

Case Studies of the Greening of Urban Transit:

San Francisco's Muni

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In many ways the city of San Francisco has been a leader in the conversion to clean energy for its vehicles. By early 2005 the city claimed to have over 600 alternative fuel vehicles in its city fleet, or about 15% of its entire fleet. The alternative fuels and power systems included natural gas, hybrid electric, electric, and even two hydrogen fuel cell vehicles. A city ordinance passed in 1999 mandated that all new passenger vehicles and light trucks owned by the city had to be ultra-low or zero emissions. Likewise, the city's transit agency, the San Francisco Municipal Railway (MUNI), is said to be over half zero-emission vehicles, mostly due to electric streetcars and trolley buses. Notwithstanding the good record overall, the issue of old diesel buses became quite contentious during the early 2000s.¹

Pockets of the San Francisco Bay Area have a serious problem with smog, and although residents of the city like to think their air is clean because coastal winds blow the pollution down over to the East or South Bay, the City and County of San Francisco has ranked poorly on other air quality measures. In a 2004 study by the American Lung Association the county received an "F" grade on particle pollution. Studies have linked particle air pollution with increased risk for lung and cardiovascular diseases, and the major sources of particle air pollution are power plants, wood burning, and diesel emissions. A generally cited statistic is that for air pollution caused by motor vehicles, diesel emissions consist of about two-thirds of all particulate emissions and about a quarter of all nitrous oxide (NOx) emissions. Diesel emissions also contain about forty carcinogens as recognized by the State of California and contribute 70% of the toxic air contaminants for cancer in California. Increasingly, public health studies have linked diesel emissions from buses and trucks to lung disease, especially asthma in children, as well as a variety of other diseases, including cancer, pneumonia, and heart disease. Although aggregate figures suggest that trucks may generate the bulk of diesel-related pollution, individuals experience variable rates of exposure, and residents living near diesel bus lines or using diesel buses frequently would have cause for concern.²

Given the concern with air quality in the Bay Area, the high level of environmental consciousness, the city's good record overall on environmental issues, and the general trend toward the greening of bus fleets across the country, one might expect that MUNI would be a leader in the conversion of its diesel buses, which comprise about half of its fleet. In many ways the expectation is born out, and MUNI has a plan to shift its entire transit fleet to zero-emissions electric vehicles by 2020. However, MUNI also had a substantial number of relatively old, very polluting diesel buses, including some buses built before 1991, the year bus manufacturers made significant changes to reduce emissions. A controversy erupted when various health and environmental organizations called upon MUNI to "Dump Diesel" by converting to compressed natural gas (CNG).

The differing perspectives of the environmental coalition and MUNI on the controversy can be of general interest to students and policymakers who are looking at community involvement in decision-making over the greening of transit fleets.

This case study is based on various sources of information, and it was more difficult to write than others because of the divergent perspectives. First, I tried to gain an interview with representatives of MUNI on the conversion of their fleet, but the representative I contacted did not return repeated phone calls and emails prior to the trip to California in March 2005. I was able to obtain an interview with Linda Weiner, who is the Director of Communications and Air Quality Advocacy of the American Lung Association of San Francisco and San Mateo Counties and the Vice President of the American Social Marketing Association. Drawing on her many years of experience in the civil rights movement, anti-Viet Nam War movement, and as the first VISTA volunteer in Pennsylvania, as well as her work in public health communications at Stanford University and other organizations, Weiner was able to play a leadership role in the coalition to get MUNI to convert its diesel fleet. The coalition included the chapter of the American Lung Association, the San Francisco-based environmental foundation Our Children's Earth, the Union of Concerned Scientists, the Sierra Club, and the Natural Resources Defense Council, with Jon Goliglier serving as the spokesperson for the Dump Diesel campaign.

I also interviewed Tom Ammiano, who is currently a supervisor (the equivalent of city council member) in the city of San Francisco, where he has served since 1994 and has also served as president of the board of supervisors. Ammiano worked closely with the coalition and has worked with MUNI over the years. He provided some additional insight into the controversy and especially into the issues of equity and sustainability.

After returning from my trip, I received an email from a MUNI spokesperson suggesting that I contact Joe Speaks, who is the Special Projects Coordinator of the Senior Administrative Analysis Department. Speaks is an environmentalist and has worked for the greening of the fleet within MUNI. Although he joined MUNI after the controversy had been underway for some time, he subsequently worked as a liaison between the environmentalist coalition and the transit agency. As a result of contact with him, the case study was revised to have two sections. The perspectives were different enough that it made sense to present them in two different sections. Together they provide some instructive background on how transit agencies and community groups can come into conflict, and also how technology design plays a role in the conflicts and in their resolution.

