Market Transformation in Manufactured Housing: A Pacific Northwest Experience

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This paper presents interim results from the Bonneville Power Administration (Bonneville) Market Transformation Study of the Manufactured Housing Acquisition Program (MAP). The *market transformation* study begins in August 1995, following the close of *market intervention* in July. MAP was designed and operated with the intent to transform the energy-efficiency attributes of all product offered in the market for new manufactured housing. The program was offered in the U.S. states of Washington, Oregon, Idaho, and western Montana in April 1992 by Bonneville and regional utilities. Close to $100 million dollars in payment to manufacturers leveraged about $2.5 billion dollars of consumer product value during market intervention. Importantly, in the market intervention phase, virtually a 100% market share for all market segments was achieved by the time the direct purchase of energy-efficient measures ended in July. MAP homes exceed the 1976 HUD standards, and also exceed the higher 1994 HUD standards. The 1994 HUD standards were in part an outcome of the MAP program. The intent of this paper is to:

(1) Report on the specific post-MAP program market dynamics and effects.

(2) Present an assessment model for evaluation of market transformation programs.

(3) Suggest ways to sustain the energy-efficiency of manufactured housing.

The paper reports on the synergy between MAP and the current quality and quality control revolution in manufactured housing, and its implications for sustaining the transformation. It uses conceptual models developed by the NUTEK or ''Swedish School.''

INTRODUCTION

During its market intervention phase, the Manufactured Housing Acquisition Program (MAP), was able to raise the energy-efficiency of virtually 100% of product in Washington, Oregon, Idaho, and western Montana. The strategy of technology procurement was conceptually simple but the step by step accomplishment of a series of tasks and subtasks, involving many parties and key actions of individuals over many years, was complex.[1]

Background

The project required the voluntary and sustained cooperation of many public and private institutions, including the Northwest Regional Power Council, Bonneville, the energy offices of four states, the public and investor-owned utilities of the region, and the manufactured housing industry, including manufacturers and dealers in the four states.

Financial Basis of Market Transformation. Purchase of equivalent conserved energy from manufacturers, through an incentive payment for the enhanced energy-efficiency attribute of each home, cost utilities less than purchase of energy from the marginal power plant.[2] As time goes by, the financial wisdom of MAP is confirmed as the number of units produced in the market transformation phase (following the end of utility payments to manufacturers) continues to grow, thousand by thousand, passing 7,000 in the spring of 1996. Indications are that the energy-efficiency attribute is sustainable in the marketplace, so these numbers are expected to grow dramatically in succeeding years, assuming the continued support of the Super Good Cents (SGC) follow-on program and joint marketing efforts. A practical venture, MAP is one of those rare instances of human maturity—a smart project with a long term perspective, uniting industrial, household, utility, and environmental interests.

Project Scale of Market Transformation. The scale of the project was large, involving four US states. It was made possible, in part, by an increasing knowledge base built on years of prior effort in the Residential Construction

Demonstration Project (RCDP) and SGC. [Images are better at conveying scope than are statistics: We might liken the MAP effort to the building of a cathedral in the middle ages, a major project that is often used as the epitome of human accomplishment in its time.] Not without its frustrations and problems, *MAP pushed the envelope of possibility*, in its physical and market accomplishments, and in its social and organizational dimensions.

Market Transformation in the Context of Socioeconomic Transition. As the project went forward, electric power markets were moving from a long era of geographic territoriality in which central planning, lately expanded to include the public or societal interest under Integrated Resource Planning (IRP) procedures, was ascendant. However, anticipating restructuring, the electric power industry began to shift toward competitive advantage at the level of the firm. Market boundaries the largest customers became fluid, and spot market prices and contracts removed the IRP marginal power plant to the public domain as a general social problem rather than as a concern of the individual firm.[3] During this period, the unit by unit cost justification of MAP became less relevant.[4] Market transformation (following the period of market intervention) became even more important.[5]

