

EPAct Alternative Fuel Transportation Program

Success Story



FPL provides electricity to more than 4.5 million customers in Florida and relies on its 2-million-gallon B20 storage tank to ensure a stable supply of biodiesel.

Biodiesel Drives Florida Power & Light's EPAct Alternative Compliance Strategy

Florida Power & Light Company (FPL)—one of the nation's largest electric utilities—relies heavily on biodiesel to comply with the Energy Policy Act of 1992 (EPAct). In the process, it has become a biofuel leader, reducing petroleum use and pollutant emissions throughout Florida.

“We use biodiesel because it works with our existing vehicles and infrastructure and because it's a truly renewable fuel made from U.S. feedstocks like soy and sunflower oil,” says George Survant, FPL's director of fleet services. “Biodiesel is in sync with FPL's corporate commitment to renewable energy.”

This strong commitment to renewable energy, a successful biodiesel fueling infrastructure strategy, and a robust fuel quality—assurance program set an example for other fleets who are seeking to comply with EPAct while providing environmental and energy security benefits to their home territories.

Complying with EPAct

Certain fleets owned or operated by state agencies or alternative fuel providers must comply with EPAct's alternative fuel vehicle (AFV)-acquisition requirements via one of two methods. Standard Compliance requires covered fleets to acquire a

certain percentage of AFVs each year based on the number of light-duty vehicles they acquire; up to 50% of this acquisition requirement can be met through purchase for use of biodiesel (in blends of at least 20% biodiesel). Alternative Compliance allows covered fleets to obtain a waiver from the AFV-acquisition requirements of Standard Compliance and instead implement petroleum-reduction measures such as deploying hybrid electric vehicles (HEVs), increasing fleet fuel efficiency, increasing the use of alternative fuel blends, reducing vehicle miles traveled, and using alternative fuels in AFVs, among others. Unlike Standard Compliance, under Alternative Compliance there is no cap on the portion of requirements that can be met through biodiesel use, nor must biodiesel be used in blends of at least 20%.

Both compliance strategies create a core demand for alternative fuels and advanced vehicles and stimulate markets for these technologies while reducing petroleum use in regulated fleets. Alternative Compliance is particularly attractive for fleets, such as FPL's, that use large amounts of biodiesel.

A Decade of Biodiesel Success

FPL provides electricity to more than 4.5 million customers in Florida, its fleet of 3,400 vehicles covering 27,000 square miles of service territory. In 1999, it began experimenting with B20 (20% biodiesel, 80% petroleum diesel) in diesel vehicles in two locations. It chose B20, in part, because it requires no vehicle modifications. During the B20 pilot program, a vendor delivered B20 to the FPL fueling sites, and fuel and vehicle monitoring verified the viability of B20 use in FPL vehicles.

Then the storms came. In 2004, four major hurricanes hit Florida, disrupting fuel distribution throughout the state and spurring FPL to secure a more reliable fuel supply. As a result, FPL took out a 10-year lease on a 2-million-gallon B20 storage tank in Miami. The tank provides several benefits:

- Ensures a stable supply of biodiesel, which is difficult to obtain in Florida and must be imported from other states
- Enables FPL to purchase biodiesel at lower bulk prices and to choose the timing of purchases to take advantage of low cyclical prices
- Enables FPL to blend its own B20 and exercise tighter control over fuel quality.

The success of FPL's biodiesel program has surpassed expectations. It now

purchases more than 500,000 gallons of B100 (pure biodiesel) annually. Its vehicles have accumulated more than 60 million miles using B20 without encountering biodiesel-related issues, and evaluations have demonstrated no appreciable change in fuel economy, engine wear, or driver acceptance. After Hurricane Wilma struck Florida in 2005, FPL was able to dispense 151,000 gallons of B20 nightly.

Better Biodiesel Through Chemistry

In addition to FPL's strong commitment to biodiesel, much of the company's biodiesel success is attributed to its stringent fuel testing and handling program. Diesel vehicles operate well on high-quality B20, but off-specification or degraded B20 can cause problems such as fuel filter clogging.

