From Maine to California, more than 140 school districts are using natural gas-powered vehicles (NGV) in their fleets every day. This number will increase as these districts build on their successes and new ones join the trend.

That’s because NGVs are very clean, providing the greatest emission reductions and related environmental benefits of all available alternatives. They also have an added advantage—they displace petroleum fuel. Reducing dependence on oil has become an ever more-pressing priority as world oil demand outpaces supply and causes prices at the pump to rise, especially given our reliance on politically unstable oil-producing regions of the world. About 98% of all the natural gas used in the U.S. comes from the lower 48 states and Canada.

In addition, NGVs cost less to fuel than gasoline- and diesel-powered vehicles. For most fleets, fuel and maintenance savings offset NGVs’ higher purchase price and deliver substantial life-cycle savings. New federal incentives further improve NGVs’ life-cycle cost advantage.

Advances in NGV technology over the past decade put them on par with gasoline and diesel vehicles in terms of durability, performance and reliability. And, as a gaseous fuel technology, NGVs will help build public familiarity and acceptance of hydrogen-fueled vehicles when they’re eventually offered in the future.

Available NGVs include a variety of sizes and models including cars, pick-ups, vans, shuttles, buses and a range of work trucks from step vans to over-the-road tractors. While thousands of individual consumers drive NGVs, they’re most common in fleets, for example, at transit agencies, utilities, airports, refuse companies, delivery services and—more and more frequently—school districts.
“We need engines that are clean, quiet, and reliable.”

“We need John Deere.”

“John Deere natural gas engines not only save the district money on fuel and maintenance, they’ve enabled us to show the community something tangible we can do for the environment,” says Tim Purvis, director of transportation for the Poway Unified School District in Poway, California. “Going with John Deere was a wise business decision, too, because as a supplier they listen and respond to our needs—and stand behind their engines.

“A school bus can be a pretty noisy place,” adds Purvis, “but when we added John Deere natural gas engines to our fleet, our drivers told us the overall noise level dropped dramatically.”

John Deere natural gas engines run quieter, release significantly fewer harmful emissions, and don’t have the unpleasant smell associated with other fuels. So the whole community—right down to the bus drivers—benefits from natural gas.

To see how you can add John Deere natural gas engines to your fleet, contact us today.
In summer 2005, Congress passed new federal legislation containing grants and tax incentives that lower vehicle purchase and operating costs. These new measures dramatically improve the economic case for natural gas-powered school buses and other fleet vehicles and related fueling infrastructure.

**Vehicle Purchase Income Tax Credits**

Under the Energy Bill (Public Law 109-58), buyers of a “new dedicated alternative fueled vehicle placed in service after December 31st, 2005” are eligible for a tax credit of 50% of the incremental cost of the vehicle, with an additional 30% “bonus” credit for those vehicles meeting the most stringent applicable California Air Resources Board (CARB) or Environmental Protection Agency (EPA) emission standard.

Importantly, the law provides that, if the buyer of the vehicle is a tax-exempt entity (e.g., a school district, transit agency or municipality), the tax credit may transfer to the seller of the vehicle. In effect, school districts could require that the equivalent value of the tax credit be passed along to the school in the form of lower purchase price while the seller (in this case the dealer) takes the tax credit.

The amount of the available credit is capped into four groupings based on gross vehicle weight rating (GVWR). For example, light duty vehicles (LDV) such as sedans and most light pick-up trucks have an incremental cost cap of $5000. Therefore, a dedicated natural gas-powered LDV that meets ULEV standards qualifies for up to $2500 while vehicles like the Honda Civic GX, which meet cleaner SULEV standards, qualify for up to $4000 in federal tax credits. At the other end of the spectrum, heavy-duty vehicles with GVWR over 26,000 pounds have an incremental cost cap of $40,000, which means a dedicated natural gas-powered “transit-style” school bus qualifies for up to $32,000 if the engine meets CARB’s stricter Optional Low-NOx heavy-duty engine emission standard of 1.8 g/bhp-hr NOx+NMHC and .1 g/bhp-hr PM.

The transit-style (Type D/1) natural gas-powered buses offered by both Thomas Built and Blue Bird feature John Deere’s 8.1L engine, which is CARB-certified to 1.2 g/bhp-hr NOx+NMHC and .1 g/bhp-hr PM.

