

# **Buying Market Transformation – A Cautionary Tale from the Northwest**

*David Baylon, Ecotope, Inc., Seattle, WA*

*Bob Davis, Ecotope, Inc., Seattle, WA*

*Tom Hewes, Oregon Department of Energy*

## **ABSTRACT**

Beginning in April 1992, Pacific Northwest utilities, the Bonneville Power Administration, and eighteen manufactured home (HUD-code) builders undertook a large-scale experiment. Manufacturers were paid acquisition payments (initially \$2,500/home) to install better insulation and windows in new electrically-heated homes. This resulted in homes 60% more efficient than HUD regulations dictated. Initial production projections of 10,000 homes per year were easily exceeded, with 94% of the manufactured homes (55,000) built to these standards during the 3.5 year program. During the Manufactured Housing Acquisition Program (MAP), production and on-site installation standards improved significantly. Manufactured homes made inroads into new construction markets, accounting for about 30% of regional production of new housing and competing with low- to mid-priced site-built homes in some areas.

The market was transformed. Or was it? Two years have passed since the incentives stopped and the participating manufacturers were left to fend for themselves. Since MAP ended, production of homes built to the higher BPA Super Good Cents (SGC) energy efficiency standards has dropped throughout the region. The state energy offices (SEOs) have maintained an SGC inspection and certification program for which manufacturers pay \$30/home, which has helped energy-efficient manufactured homes retain market share in some localities. However, where local codes do not require strict levels of energy efficiency for new homes, saturation of energy-efficient manufactured homes has declined dramatically.

This paper examines factors affecting market transformation since the cessation of direct incentives, including fuel choice issues and the effects of state codes on production, infrastructure and siting levels.

## **Introduction**

From the mid-1980s through 1995, the Bonneville Power Administration worked with Pacific Northwest utilities and state energy offices to increase energy efficiency in the manufactured housing industry. The manufactured home industry was targeted as an important residential growth sector in Washington, Oregon and Idaho, with unique features that aided market transformation efforts. By the end of the 1980s, approximately half of all new electrically-heated homes in the region were manufactured homes. In some rural areas, manufactured housing accounted for more than 90% of new residential construction and had become the default residential new construction standard. The number of new manufactured homes built in the region exceeded 15,000 per year, representing almost 25% of all new single-family homes. All of this housing was produced in only 18 plants, largely concentrated in western Oregon and near Boise, Idaho, with a few plants scattered throughout Washington and eastern Oregon.

For the most part, the managers of these 18 plants were responsible for virtually all of the construction detailing and materials selection decisions, without significant input from engineers outside the region. These factors allowed an almost complete market transformation to be accomplished using the BPA's leverage. No efforts aimed at changes in state energy standards could have been as effective in this industry, since the manufactured homes were regulated under a federal HUD construction standard which pre-empted state regulations. The program included a technical review committee made up of representatives from the BPA, the state energy offices and manufacturers. This committee reviewed specification changes and approved control and design changes in manufactured homes under the MAP.

## **Residential Construction Demonstration Project**

Beginning in 1986, the BPA focused on market transformation toward energy efficient practices in the manufactured home industry. The initial approach was designed to mirror its single-family site-built market transformation efforts in Super Good Cents (SGC) electrically-heated homes. The Residential Construction Demonstration Project (RCDP)--Cycle II was designed to produce a standard series of construction details and performance requirements for the industry, and develop these measures in homes produced in this region. Eight manufactured home plants were recruited to build approximately 150 homes in 1988 and 1989. In this period, approximately 15,000 to 18,000 manufactured homes were produced and sited in the region, so the RCDP program affected a relatively minor portion of the overall output. As part of this program, construction details and standards were modified to be more relevant to manufactured homes (known collectively as the Super Good Cents (SGC) standards), and to improve on current manufacturing practices by halving the average building heat loss rate.

## **Retail Subsidies**

After the demonstration project, the BPA offered direct retail subsidies of \$2,000 to \$3,000 to buyers of manufactured homes built to SGC standards. From 1990 through 1992, this retail incentive structure was administered through the regional manufactured housing dealer network and participating utilities. Penetration had reached approximately 25% of the manufactured housing market by the end of 1991.

## **Manufactured Housing Acquisition Project (MAP)**

During the demonstration phase, the utilities distributed the incentives to dealers and home buyers at the retail level. In 1991, negotiations between the BPA and the 18 manufacturers resulted in an offer of a direct "wholesale" subsidy of \$2,500 per home to the manufacturers if every electrically-heated home produced by the factory was built to Super Good Cents standards. The result was that the entire industry in all three states was recruited -- even plants that were reluctant to implement the standards were forced into participation by competitive pressures and other intervention by regional leaders in the industry.