The Reality of Transformation. Market transformation has become a catch word with different meanings (Prahl & Schlegal, 1996). But for MAP, both market intervention and market transformation results are supported by hard numbers that stand the test of inspection from any analytic viewpoint. Still, we need to see a full business cycle to know the stability of the transformation.[6] Currently, the market for manufactured housing in the Pacific Northwest continues to slow as indicated by the end of factory backlogs, and the temporary shut down of some production lines.[7]

Program Description

In April 1992, Bonneville and regional public and investor-owned utilities in collaboration with manufacturers launched MAP with the intent that it last four years, through March 1996. Through a program of technology procurement, the intent was to produce permanent change in all new electrically heated manufactured homes in these markets. Specifically, the goal was to change the characteristics of homes offered in these markets so that following the final technology procurement payment to manufacturers, homes would continue to be offered with MAP or better standards.

Before MAP. Prior to MAP, and its predecessor programs, all homes were built to the 1976 HUD standard. This standard, and the pre-MAP construction processes, allowed unnecessarily high customer electric bills and discomfort during cold snaps. It also allowed a substantial waste of generated electricity throughout the Northern tier of the U.S. MAP contains a uniform set of specifications with provision for variation, depending on the amount of glazing and other physical characteristics of individual home designs. These specifications yield thermal standards approximately 60% more efficient than the 1976 HUD standards and approximately 30% more efficient than the October 1994 HUD standards, which were themselves made possible by the MAP work.[8] The normalized overall heat loss rate for MAP is $U_0 = 0.0534$ Btu/hr f^{o2} °F.

From Market Intervention to Market Transformation. During the first two years of MAP (Chong & Davis, 1995; Lee, et al, 1995; Results Center, 1992; Sebold, et al, 1995), each manufacturer was given $2,500 for each home built to MAP specifications. The payment was by home rather than by the manufacturing unit of the ''floor,'' and each home is one to three floors depending on size. The State Energy Offices ensured quality control through inspections of each manufacturing plant. After the new HUD code was in place (1994), the incentive to manufacturers was reduced to $1,500. There were no financial incentives offered to either dealers or purchasers of homes. Bonneville was the financial center for MAP, providing payment to the manufacturers, and then recovering payments from the collaborating investor-owned utilities for units sited in their service territories. After MAP ended, Bonneville continued a low-level marketing effort under the Super Good Cents (SGC) logo and the manufacturer/dealer Northwest Pride effort is also promoting sales.

The Dynamic of the Plan & the Market

The market for a product consists of potential customers who have unsatisfied needs and the ability to purchase the product to meet that need.[9] It might be asked, then, what the market for a MAP home was before the program and its predecessors, RCDP and the pre-MAP buyer-oriented version of SGC, began?[10] The answer is that there was then only a potential market because there was no product.

The Initial Failure of the Free Market. The situation with regard to the energy-efficiency attribute of product offered prior to MAP and its predecessors was virtually complete market failure.[11] Now, many conventional economists would not see market failure in this situation because the market satisfied the individualistic desires with which it was presented and, presumably, sellers maximized profit by optimizing product to meet these perceived individualistic needs. That is the technical function of a market mechanism, so where, it might be asked, is the market failure?. From a social perspective, however, there is a difference between a market mechanism operating ''in the wild'' and a market mechanism brought under mature human control to serve the higher social interest while it performs its function of

optimizing product to meet the lower level individualistic interests. But, it may be asked, isn't the public interest ''automatically'' served by the outcome of the market behavior of individuals? The hard answer to this article of faith has to be: perhaps in some respects, ''yes''; but yet—and critically—in others, definitely ''no''. It depends on the specific case, and valid assessment requires the empirical measurement of outcomes in the particular context, the same as for evaluation of any other social program.