In addition, pending the Internal Revenue Service’s (IRS)
Incentives

Promulgation of regulations governing the new legislation, existing gasoline- or diesel-powered vehicles retrofit or repowered with EPA-and/or CARB-certified natural gas engine and fueling systems (and placed in service after 12-31-05) should qualify as "new dedicated alternative fuel vehicles." This may be an important option for those school districts that want natural gas-powered Type A/4, B/3 and C/2 school buses or LDV models not currently offered by the major automotive and truck companies as well as from small volume manufacturers (SVM). For more information about which NGVs are available from the major automotive and truck companies as well as from small volume manufacturers (SVM), contact NGV America at www.ngvamerica.org.

Clean School Bus USA Grants

Another new piece of legislation that reduces school bus purchase costs is the Clean School Bus USA provision included in the Highway Bill (Public Law 109-59). It formally recognizes the existing EPA-managed program and also sets entirely new criteria by which grants will be evaluated and awarded. In the new bill, Congress authorized $55 million each for FY2006 and FY2007 for the replacement, repower or retrofit of existing school buses and to provide alternative fuel. Program funding for FY2008-10 is defined as "such sums as are necessary."

The new criteria establish a two-tier incentive approach to advance emissions reductions, one at a higher level of funding for meeting stricter emission requirements ahead of schedule, and another at a lower level for meeting current emissions standards.

Specifically, for model year (MY) 2005 and 2006 school buses, the grant provides 50% of the school bus cost if the vehicle emits 1.8 g/bhp-hr NOx + NMHC and .1 g/bhp-hr PM but just 25% of the school bus cost if it meets the current standard of 2.5g/bhp-hr NOx + NMHC and .1 g/bhp-hr PM. For MY 2007-09, the program raises the bar, providing 50% of the school bus cost if the vehicle meets the 2010 standard of .2 g/bhp-hr NOx and .01g/bhp-hr PM but just 25% of the school bus cost if it meets the then current standard, expected to be 1.2 g/bhp-hr NOx and .01 g/bhp-hr PM for 2007. At present, only natural gas buses can meet the tougher benchmarks.

Two significant points about this grant program are worth emphasizing. First, the program pays a percentage of the entire cost of the school bus, not just the incremental cost of the school bus. Second, this is a competitive grant program with available funding limits set by the Congressional appropriation process and, furthermore, no state may receive more than 10% of the total grant appropriation. For FY2006, Congress appropriated only $7 million for the program so no state may receive more than $700,000. While the program grant guidelines are generous, Congress’ yearly appropriation will be the ultimate determinant of the program’s impact in the marketplace.

Federal Motor Fuels Excise Tax Credits

Another key provision in the new Highway Bill is the federal motor fuels excise tax credit for alternative fuels, which beginning October 1, 2006, provides the “seller” a payment of $.50 per gallon of LNG or gasoline-gallon-equivalent (GGE) of CNG. For CNG, the excise tax credit will be paid to the seller of compressed natural gas, which means that the credit is not generated until the gas is compressed for vehicular use. In addition, if there is no “seller,” the credit goes to the user, e.g., if a district owns and operates its own CNG station, there is no “seller.”

Importantly, the excise motor fuels tax credit will be paid on a regular basis to eligible recipients without regard to the amount of excise tax paid, including tax-exempt entities such as schools, which do not pay federal excise taxes. In other words, the U.S. Treasury will issue $.50/gallon payments to sellers of alternative vehicular fuel on a regular (probably quarterly) basis, whether they paid the excise tax or not.

The same provision raises the CNG federal tax from its current $.06/GGE to $.183/GGE, making it equivalent to the federal tax paid per gallon of gasoline, and it also raises the LNG tax from $.119 to $.243, making it equivalent to the federal tax paid per gallon of diesel fuel. However, as noted above, public school districts do not pay this tax on their own fleet fuel use.

The percentage of the new fuel excise tax credit the school district realizes will depend on whether it (1) buys its own natural gas, compresses it and dispenses it with its own equipment and thus assumes all risks and responsibilities associated with providing its own CNG fuel supplies (2) contracts for turnkey CNG fueling services with an independent fuel supplier who thus assumes the risk or (3) some combination of these two options.