An Advocate's Perspective

According to Ms. Weiner, the controversy began when MUNI was considering a purchase of new buses: "The bus contract was coming up for a purchase, and MUNI made clear that they were interested in purchasing diesel buses. Even though we were technology-neutral, our research indicated that CNG was the cleanest technology for transit buses at the time, used in many other cities in California, the United States, and internationally. A CNG bus came to San Francisco, and even though MUNI kept saying that it couldn't go up the hills (because of a heavier fuel load), it did just fine. Nonetheless, we told MUNI that even if they weren't satisfied with the uphill drive, there

were flat routes where the buses could be used. They were supposed to implement a pilot test for CNG, but it was delayed for four years.”

It became clear to the coalition that MUNI did not want to use CNG. In a press statement, MUNI spokeswoman Maggie Lynch stated that the CNG buses break down more often than diesel buses. However, according to the environmentalist coalition, that was a problem with new buses in general, and problems with breakdowns could also be due to lack of appropriate training for mechanics. The environmentalists also claimed that the drivers and mechanics were resistant to change. Cost was also a factor in MUNI's resistance to purchasing CNG buses, and the agency was facing budget problems. Furthermore, during the late 1990s and early 2000s the agency was also facing criticism from other corners. For example, in 1999 voters approved Proposition E, which reorganized MUNI under the new Metropolitan Transit Agency. The new agency put MUNI and the city's Department of Parking and Transit under one roof, and it created an independent transit agency, with the board of directors appointed by the mayor. The reform gave more room to the director of MUNI to hire middle managers outside civil service, but it also allowed the supervising board to institute performance standards to assess the agency. Another goal of the reform was to stabilize the budget for the agency. However, MUNI's budget problems continued up to the time this study was written. In March 2005 MUNI proposed raising the fare by 25 cents, an increase that followed on a similar 25 cent rate hike a year earlier. The proposed rate hike was generating a new wave of controversy.³

Eventually the coalition of environmental organizations and the Board of Supervisors, led by Supervisor Ammiano, worked out an 11-point compromise with MUNI. One issue was to have a more staggered procurement process. Ammiano noted that a major problem with MUNI was its antiquated procurement system: “They wait for years until the stock is really in the toilet, then they order everything at once. Bus ordering is really difficult, because there are people waiting in line.” The agreement reached between MUNI and the Supervisors/environmental coalition was that instead of buying 200-300 new diesel buses, MUNI would buy 100 new diesel buses immediately and pilot the CNG buses, then later buy either CNG buses or newer diesel buses with particulate matter traps. After some delays, MUNI finally did pilot the CNG buses, but the agency concluded that there was little difference in emissions between the CNG buses and the new diesel buses. The coalition thought that MUNI's methodology of evaluation was flawed. “In the meantime,” Weiner continued, “the local air district and the state had off-set money available for transit districts to purchase clean fueled buses. In addition, the natural gas companies came to hearings and said that they would build an infrastructure if there was a large enough contract. But MUNI missed every deadline. It was clear that they did not want to do CNG. So we went to the Board of Supervisors, and they passed a resolution that MUNI would buy no more diesel buses.”

Meanwhile, MUNI had not yet retired the older, pre-1991 buses that were quite dirty and of great concern from a health and environmental perspective. The environmental coalition could not get a clear answer from MUNI about how many of the older diesel buses were in service. As Weiner continued, “So with a very small grant for the Dump Diesel campaign, Jon Golinger (the campaign's coordinator) did a small study: he got up every morning at 5 o'clock, went to the bus yard, counted the buses, and found out that one third of their fleet was old diesel. He developed little fast pass cards that said,

‘Toxic pass: this bus is dangerous to your health.’ On the back it had the statistics on asthma, lung cancer, etc. He and the people at Our Children’s Earth took photos of the sooty buses and made posters the size of a Buick. He then contacted an advertising agency to have the posters placed on bus shelters all around the city, but the head of the bus shelters alerted the director of MUNI, who said no.” When MUNI refused to let the coalition put up the posters in paid advertising space, the coalition cried foul and pointed to the first amendment. The story soon appeared in the papers and drew more attention to the problem of the old diesel buses.

