ENERGY VISION NEWS

Planning for a Sustainable Future

Vol II, Issue 1, 2009

Evening Co-Chair, Blythe Danner, host, Tom Fontana, and EV President Joanna Underwood

ENERGY VISION CELEBRATES ITS SECOND ANNIVERSARY

On December 4th Energy Vision hosted a gala reception to celebrate its second anniversary. About 150 people gathered at six o'clock for drinks and organic hors d'oeuvres in the two story library of an historic New York City townhouse that was generously contributed to Energy Vision for this occasion by its owner, movie and television producer Tom Fontana.

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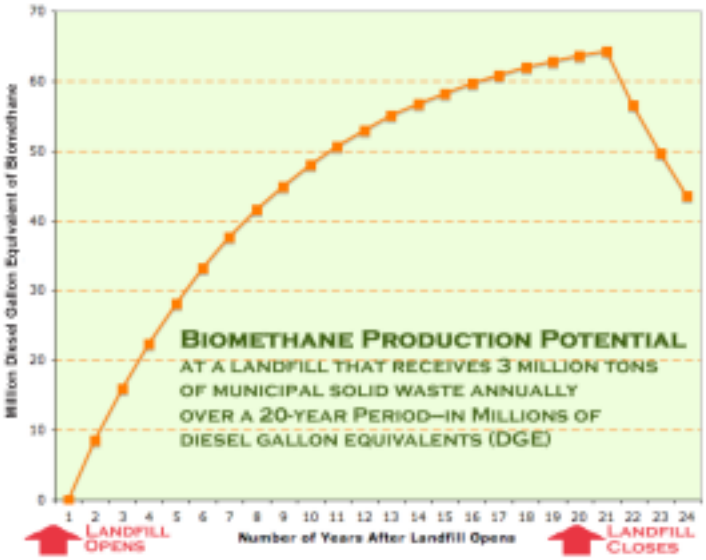
Former Commissioner of Sanitation and EV board member Brendan Sexton, and environmental attorney Michael Gerrard

CLOSING THE LOOP: USING NYC WASTE TO POWER SANITATION TRUCKS

By Gail Richardson, VP for Programs, Energy Vision

At a time of economic crisis, New York City has the chance to take advantage of a valuable energy resource that, although close at hand, is largely thrown away, and at great cost. NYC pays private waste management companies about $325 million to transport and bury over 3 million tons of household garbage per year at distant landfills. There, the biogas expelled by this accumulating waste is a large enough potential source of biomethane — "renewable natural gas"— to fuel not only the City's entire fleet of refuse and recycling trucks, 2400 in all, but many thousands of additional vehicles as well. Energy Vision's conclusion is based on the model shown in the line graph to the right.



Step #1: Turn Garbage into Vehicle Fuel

The line graph, which is a simplified picture of reality, traces the rising curve of biomethane production as 3 million tons of NYC residential waste per year — the portion containing organics — are deposited in one landfill over a 20-year period; and the fall-off of production after landfill closure. As the waste pile grows, biogases are collected in greater quantities, and more fuel is produced. During Year 3, emissions from 6 million tons of waste in place yield more than 15 million diesel gallon equivalents (DGEs) of fuel. During Year 6, with 15 million tons of waste in place, the biomethane yield doubles to more than 33 million DGEs. At peak, biomethane production reaches nearly 65 million DGEs per year. Even during the fourth year after landfill closure, biomethane production, although on the wane, tops 40 million DGEs, and does not cease entirely for more than another decade.

Step #2: Use Biomethane to Fuel Refuse Trucks — and More

The bar graph on page 3 shows at intervals how many "average NYC refuse trucks" could run on the biomethane potentially produced from NYC's residential garbage if NYC arranged for biogases emitted from its landfilled waste to be cleaned up and piped back to town. By Year 3, the Department of Sanitation (DSNY) could run its entire refuse and recycling fleet on its residents' own "natural resource." Then, for more than 20 years, until landfill closure and beyond, there

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A LETTER FROM THE PRESIDENT

A New Year and a new chance for cities to shift to alternative fuels for environmental progress, green jobs and saving money.