Under the first scenario, the school district is clearly the “seller” and should recoup the full credit. Likewise, in scenario number two, the fuel supplier likely will recoup the credit. IRS rules will address those situations where the purchase of gas and the ownership, operation and
maintenance of compressor/dispenser equipment is shared between the fleet operator and the fuel service provider.

Regardless, whether the fuel excise tax incentive is recouped directly by the fleet operator for its owned-and-operated fueling station or partially credited back to the fleet by the private fuel provider in the form of lower, stable long-term fuel pricing or upgraded investment in fueling station equipment and operations, the new credit will further lower the cost of natural gas for vehicular use.

**Fueling Station Equipment Tax Credit**

The Energy Bill also includes an income tax credit “equal to 30% of the cost of any qualified alternative fuel vehicle refueling property placed into service after December 31st, 2005” with a $30,000 cap per property. Assuming the IRS interprets the word “property” as it has in other rulemakings involving depreciable assets, the credit and cap should apply to individual pieces of equipment such as compressors, dryers, dispensers, etc. rather than an entire station. This means the tax credit for a station could be substantially higher than $30,000. The provision also includes a cap of $1000 for home refueling appliances such as the recently introduced Phill by FuelMaker. The new measure is effective through December 31st, 2009.

As with the vehicle purchase tax credit, the fueling infrastructure tax credit can be taken by the seller of the equipment if the purchaser is a non-tax paying entity.

**Additional Federal, State and Regional Incentives Are Available**

School districts may find it useful to identify an internal “champion” who can participate in the closest DOE Clean Cities Coalition where petroleum displacement technologies, experiences, strategies and funding opportunities are discussed. In areas not yet officially designated as Clean Cities, there are often informal “clean air” coalitions and partnerships with similar objectives. Additional information is also available at DOE’s Clean Cities program website [www.eere.energy.gov/cleancities]. Here, you also will find links to state and regional programs. Or call your local natural gas company representative who can direct you to additional resources like NGVAmerica and the Clean Vehicle Education Foundation.

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School buses are the safest way to transport students to and from school, but chronic underfunding of school transportation budgets in many districts has resulted in a significant number of older dirtier diesel school buses remaining in service. Even districts that are able to adhere to a regular replacement schedule, often keep their school buses in operation for at least 13-15 years, and often more than 20 years. This means that many school buses currently on the road were manufactured when emissions allowances were far more lenient than the standards that now apply.

More than 70 percent of school buses in service today are diesel-powered. Public awareness and concern about the impact of diesel exhaust on children’s health, and the availability of federal, state and local government grants are prompting proactive school districts to accelerate replacement of older diesel school buses with newer cleaner ones. After evaluating their options, many school administrations have decided to buy natural gas-powered buses.

Natural Gas School Bus Use Is Growing

School districts in California account for the majority of all natural gas school buses in service nationwide, which is estimated at about 2800, but there are many other examples across the country. For example, Lower Merion School District in suburban Philadelphia has operated nearly its entire 100+ bus fleet on compressed natural gas (CNG) for years. Tulsa Public Schools has run dozens of bi-fuel CNG-gasoline school buses since the early 1990s and so has neighboring Sand Springs School District.

More recent converts include Virginia Beach City Public Schools, which added two more CNG buses in 2005 to the two it placed into service in 2003. In Portland, ME, the city school district will put its first three CNG buses into service early this year. Dozens of other districts rely on CNG school buses in Arizona, Utah, Texas, Illinois, Michigan, New York and Wisconsin, to name just a few...
New EPA Emissions Guidelines ‘Raise the Bar’ for Next Generation of School Buses

“On a ‘apples-to-apples’ basis, today’s natural gas buses are cleaner than their diesel counterparts,” says Doug Horne, President of the non-profit Clean Vehicle Education Foundation (CVEF). “They’ll continue to have that edge in 2007 when the next level of EPA emissions guidelines go into effect,” adds Horne.

Horne refers to the EPA’s multi-year phase-in of new emissions standards governing heavy-duty engines. Beginning in model year (MY) 2007 and gradually tightening through MY 2010, engine manufacturers must meet tough new limits on smog-forming oxides of nitrogen (NOx) and soot—referred to as particulate matter (PM). These new emission targets come on the heels of previous reductions required of MY2004 units, which most manufacturers met by October 2002 under a court-imposed settlement with EPA.

