

Walmart's Increasing Efficiency of its Fleet and Distribution Centers

At Walmart, we know being an efficient and profitable business can go hand-in-hand with being a good steward of the environment. Two company-wide goals at Walmart are to be supplied 100 percent by renewable energy and to create zero waste. Our company operates one of the largest private trucking fleets in the U.S. and the U.K. Today, our Logistics Sustainable Value Network (SVN) is working to make our entire truck fleet more efficient and create more sustainable distribution centers.

Logistics Sustainable Value Network Goals

- Achieve a 25 percent increase in fleet efficiency in the U.S. by October 2008 (2005 Baseline).
- Double fleet efficiency in the U.S. by 2015 (2005 Baseline).

Fleet Improvements

We are working to increase the efficiency of the trucks we drive and improve the ways we load and route our fleet.

- Between 2005 and 2008, we increased our fleet efficiency 38 percent by:
 - installing fuel-saving technologies on our trucks such as improved engine calibration and auxiliary power units (APUs)
 - loading our trucks and cases more efficiently,
 - improving our routing and eliminating the number of empty miles our trucks travelled.
- In 2008, Walmart delivered 3 percent more cases to our stores while driving 7 percent (about 90 million) fewer miles.
 - By driving fewer miles, we avoided adding 200,000 metric tons of CO2 into the atmosphere.
 - These efficiency gains resulted in fewer trucks on the road, reducing wear-and-tear on roads, highways and bridges.
 - Additionally, our changes helped us save almost \$200 million last year.
- We calculate our fleet efficiency by dividing the number of miles we travelled by the average fuel efficiency, as measured in miles per gallon. This gives us the amount of fuel we used. We next take the number of cases we delivered during the same time period and divide it by the amount of fuel we used to deliver the cases. The resulting metric is cases shipped per gallon burned.
- In 2008, we added more than 1,100 aerodynamic trucks to our fleet and plan to add 1,300 more in 2009.
- In 2009, we added several trucks into our fleet that run on alternative fuel sources. We are testing these trucks to determine if they will help us reduce our environmental footprint, are viable for our business and provide a positive return on investment.
 - A full-propulsion Arvin Meritor hybrid is in testing in the Detroit area. This dual-mode diesel-electric hybrid can operate on electric power below 48 miles per hour, it is believed to be the first vehicle of its type;
 - Fifteen trucks operating out of the Phoenix area have been converted to run on Reclaimed Grease Fuel™, made from waste brown cooking grease collected at Walmart stores. Additional trucks operating from this distribution center will use an up to 80/20 blend of biodiesel made of reclaimed yellow waste grease;
 - Five Peterbilt Model 386 heavy-duty hybrid trucks with diesel-electric hybrid power assist systems developed by Eaton Corporation and PACCAR. These trucks are based in Dallas, Houston, Atlanta, Baltimore and Apple Valley, Calif.
 - Four Peterbilt Model 386 trucks and one yard truck (that solely operates on the distribution center property) fueled by liquid natural gas. These trucks are part of a partnership with the Mojave Air Quality Management District and will operate out of the distribution center in Southern California.
- In addition to transporting products, we have a fleet of passenger cars to transport associates. We have approximately 860 hybrids in our passenger care fleet and have committed to purchasing an additional 300 hybrid cars in 2009.

- In the U.K., our ASDA stores launched an initiative to reduce the number of empty trucks on the road by increasing their backhauls and fronthauls.
 - Backhauls enable ASDA to fill empty trucks travelling between the store and DC with shipments from suppliers for direct delivery to their distribution centers. In 2008, this saved ASDA approximately 1.17 million miles in their supply chain.
 - Fronthaulls enable suppliers to deliver ASDA's goods, in the event the suppliers' drivers are already headed to that destination. In 2008, this saved ASDA 1.4 million road miles.
 - Total road mileage saved in 2008 through ASDA's logistics sustainability efforts was 8 million miles and eliminated the production of 10,222 tons of CO₂ from its trucks.
- Our Seiyu stores in Japan are trying to reduce the amount of fuel required to carry one ton of goods one kilometer by 25 percent by 2012. Between 2007 and 2008, Seiyu was able to transport 16 percent more goods over the same distance by using more efficient routing and loading techniques for trucks, and consolidating operations and deliveries.

Operational Efficiencies

We are integrating a number of new technologies in our distribution and return centers in the U.S. to help decrease waste and increase our efficiency.

- **Retrofitting lighting fixtures:** Replaced the lighting fixtures in more than 100 of our distribution centers with more efficient lighting. Using these new bulbs, we **saved more than 200 million kWh of electricity**.
- **Using the Energy Demand Monitoring System:** Although distribution centers run nearly 24 hours a day, not all of the equipment needs to run all the time. The Energy Demand Monitoring System enables us to turn off lights and equipment when not in use.
- **Integrating Glycol Cooling into the Refrigeration System:** As HVAC units reach end of life, distribution centers have been retrofitted to use the glycol cooling loop supported entirely by the refrigeration system. The system keeps the perishable foods cold and will cool the entire distribution center.
- **Rapid Doors:** We have successfully tested rapid operating doors that create a solid barrier between rooms requiring different temperatures in the grocery distribution centers. These doors help save energy by closing when there is no traffic in-and-out of the room, but open very quickly when an associate approaches.
- **Variable Frequency Drives (VFDs):** Similar to the Energy Demand Monitoring System, our refrigeration systems adjust output based on current need. If there is not as much area to cool, the systems do not need to run at full capacity. By installing Variable Frequency Drives (VFDs), we are able to match the speed of operation to the current load required.
- **Solar Panels:** In California, we completed the installation of solar panels at distribution centers in Porterville and Apple Valley. In Porterville, the panels are installed on the roof of the facility and will supply approximately 600kW of power. The ground-mounted solar panels in Apple Valley cover a nine-acre field and supply 1 megawatt (MW) of power.

Walmart is working diligently toward achieving its sustainability goals. For information about Walmart's sustainability initiatives, please visit: www.walmartstores.com/sustainability