The next step was a voter ballot initiative, Proposition I of 2004, which required MUNI to replace all of its pre-1991 diesel buses with cleaner buses. The only opposition to the campaign came from Rescue MUNI (a small organization of MUNI supporters), the Chamber of Commerce, and the *San Francisco Chronicle*. During the kick-off new conference, in order to visualize the pollution from diesel, two members of the Board of Supervisors emptied a three-gallon bucket of soot, which is approximately the amount of particulate matter that one old diesel bus emits in one day. The San Francisco Medical Society also supported the initiative as a public health issue.⁴

Since the passage of the proposition, the controversy has continued. The California Air Resources Board, which sets air standards for the state, mandated that all cities phase out high polluting old diesel buses by 2006, and it approved new hybrid-electric diesel buses as meeting the new standards. At the time the original campaign began, in 1999-2000, CNG was a viable clean energy alternative for buses. However, during the following half decade improvements in diesel technology—including particulate matter traps, ultra-low sulfur fuel, and hybrid engine designs—had solved many of the emissions issues with diesel.

In September 2004 MUNI announced that it would purchase two lots of 56 hybrid-electric diesel buses to replace its old diesel buses, with delivery of most of the buses planned for 2006 and 2007. The agency also announced a plan to have a completely zero emissions transit system by 2020, based on an all electric fleet. The choice of hybrid-electric diesel buses was acceptable to the environmental and health coalition because the new buses have very low emissions, so to some extent the new technology has allowed a resolution of the conflict.

However, the coalition continued to express reservations about the time schedule and the continued delays. In February 2005 the issue was again in the news, when MUNI failed to meet the first of three deadlines for phasing out the old buses. Furthermore, MUNI had agreed to install particulate matter traps on its post-1991 buses, but there were delays in installing the traps as well. Weiner noted that the traps were in great demand and the company was not able to keep up with the demand at the time. “It’s now three years past when we made the 11-point agreement, and only half the buses have the traps on them.”⁵

A MUNI Perspective

NOTE: Ms. Weiner offered some comments on Mr. Speaks’ version, and Mr. Speaks suggested that the final draft be left in a form that showed her comments. Her comments appear in italics.

According to Mr. Speaks, the controversy resulted from misunderstandings on both sides, even though they shared a common goal of reducing emissions from diesel buses: “The MUNI fleet engineering staff was asked by management to replace the oldest and most polluting diesel buses as quickly as possible and within realistic technological and financial constraints. Advocates of CNG technology did not share MUNI’s engineering opinion that CNG was an inferior bus technology, nor did they understand the financial and operational obstacles that would need to be overcome if a CNG program were to be attempted.” (*Comment from Ms. Weiner: We understood well; we just disagreed, especially since many other cities had managed to overcome a similar situation. The discussions from 2000 to 2002 occurred before Joe was on board.*)

Speaks went on to ask: “Should MUNI staff have done a better job of keeping community stakeholders better informed so that they would have understood why we thought we were making the best choices for clean air? San Francisco has a wonderful tradition of strong community involvement and a willingness to try new things: MUNI shouldn’t have expected that advocates would, or should, have just sat back and let staff maintain what appeared to be the status quo of more diesel buses.

“In the end dirty buses continued to be on the streets when both sides thought they were moving to get them off as fast as possible. What they couldn’t see is that they were blocking each other from doing anything—that’s what I was able to see from my unique vantage point as someone standing ‘on both sides.’” (*Comment from Weiner: Joe always, and understandably, represented MUNI’s position. That’s what he is paid to do, that’s the way he presented himself, and that’s the way he was perceived. In his personal life, he does walk the talk: he rides a bicycle and takes public transit.*)

From his perspective, one of the key problems in the controversy was a lack of technical expertise from the environmental coalition, but MUNI also failed to provide the education and communication to bridge the gap in perceptions. As Speaks explained, “The environmental community, in this case, lacked the technical expertise and the dedicated resources to really understand the transit agency’s operating realities, funding requirements, and technology. Conversely, MUNI was not proactive enough in providing staff to help the advocates grow to understand these realities. This disconnect continued to erode understanding and trust and ended up costing the citizens a lot of time, money, and missed opportunities to realize emission gains.” (*Comment from Weiner: This is rather puzzling, to say the least. We had a number of technical experts in our group. Aside from the experts from PG&E—which we understand was somewhat of a conflict of interest since they sold CNG—we had a diesel techie from NRDC and some folks from the Dept. of the Environment and the Public Health Division of the City, who were not allowed to take a political position, but did offer technical advice. Again, I believe this was before Joe was there.*)