In either case, the public interest is generally not a ''hard driver'' of markets in the same manner as selfish, acquisitive, emulative, and other interests lower in the hierarchy of needs: it is a higher level concern.[12] Generally, attributes of product that are highly desirable from a societal perspective are only maximized if, *by chance*, they happen to be inseparably bound to other attributes which correspond to the consumer or producer interests that actually drive a market. Maturity and intelligence regarding social goals enter not through the market itself, but, if at all, then at a higher level, through planned market intervention and purposeful market administration. By itself, and absent planning, intervention, and collaborative social control, the free market is virtually incapable of achieving energy-efficiency, except under special circumstances.[13]

Twin Solutions to Market Failure: ''Hard Driver'' vs. ''Derived Demand''. The economic demand for energy-efficiency comes out of a different kind of ''meeting'', a different type of human interaction than the coming together of buyers and sellers in the market. The marketplace maximizes profit through the competitive satisfaction of individualistic needs: a better grade of carpet, oak cabinets, or a more expensive look. But, at a social level, that market will fail to produce meaningful energy-efficiency, especially if there is no effective marketing plan and materials. Energy-efficiency does benefit the individual, but it is one of those Darwinian categories that operates at the highest social level. Energy-efficiency must generally:

(1) Operate as a derived demand, in which planned market intervention is required in order to first create the product, and then to provide it with market dominance for a period of years, usually through direct purchase of the energy-efficiency attribute of product.[14]

(2) Or, it must attach inseparably to a powerful ''hard driver'' or competitive advantage so that the profit motive can sustain the energy-efficiency attribute of product.

As in the first point, MAP's market intervention used direct purchase of conserved energy by regional utilities to create the necessary derived demand for the energy-efficiency attribute of product. This market intervention corrected the market failure through planned intervention, demonstrating the interaction between 'plan' and 'market.' And, as in the second point, the follow-on SGC program is inseparably attached to a ''hard driver'': a true competitive advantage in the wider competition among builders of manufactured and stick-built homes. Although all concerned can feel mature and happy that they are acting in accord with environmental stewardship and intergenerational responsibility in promoting energy-efficiency, SGC offers an exceptionally robust opportunity as a vehicle by means of which the manufactured home industry can work to expand market share. The profit potential is very high and potentially very sustainable once the market is tipped.

The Situation by Market Segment

Dealers for manufactured housing have identified three market segments based on buyers' ability to pay.[15]

Low-end Segment. The low end segment can purchase primarily a single-wide, with a monthly mortgage payment just above rent. Total first cost may vary from the high teens to the mid-twenty thousand dollars but the key for the this segment is the *monthly payment*, not the price. The target market is characterized by a young family of four with a little child and a new baby who need a monthly payment not too different from their current low end apartment rent. For the energy-efficiency attribute of product this is the most vulnerable market segment.

In the absence of social support to provide choice in the market, this segment *must* be oriented to low monthly payment, and so to low first cost. Though desire to consider comfort, low life-cycle cost, low electric bills, and the protection of the environment may well be present, the ability to pay extra for these product attributes is not. If there is some discretionary cash, a practical exercise of choice would be to upgrade the carpeting in a low end unit. For all practical purposes, ''extra insulation'' and the like comes much further up the hierarchy of needs. So, if the public interest is to be served through least-cost energy acquisition, this is the sector that may require some form of secure and direct financial return to the family at time of purchase of the benefit to society that is created when they choose energy-efficient housing.

Middle Segment. The middle segment purchases homes that are primarily double-wide or elegant single-wide, and priced from the mid-twenties through the low sixties. Following MAP, these units have been generally kept within SGC standards, with only some erosion to the 1994 HUD code. It is likely that continued marketing support of Super Good Cents, of the type currently offered by Bonneville, Northwest Pride, and others will be a significant factor in sustaining this sector. Unlike the low-end segment, the mid-

dle segment is unlikely to require direct financial support so long as the industry maintains its SGC/quality emphasis. However, development of increasingly favorable financial plans for energy-efficient housing would be a desirable addition to the marketplace.

