is the beginning of a national movement, and we are ready and willing to play a coordinating and catalyzing role.

For more information on vouchers, contact Tom Brotherton, tbrotherton@calstart.org or Jamie Hall, jhall@calstart.org. To be involved in the national effort on vouchers, contact Bill Van Amburg, bvanamburg@calstart.org.

About CALSTART

CALSTART is a non-profit organization focused on the growth of the clean transportation technology industry. CALSTART has 150 member companies representing a broad array of clean vehicles, fuels, and technologies. CALSTART provides services and consulting help to spur advanced transportation technologies, fuels, systems and the companies that make them. CALSTART's main activities include:

- Providing value-added services for member companies
- Working with teams to commercialize new technologies
- Helping fleets and ports cost-effectively “green” their operations
- Supporting positive pro-environment and business public policy

One of CALSTART's main strengths is its access to an unparalleled array of information sources through its diverse activities and extensive network. The clean transportation technology industry is rapidly changing and CALSTART's close contact with fleet managers, policymakers, researchers, scientists, technology developers and manufacturers puts the organization in a unique and valuable position.

