

Moving towards market transformation

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1. SYNOPSIS

This paper attempts to define the concept of market transformation, to indicate the variety of transformation paradigms (with examples), and to raise questions regarding the design and evaluation of market transformation efforts.

2. ABSTRACT

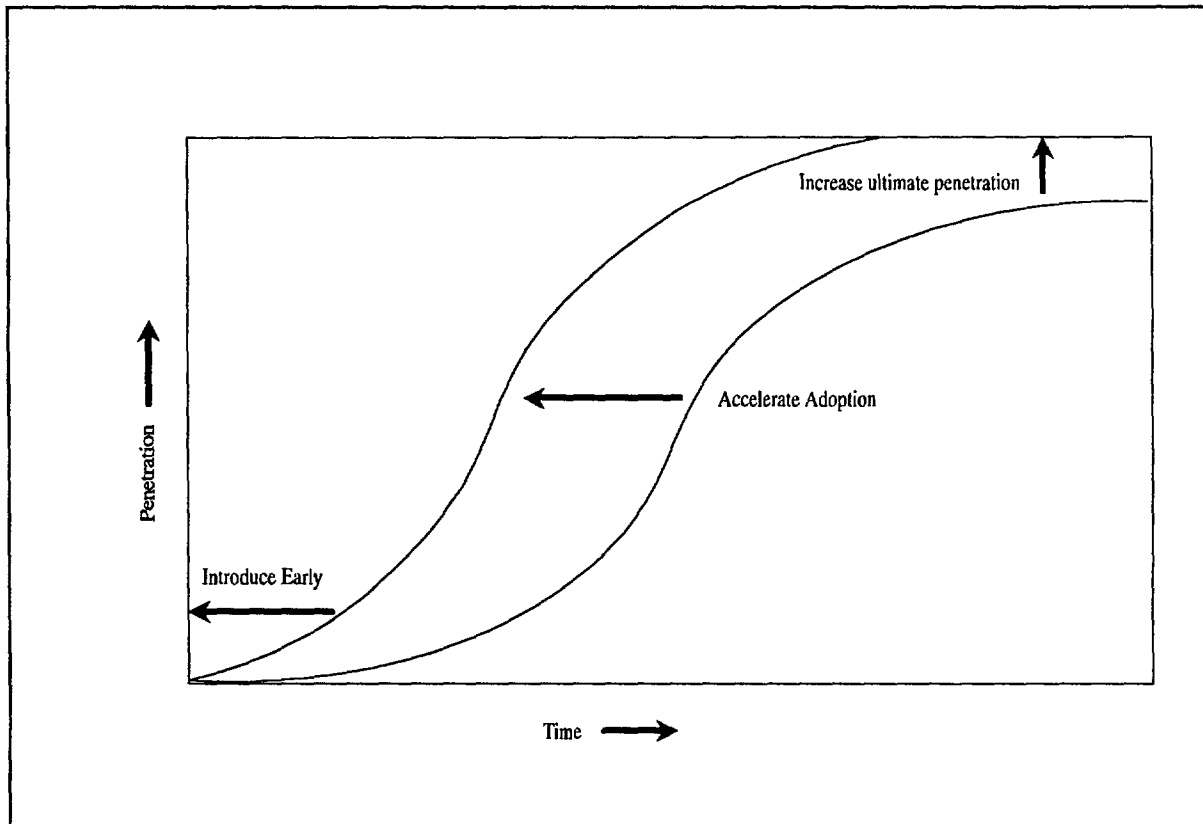
Drawing from the work of Ralph Prael and others (Schlegel, et al, 1993), a systematic definition of market transformation is offered. The contrast between market transformation efforts and traditional utility programs is briefly developed. Market transformation is then contrasted to marketing. The result is to show that market transformation is a conceptually distinct area for organizational effort. Four true market transformation programs (NUTEK, SERP, NWPPC New Housing Construction, and Ontario Hydro's motor program) are reviewed to indicate their basic similarities and operating principles. The poor fit of current DSM evaluation approaches to market transformation is then discussed. The paper presents the strategic importance of market transformation, and suggests that this will be one of the key emerging efforts to accomplish energy efficiency in the 1990's and the first decades of the 2000's.