High-end Segment. Customers in the high end sector have the ability to pay, and are not constrained in the choice of multiple product attributes, in contrast to middle and low-end buyers. The high end of the market purchases homes that are generally either triple-wide or a very elegant double-wide. These homes compare favorably in appearance and quality with upper end site-built homes. Appearance is highly crafted, the feeling is of ample space, and of comfortable functionality. Prices range from the high fifties to well over one hundred twenty thousand dollars. By intervening in the market to create the MAP or SGC product, and by making information about benefits available, this market segment was initially secured. Interviews with manufacturers, dealers, association executives, and energy office and utility professionals throughout the four states revealed only one expression of concern that this segment might erode below MAP standards, and while some manufacturers are not emphasizing Super Good Cents, the homes are built to the standard.[16] There is no need to employ additional financial tools to support this segment. However, continued success is dependent on manufacturers and dealer maintaining an aggressive SGC/quality emphasis in product marketing and sales.

Facilitating the Market: the Special Role of the State Energy Offices

Interviews with manufacturers and housing industry representatives revealed one of the most important, yet unexpected findings thus far in the market transformation evaluation. They reported that the professional relationships that developed while working with the four state energy offices resulted in concrete and practical advantages in designs to meet MAP standards. Through MAP, energy office staff became known for helping to solve practical technical problems and for raising the value of manufactured housing product offered in the market.

The uniformity of these comments by factory managers and industry representatives is remarkable, particularly at a time when the current fad is to question government. For this group, MAP meant much more than energy-efficiency. It became a signature for housing quality at a time when the industry was going through a particular maturation. *With this signature, it was much easier to communicate to buyers that some manufactured housing meets or exceeds the quality standard of site built housing, a competitive advantage for the industry*. In part, this message to buyers was self evident from the new look of manufactured housing, particularly the sleek and attractive energy efficient windows that came with MAP. But there were also other features of the homes as well. One essential program element appears to be the external placement of the MAP certification on the homes designating them as meeting MAP standards.

The Underlying Dynamic

The market dynamic can be summarized as follows:

(1) Initial and virtually complete failure of the free market completely reversed by the development of predecessor programs and MAP, so that by the end of the market intervention period in July 1995, product offered was virtually 100% to the MAP/SGC standard.

(2) During market intervention phase, State Energy Offices acquire reputation in industry for productive technical innovation that contributes to industry profit opportunities. In market transformation phase/SGC follow-on, industry is comfortable in continuing to draw upon State Energy Offices to support its internal technical resources. A progressive technical improvement capability is in place and the technical dynamic is sustained.

(3) Market transformation period begins with the beginning of the SGC follow-on program, led by the State Energy Offices, and paid for by the manufacturers, a good indication of sustainable market transformation. Bonneville and other efforts begin to build SGC marketing emphasis and put together initial marketing materials so that initial program is largely in place in the spring of 1996.

(4) Low-end market segment shows erosion from SGC standard in order to respond to consumer needs. Upper-end market is secure, middle segment generally secure, but dependent upon continued industry enthusiasm for SGC/quality promotion.

(5) Continued Bonneville and industry efforts sustain the SGC standard, and the specific nature of optimal involvement level and support activities to sustain long-term market transformation begins to emerge from ongoing experience. Other utilities begin to find ways to support this effort.

(6) SGC, quality, and superior quality control of manufacture housing becomes focus of industry leaders as a way to increase market share as against stick-built homes. Potentially sustainable coherency gradually builds, but is dependent upon the industry organization within each state. Approach offers high potential for greater profit and increased market share, in a context

in which market balance may be permanently tipped in favor of manufactured housing.

METHOD

The Department of Housing and Urban Development has provided access to the raw National Conference of States on Building Codes and Standards (NCSBCS) database. These data contain the denominator for the market participation fraction, by state, for units produced and for first destination, by state. The numerator of the market participation fraction is provided by the Idaho Department of Water Resources, the Oregon Department of Energy, and the Washington State Energy Office. The data base approach is undergoing continuing refinement, and this paper constitutes an interim report. Hard data is supplemented by extensive and continuing discussions and interviews with industry leaders, manufacturers, dealers, State Energy Office staff, Bonneville staff, Northwest Power Planning Council staff, and others; as well as field observations of set-ups of new homes, in-plant manufacturing, review of industry publications, and observations at regional home shows.

