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# REPORT ON ENERGY CONSERVATION IN SUPERMARKETS

by  
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Thank you for your invitation to speak on energy conservation, the hottest topic in retailing. In our company energy costs were up twenty-eight percent last year. I must say; however, that we do not have the energy costs faced by supermarkets in the New York City area. As a result of this difference, the economic justification of energy conservation capital projects is more difficult in Canada. My comments will be tempered by this fact. The highest Canadian energy rate in large supermarkets is three cents per kilowatt-hour found in Nova Scotia. This results from the fact that Nova Scotian power is all fossil fueled. The average rate across Canada is about two cents. As a result Canadian experience will lag most American experience.

The first widely accepted analysis of shrinking resources was the report "Limits to Growth" prepared by the Club of Rome which was an assembly of scholars convened by the Chairman of the Fiat automobile company. This report outlined in broad terms the interaction of selected items such as population, arable land, energy sources, critical metals and non-metals, pollution and the like. The depletion of resources and increase in pollution and population portrayed in the book, although presently in dispute, made a profound impact on many readers. It certainly did on me and I recommend that the study be read.

It is difficult to imagine the heritage being left to future generations.

Our effectiveness in reversing these adverse trends will hopefully have significant impact on future generations. Energy conservation is one facet of the overall problem, other elements are population control, recycling, and environmental protection. We in the supermarket industry can only significantly impact energy conservation and recycling. We can be proud of our leadership in energy conservation and attempts in Canada to introduce generic returnable bottles for soft drinks, thus aiding recycling. It must be realized by the public and legislators that the function of supermarkets is to sell groceries and related items which satisfy public demands for a reasonable return on investment.

Competition forces us to be responsive to public tastes. It is therefore, essential that public tastes and habits be changed. This can only be done through education of the public and if the public is not responsive, then legislation, but only as a last resort. I do not believe that it is reasonable to expect a private company to disadvantage itself by pioneering energy conservation methods which will alienate customers or not provide adequate return on investment. There are known ways to reduce energy consumption, the question to be answered is what actions are economically justifiable.

Canada is the highest consumer of energy on a per capita basis. This is because we have similar life styles to

Americans in a colder environment with greater lighting needs because of our latitude and lower population density which increases transportation costs. In spite of scarcer resources; media impact, prevailing life styles our society has grown accustomed to and development of the Third World cultures will result in a cultural inertia which will resist reduction in standards of living around the world. It is only human to be selfish.

In addition to the social inertia of change, is the physical inertia of change caused by engineering and financial limitations and expense of retrofit revisions to an existing retail store's energy system. The supermarket of today is a long way from those of even ten years ago. They are larger, brighter, include scratch bakeries, more refrigerated merchandiser footage and electronic point of sale terminals. As a result the total system is not just larger but also more complex. In addition, customers caused both supermarket chains and various governmental agencies to either raise standards or enforce existing law more strictly. This applies to the areas of product quality, employee safety, sanitation, sewage disposal, noise and the like. The pressures on chains and individual store managers have never been greater but the pressures will increase, not lessen. Anything which can be done, within reason, to lighten the store manager's load should be done to allow maximum time for dealing with people including customers, inspectors, office support staff and store employees.

I have laid out this broad outline as a basis for projecting what the next five years hold with respect to retail supermarket development. In reading various authors I have found a commonality of thought but note that any attempts to estimate time are usually wrong. People assume that things will happen faster than they actually do. Social inertia in

action! When we realize that stores being planned today will possibly be operating thirty years from now, the need for a long term perspective is apparent.

Refrigerated equipment suppliers have developed various techniques of saving energy and supermarket operators will be pushing for more since the refrigeration system uses 60 percent of total supermarket energy.

The design criteria must include:

1. Product appearance and accessibility
2. Capital cost
3. Labor cost
4. Energy cost
5. Repair and maintenance cost

Generally, pay back has been used to decide on equipment purchases and lowest capital cost, given that equipment was generally acceptable, was the deciding factor. The important factor should be the total life cost per unit sold or dollar margin of sales. Product appearance and accessibility is still the most important consideration in choosing merchandisers since their prime function is to sell product. The fact that the product is refrigerated is presently of secondary importance. However, as power costs rise in relationship to capital and labor costs, we will have to reevaluate our purchasing decisions based upon total life costing. Financial analysis techniques, which make expenditure comparisons possible on a present value basis, are necessary and calculators are available which make this calculation quite easy. It will be necessary; therefore, for case manufacturers to design refrigeration systems, considering the five elements mentioned, to provide

minimum life cost per dollar sale of product. It will be necessary for the supermarket industry to co-operate in the development of this equipment.

Building specifications are being examined. Revisions to general building design including insulation, heating, ventilating and air conditioning, size and locations of window lighting and most importantly, the logic of the energy control systems. Energy conservation control techniques have been used with significant results in department stores, hotels, apartment and office buildings but these systems involved two elements, lighting and heating, ventilating and air conditioning. The control strategies used are basic. When 60 percent of the total energy costs are the result of the refrigeration system the control logic developed for these other applications is only 40 percent applicable to supermarkets. Considerable work has been done by various companies in this field but we are still really in the development stage, further tuning of controls and the ability to tailor these control systems to individual supermarket conditions and development of new design specifications to allow the best use of these controls is necessary and will be time consuming since it requires a year to get meaningful results from a single installation because of the impact of the four seasons. In Canada this impact will be more significant than in most localities in the U.S. As a result of this development in control systems, more complications will be added to supermarket facilities management.

With respect to repair and maintenance it has been a tradition in the industry to depend upon outside contractors to respond to the store manager's panic call when a piece of equipment has broken down for some strange reason. This seems to be timed to occur Friday at 4:30 p.m. Planned preventive maintenance

systems are receiving greater attention. Repair and maintenance is a key element in any energy conservation program. There will be a need for increased technical and managerial skills to provide these services.

The speed with which these developments occur cannot be forecast without reference to power costs and geographic considerations. Therefore, I cannot make specific forecasts to a meeting which has such broad geographic representation. The trends will include the following:

1. Redesign of refrigeration systems to provide minimum total life operating cost per dollar sales.
2. Revised building specifications which will stress insulation; heating, ventilating and air conditioning; lighting; control system design and window area reduction.
3. Increased emphasis on preventive repair and maintenance of retail facilities.
4. Training of retail operating personnel in the proper use and care of energy.
5. Increasing Governmental regulation of energy usage.