Joanna D. Underwood

As 2009 begins, environmentalists who have long fought for "sustainable" energy and fuels – that are pollution-free, carbon-free, and made from renewable sources – as well as business innovators who have been developing technologies for a sustainable future, all have reason to celebrate.

First, our national leadership finally realizes that the US must advance this fuels and energy revolution to improve our country's health, to safeguard its national security and to reduce its contribution to global warming. Second, our leaders plan to invest tens of billions of dollars in projects aimed at making it happen with hundreds of millions of those dollars going to alternative vehicle fuel initiatives. And finally, this new administration recognizes that such a revolution cannot come from Washington alone but must be embraced by Americans in municipalities, cities, and businesses across the country – young and old alike – who will work to make this energy revolution happen "on the ground" where it counts.

Energy Vision, entering its third year, has devoted its initial efforts to educating Americans about one viable path in transportation away from reliance on petroleum-based fuel that cities, municipalities and businesses can embrace. This path can be taken by public or private sector fleets that operate the 13 million heavy-duty refuse and delivery trucks, transit and school buses, shuttles and vans, forklifts, 18 wheel transport vehicles, and more that are now powered by petroleum-based diesel fuel. With the right partners and support, these diesel vehicles can be traded in for or converted to natural gas models.

Since diesel - powered vehicles consume 20% of all transportation fuel, a concerted effort by cities and communities to promote this shift - a commercial option today - can significantly reduce US reliance on foreign oil with its unpredictable pricing, (natural gas is domestically plentiful and the US Department of Energy forecasts an 118 year supply in this country). It can also improve air quality and reduce greenhouse gases. These investments also pave the way for use of even better gas fuels: biomethane, as clean as natural gas but made from renewable organic sources, hythane, a combination of natural gas and hydrogen, and hydrogen.

At the year end celebration of EV's second anniversary in December (see the article on pages 1,4,5) we were particularly proud of the impact that our outreach in New York, New Jersey and Pennsylvania had in putting hundreds of new clean, quiet, and economical natural gas refuse and recycling trucks on the region's roadways. (see map) Through conferences and speeches,