3. INTRODUCTION

The NUTEK model of market transformation is a major conceptual and functional innovation which introduces new ways of thinking about efficiency efforts, as well as new practical methods and standards adapted from the field of technology procurement (Westling, 1991). The presentation of this model and of the conceptual extension of the traditional "S-curve" (Nilsson, 1992) at the ACEEE 1992 Summer Study came at a time in which renewed interest in market transformation was being expressed by both utilities and regulatory authorities in the U.S. and Canada. At the same ACEEE Summer Study, another paper included a section on approaches to market transformation (Eckman, et al, 1992), while behind the scenes informal meetings were held to develop work, including work on market transformation, that had been chartered by the California Public Utility Commission (Schlegel, et al, 1993). During this same time period, Rick Fleming was assigned by Ontario Hydro to conceptual development work in which market transformation and evaluation of market transformation are key elements. Conceptual development in this area may provide a touchstone to Ontario Hydro's future program and evaluation efforts. Ralph Prael and Jeff Schlegel are principal authors of the just completed systematic study of utility incentives for the California Public Utility Commission which includes perhaps the first intellectually systematic work on market transformation in North America. Each of the authors has become aware of the immediate and strategic practical relevance of extending knowledge in the design and measurement of market transformation for governmental and utility policy and programs.

"Market transformation" is a phrase which has been attached to least cost utility planning, the presentations and agendas of environmental and conservation interests, and the design of utility demand-side management programs for the past several years. Usually, "market transformation" is not part of the serious and practical development of a perspective or of an actual program, but rather a phrase which is used to point toward the model of a sane and sensible future in which we humans accomplish our activities in a manner which is well established and well thought through from the perspectives of efficiency and sustainability.

In this sense, "market transformation" has been quite useful to lift our horizons and focus our visions on a goal which helps us understand the meaningfulness of our everyday worklife and personal life in promoting energy efficiency. While "market transformation" provides a vision and begins to point towards a process which might accomplish that vision, it is also often simply a catch phrase. That is, something of a pious wish that is tacked on as an after thought, or added to a list of justifications for a program or a platform. We would like to add our effort to the pioneering work of NUTEK to begin to move market transformation to a serious program of action and a major focus of effort.



4. DEFINITION OF MARKET TRANSFORMATION

Following Schlegel, et al (1993), we define market transformation as follows:

...market transformation occurs when DSM programs induce a lasting, beneficial change in the behavior of some group of actors within a market system.

Both of the qualifiers in this definition are important. A one time change, or awareness program such as a light bulb give-away is not inherently a market transformation program, unless it can be demonstrated that the lighting program has actually induced a long term shift in purchase behavior. Also note that the effect is beneficial, which implies a valuing in a social welfare (conservation, environmental, emancipatory) sense.¹ Such values are not those automatically exercised by the axiomatic workings of a free-market system: there is therefore required an inherent element of intelligence in the service of the general or societal good which conditions or constrains market transformation toward conservation, environmental, and emancipatory goals. Hence it is appropriate to think of market transformation as implicitly and congenially the role of a state agency, a public or quasi-public organization of the social infrastructure such as a utility, or possibly of a governmentally guided set of private-sector service companies.

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Accepting this definition of market transformation as a general criterion, we can then accept Nilsson's (1992) framework for the three types of market transformation.