This program became known as the Manufactured Housing Acquisition Program (MAP). The MAP began on April 1, 1992. By June, 1992, virtually every electrically-heated manufactured home produced in the Pacific Northwest was built to SGC/MAP standards. A marketing program supported by the BPA and cooperatively run by the plants was initiated to inform consumers of the advantages and benefits of manufactured homes meeting SGC/MAP. An aggressive effort was made to target potential buyers and increase the relative market share of manufactured housing in this region.

### **Market Penetration Costs**

The MAP was extremely successful. From 1992 through 1994, the production of manufactured homes increased by about 60%, due mostly to market penetration into areas previously served by new site-built homes. In rural areas with rapidly expanding populations (such as in the Willamette Valley, Oregon and parts of southern Idaho) the MAP accelerated an existing trend toward manufactured housing. The “per home” incentive payment, which had originally been budgeted to apply to 10,000 to 12,000 homes each year (at a cost of about \$30 million), ballooned to more than \$45 million annually in 1994.

These incentive costs and associated administrative costs were shared by the participating utilities and the BPA, with allocation based on the location of the home's set-up site. In areas served by public utilities, the BPA was responsible for incentive payments, while each investor-owned utility reimbursed the BPA for incentives related to manufactured homes sited within its service territory. This allocation system resulted in a wide variation in costs to the utilities. The overall impact on some investor-owned utilities reached \$6 to \$7 million per year in the most active areas, while some municipal utilities in urban areas had virtually no activity or associated incentive cost.

In 1994, the BPA negotiated a revision of the contract with the manufacturers which allowed the subsidy to be reduced from \$2,500 to \$1,500 per home if HUD standards were improved. This was based on a HUD proposal issued in late 1993 to substantially improve manufactured housing standards. (This proposal was based, in part, on the results of the RCDP Cycle II results).

As this negotiation proceeded, several investor-owned utilities participated in an evaluation of the MAP which suggested substantially lower realization rates for the savings estimates than were expected. While this sparked significant political and engineering debate, the primary result was that the managers of several investor-owned utilities saw an opportunity to dramatically reduce their costs by changing the subsidies associated with the MAP or dropping them altogether. Portland General Electric, one of the largest single participants in the region, announced that it would drop out of the program a year prior to the contract expiration, in July, 1995. This action was promptly supported and copied by the utility with the largest involvement, PacificCorp. In the face of potential economic damage and unrelated rate pressure due to deregulation issues, the BPA decided to terminate the program following a six-month transition phase. The Manufactured Housing Acquisition Program was officially ended in August, 1995.

### **Implications of the MAP and Program Termination**

As part of the negotiations regarding continuing marketing support by BPA, the Oregon Department of Energy (ODOE) secured rights to the Super Good Cents logo (previously licensed by the BPA) and offered to continue certifying homes built to the MAP technical standards for interested

manufacturers. The manufacturers would not receive a direct subsidy; in fact, a subscription fee would be required by ODOE from each participating plant for each home certified. This implied that manufacturers were free to return to construction standards meeting minimum HUD specifications (which were significantly less stringent than SGC standards even after revision) and compete over cost and other features or to offer SGC homes, boasting increased comfort and efficiency, and priced at a premium.

## **Quality Control**

Perhaps the most significant impact of the MAP termination is that the quality control engendered in the BPA program was terminated. The states and manufacturers were left to develop the resources necessary to ensure the quality control inspections crucial to the success of the program were continued.

Each state was impacted very differently by this change. During the MAP, Oregon state inspection agency officials were responsible for implementing SGC/MAP in-plant quality control, and on-site and set-up inspections were a part of the building department's regular authority. As a result, an infrastructure of inspectors and inspection procedures was developed as part of regular state inspection program.

Conversely, the state inspection agency in Idaho refused to cooperate and would not review in-plant practices associated with energy efficiency standards beyond HUD code requirements. On-site inspections were not required in most of Idaho. The job of maintaining the MAP standards in this state was almost completely performed by the Idaho Department of Water Resources (IDWR) with some funding from the BPA and MAP participating utilities. A private contractor was hired to conduct the inspections, which significantly increased their cost. Manufacturers balked when they were asked to subsidize the cost of conducting these quality control inspections, which were conducted in addition to the regular in-plant inspections required by the state inspection agency. The results were that the higher inspection costs were only partially offset by licensing fees and manufacturers were more resistant to the added inspections.

In Washington, the relatively small number of manufacturers were focused on producing high end manufactured homes designed to compete with site-built homes. This resulted in a continued commitment to the SGC standards. The state inspection agency continued to provide the SGC inspections, although a fee was charged for this service. No additional inspections were required.