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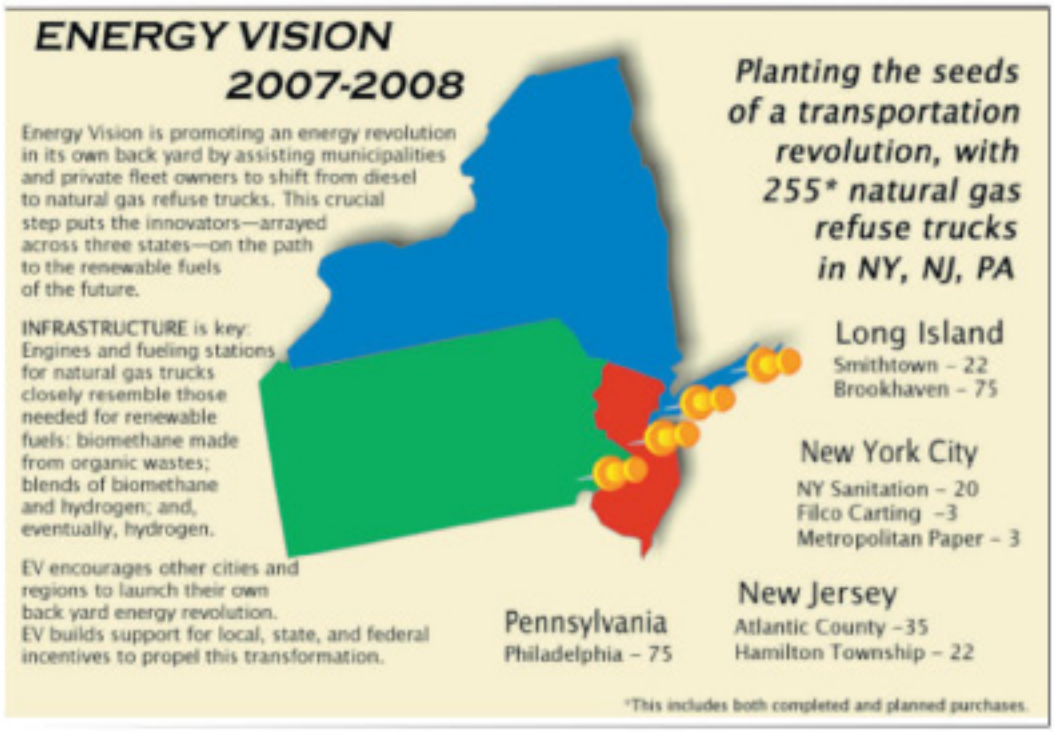
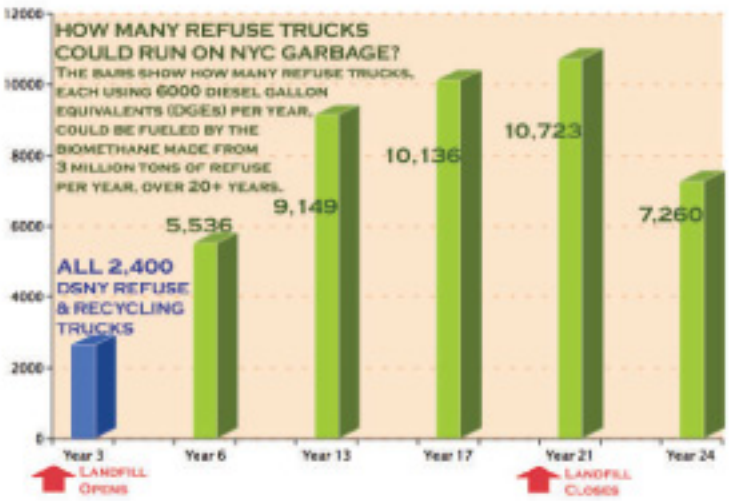
As EV celebrates its second anniversary we are proud that our outreach in New York, New Jersey and Pennsylvania has helped put hundreds of new natural gas refuse and recycling trucks on the region's roadways.



Close the Loop continued from Page 1

would be vast quantities of "left over" biomethane that the City could offer to other urban fleets to shift to "renewable natural gas": street sweepers and other DSNY vehicles; taxis, limos, ambulettes; buses and delivery vans. In fact, the quantities of biomethane owned by the City would be large enough to employ as an incentive for private carters who operate more than 3,600 mostly old and dirty diesel trucks, to go green with the only commercial fuel that is pollution-free, greenhouse gas neutral or negative, and made from renewable organic resources.



The Win-Win-Win-Win Fuel: Health, Climate Protection, Economy, Oil Independence

In 2008, Energy Vision documented the air quality gains for NYC metro area residents of converting diesel trucks to natural gas: the 25-30% reductions in carbon dioxide emissions and the minimizing of particulate and nitrogen oxide pollution that, as numerous studies of diesel emissions have shown, are related to the high incidence of cardiovascular disease, asthma, and cancer in urban areas. Biomethane, which is chemically equivalent to natural gas in containing only one carbon atom for every four hydrogen atoms, achieves all the benefits of natural gas, and then smartly outshines its fossil "twin." Its production and use recycles carbon that was recently removed from the atmosphere (instead of unearthing fossilized carbon) and also prevents the powerful greenhouse gas methane from escaping the rotting organics. Thus, the entire cycle of making and burning waste-based biomethane fuel is actually GHG-negative: It removes more GHG from the atmosphere than it contributes. Biomethane can also be a very low-cost fuel when made from an essentially free source — wastes. In Norway, for example, when Oslo transit buses switch from diesel to biomethane later this year, they will slash their fuel costs by 60%, after correcting for the cost of the electric power that drives the biomethane-production process at both of the city's sewage treatment plants.