To prevent these issues, FPL starts by screening biodiesel producers, working only with those who are BQ-9000 certified¹ and prequalified via a detailed checklist. It then tests fuel quality throughout the distribution and storage processes: before the producer delivers the B100 to FPL, before the B100 is blended with petroleum diesel (to produce B20) and stored in FPL's tank, and continually during storage. The B100 must meet all parameters of the ASTM D-6751 biodiesel standard as well as FPL's own more stringent requirements for acidity, glycerin content, and oxidation stability. This includes use of biocide and antioxidant additives to extend the biodiesel's shelf life. Florida's warm, humid climate is conducive to organism growth in biodiesel, so FPL requires that producers add stabilizing additives at the point of origin. As

¹ The voluntary National Biodiesel Accreditation Program issues BQ-9000 certification to biodiesel producers and marketers who meet a set of fuel-quality, testing, and fuel-management requirements. See www.bq-9000.org for details

FPL's Thoughts on Key Biodiesel-Quality Parameters

Key ASTM Standard Criteria

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| • Water and sediment | These contaminants degrade biodiesel. |
| • Cloud point | This is the temperature at which the fuel coagulates. Be especially careful about the cloud point of recycled oils, animal fats, and palm oil. |
| • Acid number | High acidity causes fuel system deposits and corrosion. |
| • Total glycerin | High glycerin causes storage tank and fuel system filter plugging and engine fouling. |
| • Oxidation stability | Oxidation stability affects the stability of the fuel and acid level. |

Additional Testing Required by FPL

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| • KF moisture | This test tracks dissolved water in fuel. |
| • Cold soak filtration assay | This test detects precipitants in fuel. |

a result, FPL has been able to store its treated B20 for up to 2 years.

“Watching the broader market experience with biodiesel, it's obvious to us that the benefits of ensuring quality from the producer to the final fuel deployment have more than justified the investment in building the expertise needed to manage fuel quality,” says Survant.

The Road Ahead

FPL plans to use Alternative Compliance petroleum-reduction strategies to “green” its fleet and meet its EPAct obligations in 2010 and beyond. One benefit of this approach is that Alternative Compliance allows for 100% of fleet requirements to be met through purchase and use of biodiesel. FPL is also reducing petroleum use through acquisition of heavy-duty HEV bucket trucks and material handlers as well as light-duty HEV sedans and sport-utility vehicles. The fleet currently has more than 300 HEVs, mostly Toyota Priuses and Ford Escapes. FPL has even converted some of its HEVs into plug-in HEVs and is testing their performance.

“FPL's biodiesel program, in conjunction with other measures like HEVs and improved vehicle efficiency, has created an opportunity to operate a large fleet

on renewable fuels and to lower emissions dramatically—at an affordable cost,” says Survant.

More Information

For more information about FPL's advanced transportation efforts, contact Patti Earley, fleet fueling operations supervisor, at Patti.Earley@fpl.com or 561-904-3222. For more about biodiesel, visit the Alternative Fuels and Advanced Vehicles Data Center (www.afdc.energy.gov/afdc/fuels/biodiesel.html) and National Biodiesel Board (www.biodiesel.org) Web sites. For more information about the Alternative Compliance option to comply with EPAct requirements, visit the EPAct Program Web site (www.eere.energy.gov/vehiclesandfuels/epact).

What Is EPAct?

The Energy Policy Act of 1992 (EPAct) was passed by Congress to reduce the nation's dependence on imported petroleum. Provisions of EPAct require certain fleets to purchase AFVs. DOE administers these requirements through its Alternative Fuel Transportation Program, Federal Fleet Requirements, and Alternative Fuel Designation Authority.

For more information, visit www.eere.energy.gov/vehiclesandfuels/epact or contact the Regulatory Information Line at 202-586-9171 or regulatory.info@nrel.gov.

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