From a MUNI perspective, the environmental coalition’s focus on CNG led to the consequence of blocking MUNI from purchasing cleaner diesel buses that would have resulted in lower emissions. As Speaks explained, “MUNI had prior organizational and management problems that stalled fleet replacement plans in the early 1990s and resulted in an aging fleet. (*Comment from Weiner: Agreed, MUNI has had a history of mismanagement, which contributed to the aging fleet.*) Upon the arrival of a new management team, immediate steps were taken to initiate bus turnover and by new clean-diesel buses before the California Air Resources Board deadlines would no longer allow

the purchase of these proven, and much-improved buses. While MUNI was successful in replacing most of the buses with newer, ‘clean,’ diesel buses, the final purchases were blocked by a coalition of CNG advocates including both environmental groups and Pacific Gas and Electric, the natural gas fuel provider. MUNI had minimal experience with CNG, but lots of technical awareness and contact with other jurisdictions running CNG. While the evidence was flimsy at the time (*Comment from Weiner: The evidence was ‘not flimsy’—there was much information at the time to suggest CNG was the best alternative*), MUNI’s resolve to resist a conversion to CNG was strong. History has proven MUNI’s staff decision to be right: CNG has fallen out of favor and is being abandoned even by transit agencies that have already sunk huge investments into CNG infrastructure.” (*Comment from Weiner: It’s true that some problems have developed with CNG, and some agencies have opted out—but others are still using the technology with little problem. The scientist from the National Resources Defense Council was the techie on the group and knows much more than I about CNG/diesel transit. I would also add that the new diesel hybrids—as with any new technology—are still working out its problems. It has been noted—I think in Seattle—that, even though the hybrids were touted to be very fuel efficient there is little, if any, fuel efficiency gain, although they are good at reducing emissions.*)

He also notes that the offers from the private sector to cost-share by providing CNG infrastructure for “free” had some strings attached: “We met with companies claiming to provide the infrastructure for ‘free.’ This was not a real offer. In Washington, D.C., where the transit agency that choose to convert to CNG, the agency pursued these ‘free’ infrastructure offers but chose instead to pay for the infrastructure themselves because the contract terms of the ‘free’ deals were so bad in the long run. Note that Washington abandoned its CNG program just a few years after spending millions of dollars on infrastructure due to poor performance, higher costs, and minimal emissions gains.”

According to Speaks, MUNI did not delay its tests of CNG, and it conducted the tests fairly: (*Comment from Weiner: Joe is talking about the CNG test that took place a few years ago, and that was timely. What we are referring to—which was before his time—was the fact that in 1999 a pilot study for CNG was approved, and it did not take place until 2003; that is the time lag. MUNI publicly admitted this at a hearing, and has no explanation for the delay.*) “There was no delay, though the test took time. It’s actually strange that we had to do first-hand tests to verify facts that were already well-documented in the industry. We tried to do good science under the circumstances. Then when we reached the same conclusions as our previous assertions that CNG had problems, we were criticized for ‘cooking the books’ and being resistant to change.” (*Comment from Weiner: I don’t believe we ever said they “cooked the books.” We just disagreed with their methodology.*)

From MUNI’s perspective, the Board of Supervisors’ decision to block the purchase of new diesel buses resulted in higher levels of emissions for the city, because the effect was that the old, dirty buses will remain on the streets for as much as five years longer than in the original replacement plan: “Had the original bus replacement plan not been blocked at the Board of Supervisors, all old buses would have been retired in mid 2002. The overall fleet particulate matter numbers would have been reduced by 95% per bus, and as much as 98% when emissions reduction devices were installed. Because the

replacement project was blocked, with heavy support from CNG proponents, fleet emissions remain much higher than they could have been.” (*Comment from Weiner: Fifty percent of these PM traps have never been installed, primarily because of backorders by the manufacturer. We would prefer to be referred to as alternative fuel proponents; that’s how we began the discussion with the research pointing us to CNG.*)”

From the perspective of the transit agency, the shift toward CNG was a high risk option, because it would have required a heavy investment in infrastructure and a shift toward an unproven technology: “The advocates had no idea of the risks involved in pursuing CNG and no way to approach the technology and business issues. Sure, they had a clear mind of the fact that they wanted CNG buses (right or wrong), but they neglected to consider what technology would be available if CNG proved unworkable. The fact is there was no other technology that could serve as a backup. We were at a strange time in history where transit bus options were either: 1) get very clean and reliable diesel buses very quickly and clean your fleet up by 98% but still be using diesel, which does have a lot of toxic emissions (*Comment from Weiner: As with any new bus purchases, there are always kinks to work out, including issues related to reliability, so one cannot say categorically that there would have been reliable diesel buses, and note the reference to toxic emissions, which is the key point*); 2) fly in the face of the emerging industry consensus that CNG has some real operational problems and has no clear consensus from air quality regulators that it improves the pollution problem (*Comment from Weiner: That is not true. When the California Air Resources Board (CARB) gave transit districts a choice of fuel paths a number of years ago, CNG was uppermost in their minds, with documentation to prove it*); or 3) just wait and leave the oldest, most polluting diesel buses on the road, and hope that hybrid buses, which were only experimental at the time, would develop fast enough to become a realistic alternative.