In New York City, a business plan spelling out how the City could reap benefits from its "renewable gas fields" would necessarily take into account current high costs of waste management, expenditures that are offset at present by no income streams except taxpayer dollars. Such a plan would include consideration of opportunities for selling excess biomethane, beyond that used in the transportation sector, in nearby natural gas markets, for example, to towns on Long Island.

By taking steps to develop its own renewable gas resource, the City could ensure a significant measure of independence from foreign oil and security for vital urban services. The zig-zags of the petroleum markets in 2008 underscore the dangerous dependence of New Yorkers on oil imports and the need to break the oil habit.

Because biomethane can move right into the "shoes" of natural gas infrastructure and vehicles, the more numerous the vehicles that use natural gas the faster the biomethane markets can grow.

Tapping into an Urban Natural Resource

New York City need not invent a new wheel to tap into its biomethane potential. Commercial biogas cleanup technology already exists in the US and Europe.

Once produced from biogas, biomethane can be pumped through the same pipelines, dispensed at the same fueling stations, and burned in the same truck engines that are already on the market to support the growing use of natural gas in heavy duty refuse and bus fleets in New York City and elsewhere in the US and Europe. No scientific breakthroughs are required. Nothing new need be invented to take advantage of this very green fuel, which is already on the market in a number of European cities. Because biomethane can move right into the "shoes" of natural gas infrastructure and vehicles, the more numerous the vehicles that use natural gas the faster the biomethane markets can grow.

Hauling NYC garbage hundreds of miles away to produce vehicle fuel for city fleets may not sound especially efficient — and in an ideal world it would not be. However, given the sprawling waste-management system in place right now, it would be far better for the City to realize benefits from its residential garbage than to turn it over for free to be "mined" by others as the scramble for energy resources intensifies in the US and abroad.

City agencies could also look into other sources of biomethane closer to home. For example, the site of the former Fresh Kills Landfill, which closed a decade ago with about 150 million tons of municipal waste in place,

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Close the Loop continued from Page 3

is still rich with biogas. Some of these emissions are being cleaned up by National Grid, injected into a pipeline, and delivered to thousands of Staten Island residents for home heating. What about the rest of the biogas? How much potential fuel might the City be wasting by flaring it away? A study is needed to find out.

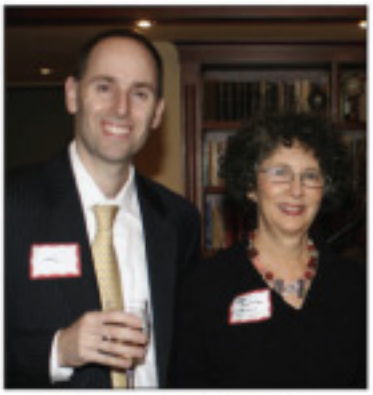
Restaurant food wastes and fresh market wastes, which are currently shipped to landfills by private waste management companies, are another potentially rich source of biomethane fuel. These wastes could be separated from the rest of the commercial waste stream and processed closer to home, using small-scale digestion and biogas cleanup plants like those whose numbers are rapidly growing in European towns and cities.

In short, New York City, as the owner of the largest residential waste stream in the country, is in a position to take the lead in working with private sector partners to ensure that its garbage resource is recycled into valuable biomethane vehicle fuel for urban fleets — to help cleanse the air of health-damaging pollutants, to make headway in reducing greenhouse gases, to save taxpayer dollars, and to take a significant step to reduce the dependency of indispensable service fleets on imported petroleum.

Energy Vision plans to continue its research and to collaborate with the DSNY, other public agencies, and private companies to design biomethane initiatives that could help shape the leadership role in urban sustainability that New York City is committed to playing.