Horne notes that, while the 2004 EPA requirements reduced the emissions differential between diesel-powered units and those powered by CNG, the 2007-10 phase-in has ‘raised the bar’ significantly. “CNG has always had an emissions advantage over diesel,” says Horne. “When the 2004 guidelines hit, engine manufacturers had to come up with a host of engine control, fuel and exhaust after-treatment strategies just to get diesel engines where CNG engines already were. They had to pull a lot of tricks out of their technology bag,” says Horne.

“Reliability of today’s CNG buses is very high.”

Tim Purvis, Poway USD

Reliability of today’s CNG buses is very high.

Advances in NGV Buses Put Them On Par with Gasoline and Diesel Counterparts

Today’s natural gas school buses are generations ahead of the ones introduced in the early 1990s,” says Tim Purvis, Transportation Director of the 100-square mile Poway Unified School District (USD) in suburban north San Diego County. Purvis has been a leader in natural gas school bus use and was one of the first to put demo units to the test in the field.

“In those early days, I knew we were putting new technology on the road and that we would run into some bumps along the way. You expect that when you’re being a leader,” says Purvis. “We were enthusiastic about the possibilities for NGV technology but tempered it with an appropriate amount of caution. We’re way beyond that now,” he adds.

Poway now has 31 CNG buses in its fleet, all powered by John Deere 8.1L natural gas engines. “Reliability of today’s CNG buses is very high. I’m more concerned about the learning curve with new diesel technology,” says Purvis.

Jordan School District, which is Utah’s largest, also was an early adopter of CNG school buses. Their 270 buses, including 30 CNG units, transport more than 21,000 students every day across 250 square miles of south Salt Lake County. Transportation Shop Foreman Willie Martinez has worked with CNG school buses since the first ones arrived in 1992. “Sure, we hit some snags. The technology was new and had lots of room for improvement,” he says. “But we were new to it too,” admits Martinez. “We stuck in there and worked through low-sulfur fuel to keep from fouling, like those being tested on new transit buses. How they’ll achieve the NOx target is still up in the air, he says. “Most of the discussion now focuses on use of NOx adsorbers, selective catalytic reduction using urea or other complicated exhaust after-treatment strategies,” says Horne. “And that’s just what maintenance techs need,” he adds a bit sarcastically, “another can under the bus, the added hassle of urea storage, sensors and who knows what else.”

Natural gas engines, on the other hand, have been demonstrated to meet the 2010 benchmark using variations of current technology. In fact, two leading natural gas heavy-duty engine suppliers already have announced their readiness to deliver 2010-compliant units beginning in 2007 and others are expected to follow suit.

“When you look at the increasing complexity of diesel emissions compliance strategies, it makes sense to go with natural gas technology. It’s clearly where we’re headed. It’s the bridge to the future,” says Horne.
Leaders continued

Martinez says Jordan’s newest CNG buses have no problem handling the district’s terrain. “Our routes cover everything from flat valley to some pretty steep hill country. My CNG buses have all the power and performance of diesels. They perform like champs.”

Energy Independence and Environmental Stewardship Are Common Themes

Martinez emphasizes his district’s small—but important—contribution to helping the nation wean its dependence on oil, especially foreign oil. “There’s a lot of natural gas in the ground right here in Utah,” he says with a smile. “I’d rather use fuel from the good old USA than from overseas. Besides, it’s the right thing to do for the environment and—most important—for the kids.”

These underlying themes of energy independence and environmental stewardship are echoed by NGV school districts across the country.

“As educators, we’re responsible for setting an example for the kids—it’s their future,” says Bill Ball, Director of Transportation for Tucson USD. “We need to demonstrate leadership and show them what the country has to do to tackle environmental problems,” he says. “That thinking has to permeate across all areas… especially in our own fleet because that’s what people see each day.”

Currently, Tucson USD has only three CNG buses in its fleet of more than 300 that traverse the 228 square-mile district each day but Ball is pursuing an aggressive strategy to change that in the next couple of years. “We plan to purchase 70 CNG buses starting this year with the last ones being delivered by the beginning of the 2007 school year,” says Ball. The plan includes building a CNG station on site. Currently, the district fuels its CNG buses at a public station located at nearby Tucson Airport.

“I read about how poor air quality is increasing childhood asthma and how that causes ab-
sentee rates to go up and affects learning,” says Ball. “Improving air quality is everyone’s responsibility and we’re going to do our part by replacing older buses as fast as we can afford to do it.”