5. TYPES OF MARKET TRANSFORMATION

Nilsson (1992) describes three ways in which the market for a specific technology can be transformed. Characteristically, diffusion of a new technology follows an S-shaped curve. When the technology is first introduced, there are relatively few takers. As it becomes better understood and more widely accepted, diffusion accelerates. Finally, when most of those consumers amenable to the technology have already purchased it, diffusion decelerates. Within this framework, the market for the technology can be transformed by *pre-introduction*, by *acceleration*, or by *enlargement*. Pre-introduction involves moving up the date on which the technology is first offered on the market, acceleration involves moving the entire diffusion curve to the left, and enlargement involves increasing the ultimate penetration reached by the technology.

6. HOW MARKET TRANSFORMATION DIFFERS FROM UTILITY DSM PROGRAMS

Utility DSM Programs tend to have a well-defined "target market", such as a particular rate class or a certain size of firm. The way we think about such programs involves categorizing the target market into two groups, participants and non-participants, and focuses on increasing the participation rate in the program. For example, in a direct-install commercial lighting program, the problem is to overcome market barriers to secure the participation of firms. Each year, the utility will budget a sum for the program. This sum will be based on projected participation for the year, and staff performance goals will be tied to this target. Although the program may be evaluated as a marketing success in its perhaps three to ten years of operation, it may or may not be a successful market transformation program. The market *may* have been transformed if the incentives paid out led to lasting changes in the market structure, or to the structure of incentives faced by trade allies. But this is not the typical case. In fact, even in the more limited aspect of transformation, the reliability of installed measures is often in question. Utility DSM programs typically do not include a systematic maintenance component to insure the DSM equipment introduced remains in place and that decisions to expand or refurbish include comparable equipment. If efficient equipment is replaced by less efficient equipment, the market has not been transformed.² In fact, recent studies of reliability of conservation program savings in the commercial sector suggest that turnover in a location may be much more frequent than previously thought. When a small business location changes over from a pizza parlor to a small grocery, or to an insurance office, the new tenant specifies the "look" and the functionality that is important to the success of the business. Existing fixtures are often scrapped, perhaps without their energy efficiency even being a factor in the decision!³ In contrast, market transformation, by definition, must offer a means by which the behavior of actors is transformed so that the energy efficient technology becomes the technology of choice. The point is that well thought through efficiency and conservation choices have to become second nature. They must become the equivalent of the unreflective choice of preference within the market system.⁴

But beyond the practical question of the reliability of energy savings from direct install programs, these programs inherently carry with them a way of thinking about energy efficiency that is different from the outlook of a market transformation approach. We necessarily and rightly focus on service to the participants, but in doing so we unintentionally defocus the "big picture". For example, in a refrigerator rebate and replacement program, we focus on the number of old refrigerators picked up and destroyed and the number of more efficient refrigerators sold during the period of the rebate. We may not notice the market structure, which temporarily diverts a fixed number of more efficient refrigerators to the rebate-eligible market for the duration of the rebate period. Or which may have simply shifted sales among dealers in a city and its environs. The problem is equivalent to that described by the economist, David Gordon, regarding job training programs in New York City: successful job training programs only shift employment from non-trainees to trainees if the job-structure of the city is fixed. It is the job-structure itself which must be the focus of an administration interested in advancing the social welfare of the city. In contrast, work in

market transformation inherently focuses on the entire structure of a particular market. When we work on market transformation, we work at a level in which our thought and actions are inherently within the "big picture". This can be more satisfying. When it works, as NUTEK has shown that it can, market transformation is a success of a higher order.

In cases in which utilities receive program incentives, as Schlegel, et al (1992) have pointed out, program incentive goals can have negative effects:

...unless appropriate counter-measures are taken, regulatory incentives based on net benefits may deter utilities from taking precisely the kind of actions that are most likely to lead to market transformation. Many of these actions, such as attempting to build a widespread conservation ethic or attempting to increase the market availability of efficient equipment, will tend to promote savings among non-participants. Non-participants who increase their use of energy efficient equipment as a result of these actions are termed "free drivers." Unless utilities are explicitly credited for such results in the calculation of their incentive payments, these actions will tend to reduce the apparent net impacts of their programs--and, by extension, their incentive payments. Thus, depending on (1) the extent to which free driving effects are included in impact estimates, and (2) the extent to which measurement and evaluation approaches mislabel free driving as naturally occurring conservation, some incentive mechanisms may explicitly discourage efforts at market transformation.

