from the FIELD

Voice of Experience

A conversation with Toronto Hydro's fleet manager provides an inside look at one of Canada's most progressive — and varied — fleet operations

While the North American utility sector as a whole has largely retreated from its once prominent role in the alternative fuel vehicle (AFV) market, a core group of energy companies has maintained a commitment to using fuels and vehicles that are better for the environment and less dependent on petroleum. Toronto Hydro-Electric System is a mainstay in that group, with a longstanding and ongoing AFV program that in 10 years has tried just about every type of non-petroleum technology available in the marketplace, including natural gas vehicles. Some of those technologies remain a viable part of the Toronto Hydro fleet operation, some have fallen by the wayside and others are waiting in the wings. Here, Roger Smith, the utility's manager of fleet management services, explains where the fleet has been, where it stands today and where it's headed in the future.

NGF: How and when did Toronto Hydro first become involved in alternative fuel vehicles?

Roger Smith: Toronto Hydro has been involved in alternate fuel/advanced technology vehicles since the early 1990s.

NGF: What's happened to your organization's alternative fuel/advanced technology vehicle program since then in terms of the types of vehicle and infrastructure investments your fleet has made?

RS: In the 1990s Toronto Hydro began a carbon dioxide reduction program throughout its organization, including the fleet operation. A number of initiatives were put in place, including propane conversions for many light-duty vehicles, outfitting many aerial trucks with electric-drive battery systems to run the truck's hydraulics, and installing fiber-optic start-stop devices so operators could shut off their engines when aloft in bucket trucks. In addition we implemented anti-idling awareness programs and installed diesel-fired auxiliary heaters in many vehicles. We even invested in a zero-emission vehicle, a GMC full-size G-van powered entirely by electricity.

Since that time we've moved on to the use of compressed natural gas (CNG) as our fuel of choice for light-duty vehicles. We've also purchased a number of hybrid gasoline-electric vehicles. With hybrid and CNG technologies, we first review if an economic case can be made for the additional capital costs. A fuel blend of gasoline and 10-percent ethanol is used for the rest of the light-duty fleet. These fuels are used in about 700 light–duty vehicles.

For diesel-powered vehicles we were an early implementer of biodiesel. We were the first fleet in Canada to undertake a large-scale biodiesel pilot project in 2000-2001. After the pilot was totally successful, we went to full-scale use of biodiesel in almost 400 vehicles and that commitment continues to this day. Today, our entire fleet is powered by some form of alternate energy!

As for infrastructure, we have invested in FuelMaker CNG slow-fill fueling stations at three of our major work sites. A fourth system is underway at this time. When that station is completed in May, all our natural gas vehicles will have slow-fill, overnight refueling available on-site.

NGF: Why would a company like yours that is involved primarily in the hydro-electric industry be concerned with using fuels like natural gas, biodiesel and ethanol?

RS: From our urban wind turbine project to our tree advocacy program to the fleet alternate fuels program, it is our corporate culture to do things in an environmentally friendly manner. Part of our shareholder commitment is to protect the environment. Cars and trucks are among the leading sources of smog-causing pollution in the Toronto area. By using alternative fuels and technologies, we are actively reducing smog-causing tailpipe emissions. The "triple bottom line" is a way of life in this organization.

NGF: What advantage does a fleet gain by testing a variety of alternative fuels and technologies?

RS: Many alternate fuels, if implemented correctly, will save money. It also helps build investor and employee confidence.

NGF: Which alternative fuels and vehicles have worked best for the Toronto Hydro fleet to this point and why?

RS: Propane was an early-generation alternate vehicle fuel. While in some applications it worked satisfactorily, in many cases it did not for a variety of reasons, including reliability and safety. With propane, we had to rely on third-party vendors for fuel, so there were productivity issues.

The aforementioned electric van, while well-engineered and designed, was not practical for real-life operation.

Today we can readily buy an assortment of factory-built CNG vehicles. And the newest generation of aftermarket conversions are showing tremendous promise. Today's CNG vehicles operate in exactly the same manner as their gasoline-powered counterparts, so there are no driver change-management issues. And the advantage of overnight refueling prevents our drivers from ever having to visit a filling station during prime business hours, which has a positive effect on our productivity.

Natural gas has had a number of price increases since we began. But despite that, when we amortize the capital investment both for the onboard equipment and the fueling equipment and calculate our fuel costs, we are still saving a lot of money while helping the environment. In fact, our use of natural gas actually directly offsets our additional costs of using biodiesel in our large vehicles! So overall, our use of alternate fuels is cost-neutral to the organization. And look at the resulting huge reduction in greenhouse gases.