Poway’s Purvis agrees saying that, with NGVs, energy independence and environmental responsibility go hand-in-hand.

“We’ve got the opportunity—the obligation—to teach young people about mass transit and environmental responsibility,” says Purvis. “Our CNG school buses are an example of clean mass transit in a school setting.”

NGVs’ Life-Cycle Cost Advantage Increases

A CNG school bus’ higher up-front purchase price, as compared to a gasoline- or diesel-powered bus, is offset by lower operating costs over the life of the vehicle. In many cases, these life-cycle savings have been quite substantial.

That is certainly the case for Sand Springs School District, a 92 square-mile suburban area just west of Tulsa, OK. According to Assistant Transportation Director Gerry Hughart, their 30 CNG bi-fuel buses “pay for themselves and then some.” In 1991, the district converted fifteen of its MY1985 gasoline-powered conventional school buses to run on CNG. Hughart says Sand Springs elected to retrofit existing buses rather than buy new CNG buses because their routes required conventional buses. The district borrowed money from the state on a low-interest seven-year loan. “The differential between CNG and gasoline is substantial in Oklahoma,” says Hughart. Fuel savings were about $2,200 per month, he says, and the loan payment was only $1400. “The folks in accounting caught on real fast that this was a smart move,” he adds.

The next year, they retrofit another six buses, working with the local utility, Oklahoma Natural Gas, to utilize a state tax incentive to lower their costs for the CNG engine retrofit systems and fueling tanks. Again in 2003, they retrofit another thirteen MY 2001 and 2002 buses. And, in October 2005, Sand Springs took delivery of a 2005 CNG Honda Civic GX, which is used daily by the Buildings Maintenance Director to travel throughout the district.

Hughart is proud of the district’s commitment to deploying NGVs in its fleet. “With budgets the way they are these days, you’ve got to be economical - and we are…and we’re doing something ecological, too. That’s two feathers in our hat. It’s a better return on taxpayer’s money. They’re getting what they paid for—and more,” he says.
Life-cycle cost savings vary from one location to another and from one region to another based on a variety of factors. An analysis conducted by the non-profit NGVAmerica, released in December 2005, shows that savings per diesel-gallon-equivalent (DGE) range from $.25-1.05 per gallon and maintenance savings range from 5-10 percent. Some districts report even greater savings. In addition, new federal incentives that reduce vehicle purchase costs and operating expenses will further increase this life-cycle cost advantage (see article page S-3).

CVEF’s Horne says that there’s more good news. The first-cost differential between CNG-powered and diesel-powered school buses is expected to drop in the next several years and the operational savings are expected to increase even further.

Horne cites several reasons. “First, increases in heavy-duty natural gas engine production volumes over the past several years have created manufacturing economies of scale that are already starting to lower costs,” he says. “On the diesel side,” continues Horne, “compliance with emissions requirements is pushing up diesel costs $7,000-10,000 per engine—and that’s in addition to those expensive new exhaust systems.”

Furthermore, says Horne, CNG’s favorable fuel cost differential will increase because of the pending EPA-mandated reduction in diesel fuel sulfur content. To enable proper functioning of catalyzed particulate traps, fuel refiners must reduce diesel sulfur content to 15 parts per million (ppm) by September 2006. Oil industry analysts project that shortages in refinery capacity and other fuel distribution logistical issues will increase rack diesel costs by $.08-.14 per gallon.

Horne also cites a 2005 study by expert engine R&D firm TIAX LLC, which projects that maintenance of particulate traps and related sensors and disposal of ash will increase diesel operating costs. “We’re already hearing that from the transit industry” says Horne. “I suspect we’re going to discover more hurdles down the road as these systems get a little life on them,” he adds.

For many school districts, a CNG bus’ first-cost premium is hard to justify even when offset by lower life-cycle costs. “The unfortunate reality is that transportation budget requests have to vie with other educational priorities,” says Frank Fiumano, Assistant Superintendent for Business for Long Beach City School District on Long Island, NY. “The result is deferred bus replacement schedules,” he says. “When funds are made available for new buses, there’s usually a lot of internal and public pressure to go with the lowest purchase price.”

In 2001, his district could no longer defer replacement of twenty 18-20 year-old diesel school buses. The 4300-student district, which serves three small towns on a thin barrier island located just off Long Island’s Atlantic side, has 50 school buses. Replacing 40 percent of them in one year was going to be a significant undertaking.