“MUNI management carefully weighed these alternatives and chose option 1, looking forward to hybrid buses as a future ‘backup plan.’ MUNI even hedged its bets by pushing for the development of a possible LNG (liquified natural gas) option that one major manufacturer had plans to develop. We chose a course with great emissions gains, and very little risk—a good choice for the public and a great management decision. CNG advocates chose to place all their money on CNG and left MUNI with no backup plan.

“CNG advocates used an environmental message to prevail in the political arena. But without funding or any belief that CNG could be effective, there was no bus technology that could be purchased. (*Comment from Weiner: Again, at the time we proposed CNG, there was plenty of documentation and experience to show CNG was effective. For example, New Delhi, India, changed their entire bus system from diesel to CNG, and air pollution improved dramatically with, as far as I know, few problems in implementation.*) The oldest, dirtiest buses remained on the street while MUNI staff turned its attention to hybrids, which were still several years away from commercial viability. From a local environmental perspective, the communication breakdown between advocates and MUNI proved very harmful. It pushed particulate matter emissions into the air that both sides wanted to get rid of. From a local perspective, it has forced MUNI to spend countless staff hours and large amounts of money to put us on the bleeding edge of hybrid bus technology. MUNI is, whether we like it or not, now leading the country in our pursuit of hybrid buses because of our extreme need to remove our oldest buses from the fleet. For many of the national environmental groups and national

corporations that pushed this agenda, perhaps it is a great benefit to have a major transit property like San Francisco MUNI spending huge amounts of dollars and putting large amounts of staff time to break new ground in emerging technology. If that was the objective of these national organizations, they have succeeded—hybrids may sweep the country a little faster because of our push. For the local citizens, it has been costly.” *(Comment from Weiner: And one could say the same about the fact that if they had purchased alternative fuel buses for some of their major routes, we wouldn't be in the position we are today. I think we need to stop beating this dead horse.)*

Speaks sees both the environmentalists and MUNI as having made some mistakes. From his perspective, the environmentalists were focused on health risks and air quality, but they were slow to recognize the financial and technical risks of CNG. *(Comment from Weiner: We understood the financial and technical issues, but we could not understand why MUNI could not do what many other transit districts had done.)* According to Speaks, they even opposed hybrid diesel until recently: “They were against this for over a year because it is still diesel-based technology at this time. They have only dropped their opposition to hybrid technology as CNG has continued to be abandoned throughout the country and the push toward CNG has waned.” *(Comment from Weiner: We abandoned any opposition, not because we were so wedded to CNG, but because our goal was to reduce emissions, and after a year or so, it has been documented that diesel hybrids do indeed do a good job of reducing emissions.)* However, MUNI also made mistakes, such as the decision not to let the posters be aired: “It just looked bad and bred more ill-will between advocates and management.”

He believes that positive steps have now been taken to solve the problems. First, communication is better with the environmental coalition: “I’m proud to tell you that outside advocates now understand how to read our complex spreadsheets and have a lot more trust in how we manage our bus fleet to California Air Resources Board, Federal Transit Administration, and other rules and standards. *(Comment from Weiner: This is a bit insulting. MUNI continually—over the past five years—gave us conflicting graphs and charts, which changed from one meeting to the next, and the explanations were difficult to understand, both from our part, and from the explanations themselves.)* Second, MUNI now has in place a plan to convert its entire fleet to electric buses by 2020, making it the first zero emissions transit agency in the country *(Comment from Weiner: This would indeed be exciting news, except for the fact that no one has any idea if these buses will be available by then. We were promised such buses last year, but the manufacturer bailed.)* Speaks adds, “The plan would have been impossible with a fossil fuel-based CNG strategy.” The plan will also reduce particulate matter emissions—due to new buses and emissions traps—by 2007 to a level that is 98% less than the level in 1997. “I’m very happy that MUNI is on the right track now. It’s interesting that the advocates are coming to support MUNI’s long term fleet management plan including our procurement of hybrid buses. It has taken a lot to bridge that gap and come to a common understanding.” *(Comment from Weiner: We’ve come to support their plan to buy diesel hybrids, and for the most part, the rest of their plan, because the diesel hybrids have very low emissions and because MUNI has to have a long term plan to conform with CARB regulations. I am glad that technology presented us the hybrid option, an option which works for all parties.)*