A way to think historically about the contrast between market transformation and nearly all utility DSM programs is to remember or read about the perspectives of the energy crisis years following the period in which oil-exporting countries coordinated to gain effective market control of their product. The people of many oil-importing countries experienced gasoline and oil shortages and rationing. In the US, people were asked to do without and engage in conservation as the "moral equivalent of war". Much about this period may now seem quixotic. Many of our definitions and goals have shifted over time, so that now, for example, we say efficiency has is about "doing as well or better with less energy". The energy crisis required "doing without". Yet all of our work is historically rooted in the lesson that our national and world economies, industry, commerce, social institutions, and governments depend critically on energy. What is missing in the workings of many of our utility programs today is the emphasis on "conservation ethic" characteristic of the previous period. We are, as it were, swallowed by the details of administration. In contrast, market transformation aligns congenially with the conservation ethic and with national energy policy. It is potentially the most powerful tool of the next era of conservation.

7. HOW MARKET TRANSFORMATION DIFFERS FROM GENERIC MARKETING & GENERIC MARKETING DIFFERS FROM DSM PROGRAM MARKETING

Market transformation and marketing overlap considerably in the areas of analytic categories, strategies, and tactics, but their aims are quite different. In upscale markets serious attempts are made to differentiate a product by increasing the customer's perception of the quality of service, the commitment of a dealership, or an interest of the seller in helping to insure the wise, efficient, or profitable use of the product by the buyer. The recent literature on service quality stresses the importance of such values and interests. But with this exception and the exception of traditional craft-orientations not always congenially associated with current business forms, the seller often could care less what is done with the product once it has been purchased. In market transformation we do care, because market transformation oriented to conservation, efficiency, and emancipatory goals involves commitments which integrate the whole fabric of life activity. The fundamental difference adheres to the social welfare value element in market transformation efforts. In marketing, profit is the motive and the social welfare value of a product is often appended as an additional product characteristic. In market transformation to promote efficiency, the motive is at the level of the totality or quality of human life, and profit is a useful tool in sustaining the repetitiveness of production and consumer choice.

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Marketing can also be contrasted to most utility DSM programs. In marketing, the first step is to take the "cream" from the market, by creating purchasers of those who might take similar actions in the absence of the marketing effort. Similarly, pricing is optimized to reflect high customer perceptions of value where possible. Again, there is often little concern with what is done with a product once its value has been realized in exchange. The goal is profit. In contrast, utility DSM programs are penalized for both "free-riders" and for "high-grading" or "cream-skimming". They are often jealously scrutinized by multiple parties to insure that there is not much difference between cost of supply and selling price. They are internally and externally regulated to prevent or discipline the embarrassment of profit (except within a very narrow band).

8. MARKET TRANSFORMATION AS AN ORGANIZATIONAL EFFORT

As suggested by the definition and initial contrasts presented above, virtually all utility DSM programs are not market transformation programs. It is true that utility DSM programs can claim credit for introducing product knowledge and experience with more energy efficient technologies. In selected cases, awareness and experience with product may significantly influence a market and tip a balance toward market transformation. But there have been few explicit attempts to actually transform markets.

Organizationally, market transformation effort should be located either in a separate but highly flexible governmental unit, or if in a utility attached at an executive level or directly reporting to the executive level. The nature of market transformation will require considerable autonomy, as well as the ability to interact directly with leading specialists, business owners, and executive levels in manufacturing and distribution companies. The knowledge and theory required in a market transformation effort is probably roughly analogous to that required by the top level strategic planning or financial control levels of an organization. Market transformation is to DSM programs approximately as strategic planning is to mid-level tactical decision-making; finance is to accounting; or executive level leadership is to key engineering functions. No matter who does this work, or from what levels they are drawn, the interorganizational, political, and negotiations aspects of the work will require and develop executive level abilities. The everyday work of a market transformation organization (or unit in a larger organization) is inherently at a societal, national, or international level. It will involve strategic analysis at those levels.