The administration’s preliminary plan was to present residents a 5-year bond proposal based on the cost of twenty diesel buses. Ron Gulmi of KeySpan Energy Delivery, the local gas distribution company, invited Fiumano and his Transportation Supervisor Robert Sambo to a meeting of the Greater Long Island Clean Cities Leaders continued
Coalition (GLICCC) where they could learn more about natural gas buses and funding options.

**Clean Cities Coalitions Help Schools Find Resources and Secure Incentives**

GLICCC is one of about 85 similar public-private partnership organizations established under the U.S. Department of Energy’s (DOE) Clean Cities Program. The program’s primary goal is to displace transportation petroleum use through alternative fuels and idle reduction strategies. It also provides State Energy Program Special Projects (SEP) grants, which are applied for through Clean Cities Coalitions and administered by state energy offices.

Fiumano discovered that many districts are offsetting some or all of the their natural gas vehicle and fuel station purchase costs by leveraging the technology’s environmental and energy security attributes to obtain federal, state and regional incentives. He was intrigued. The incremental costs of the CNG buses and station could be covered using ‘OPM’—other people’s money.

KeySpan arranged for Fiumano and Sambo to visit Lower Merion Public School’s CNG bus operation and meet with its Director of Transportation, Mike Andre, who shared his own experiences and offered helpful suggestions. KeySpan also worked with Fiumano to pursue state and federal grants and introduced him to a CNG station design consultant.

The district’s superintendent took an active interest in the project and supported its goals, says Fiumano. “Living on a barrier island, our residents are very aware of environmental issues. This was a big project for us. We wanted to do it right. But we also had to stay within a budget the residents would support.” They presented their case to residents at public meetings, highlighting the environmental benefits and the potential leveraging of local funds with federal and state grants.

In June 2003, residents of Long Beach City School District voted 2-to-1 in favor of the bond. The process culminated with the district securing over $1.7 million in grants from the New York State Energy Research and Development Authority (NYSERDA), DOE Clean Cities and Congestion Mitigation Air Quality (CMAQ) funds through GLICCC, as well as a pass-through tax credit from KeySpan.

The supplemental funds package was structured to cover the incremental cost of twenty CNG buses, modifications to the bus maintenance facility and construction of a new onsite CNG station.
CNG Civics in Driver Ed Make the Case With Next Generation

Ask any 15- or 16-year-old their favorite class and they’ll inevitably blurt out “Driver’s Ed!” The course is one of the obligatory steps on the path to the long-awaited rite of passage—getting a driver’s license. When they finally climb into the driver’s seat, buckle up and hear their driver education instructor say “OK, start the car,” it’s a heady experience—one that comes with a lot of responsibility.

Several school districts use this attention-getting course to teach a different kind of responsibility. They use near-zero emission natural gas-powered Honda Civic GX sedans for their students’ behind-the-wheel time and supplement their course curriculum to teach them how the driving choices they make have an impact on the environment, energy security and the economy.

“The students really pick up on the fact that they can drive a Honda Civic GX 100,000 miles and put less pollutants in the air than spilling a cup of gasoline on the ground,” says Grant Price, Driver Education Department Chair at West Jordan High School in Sandy Utah. Referring to the fact that natural gas is an abundant domestically-produced fuel, Price adds, “We also explain the idea behind energy displacement, where we get our gas from and how we can be more independent. That really resonates with students at that age because they have definite ideas about being independent.”

The high school’s two 2002 Civic GXs are part of Jordan School District’s larger natural gas-powered fleet which includes 30 school buses, half a dozen vans and pick-ups, a forklift and two more 2004 Civic GX sedans at Alta High School. While Jordan has several CNG stations throughout its district, both high schools fuel their CNG Civics onsite using FuelMaker time-fill units. Price says it gives students a chance to see how easy and convenient it is to fuel a CNG vehicle.

At Amphitheater Public Schools in Tucson, AZ, Transportation Director Marc Lappitt has put two 2003 Honda Civic GX sedans in his driver education fleet. “We make the case directly with the students,” says Lappitt. “The class material about alt fuel vehicles is neat but when students get to actually drive a natural gas Honda, it really backs it up.” When the local newspaper interviewed some students, Lappitt says he knew they’ had gotten through to them. “It was was great,” says Lappitt. “Besides saying how much they enjoyed driving the Civic and that they didn’t notice any difference in performance, the students really talked up the the environmental aspects. It’s nice to know that we’re having an impact,” says Lappitt. “Let’s face it, they’re the next generation and the choices they make will have long-term environmental and energy consequences.”