NGF: Tell us a little about Toronto Hydro's

natural gas vehicle (NGV) program in terms of when it started, how it has evolved, the types and number of vehicles you operate, where they refuel, etc.

RS: We piloted CNG in a 4x4 pickup in 1997-98. With the success of that pilot vehicle, we added six factory-built, dual-fuel (bifuel) cars. With the success of these vehicles, we then installed our first on-site, slow-fill station at a major service centre, followed by a second station at our head office. With the success and user acceptance of the first two stations, we went on to purchase 22 dual-fuel pickup trucks. Then we doubled the capacity of the original fueling station to accommodate the new pickups.

Roger Smith and Toronto Hydro lean heavily on NGVs.

Our next move was to purchase 15 dedicated CNG full-size cargo vans. These vans were located at another site in the east end of the city, so we installed a third slow-fill refueling station there as well. Some of these vans and pickups eventually migrated to another worksite in the northwest sector of the city. We're currently installing a fourth fueling site there with sufficient capacity to handle additional CNG vehicles. We also have added an additional 17 CNG vans and pickups, bringing the total to 61.

While the ratio of total CNG vehicles in our fleet is still small relative to our fleet size we're slowly adding to the total each year. And we now have the fueling infrastructure in place to support a larger CNG fleet.

NGF: How has Toronto Hydro's use of NGVs benefited the organization?

RS: There have been multiple benefits, mostly in the area of cost savings, an enhanced public image, investor confidence and convenience.

NGF: What have been the biggest challenges in making your NGV program work?

RS: Sourcing factory CNG vehicles. A major auto manufacturer promised CNG vehicles in their national fleet program and, after landing the business, could not (or would not) provide as promised. It caused a huge disruption to our capital acquisition program that year.

We are still a little gun-shy about aftermarket conversions. We are considering an experiment with the new Ecofuel system, which looks very promising and is getting great reviews from fleets.

There are still a lot of negative perceptions because NGVs often are associated with propane vehicles. People still recall that some early propane conversions were unreliable in cold weather, difficult to find fuel for, lacking in power and potentially dangerous in the event of a leak. For some reason, people seem to relate propane to natural gas. For those who know the distinction, there is a world of difference between the two fuels.

NGF: What are the prime factors that sustain Toronto Hydro's alternative fuel/advanced technology vehicle program here in the 21st century?

RS: Toronto has an air-quality program like most major cities. With continued senior executive support like we've had in the past, combined with business conditions that continue to make the use of environmentally friendly fuels cost-effective, or if we can continue to find ways of making these initiates cost-neutral, Toronto Hydro will continue to opt for green fuels whenever possible.

NGF: In your view, what sort of role should public utilities in general play in the alternative fuel and advanced-technology vehicle market, if any?

RS: Utilities can take a leadership role to have a big impact on air pollution. And our vehicles are very visible to the public. What better way to encourage energy conservation than demonstrating our initiatives to the public?

NGF: What are the biggest challenges you face in maintaining a strong alternative fuels/advanced transportation program at your organization?

RS: Containing costs is tough but can be done. In Canada we've had some support from the government with fuel tax rebates and other incentives, but there needs to be more. Modifying vehicle life-cycles will help recover costs.

NGF: To what extent has Toronto Hydro been involved in promoting alternative fuels and cleaner transportation in the Toronto area?

RS: We have been very involved in the "Repair Our Air Fleet Challenge" and last year co-sponsored this event with Natural Resources Canada. It's a friendly competition between private- and public-sector fleets to reduce idling and fuel consumption. We also participate in the Better Transportation Partnership with the city of Toronto and have exhibited our green vehicles at a number of local venues.

In recognition of our biodiesel program, Toronto Hydro-Electric System has won the Electricity Distributors Association Environmental Award of Excellence, the National Transportation Week Ontario Committee Award of Excellence and the Ontario Energy Association Company of the Year for environmental stewardship.

Also, as a result of our successful biodiesel project, Toronto Hydro-Electric System has become a model for other fleet users. The cities of Brampton, Toronto and Guelph, as well as Kingston Transit and Bruce Power, are using biodiesel in their fleets. Pilot programs also are underway at Winnipeg Transit, Montreal Transit and the Calgary Fire Dept.

NGF: How do you see transportation technologies evolving in the years ahead in terms of the fuels and vehicles fleet operators will be using?

RS: It's generally agreed that hydrogen fuel cells will be the ultimate transportation technology for fleets and publicly operated vehicles. But a hydrogen fueling infrastructure is many years away. So in the meantime, we can progress in terms of green fuels by using what's available here and now. CNG, biodiesel, ethanol, hybrids and creative new combinations of all these technologies can produce lower emissions than fossil fuels and are available today.