How are these organizations (or organizational units) to be assessed? Market transformation programs must be well thought through from the beginning, in implementation, and in evaluation as market transformation programs. The criteria for good design, for accomplished implementation, and for successful evaluation will be different. These criteria will probably take some years to develop, however, the four case studies below provide initial examples for beginning their development.

9. FOUR MARKET TRANSFORMATION PROGRAMS

The four market transformation programs presented were selected as four of the five or six best programs which meet the strict definition of market transformation (above). Note that in the Ontario Hydro Motor Program, the initial program was a utility DSM rebate program. The research into market relations stimulated by the poor market response to the incentive showed that simple economic axioms did not hold. The social and social structural dimension of the market were much more complex. Continued market research provided the strategic insight into what a successful market transformation program might require. These elements were put in place in a new program design, with a significant response in market share for efficient motors. A remaining question, however, is "has true market transformation been achieved?" If Ontario Hydro were to withdraw, would the market share for efficient motors continue to increase, or would it decline?

This critical question was systematically addressed in the second example, the Northwest Power Planning Council's and Bonneville Power Administration's long-term effort to transform the market in new housing construction in the four state region comprising the North West corner of the United State. Here the

strategy was to employ incentives and market forces to tip a political balance. Once political opposition was overcome, new housing standards would be shifted over to legal codes. A potential weak point of this design is, of course, whether or not state inspection agencies (already overburdened and under-staffed to enforce other sections of the building code) will enforce the new energy efficiency provisions of building code with sufficient vigor to insure persistence.

The SERP refrigerator program is presented as a variant of the technology procurement approach. Technology procurement is more fully presented in the section on NUTEK, and drawing on the theoretical work of Westling (1991). This approach, with its explicit development of the market through procurement agreements is another approach to the problem of sustainability. All of the approaches discussed are potentially complementary.

9.1 Ontario Hydro motor program

In 1988, high efficiency motors represented approximately 5% of the motor market in Ontario. By the end of 1992, industry estimates place the market share at 40%. A key factor in this transformation has been Ontario Hydro's program approach, which focuses on consumers, distributors, and manufacturers. Program activity on high efficiency motors began in 1987 with a pilot program providing cash incentives to buyers. Although the incentive was adequate to cover the premium cost of the motors, market response to the pilot was poor.

Through market research, other barriers were identified. From a customer perspective, two factors were missing. First, there was a lack of experience and confidence with the product (both product knowledge and a congenial preference for the product were missing). Second, access to the product was not easy and routine. It was virtually impossible to purchase it off-the-shelf from the distributor. From the perspective of distributors, the consumer market was uncertain. It was financially risky to stock a product that did not have a demonstrated market. In addition, recommending something other than what the customer requests puts the distributor's reputation and thus the stream of future business from that customer on the line. From a manufacturer's perspective, the question of opening or expanding a product line relate to the manufacturer's confidence in the size and persistence of the market for the new product.

Analysis suggested a strategy of product knowledge and incentives. Product knowledge was required to overcome the customer's lack of experience with the product, the distributors' initial uncertain confidence in the product, and to clearly define for the manufacturers the specific tie between product attributes and incentives. Incentives were required to overcome customer uncertainty and fear of "buyers remorse", to strengthen distributors' belief that stocking product for an as yet undemonstrated market might well be profitable, and to persuade manufacturers that a market for new product variation could be created and sustained for a period of time sufficient to warrant changes in production and volume of production.