Lappitt also appreciates that his Civics are so easy to maintain. “The maintenance schedule on these cars is a breeze,” he says noting the manufacturers’ recommended 10,000 mile oil change interval and 100,000 tune-up. “That’s savings in labor, parts and materials and one less vehicle tying up a service bay.”

Leaders continued

that KeySpan owns and maintains under a three-year lease before selling back to the district for $1, at which time, the district will own it.

“Working with our local Clean Cities was important to making this project successful,” says Fiumano. “The project was big, complex and involved a lot of players. I’m not sure I would have had the time to put it all together on my own,” he says. “Ron followed up on details and kept us in the loop on how grants were progressing. Now that we’ve accomplished it and I see the results, I’m ready to do it again. Eventually, I hope to have all our buses running on CNG,” he adds.

Another example is in Charlottesville, VA, where Kristel Riddervold, the city’s Environmental Administrator has worked closely with Hampton Roads Clean Cities Coalition Executive Director Nic van Vuuren to make the city’s CNG school bus program a success. The project is an example of the city’s forward-thinking Environmental Sustainability Policy. “Nic helped us round out and expand our environmental program,” says Riddervold. “He brought us expertise that we didn’t have in-house and provided a wealth of information and connections. Most important, he suggested tangible, actionable items that we could move forward on,” she says. Working with Nic, the city was awarded a $180,000 SEP grant it used to purchase two CNG school buses and expand its current CNG fueling capability. The City hopes to add five CNG buses in 2006. Jordan School District has used the $820,000 plus in grants it has received over the years from the state’s energy office, continued on page S-14
Depending on the vehicle desired, NGVs are available either as (1) “off-the-assembly line” vehicles from major manufacturers through their traditional distribution channels, (2) from small volume original-equipment-manufacturers (SVM) who manufacture EPA- and/or CARB-certified natural gas engine retrofit systems, or (3) as repowers with new or remanufactured engines. Retrofits or repowers using certified systems may be installed by the SVM or, more commonly, by a qualified full-service installer (also sometimes referred to as an “integrator”).

For school buses, Blue Bird Bus and Thomas Built Bus both manufacture Type D “transit-style” CNG buses in a variety of seating capacities, all featuring John Deere 8.1L natural gas engines. Retrofits and repowers of existing Type A, B and C buses also are possible using EPA- and/or CARB-certified engines or engine systems from BAF Technologies, Baytech Corporation, Campbell Technologies, Cummins Westport, DRV Energy/HPS, Emission Solutions Inc and John Deere.

Options for school district “white fleet” vehicles are as numerous as the type of vehicles in service. For example, American Honda continues to offer its popular dedicated CNG Honda Civic GX and GM has committed to offering its dedicated and bi-fuel CNG Sierra and Silverado pick-up trucks through 2006 as well as several CNG-ready engine options for SVM retrofits. Certified engines and engine retrofit systems are available from the manufacturers listed above for light-, medium- and heavy-duty chassis using (GM) 4.3L, 5.3L, 5.7L, 6.0L and 8.1L engines, (Ford) 5.4L and 6.8L engines, (Cummins) 5.9L, 8.3L and 8.9L engines and (International) DT466 and 444E engines.

New engine and engine retrofit system certifications are issued on a continuing basis. School fleet managers are advised to contact these manufacturers directly for more information concerning availability of EPA- and/or CARB-certified engines and retrofit systems, applicable model years and installation services.
DOE Clean Cities Program and EPA Clean School Bus USA Program to supplement its ongoing CNG school bus deployment plan. Route Coordinator Craig Rasmussen, a tireless advocate for NGVs is active in the Salt Lake Clean Cities coalition headed by Beverly Miller and extols her work. “Bev has been a tremendous help to us doing all the legwork writing and obtaining grants,” he says. Rasmussen also praises the support from Questar, his local gas company, which maintains the state-owned CNG station at Jordan’s East Bus Depot and operates two other nearby CNG stations used by the district. “The team at Questar has always been there for us,” says Rasmussen, “…especially Jack Elizondo—he’s our NGV ‘go-to’ man.”

