1. Company Background

In 2006, PepsiCo joined other industry leaders and environmental groups in Refrigerants Naturally!, a global, not-for-profit initiative focused on addressing climate change and ozone layer depletion caused by HFCs in point-of-sale refrigeration equipment.

PepsiCo has made a commitment to sustainable growth, defining this as Performance with Purpose. An integral part of this commitment is PepsiCo’s mission to deploy more sustainable refrigeration equipment. We started placement of field test since late 2006. By the end of 2010, we have placed over 61,000 units globally while reducing our average, per-unit energy consumption by almost 50%.

One of our biggest success stories in this regard is the development and deployment of our “Green Cooler Initiative” in Turkey. The following detail is the case study of this highly successful project, an initiative that we use as a model for our sustainability initiatives for other countries around the world.

PepsiCo offers the world’s largest portfolio of billion-dollar food and beverage brands, including 19 different product lines that each generates more than $1 billion in annual retail sales. Our main businesses - Frito-Lay, Quaker, Pepsi-Cola, Tropicana and Gatorade - also make hundreds of other nourishing, tasty foods and drinks that bring joy to our consumers in more than 200 countries. With annualized revenues of nearly $60 billion, PepsiCo's people are united by our unique commitment to sustainable growth, called Performance with Purpose. For more information, please visit www.pepsico.com.

Issue: Customer Concerns Raised in PepsiCo 2007 Turkey Cooler Survey

In 2007, Turkey Marketing Equipment Managers (MEMs) were interviewing location managers in regards to their opinions of PepsiCo cooler offerings. As they discussed this topic in detail with customers, they learned our current cooler offerings had opportunities for improvement. Feedback centered on a growing concern by store owners over energy usage, as well as a lack of hydrocarbon (HC) refrigerant offerings. Several traditional trade venues suggested they were hoping for near-term actions to decrease energy usage in such equipment.

Objective: Increase Share With a Targeted New “Green” Cooler

PepsiCo Senior Managers decided to take action immediately based on the survey feedback in Turkey. Ideally, it would be accomplished with a cost-neutral new product. Based on the customer feedback, two main goals were established. We would develop a new, earth-friendly, HC refrigerant system-based cooler and we would take steps to ensure it would consume significantly less energy.

Outcome: Results of PepsiCo Turkey’s “Green Cooler Initiative”

Business Results

PepsiCo’s new Green Cooler was introduced to the Turkey market in 2009. It was immediately determined to be a big success. The cooler featured special Marketing graphics testifying to its earth-friendliness, enabling both customers (retailers) and consumers (end users) to feel good about choosing Pepsi products.

Customers loved the cooler because it featured dramatically decreased energy usage, saving them up to 50% on energy costs. Consumers loved it not only because it was attractive,
but also because it saved “five trees with its energy saving technology.” It was positive message to both retailers and consumers.”

The outstanding reception for Pepsi’s new Green Cooler was borne out by the fact that PepsiCo cooler share placements increased by some 3-4 percentage points, as shown by the research firm ACNielsen. PepsiCo decided that all 2010 cooler placements in Turkey would utilize the successful new “Green Cooler.” As a result, 2011 cooler placements are expected to double from the numbers of units today globally. Both are testaments to the success of PepsiCo’s “Green Cooler Initiative.”

2. HCFC Use

Prior to this case study, PepsiCo coolers for the Turkey market used HFC refrigerants for point of sales purchased equipment. We have mandate, since 2005, to eliminate HCFC from our point of sales purchased equipment.

3. Technology Options Considered

Now that it had, been decided to use HCs refrigerants, which would be the best for this application? Consideration was given to R-600a Isobutane, R-290 Propane, and R-744a CO2 systems.

4. Technology Chosen

In coordinating with our existing cooler supplier base, we determined that R-600a was the clear choice for Turkey. Selecting R-600a was an easy choice since it has been used in Europe for domestic appliances for many years. There are service infrastructure is already established in Europe and gaining access to that was any easy because the location of Turkey. In addition, we are using R290 as well. We believe that “one size fit all” approach will not work in this case. R600a is moderate temperature refrigerant and very well fit in appliances as well as single door application. R290 is classified low temperature refrigerant and take less charge than R-600a and it can be used for double door cooler and open air as well.