A full scale program was introduced in 1989. Some of the specific tactics used to overcome the market barriers are summarized in Table 1. To increase clout and to reduce confusion, the three largest Canadian utilities, Ontario Hydro, Quebec Hydro, and BC Hydro (leading the Power Smart consortium of smaller utilities), joined forces. This Coordinated Utility Approach presently represents 85% of Canadian utilities, working together to develop a common set of standards for testing, a single measure of qualification, and a common national qualifying motor database. Since 1989, market share has increased eight-fold, while the premium price of high efficiency motors has dropped from a range of 30%-90% to a range of 15%-25%, depending upon motor size.

Has the market been transformed? Clearly, many of the barriers present in 1988 have been reduced. Would the changes persist if program activities were removed? It is too early to say for certain.

9.2 NWPPC new housing construction program

The Northwest Power Planning Council was established in the early 1980's as an interstate compact of four states in the North West corner of the United States to promote coordinated energy policy and energy

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efficiency in the region. One of its first activities was to initiate improvement in residential building practices. Two programs, one a utility sponsored incentive and marketing program for residential builders, and the other a drive to win political support through state legislatures from improvements in state housing codes were designed to work together to accomplish market transformation. In this model, described as "transformation of building practice through coordination of utility programs and government actions", (Eckman, et al, 1992):

The two programs were designed to complement one another. Where there were opportunities that made it possible to adopt the new standards as a local energy code, they could be seized. Where individual builders or buyers wanted to build to the new standard, they could do so with the assistance of their utility. Under both the code adoption program and the utility marketing program, payments were made to the home buyer to cover some of the increased cost of building to higher levels of energy efficiency. Utilities also covered increased building code enforcement costs for local governments.

The strategy was inherently political, designed to create builder experience with substantial market incentives on a relatively short term (but multi-year) basis, but with the eventual goal of phasing out utility incentives and moving to codes. Where the baseline percentage of electrically-heated new homes performing to the new standards was estimated to be approximately 25% in the absence of the market transformation effort, it is now estimated in the range of 85%-90%. This was a coordinated effort, planned at the level of the politics of state government by an interstate planning authority with an energy efficiency mission. Implementation was greatly facilitated by regional public and private utilities. It should be noted that the project involved manufacturers and distributors of energy efficient products, relations of major and minor builders, and market competition within the framework of moving towards improvement of state codes. While official inspection may play an important part in maintaining standards, the market dynamic set in motion by the codes also creates an interest in enforcement by suppliers of energy efficient technologies.

While clearly successful in its long term political strategy leading to improved housing codes, the degree of observance and enforcement of codes remains an open question, which is currently being studied.

9.3 SERP

The Super Efficient Refrigerator Program (SERP), sponsored by a consortium of environmental, utility, and government agencies has been described as "transformation of a product by coordinated purchases" (Eckman, et al, 1992). For several years, the Natural Resources Defense Council (NRDC) and other environmental groups have contributed to the development of federal appliance standards in the United States. In this work, a beginning strategy was to push for stringent standards in some of the most populous states, in particular, California. Once the success of this initial strategy had been shown, manufacturers realized that they had a practical interest in working with environmentalists: otherwise their mass markets would be fragmented in unpredictable and unstable ways as different states adopted different appliance standards. It then became politically possible to enact federal appliance standards in the National Appliance Energy Conservation Act of 1987 (with the support of all affected parties). Meanwhile, NRDC and other environmental organizations continued technical research on refrigerators and soon learned that what is now termed a "super-efficient" refrigerator that was also a "green" refrigerator was possible with existing technology. Environmentalists then enlisted utilities and other organizations with an interest in either energy efficiency or the environment to create SERP, sometimes referred to as the "golden carrot". In this phase of technical development, manufacturers would be enticed by a multi-million dollar guarantee of sales, and a sharing of the development risk. The single SERP contract would be awarded based on a competition. There are several other aspects of this project, but it is predictable that once even a minor market for the new product is in place NRDC will use the existence of the technology and the market to move up the base for the federal appliance standard for refrigerators. The essence of this model, then, is not SERP itself but the existence in the background of a deeper strategy of which SERP is a moment in an ongoing process.