In California, a series of progressive state and regional air quality and school bus replacement programs have helped put hundreds of CNG buses into service at dozens of districts. For example, Yuba City USD, located about 40 miles north of Sacramento, secured over $750,000 in grants from the Feather River Air Quality Management District (AQMD) over a seven-year period. They’ve used them to gradually replace eleven older diesel buses with CNG units and build and upgrade their onsite time-fill CNG station. “If you want the money, you have to beat a path to people’s doors and ask for it,” says Charlie Ott, the district’s Transportation Director. Ott echoes others’ advice that districts work with their local Clean Cities Coalition, gas utility and AQMD. He coordinates closely with Jill Egbert, chairperson of the Greater Sacramento Regional Clean Air Coalition and an account supervisor at Pacific Gas and Electric Company (PG&E). “PG&E and the Coalition have been a tremendous resource for me. Jill’s definitely on top of things and gives me the ‘heads up’ on all the alt fuel and clean air funding and deadlines. Tom Alexander [another PG&E NGV expert] took me to other CNG stations, explained my options and even helped out with the local fire code official when we built the station,” says Ott. “We’re fortunate to have them as resources and to have such a great working relationship with the AQMD staff.”

Choose the CNG Fueling Option That Best Fits Your District’s Needs

School districts have a number of off-site and onsite fueling choices and just a many ownership and operations options. Each district has to weigh the pros and cons of all options to find the one that is “best” for their situation.

At Long Beach City School District, for example, the onsite CNG station is owned and maintained by the local utility but the district runs its operation daily. “It’s simple, really. The system monitors itself and lets us know if something isn’t right,” says Sambo. “We just check the compressor oil levels a couple of times per week and drain any moisture that the filter may have picked up. KeySpan takes care of the preventative maintenance. We’ll probably put a bid out for maintenance once the district takes over ownership at the end of the three-year lease arrangement,” he adds.

When Terry Fuglsang, came on board as Director of Transportation for Lodi USD in December 2003, his district’s fifteen CNG buses traveled nearly 45 minutes roundtrip...
to fuel at a PG&E operated station in Stockton, CA. Lodi USD, a 360 square-mile district located about 30 miles south of Sacramento, was finalizing acquisition of land to secure release of the $897,000 in grants awarded by CMAQ and San Joaquin AQMD for a new onsite CNG station.

“The City of Lodi Public Works had a CNG station, but they needed most of its capacity for their own fleet,” says Fuglsang. “They approached us because the transit service was going with CNG and they really wanted back-up capacity. They knew we really needed an onsite station. It was a good fit. Besides, they were aggressively going after the grant money. The one caveat was that AQMD required that we provide public access,” he adds.

Fuglsang hired an independent consultant to design the station. “The whole process was very interesting,” says Fuglsang. “I definitely recommend that you get a good design consultant and a general contractor that has experience with this type of work. I’m very pleased with the way it all turned out.”

Fuglsang sub-meters his electric compressors and collects other data to calculate his fully-loaded cost per gallon, including a “sinking fund” charge to cover projected repairs, maintenance and the station’s eventual replacement. He’s saving about $.70/DGE compared to diesel. Commenting on the new federal fuel excise tax incentive for CNG (see article, page S-3), Fuglsang says “I see some opportunities to promote CNG to other private fleets in the area, maybe even add a small administrative charge to handle the tax collection and reporting… then use the savings to lower the schools transportation expense even further.”

Chuck Ernst, Transportation Director at Grant Joint Union High School District in Sacramento looks forward to breaking ground on his district’s new CNG station in March. His 25 CNG school buses currently fuel at an offsite fast-fill station located at a closed air force base about four miles away. The district leased the CNG station when the former operator opted to close it down and he’s continued to serve the station’s 20+ other area clients. He plans to transfer their accounts to the new combination time-fill fast-fill facility and build the customer base.

“Range is important,” says Ernst. “Once school districts and other businesses see that CNG is available, it will open up their thinking and make it that much more cost beneficial.” Ernst plans to make full use of the new federal motor fuels excise tax incentive. “I think it’s fantastic!” he says. “It puts a whole new spin on what we’re doing. The money CNG saves us on transportation costs goes right back into the classroom for our children’s education…and that’s what we’re all about.”

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