RESULTS

Since the end of the program in July, erosion from MAP standards has gradually affected the low-end market. Oregon is producing approximately 85% MAP homes.[17] Washington is producing about 85%, and Idaho produces considerably less. Idaho is special because it has a substantial gas market and production lines for this market were never converted from HUD to MAP. Also, approximately 25–50% of Idaho homes are shipped south to Colorado, Nevada, and Utah. These markets have always been outside the MAP area. At the same time, some MAP standard homes sited in Idaho are shipped from California plants. So the correct number for Idaho electric heat homes actually sited in Idaho has yet to be determined. The raw Idaho numbers cannot be taken at face value. Another inference drawn from the study data is that the Idaho industry may be less centrally oriented than the Oregon and Washington industries. This may be creating a feeling that dealers are on their own, some staying with SGC and others looking for the next promotion. So, at this time Idaho remains the most interesting part of the MAP puzzle. Little or no further erosion in Washington and Oregon is expected through 1996, due in part to the marketing effort under the SGC logo and the manufacturer/dealer Northwest Pride effort. Montana has no producers, and we do not have an estimate, pending improvements in the data base.

Market Share

About 62% of the Pacific Northwest's production is in Oregon, with another 13% in Washington, and 25% in Idaho. Approximately half of Oregon's production is sent out of the state, primarily to Washington. Once sorted out, it is unlikely that the drop in Idaho will be much different on its true base than the percentages in Oregon and Washington, but for now assume a worst case of 45%. Our best estimate at the beginning of June 1996 is that, given the weighting of production by state, the total slippage in the regional market is in the worst case, about 25%.

$$\text{Sustained \%} = [(0.62)(85\%) + (.13)(85\%) + (0.25)(40\%)] = [0.527 + 0.110 + 0.113] = 75\%$$

At the present time there is no indication of instability in the market and so this percentage is expected to sustain in response to the SGC/quality approach to promotion. Also, it is possible that this proportion might increase as the SGC follow-on matures,[18] and depending upon the success of industry leaders in leading the industry to go after the Super Good Cents/quality competitive advantage against stick-built homes.[19]

Evaluation Model

What we learned so far in evolving a model for empirical assessment of market transformation can be summarized as follows:

(1) Typical quasi-experimental design models do not directly apply, although the basic philosophy encompassed by the intent of the designs does apply.

(2) There is no need to maintain a separation between the program and evaluation functions.

(3) Evaluation at the first level of approximation is simple and straightforward. For this particular project, quantitative evaluation consists of analysis of a simple statistic, market participation by State using industry and government data. This provides a definitive market participation statistic. The qualitative part of the evaluation consists of plant visits to assess the materials in the yards and to see what is coming off the line. Observation of actual set-ups to see if standards are being adhered to and consultation with State Energy Offices and state in-plant inspection officials, as well as with manufactured housing industry representatives, manufacturers, and dealers were also integral to the evaluation. The qualitative data gathering is designed to catch any meaningful change in activity as well as any change in perception of activity in the economic sector.

An appropriate basic model for assessment is the ''effect chain analysis'' an analysis based on establishing the links

between different events.(Goransson, et al, 1995). This model is used in this paper, however it is not very visible. This is because the market and the program effort are mutually and intersubjectively understood among all concerned, including the evaluation team, but will be made explicit in the final research report. In addition, the assessment model guiding the evaluation includes the following check points (Peach, et al, 1993):

(1) Demonstration of social welfare effect.

(2) Documentation of transformation of sales.

(3) Tracing of the mechanism of transformation.

