International Cooperation, Environmental Goals, and Clothes Washer Standards

Background
The desire of governments and their citizens to reduce energy use—both to lower cost and to support environmental efforts—has influenced the design and manufacture of all types of appliances. Manufacturers face standards created by different regulators for similar products. When international organizations cooperate to create standards, they can influence manufacturers to produce more efficient products and create programs to encourage consumers to purchase energy efficient products, ultimately reducing energy consumption.

Problem
Technological advancements support environmental goals and present the opportunity to upgrade standards. By harmonizing standards, the US Department of Energy (DoE) and the Canadian Standards Association (CSA) support their countries' manufacturers and consumers as well as energy and water conservation. Balancing the needs of all involved is the best way to encourage the use of more energy efficient appliances.

Approach
In cases such as consumer appliances, developing a new performance standard can encourage the market to improve performance and consequently realize energy and water savings. A perfect example involved upgrading the standards for clothes washers. In 2003, CSA revised its existing CSA-C360 standard to align with a new US DoE rule. Provincial Energy Efficiency Acts reference the new CSA-C360, so the standard affects manufacturing companies that need to meet its minimum requirements.

Because 'energy efficiency' is a broad term interpreted in different ways, developing a standard involves several issues: How to define energy usage, how to measure energy efficiency, and whether the standard's requirements are technologically and economically feasible plus whether they create value for those affected. For clothes washers, energy usage includes mechanical energy and water heating energy. CSA-C360 provides a detailed procedure for measuring energy efficiency, ensuring a consistent method for all washing machines and meaningful information for regulators and consumers.

CSA-C360 defines methods to measure washing machines' capacity and their energy and water consumption. Both the US DoE and CSA-C360 define a modified energy factor (MEF) that describes the volume of load that the machine can wash per unit of energy expended. The DoE expresses this as ft^3/kWh/cycle. CSA expresses the MEF in SI (metric) units as L/kWh/cycle. For example, a vertical axis standard washing machine with a capacity equal to or greater that 45 liters must have a minimum MEF of 35.68 L/kWh/cycle, equivalent to the US minimum of 1.26 ft^3/kWh/cycle. Because CSA and US DoE standards correspond, suppliers can meet both countries' standards with the same product. Harmonizing supports and encourages the manufacturers' energy and water efficiency efforts.

A standard like CSA-C360 can encourage changes in the manufacturer's design by specifying requirements such as unheated rinse water for horizontal-axis washers. Establishing energy factors helps manufacturers to improve product performance by providing clear guidelines. For example, the CSA standard defines minimum MEF requirements for calling a washing machine 'high efficiency.' The standard's test methodology and definition ensure that everyone using the standard works with a consistent measurement for energy efficiency. Thus, the standard creates the ability to benchmark products. Programs like EnerGuide and Energy Star™ use methodologies described in the standard and verified by CSA. So a washing machine that meets the standard's 'high efficiency' requirement, 40 L/kWh/cycle, can receive the Energy Star™ designation. Labeling systems like Energy Star™ can help consumers to make informed and responsible decisions.

The benchmarks created by standards allow institutions like Energy Solutions Alberta to introduce programs like Soak Up the Savings, which encourage individuals to purchase energy efficient appliances. Buying an appliance involves two price tags: what a consumer pays to take it home and what it costs for the energy and water it uses. Energy Star™ qualified appliances incorporate advanced technologies that use 10%-50% less energy and water than standard models. Soak Up the Savings is a partnership between Climate Change Central, the Alberta government, Natural Resources Canada, and the City of Alberta. It offers a time-limited cash incentive to Albertans who purchase a water- and energy-efficient clothes washer model.

The energy savings from using an Energy Star™ machine compared to a standard washing machine result in annual savings of approximately $150 for a family of four. The environmental impact of washing activities is also reduced. For example, nearly 70 percent of US electricity is generated by burning coal and natural gas, which release greenhouse gasses into the atmosphere and causes global warming. Energy Star™ qualified clothes washers use less energy and help reduce our impact on the environment. By reducing water consumption by an average of 17 gallons of water per wash, or 33,000 liters a year, Energy Star™ qualified washers also help protect our lakes, streams, and oceans.

Outcome

By cooperating to harmonize their standards, CSA and the US DoE encourage technological improvements and suppliers' efforts to create more efficient products for the international market. New designs use less energy and water benefitting both the consumer and the environment. Consumers save money. More clean water is conserved. Fewer greenhouse gasses are created in producing the electric energy the washing machine requires.