Second anniversary event..continued from Page 1

A mezzanine view of the EV's December 4th reception



Evening Co-Chair Joan C. Pearlman with Neil Zeller of "Limo Green"

EV award winner Robert B. Catell, exec chairman of National Grid US, Joanna Underwood, and Rocco DiRico of the NYC Dept. of Sanitation

Guests were welcomed by evening Co-Chair Blythe Danner and EV President, Joanna Underwood before going to place their bids on more than thirty tempting items in our "green products auction" collected by EV Board member, Joan Pearlman, and her committee.

These popular offerings included items donated by "At West End"; dinner for two at the Savoy; a bracelet and earrings made from reused cufflinks by New England jewelry designer Laura Bergeron; a spring weekend in a solar heated country home in Rhinebeck, NY; a trip to one of the NY area airports in a "Green Limo" black car powered by natural gas; a case of fine wine from the Guido Gaulandi winery in Tuscany, where all practices and the wines are organic; a blouse worn by Blythe Danner in the movie *Meet the Fockers;* and a signed print by artist Saul Lambert from his leaf series.

Joanna Underwood described the highlights of Energy Vision's first two years, especially the real impact this work has had in bringing the use of "green garbage trucks" to the East Coast. Dozens are now operating in NYC and on Long Island, and they will soon be arriving in Philadelphia. "Every one rolling onto our streets," she said, "means healthier air, quieter communities and reduced dependence on foreign oil for one the most important service fleets in urban America."

Phil Shabecoff, EV board member, former lead environmental writer for The New York Times, and author of several books on the environmental movement was the evening's keynote speaker. He discussed the catastrophic effects that toxic pollutants in the atmosphere from many sources including cars and trucks are having on our children, reported in his most recently released book, *Poison Profits*, co-authored by Phil and his wife Alice Shabecoff. (For the text of his remarks see highlight on the following page.)

Next Blythe Danner presented the first two "Energy Vision" awards. The first went to Robert B. Catell, formerly CEO of Keyspan Energy and its predecessor Brooklyn Gas Company, and now Executive Chairman of National Grid focused on Massachusetts, New Hampshire, Rhode Island and New York, and Deputy Chairman of National Grid based in the United Kingdom. Catell was an

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Evening Co-Chair, Cythnia Adler, announcing the green auction

Artists Sam Wiener and Lynne Mayocole

Dr. Noel J. Brown, President and CEO, Friends of the United Nations

Designer Altyn Chiang, and EV's Jennifer Fortin

industry leader in recognizing the value of natural gas as a vehicle fuel and how use of this fuel might lead to the hydrogen era.

The second award went to Ed Begley, Jr. a pioneer in adopting a "green 'lifestyle." Through his personal example since the l970s, his TV show "Living with Ed," his books on sustainable living - most recently *Ed Begley, Jr. Living Green (Voices for Green Choices)* - and his line of green cleaning products "Begley's Best," he has inspired millions of Americans to live more gently on the earth. Ed was unable to attend the reception as he was shooting a film, but he accepted his award enthusiastically via a DVD which was shown on a large screen. (You can see Ed's acceptance speech and the list of all the great green products in EV's auction on our website: *(www.energy-vision.org)*

For all who missed this year's event, do tune in for 2009!

The Bryn Mawr College contingent with Co-Chair Blythe Danner: (l to r) Dr. Bonnie Cunningham, Camille Jones, Joanna Underwood, Jessica Amelar, Nancy Kirk, Jessica Kirk, and in front Alison Baker, and Taylor Stacey

The Honorable Virginia Stern, Dr. Mark Stern, and Dr. Lucy R. Waletzky

PHILIP SHABECOFF DESCRIBES THE EFFECT OF TOXIC CHEMICALS IN THE ENVIRONMENT ON OUR CHILDREN'S HEALTH

Although there was strong evidence that climate change was going to be a serious problem for the world when I began writing about it for The Times in the 1970s, it has continued to be ignored by the public and policy makers. Unfortunately future generations will pay the price for that neglect.