5. Factors Contributing To The Selection of the Technology

Isobutane and Propane, both HCs, typically offer up to 10% energy savings over existing R-134a refrigeration systems, and components are much less expensive than those required for the higher pressure, R-744a CO2 systems. It’s also been proven that Propane systems typically perform more efficiently than Isobutane.

However, what tipped the scales in favor or R-600a for this application was the fact that it was already commonly being used for European domestic refrigeration applications. Our local market suppliers in Turkey already had the infrastructure and systems in place to support R-600a systems. Therefore, that is how we decided upon using R-600a Isobutane.

6. Technical Performance

Energy Reduction Aspects
The other focus for the “Green Cooler Initiative” was to reduce the energy usage significantly. As noted earlier, changing to an HC-based refrigerant system could save up to 10% and perhaps more based on the changes to the system.

That was a good start, but PepsiCo sought more. We worked closely with the cooler suppliers to evaluate all potential energy saving features. We have strategic suppliers that we collaborate with to developed energy efficient components. We continue to seek, test and evaluate new technologies such as; Energy management devices, LED lighting, ECM motors. These technologies are just a few examples of many we are using. We will continue to target every sub-system in the cooler in order to reduce overall energy consumption.

### 7. Climate Impact

**Climate Impact Benefits of the Initiative: Reduction in GHG Emissions**

Research shows 95% of the total global warming potential (GWP) of a cooler system comes indirectly from energy usage, whereas 5% comes from the HFCs themselves. If one looks at the 95% portion of the GHG potential, reducing energy usage to the extent that the Green Cooler does has a very positive effect on the environment in terms of reduction in GHG emissions. The positive impact can be calculated based on the fact that each 1 kwh of energy saved is equivalent to a reduction of about 1.5 lbs. of CO2 GHG emissions.

If one then reviews the 5% of GWP as related to the HFCs in a cooler system, 75% of that GWP comes from the HFC propellant used in the foam insulation, and 25% comes from the HFC refrigerant itself. The Green Cooler Initiative eliminated this 5% of the GWP equation since PepsiCo eliminated all HFC foam-blowing agents in 2008, and the Green Cooler use the HC (R-600a) Isobutane (negligible GWP) in the refrigeration system.

### 8. Cost

Another challenge was how to handle the cost increase of the new coolers. The simple fact is HC-based refrigeration systems are about 3-15% more expensive and although customers want the benefits, bottlers have set budgets and find it difficult to make changes to annual cooler purchases on short notice. Realizing it was of the utmost importance to develop and introduce a more competitive cooler model for the market, Pepsi International and the bottlers worked together to develop an agreeable approach to quickly bring the new cooler to fruition. Although we believe, the HC in the near future can be very close in cost to the current HFC system when the volume goes up and more companies use HC systems.

### 9. Health and Safety

Just because cooler suppliers could develop a new cooler and support R-600a, which did not mean the PepsiCo system in Turkey was ready to immediately change over and support Isobutane. The handling requirements for HCs are very different due to flammability concerns. Knowledge of the flammability of HC refrigerants also raised concerns by bottlers and service personnel.

To resolve these concerns, we immediately began training sessions with Turkey bottlers to explain the benefits as well as the unique challenges of HC refrigerants. We found setting up the infrastructure to support the HC systems would take some time to accomplish properly. So we decided it would be best to contract with the OEM cooler suppliers in order to effectively support the new coolers for the first two years. This would give PepsiCo time to set up the
infrastructure, systems and adequate training of personnel without slowing our ability of placing the new cooler and respond to customer feedback. In addition, it is worth to note that our cooler is designed to meet safety standards in Europe and approved by environmental and safety agencies as well.

10. Availability

R-600a Isobutane and supporting system components are readily available to developing countries due to the prevalence of R-600a systems in Europe.

11. Applicability to Developing Countries

We see our case study example as being highly applicable for developing countries. We are proud to state that Turkey is the first country where PepsiCo has implemented 100% HC-based refrigeration systems. We consider it a model on best practices as we continue and expand our sustainability efforts to other countries around the world.

12. Photos