A potential problem with SERP is that the new product may or may not satisfy consumers. Refrigerator studies repeatedly document the fact that energy efficiency is very low on either the customer's or salesperson's wish list of product attributes, and developing a temporary market in which refrigerators are

Table 1. Motor Program Market Transformation Tactics

CHANGE	MARKET		
	Customers	Distributors	Manufacturers
Increase Options	<ul style="list-style-type: none"> • Increase awareness and confidence 	<ul style="list-style-type: none"> • Encouragement to increase stock 	<ul style="list-style-type: none"> • Encouragement to increase availability to Province
Increase Incentive	<ul style="list-style-type: none"> • Customer incentives reduce customer risk 	<ul style="list-style-type: none"> • Vendor incentives and customer incentives reduce perceived risk of stocking the new product • Long-term program commitment required 	<ul style="list-style-type: none"> • Vendor incentives to cover handling • Common eligibility across utilities • Long-term program commitment required
Increase Knowledge	<ul style="list-style-type: none"> • Provide customer financial evaluation tools • Provide customer examples of successful case studies • Provide educational material • Provide distributor listings 	<ul style="list-style-type: none"> • Provide financial evaluation tools • Provide examples of successful case studies • Provide educational material • Motor verification program • Qualifying motor database 	<ul style="list-style-type: none"> • Develop and maintain standard test procedures

delivered to utilities may result in open or disguised dumping if the product does not have significant customer appeal for the "end user". Still, the key factor here is the ongoing role of the NRDC, which as an active and innovative player will probably find one way or another of continuing to transform this particular market.

9.4 NUTEK

The technology procurement model employed by NUTEK is based on theoretical work by Hans Westling (1991). The full history and development of technology procurement is presented in the Westling volume (1991), as well as many practical examples from the buildings sector. This approach requires the development of both market demand and market supply through the offices of a third party agency which serves as an organizer and catalyst for the transaction. Purchase arrangements may specify supply competitions, and the characteristicly involve both a commitment for an initial purchase among a coordinated group of buyers if the required standards and use-values can be met, and an ongoing commitment to sustain orders if the product performs well in practice.

"Technology Procurement" is a form of purchasing aimed at directly stimulating innovation. Technology procurement is not exclusively associated with any particular form of

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contract, though it comes closest to design/build contracting with functional requirements and functional procurement. (Westling, 1991, 43)

10. EVALUATING MARKET TRANSFORMATION PROGRAMS⁵

The evaluation of market transformation programs has at least seven separate analyses that must be performed. A successful market transformation must meet criteria in each area.

- (1) First, it must be documented that the transformation is a genuine contribution to social welfare (conservation, efficiency, emancipatory). We can refer to this as a social welfare principle guiding the market mechanism, although the guiding may be 90% a brokering function which simply removes barriers to production and sales of efficient equipment. The benefit may be a reduction in energy or demand for the same or an enhanced value-in-use. An aspect of the benefit should be an effect in improving ecological and environmental relationships.
- (2) It should produce a documentable transformation in sales. If the transformation involves a change in law governing the production or use of certain products, then observance of the law must be similarly documentable. For example, enactment of a building code may mean little unless state inspectors enforce it, and trade allies support it.
- (3) Third, the mechanism of the transformation must be traced in detail (similar to a process evaluation, but focused on an exhaustive list of market barriers and how these market barriers were overcome by the program).
- (4) Fourth, it must be shown that the transformation would not have occurred (or not have occurred when it did) in the absence of the program.
- (5) In keeping with the definition of market transformation as fundamentally involving value-in-use rather than simply exchange, the (a) installation and ((b) reliability of the new equipment or products must be demonstrated.
- (6) Similarly, the persistence must be demonstrated.
- (7) The reproduction of the exchange-relation must also be demonstrated to document the lasting effects required for a transformation. For example in the NWPPC housing case, the sales relation was put in place using incentives, but now is enforced by law. In the NUTEK case, and in many cases in Westling's volume, market barriers were overcome so that a strong existing consumer interest could be marshalled and satisfied by winning through the otherwise blocked markets to secure the desired product differentiation. In this case, so long as the new products satisfy the newly articulated market segment, it is likely that the transformation will endure.