(4) Demonstration that transformation would not have occurred in the absence of the program.

(5) Demonstration of effect on value-in-use, not just value-in-exchange.

(6) Demonstration of persistence.

(7) Demonstration of the self-reproduction of the transformed exchange relation, and delineation of underlying mechanisms.

The next steps in the assessment approach will involve going beyond the first approximation of results. This will involve looking at continuing reproduction of MAP features in non-MAP homes, and quantitative estimation and attribution of a portion of the 1994 HUD standards improvement to MAP/SGC.

Recommendations

(1) Our research suggests that once incentives are withdrawn, sustaining a market transformation effort through the phases of the business cycle should be a continuing objective by a program office to which definite resources are assigned. Such an office would not require a large budget, but—and critically—it should be secured as a highest level policy objective, with an explicit commitment to funding on a long time horizon. By analogy, the City of Boulder, Colorado is now 25 years into a 100 year plan to contain urban growth, and the Mayo Clinic typically plans on either 50 or 100 year cycles. Manufacturers and dealers are in the market to stay. If utilities want to be effective players in these markets, they must be able to formulate and maintain policy commitments in good times and in bad—throughout the business cycle. What is needed is the strategic leverage provided by a long-term (but moderate year-by-year cost) effort.[20]

(2) For the upper income segment of the product mix, the energy-efficiency attribute can probably be sustained through information, so long as the industry enthusiasm for SGC/quality promotion continues. The middle segment, however, may require more direct and continued cooperative marketing efforts, and exploration of ways to facilitate energy-efficiency mortgage premiums. If the lower segment is to be maintained, and lost ground regained, some form of continuing incentive to mitigate the cost pressure is required. This is quite different from the original incentive program, and might take the form of a ''first home'' incentive payment to manufacturers tied to efficiency standards and financed through an energy tax on consumption. For all sectors, the Super Good Cents/quality promotion offers an intelligent and significant opportunity to build sales against stick-built homes.

(3) Regarding financial soundness, Chong & Davis (1995) raise an important set of interrelated issues regarding MAP. One of these is the value of melding market transformation benefits into a cost-effectiveness analysis:

> It is our hope that when these market transformation benefits are melded into the analysis, MAP will be found to be cost effective from a Total Resource Cost (TRC) perspective (Chong & Davis, 1995, 621)

Although the perspectives of the traditional tests, with the exception of the utility cost test, are arguably somewhat less relevant today than they were just a few years ago, the sustained market transformation of MAP is real and the homes are coming off the lines so as to continue to increment by the thousand. As has been pointed out previously by Allen Lee,[21] the bottom line from an evaluation perspective is that this project is an unqualified success. Whatever the cost test employed, and whichever of the savings estimates are favored, time continues to increase in retrospect the value of the MAP predecessor projects, MAP, and the SGC follow-on. The savings increment with each thousand new homes, while big costs of the past are essentially fixed. For this reason, and however the accounting among programs is preferred, it is recommended to any commission staff who happen to read this paper that, as the market transformation effect continues to be demonstrated, full cost recovery be granted to every affected utility.

ENDNOTES

1. The power of technology procurement is in the exercise of purposive administrative control at the point of production of what is offered on the market. This permits the central setting of standards by interested institutional

consumers of the energy-efficiency attribute of product, assistance by an expert technical analysis and support staff, and enabling of an effective central inspection function (whether carried out by institutional purchasing department, or through factory inspections as in MAP). For example, this philosophy is embodied in co-author Agneta Perssons, current NUTEK project, where she is project manager for the Swedish program ''Single-Family Houses for the 21st Century'', which is aiming at ''lower energy consumption at no extra investment,'' by emphasizing new product design and ''. . . looking at the building as a whole, and not just as building components.'' For example, ''. . . you can recover the cost for high performance windows through a simplified and cheaper space heating system.'' This kind of project is generally welcomed by manufacturers, whose eventual agreement is negotiated and voluntary, and linked to newly created profit opportunities. For the theory and practice of technology procurement, see Westling, H., (1991); Nilsson, Hans, (1992, 1994).