Equity and Sustainability

Because MUNI, like other public transit agencies, has a tight budget, it was important to position the coalition so that environmental issues and ridership access were not set up as a trade-off. During the Proposition I campaign, the coalition shifted its name from “Dump Diesel” to “Coalition for a Clean and Reliable MUNI.” The coalition also made known the availability of matching funds for transit agencies that were converting to cleaner fuels.

A second way in which the sustainability and environmental justice issues intersected involved the low-income community of Bayview/Hunters Point. In the United States, the prevalence of active asthma doubled from 1980 to 1992, and continued to rise during the 1990s. Asthma rates are higher among African Americans, low-income families, and people living in large cities. In a survey of the low-income neighborhood of Bayview/Hunters Point, the prevalence of childhood asthma was 15%, compared with about 6% nationally, and 10% for all the people in the neighborhood, compared with 7% for the state of California. The Bayview/Hunters’ Point rates were the highest in the city of San Francisco.⁶

As Weiner commented, “Five years ago, MUNI had five diesel bus routes in Bayview/Hunters Point, which already has a huge amount of industrial pollution. They have a power plant, manufacturing, cement, and bus yards. So we were successful at that time in getting MUNI to substitute those buses with cleaner buses.” One of the outcomes of the coalition was to form the Bay Area Clean Air Task Force, which has obtained funding from the San Francisco Foundation. The group—staffed by Ms. Weiner and comprised of over twenty-five environmental, public health, and transportation organizations—works proactively to shape regional clean air policy and to highlight environmental justice issues.

Supervisor Ammiano noted that a change in districting also contributed to the visibility of the environmental justice dimension: “We now have district elections, which means that every supervisor represents a district. When you have a person accountable to the district, some of the things that got lost in city-wide elections then become predominant. This one district, which is very underserved and heavily African-American, has the highest rate of cancer in the city. Their supervisor has become active on that issue and has communicated it to the rest of the supervisors. It’s been good to have a supervisor who represents that district and works with the other supervisors.”

Policy Issues and Recommendations

The case study of the conversion of the MUNI fleet suggests that some transit agencies may resist conversion, especially to fuels other than diesel. One of the factors behind the resistance was the unfamiliarity with fuels and machines other than diesel. However, the emergent hybrid diesel technologies are also seen as a bridge between fossil fuels and hydrogen-powered vehicles. Where there is resistance, constant vigilance from community-based health and environmental groups may be needed to make sure that the transit agency sets clear conversion goals and then follows through in a timely way. The combination of diesel-hybrid technologies with low-sulfur diesel and effective

emissions traps appears to offer an alternative that is more familiar to transit agencies and their workers, and as a result hybrid-diesel may encounter less resistance from transit agencies but still answer environmental and health concerns. The redesigned diesel systems may also offer opportunities for the use of biodiesel and development of local energy-agricultural tie-ins. However, for a number of environmental groups, the jury is still out on biodiesel. It works best at 100%, and most buses use between one and twenty percent, and even at 100%, according to Weiner, the NO_x is higher when using biodiesel.

A second policy issue is the cost of conversion and the dilemmas that some agencies will face when they are grappling with budget deficits. To some extent various matching funds will offset the additional costs of clean fuel vehicles, but the matching funds will not cover the entire cost. As a result, it is important to help the agency develop new sources of funding to clear up deficits and make new investments possible. In San Francisco, one of the more creative proposals currently under discussion is to increase MUNI's revenues by charging a toll on traffic entering the downtown area. The proposal would also alleviate congestion by raising the cost of driving to work downtown, and as a result it would increase the relative attractiveness of public transit for commuting. Such a development is facilitated by the new organizational structure of the Metropolitan Transit Authority, which includes the transit system and parking and traffic management under one supervising board.⁸

Web sites:

<http://www.sfmuni.com>

<http://www.ocefoundation.org/advocacy.html#muniboard>

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Interview by David Hess of Linda Weiner on March 10, 2005, and Supervisor Tom Ammiano on March 21, 2005. Emailed comments from Joe Speaks on March 29-30, 2005.

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