Another serious problem that is also still ignored and that constitutes a threat to human welfare and, indeed, the long term viability of life on earth is the toxification of the environment by chemicals, heavy metals and nuclear contamination. The book that my wife, Alice, and I have written to address this problem is called *Poisoned Profits: The Toxic Assault on Our Children.*

We focused on children because their biological defenses are not yet developed, which makes them particularly vulnerable to toxics in the environment,

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Shabecoff's remarks continued from Page 5

while embryos and fetuses are extremely vulnerable even to minute exposures to toxics. While children live in the same world as their parents, they occupy a different environment because pound for pound they drink more water, eat more food, breathe more air, and live closer to the ground where many poisons accumulate.

Americans are having increasing difficulty conceiving, and one of every two pregnancies in this country either fails to come to term or produces a less than healthy child. One of every three American children now suffers from some form of chronic illness that can be traced to environmental exposures, including childhood cancer, once a medical rarity, asthma, birth defects and a range

of neurological illnesses from ADHD and learning disabilities to autism and bipolar disorders.

This sharp increase in chronic childhood illness coincides with a marked increase in the number, quantity and variety of synthetic toxic substances. Today there are over 80,000 industrial chemicals used commercially in this country, most of which have not been tested for their effect on human health much less on the health of children.

The United States now produces or imports some 15 trillion pounds of chemicals each year that make their way into our air, our water, our soil, into our homes and consumer products, into our schools, playgrounds and lawns. Our children may be most susceptible, but we are all at risk.

In gathering evidence for our book, one of the first places we visited was the North Harlem Washington Heights area in Manhattan, where 25% of all children suffer from asthma, and there is abundant evidence that air pollution plays a significant role in triggering attacks and perhaps in initiating the disease itself. Northern Manhattan has severe pollution from the city bus depots concentrated in the neighborhood, from the thousands of cars that come into the city each day across the George Washington Bridge, and from commercial and commuter traffic including the waste disposal trucks that service the area.

That is why Energy Vision is doing the Lord's work in pushing for a way to reduce the toxic pollution from automotive vehicles in New York and other cities. We should all be acting as parents and grandparents, as citizens, as consumers and as voters to remove this threat to our children.

EV 2008 DOOR PRIZE - 3 MONTHS USE OF THE HONDA CIVIC GX NGV

Barry Carr, representing Honda, presented the prize to the winners: two directors of the Children's Environmental Literacy Foundation. They will receive free fuel contributed by Clean Energy. This Honda [see EV News vol.1 #3] has been rated:

Barry Carr and the Honda Civic GX NGV

- the "cleanest combustion car in the world" by US Environmental Protection Agency
- "Greenest Vehicle" of 2009 by the ACEEE (American Council for an Energy Efficient Economy)
- Motor Trend's car of the year in 2006
- one of the safest cars in America
- a car that does not just reduce the use of petroleum but eliminates it

(L) Patti Bressman, Programming Director, and (R) Katie Ginsberg, Founder and Executive Director of CELF.

President's Letter continued from Page 2

we also took our message of transition across the country, and into Canada and Mexico.

But even as we continue to promote this first step toward sustainable transportation, Energy Vision has been exploring tomorrow's "biomethane potential." For cities and communities, producing biomethane can involve taking one of the most expensive municipal waste streams and, like Rapunzel in the fairy tale, turning this "straw into gold." The solid (putrescible) waste stream generated by residents of every jurisdiction has long been a costly burden.

However, it has become clear that this waste stream is a valuable energy resource. It is rich in the organic matter that generates "biogases" that, when captured and refined, can be made into biomethane. Investing now in natural gas vehicles and refueling infrastructure will enable heavy-duty natural gas-powered fleets to make a seamless transition to biomethane when production facilities are readied.