2. MAP benefits all ratepayers (societal test) and non-participants, as well as participants, and the utility.

3. See Olerup (1996) for exploration of this transition in Sweden.

4. Thus, for example, the cost-effectiveness of the MAP incentive was originally calculated with reference to a per unit savings calculation (each unit had to pass the cost test). This illustrates how the planning was bound up with the earlier pre-competitive era IRP paradigm. When the competitive era market transformation effect of each new unit sold without incentive is accounted to the project bottom line, the shift from the older cost-effectiveness per unit paradigm to the cost-effectiveness in the competitive market paradigm is dramatically in the program's favor.

5. When paradigms shift, it is not only the overall sense of the picture that changes. The constituent elements of facts and their inter-relations change too. In a new paradigm, a fact may continue to exist but it may have a different meaning or relevance in the new system.

6. For a technical definition of the business cycle, see Mitchell (1927).

7. There is pressure on manufacturers to sell ''low first cost'' to maintain market share. That, as will discussed later in the paper, is not the most promising profit strategy.

8. See, on this point, Sebold, et al (1995).

9. This is a traditional definition, which excludes the interest of the consumer as a whole person, or as a member of society, as well as any considerations of equity, the public interest, the environment, or the social evolution or survival of humanity.

10. The progression was from the Residential Construction Demonstration Project (RCDP) to a version of manufactured home Super Good Cents that provided a direct financial incentive to the consumer, to MAP, and then to the incorporation of the MAP standard within a SGC certification program paid for by manufacturers and administered by the state energy offices.

11. Some manufacturers offered energy-efficiency options, but considering the market as a whole these were very marginal because their technical adequacy greatly failed the inherent technical potential. In the absence of central administrative standards and quality control, markets often make ineffectual ''gestures'' towards customer desires, creating an image—but not the reality—and yielding psychosocial gratification without meeting the material need. Some options did have great names, though, and probably did produce satisfied customers if only because these options were all anyone could get.

12. And, in any event, ''Whatever involves all of a collection must not be one of the collection.'' (Whitehead & Russell (1910).

13. For an excellent discussion of market failure and environmental problems see ''The Existence of Environmental Problems,'' Pp. 4–9 in Engleryd (1995).

14. Co-author Agnetta Persson adds that in Sweden, ''. . . we often let other qualities carry the energy-efficiency, such as better indoor air quality in the case of residential building, better product quality in the case of manufacturing industry, etc. This is, of course, due to the fact that the every day man (Mr. Robinson or Mr. Svensson, who is his Swedish cousin) really doesn't know or care about energy-efficiency or think he can afford it.''

15. Other segments include retirees looking to move from a larger site-built house to a smaller yet private one that is more easy to maintain. Often these buyers pay cash, with no need for financing. Another segment consists of homes used as offices or other businesses.

16. There is quite a bit of acquisition activity among manufacturers, resulting in new management teams and in national branding. Understandably, corporate policy on energy-efficiency marketing may be less flexible for companies with investment in their own national trademarks for efficiency when attempting to take advantage

of regional opportunities such as SGC. However, the high-end homes are built to SGC.

17. This percentage agrees with that in the paper by Ken Ecklund, et al., on the Super Good Cents follow-on, also in these Proceedings. The others have been adjusted following discussions with industry representatives and energy offices at the end of May.

18. Idaho monthly statistics have been gradually increasing, but we cannot yet claim a trend.

19. For example, see the editorial by Gub Mix, Executive Director of the Idaho Manufactured Home Association in the *IMHA News* of February 1996, which perceptively communicates the opportunity for increasing market share.

20. It is extremely important to be persistent in a market transformation program, and to have long term commitment. You need to reassure that the market works without subsidies, before you can say that your commitment is over in a market transformation project.

21. Lee, et al (1995). Also, in subsequent personal communication.

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