11. SUMMARY: THE STRATEGIC IMPORTANCE OF MARKET TRANSFORMATION

Market transformation will be a leading segment of DSM activity in the coming years. It will be an economic and social approach to "green" production and consumption of goods. As suggested here, DSM market transformation necessarily requires a social welfare orientation. This orientation requires technical choice in production and in consumption to recognize its ethical aspect. Market transformation centers on the concept of value-in-use, as opposed to value-in-exchange, and is thus both a holistic understanding and a link of the future processes and shape of human society to pre-industrial thought regarding the relation of people and environment. Nevertheless the concept of social welfare criteria guiding and bounding the operation of the market is quite practical and workable, as the examples have demonstrated. Much of the drive for DSM market transformation will probably come from environmental concerns as well as from energy concerns. As noted, evaluation steps from installation, to reliability, to persistence, to sustain-

ability. Market transformation is another name for that last step.

ENDNOTES

1. The process *could* be defined without the inclusion of social welfare or beneficial change. In its purely technical dimension, a market transformation might be defined as simply a fundamental and lasting structural change in the reproduction of the of production and exchange of a type of good in the market system. While such a definition could be adequate for analytic purposes, there is more to the problem. This is discussed further in the section on how market transformation differs from marketing. At root, the social welfare aspect of the types of market transformation we are concerned with must be retained to provide an orienting framework for the paradigm. That orientation points towards an essential difference from marketing: our concern is with values-in-use, not simply with sales. Thus, we are linked directly to concern for reliability, persistence, and sustainability in an ongoing guided market process of beneficial change. Keeping the social welfare aspect central to the definition of market transformation also correctly expresses the ethical dimension of technology, and by acknowledgement, brings the ethical dimension into conscious control. This, in turn, grounds our work in the ongoing interest of the human community and in ecological realities.
2. In a paper to be presented at the 1993 Chicago Evaluation Conference, Prah1 and Schlegel report the following example: Most discussions of market transformation to date do not appear to have addressed the issue of the permanence of DSM-induced market changes. Unfortunately, there is good reason to believe that, in many cases, markets will return to pre-program conditions once successful programs are removed. For example, programs targeting high-efficiency furnaces in Wisconsin in the early- and mid-80's were so successful that they appear to have contributed to this technology achieving up to a 90% market share. As a result, furnace rebates were for the most part phased out in the late 1980's. Recently, however, evidence has arisen that high-efficiency units are again losing market share. Prah1, Ralph, & Jeff Schlegel, "Evaluating Market Transformation", forthcoming.
3. See, for example, Skumatz, L.A., et al., "Bonneville Measure Life Study: Effect of Commercial Building Changes on Energy Using Equipment," SRC No. 7619-R2, Synergic Resources Corporation, Seattle, Washington, December 1991. Again, for market transformation it is the value-in-use that is the concern, not only the sale. Thus, it appears that program maintenance components may be essential for reliability and persistence. Reliability and persistence are necessary aspects of market transformation.
4. It is essential that the efficiency choice continue to be made over time. Reasons may vary (as they do in the examples presented later in the paper), but reproduction over time (lasting change) is essential.
5. For further work towards evaluating market transformation versus evaluating resource acquisition, and defining a market transformation research agenda, see Prah1, Ralph, & Jeff Schlegel, "Evaluating Market Transformation", forthcoming.

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