## **In-Fill Ordinance**

The situation in Oregon deserves special mention. In 1992, the Oregon legislature passed the "In-Fill Ordinance", which forced incorporated areas to accept manufactured housing without zoning regulation even though they were not regulated by the State's building codes. This measure included the proviso that these homes meet the HUD standards *and* the Oregon Energy Code. (The Oregon Energy Code provisions were virtually the same as the SGC/MAP standards). This had a major impact on the market share of manufactured housing, since it allowed the development of subdivisions and "in fill" homes to be located in previously restricted areas throughout Oregon.

No similar ordinance was passed in Idaho or Washington, although the Idaho building departments and codes were already significantly weaker than in Oregon or Washington, with very few restrictions on the siting of manufactured homes. Furthermore, the energy code standards in Idaho

were largely advisory in nature. Enforcement was left to the discretion of individual building jurisdictions. This meant that no significant leverage was available in Idaho to support a market for SGC manufactured housing after the MAP program was terminated.

### **Impacts On Other Utility Programs**

The final impact of the MAP was the development of the Northwest Energy Efficiency Manufacturing (NEEM) Standard, begun in Idaho and Oregon and now used largely throughout the Pacific Northwest. This standard was based on the SGC/MAP standard, revised for homes heated with gas, and marketed under the logo “Natural Choice”. This program became the marketing standard near the end of 1995 in Idaho, where gas-heated homes are much more common, as the transition away from MAP was underway.

One major criticism of the MAP was that the incentive encouraged the use of electric heat. There was some evidence to support this criticism, even though the saturation of electric heat in the manufactured housing industry did not change appreciably. Had the MAP not been in force, a noticeable transition to gas heat for this industry might have occurred. The use of gas heating systems increased by about 200% in the two years following the termination of the MAP, although this still represented only about 15% of the homes built during that period. The use of gas systems increased the most in Idaho, where more than 30% of the new manufactured homes sited in the state were heated with gas in the first year following the termination of MAP. Interestingly, the saturation of gas-heated homes built to the SGC standard in Idaho has been about 40% of production of gas-heated homes.

### **Program Results**

It is important to remember the accomplishments of MAP over the more than three years the program was conducted. Approximately 55,000 all-electric homes were built to SGC/MAP standards, representing 94% of all new manufactured homes (and 100% of those using electric heat) sited during this period in Washington, Oregon and Idaho. All 18 manufactured home plants operating in the Pacific Northwest participated in the program. For part of this period, four plants in California and one in Nebraska also participated in MAP for homes intended to be sited in the Pacific Northwest. Inspection services and quality control were provided by the States of Idaho and Oregon.

Following program termination, the saturation levels of SGC/MAP homes began to plummet. Table 1 shows the change in production levels of manufactured homes for each state from 1994 through 1997. The MAP operated for the first seven months of 1995 and had substantial influence on production for most of the rest of that year. As can be seen, the saturation of SGC homes went from 94% of total production in the region to approximately 52% over a period of about 3 years. The overall market share of SGC homes has fallen a few percentage points in the last six months. In short, while the market was dominated by the SGC standards during the incentive period (and the benefits of these standards were successfully marketed to potential site-built home buyers through the use of financial incentives in a way that was quite lucrative to the manufacturers), some manufacturers lost interest in the absence of direct subsidies. In spite of the obvious marketing advantages of these standards, the market transformation was not sustainable.

**Table 1. Production Levels of Super Good Cents/Natural Choice Manufactured Housing.**

	<b>Washington</b>		<b>Oregon</b>		<b>Idaho*</b>		<b>Total**</b>	
<b>Year</b>	<b>Built (N)</b>	<b>SGC/NC (%)</b>	<b>Built (N)</b>	<b>SGC/NC (%)</b>	<b>Built (N)</b>	<b>SGC/NC (%)</b>	<b>Built (N)</b>	<b>SGC/NC (%)</b>
1994	2439	97.7	12,224	97.6	5,729	81.5	19,179	93.8
1995	2329	92.3	12,595	78.3	4,417	62.5	19,341	76.2
1996	1877	88.6	11,658	61.6	4,113	34.9	17,648	58.2
1997	2104	78.4	11,722	52.5	3,692	18.2	17,517	48.3
* Production figures adjusted for regional shipments; 25% of production shipped out of Northwest.								
** Regional production only; production shipped out of region not included.								

## Morals of the Story

It is this caution that must be drawn from the MAP: Without a standard in place to support the market transformation or sufficient time to remove the capacity to manufacture the less efficient product, market forces will tend to support a “race to the bottom” for a large part of the market. For the low end consumer, price is the dominant consideration. For higher end consumers, certainty and quality are significant. The manufacturers reverted to less expensive manufacturing techniques when the incentives were stopped even though the program had substantial industry support, a technically well developed infrastructure, and marketing support. One important result of the collapse of MAP was that, in some cases, quality control and inspection methods were not consistent, leading to increased consumer uncertainty regarding the energy efficiency performance of new manufactured homes. This considerably undermined the penetration of manufactured housing into the site-built market, particularly in suburban areas.