Hence, as EV proceeds to advise cities and communities on how to pursue converting their fleets to natural gas, we will encourage officials to launch a simultaneous exploration of their local biomethane potential. First, they need to inventory local organic feedstocks from which biomethane might be produced. In addition to landfill and sewage treatment plant wastes, it can be made from non-food energy crops, agricultural waste piles and forest and lumberyard residues (with new gasification technologies). Next they can begin identifying what production technology may be best for their region. While biomethane facilities are new to the US (see EV News Vol. 1, issue #2) a variety of production technologies now operate in Sweden, Germany, France and Spain, and many EU countries have set goals for meeting 20% of their transportation needs with biofuels including biomethane by 2020.

As EV proceeds to advise cities and communities on how to pursue converting their fleets to natural gas, we will encourage officials to launch a simultaneous exploration of their local biomethane potential.

The lead article in this issue of EV News illustrates, using New York City as our case study, the significant biomethane potential that can exist in cities. As the 3 million tons of residential wastes that New York exports (the bulk to landfills) accumulates every year, these wastes could generate enough fuel to replace the more than 14 million gallons of high carbon diesel fuel that are used each year to power most of the NYC Department of Sanitation's 2400 trucks. Tens of millions of additional gallon equivalents would be available to power other heavy-duty truck and bus, shuttle and van fleets. And this fuel, made from the City's own wastes, would likely be the best bargain in town! This first analysis of biomethane potential in New York City was conducted by Gail Richardson, Energy Vision's new Vice President of Programs, whom we were pleased to welcome to EV's team as of January 1st. (See her profile below)

Cities and communities in the US have the opportunity to encourage their heavy duty fleets to participate in the energy revolution, now considered one of the highest national priorities, to create the sustainable future we can proudly leave to future generations. Tough as economic conditions are here and worldwide, the national commitment to keeping long term energy, environmental, health and education goals in sight should inspire the collaboration of local public and private sector leaders on whose initiatives success depends. Contact EV for further guidance, for information on government programs, or to discuss ways in which you can help advance our municipal workshops, research and outreach.

GAIL RICHARDSON JOINS EV AS VICE PRESIDENT FOR PROGRAMS

On January 1, Gail Richardson joined Energy Vision as Vice President for Programs. She will work closely with EV President Joanna Underwood, with a special focus on program development and implementation.

Richardson first worked with Underwood at INFORM in the 1980s, where she directed a prize-winning irrigation-water conservation program that demonstrated 30 to 50% water reductions and significant yield increases on farm fields in the western US, through the use of an inexpensive soil-moisture monitoring device.

Subsequently, also in the nonprofit sector, Richardson built two international programs that identified excellent education models for use in the US. At the French American Foundation, she built the Early Childhood Program, which has broadly influenced childcare and health care policies and practices in several states and at the federal level. As executive director of Best Practices in Education she created several projects to introduce curriculum models from Russia and Eastern Europe to strengthen mathematics education in the US.

Richardson has extensive grass roots experience. While serving as Program Director of the Child Care Action Campaign, a national advocacy organization, she assisted community leaders and state officials to

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institute policies and funding mechanisms to improve early childhood education. In Brooklyn, where she lives, she formerly led a block association, spearheaded the development of a neighborhood garden, edited a community newspaper, and founded and directed a Brooklyn-based theater company.

Richardson graduated summa cum laude in English from Cornell University, earned a master's in law and diplomacy from the Fletcher School, and received her doctorate from the University of Wisconsin at Madison. She has taught at The City College of New York and the American University in Rome, Italy. Her publications include *Winning with Water* for INFORM and *A Welcome for Every Child* for the French American Foundation.

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EV is a national non-profit organization that analyzes and promotes ways to make a swift transition to pollution-free renewable energy sources and to the clean, petroleum-free transportation fuels of the future.

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