

Maine Policy Review

Volume 17

Issue 2 *Climate Change and Energy*

2008

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Recommended Citation

Dyer, Ronald. "Poland Spring Bottling/ NWNA 's Efforts to Reduce Energy Use and Cut Back on Carbon Dioxide." *Maine Policy Review* 17.2 (2008) : 131 -133, <https://digitalcommons.library.umaine.edu/mpr/vol17/iss2/21>.

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Poland Spring Bottling/ NWWNA's Efforts to Reduce Energy Use and Cut Back on Carbon Dioxide

by Ronald Dyer

INTRODUCTION

Poland Spring Bottling has been an environmental leader in Maine since the company first began operation in 1845. From land conservation to watershed protection and now carbon dioxide (CO₂) and fossil fuel reductions, we have been engaged in sustaining our bottling company and the natural resources that make Maine a great place to live and run our business. None of this comes easily or without frequent and vigorous debate. Our movements into the world of CO₂ reductions are the beginning of what I see as a constant focus on continual improvement, a

balance of local and world environmental interests, and a resulting refinement of how we, other companies, and policymakers in Maine weigh costs and benefits of every activity we pursue.

My professional efforts in reducing CO₂ emissions began in the 1990s while I had the privilege of working for the Maine Department of Environmental Protection on the state's leadership programs focused on pollution prevention and toxic use reduction. During the Pollution Prevention Conference my colleagues and I hosted in the spring of 2000, we began our exploration of sustainability with the help of many business and government leaders, building what I believe is one of the strongest foundations for work on sustainability and CO₂ reduction efforts anywhere in the U.S. Maine does this today through promotion of its innovative STEP-UP program for sustainability and the Governor's Carbon Challenge, which allow Maine businesses to practice measuring and monitoring CO₂ reductions. From this vantage point, Poland Spring Bottling launches into a new era.

This essay focuses on three specific areas of our business where we have reduced our use of fuel and our CO₂ output: our trucks, our manufacturing process, and our bottles. I conclude with recommendations for building on Maine's efforts to be a national leader in the areas of climate change and carbon reductions.

THE TRUCKS

We recognized early on that mobile sources represent a significant portion of our carbon footprint and historically have relied exclusively on fossil fuels in the form of conventional diesel fuel, which has a CO_e (carbon equivalent) of more than 22 pounds per gallon (every gallon of fuel burned results in more than 22 pounds of carbon in the atmosphere). To reduce this impact, we embarked on a search for zero-carbon biofuels that focused on three objectives: (1) reducing our dependence on fossil fuels; (2) using domestically produced fuels if possible, and (3) reducing our carbon footprint. We also hoped to reduce costs as well, but since this is a new market, we knew we might need to present a compelling case for financial support if this switch resulted in additional costs.

Nestlé, as a worldwide food company, is concerned with the use of food for fuel when hunger remains the dominant issue in much of the world. We conducted a thorough debate about corn-based ethanol vs. waste soybean and animal-fat based biofuels vs. conventional diesel fuel (including work Nestlé has done on carbon footprinting and life-cycle analyses of each fuel). This data review, particularly the life-cycle environmental impacts, places serious doubt on the use of corn-based ethanol. The first generation ethanol produced from corn is a net loss for the environment. Ethanol uses more energy to produce than is generated from its intended end use and has many other damaging impacts on the natural ecosystem, including well-documented surface- and ground-water pollution and air pollution. For this reason, we ruled out use of corn-based fuels.

After careful debate, and trial and error of the proportion of biofuel for use, we settled on a B-5 mixture of soy and animal fat byproducts. B-5 is a five percent biofuel mixture with 95 percent conventional diesel. This percentage allowed us to maintain vehicle warranties and maintain MPG performance. Now in our second year, use of this product has resulted in increases in miles per gallon of trucks (a surprise), a reduction in carbon of 475 tons per year, increased driver satisfaction with being involved in the decisions and tracking results, and a new incentive program in 2008 to reduce idle time of our fleet, resulting in additional reductions.

THE MANUFACTURING PROCESS

As we seek to reduce use of fossil fuels in our bottling plants in Poland and Hollis, Maine, we have found something surprising: we use much of our fuel in the humid summer months. This is due to a process where we “temper” or heat the water from its year-round ambient temperature in the ground (about 55 degrees F) to a temperature that will prevent bottles from “sweating” during times of high humidity, potentially causing quality or manufacturing process problems with labels or storage. Historically, tempering was done through a manual process where technicians would monitor the dew point in the plant, then adjust

the heating system to accommodate the required leveling of tempering. This would occur two or three times in a 24-hour period and often resulted in unnecessary heating due to the relatively wide gaps of time involved in the manual process and the fact that humidity changes continually.

During 2008, the plants automated this process, with more frequent humidity checks and real-time adjustments made to the boilers. This has resulted in significant fuel savings, reducing our dependence on fossil fuels and our carbon footprint at the same time. To date, we have reduced our direct CO₂ emissions in Maine by more than 50 percent from fuel reductions when measured by the DEP’s Governor’s Carbon Challenge.

THE BOTTLES

The water bottle is much maligned recently, mostly because our country lacks well-coordinated recycling efforts. Given this fact, we decided to explore reducing our bottles’ impact by reducing the amount of material used. The ability to use less material in a product is important as we seek to improve and eliminate unnecessary materials and to use alternative materials as they become available.

While we are considering new recycled and bio-based materials, the big news in 2008 has been the dramatic reduction in PET (polyethylene terephthalate) material in our bottles. This is true pollution prevention as it has resulted in a 33 percent reduction in fuels used to produce the PET, a 33 percent reduction in carbon, and a reduction in the amount of potential waste material. I believe PET should never be considered waste, however, as it is a valuable commodity. We all need to recycle this and other materials as we seek to re-use high-value materials, look at life cycles of all materials, reduce waste, improve efficiencies and address the serious issue of climate change. Although bottles represent less than one percent of waste going to landfills, we at Poland Spring Bottling and Nestlé Waters North America need to play a lead role in addressing all parts of the recycling problem our country faces.

CONCLUSION

Maine has done much to encourage the innovation and action we need and which is evident at Poland Spring Bottling. I encourage Maine businesses and policymakers to build on these successes and create a long-term carbon-focused infrastructure, to provide support for businesses willing to take risks and invest in Maine, and to support clean energy and conservation at public organizations such as schools and hospitals. Finally, it is important to note that one critical element is needed now. For us to “get credit” for these reductions and eventually sell or trade on the open market, a carbon data verification program is needed to confirm claims of reductions. I see the verification program as an immediate need and encourage my colleagues to make haste in establishing a credible carbon program in Maine and the region. 🐉



Ronald Dyer is the regional safety health and environmental manager for Nestlé Waters North America Poland Spring Bottling plants. Prior to joining Poland Spring Bottling, he served as director for the Office of Innovation and Assistance at the Maine Department of Environmental Protection for 18 years where he led the state's Small Business Assistance, Toxic Use Reduction, Pollution Prevention, and Environmental Leadership Programs.