In the Oregon market, because of the In-Fill Ordinance and the support built into the inspection process by local building departments, this development had a less significant impact than seen in Idaho. The statewide standards, coupled with the fact that the quality control and inspection process was integrated into the existing inspection infrastructure, made it much easier for plants to continue to manufacture and certify their SGC lines. At the retail level, the market transformation begun by MAP continues to be effective in the Oregon market. It is important to point out that this only came as a result of the development of an infrastructure that made these standards both necessary and relatively straightforward to enforce.

In contrast, the infrastructure in Idaho was always kept separate from the state level inspection and there was no support for energy efficiency in building or energy codes. Manufacturers in this state seized the opportunity to eliminate one complete set of inspections, so that the percentage of SGC homes produced in Idaho dropped to less than 20% even though gas-heated homes (a growing market in Idaho) were included under the standards.

While detailed sales data tracking SGC sales as a percentage of total demand has only recently begun to be collected, early results indicate that the demand for SGC manufactured homes in Idaho is much higher than the current production from all Idaho plants combined. This implies that plants from Oregon are exporting SGC-compliant manufactured homes to Idaho and, in the process, are bolstering their market share. Whether this trend will continue is unclear at the time of this writing. However, it

must be observed that the "race to the bottom" in Idaho plants has been accompanied by a 35% drop in overall production rates. At least a portion of this is due to the importation of homes manufactured in Oregon.

For Washington manufacturers, the experience was very different from either Oregon or Idaho. This was primarily because only three manufactured housing plants are located in that state, one of which caters exclusively to the high end market. It became apparent that the largest Washington plant would continue to standardize to the SGC levels in an effort to entice customers from the site-built market. The Washington inspection program did integrate SGC standards into the regular state inspections, which further assisted in the transition, and finally, the development of an inspection procedure during set-up supported the use of SGC standards in some local jurisdictions. Unlike Oregon, however, no statewide standard was passed. Therefore, market share of SGC homes declined in some areas. It is clear that the dealer network in Washington remains committed to Super Good Cents/Natural Choice for at least the high end manufactured housing, and SGC sales remain comparable to those in Oregon. This is due primarily to strong support from retail dealers, coupled with limited utility support in some localities. However, the low end packages popular in more rural portions of the state have been marketed as "equivalent to SGC" even though these specifications are only slightly better than the basic HUD regulations. In the absence of state or utility support, these claims have gone largely unchallenged.

## Conclusions

In spite of the \$130 million spent developing and subsidizing an energy efficient option for manufactured housing in the Pacific Northwest and the relatively successful and substantial impact of the MAP on federal standards, the development of a long-term market transformation was, at best, only partially successful and must be called a failure in some jurisdictions.

In the absence of additional marketing, technical and financial support, the saturation of SGC manufactured homes cannot be expected to increase. Only where the state infrastructure and standards were designed to specifically support energy efficiency in the manufactured housing industry does it appear that the market for energy efficient manufactured housing is strong (although declining) and that the quality control and standard support necessary remains in place. Even in Oregon, however, the overall market saturation has decreased by about one-third. In the other states, this decrease was much greater.

In spite of adequate resources and a well designed program, the failure to support the standards at the utility or state level has resulted in noticeably reduced and reducing saturation levels in this industry. It should be pointed out, however, that the MAP resulted in more than 30 MW of average energy savings at a cost of less than \$.03 per kWh saved (Baylon et al. 1995). Given the relatively significant impact of this program, it remains unfortunate that the transition to a market based program was not managed more sensitively so that the benefits of the program would continue to be available.

Efforts are now underway, using market transformation plans, to shore up the Idaho and Washington programs to increase market penetration. This effort has focused on adequate and cost-effective inspections at the plant level, and substantial marketing support. It may well be that these efforts will succeed in stopping the declining market share and building a broad demand for quality control and energy efficiency as characterized by MAP. It can be assumed that to accomplish these goals, alliances with retail dealers, manufacturers and utilities will need to be re-established. These

alliances ensured the success of MAP and provided a major increase in sales during the 1992 - 1995 period. With the collapse of MAP, the resources to make the case for SGC standards were removed almost completely. The new funding is aimed at re-establishing these links. The timing of this effort, however, is such that the momentum of the MAP cannot be used to assist with this marketing transformation effort.

## **References**

Baylon, D., B. Davis & L. Palmiter. 1995. "*Manufactured Home Acquisition Program: Performance of Homes Sited in the First Year*". TO 71945. Portland, OR: Bonneville Power Administration.