

# Marketing Modular



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## Preface

This report is an amended version of a presentation given in January 1999 at the NAHB International Builders' Show in Dallas. It was one of five presentations at the session on Housing Innovation—Management, Business and Marketing Practice sponsored by the Consortium of Housing Research Centers.

The PHRC is a member of the Consortium. One reason for reproducing this presentation was to demonstrate how a strategy to support a housing related issue, in this case Modular housing, has been developed. The collaboration of the industry (MABSC and PBA), government (DCED and the Office of Community Development and Housing) and the educational system (Penn State and Penn College) and the multi-task, multi-year structuring of activities are both important features of this strategy. One of the responsibilities of the PHRC is to facilitate both collaboration and problem resolution.

Feedback with regard to this brief report would be welcomed.

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Director

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## Introduction

The modular housing industry in Pennsylvania is a leading producer, if not the leading producer, of modular housing in the nation. In collaboration with the industry through the Mid-Atlantic Building Systems Council (MABSC), the Pennsylvania Housing Research Center (PHRC) has sought to address some of the needs of this industry over the past three years.

The PHRC is an organization committed to doing technical research and development and technology transfer for the housing industry in Pennsylvania. But anything the PHRC does is ultimately an attempt either to improve the quality of housing or to produce more housing units, or both. The PHRC does not do any marketing as such, but it does seek to provide useful assistance and support, which can be viewed as marketing in a broader sense. Accordingly, the title of this presentation is correct, even though the PHRC does not do any conventional marketing.

A number of related initiatives that have recently been carried out with and for the modular industry in Pennsylvania are:

1. an assessment of the importance of the modular housing industry to the economy of Pennsylvania,
2. the production of a primer for builders who are new to modular that provides some background and identifies the pros and cons of using modular,
3. the creation of a computer program that allows builders to compare the costs of modular and stick-built construction, and
4. collaboration in setting up a training institute to service the needs of the modular industry in Pennsylvania as well as the mid-Atlantic and adjacent states.

The following is a brief overview of these four initiatives.

### **1. The Importance of Modular Housing in Pennsylvania**

(PHRC Research Series Report #56, December 1998)

Currently 23 modular manufacturers are known to be located in Pennsylvania. These manufacturers are involved in the design, production, sale, transport, and setting of single and multi-family housing. Some manufacturers are also involved in the growing market for light commercial buildings. It is evident that markets are changing. In addition to the single-story ranch and Cape Cod style houses, modular manufacturers now produce many two-story homes and low-rise multi-family as well as a wide range of custom and luxury detached, single-family homes.

The modular housing industry in Pennsylvania is a mature industry, but little is known about its size, its make-up, or even its product. Two frequently asked questions are: how important is the modular industry, and what is its impact on the Commonwealth of Pennsylvania? Unfortunately precise answers are hard to come by.

In response to a request from the Mid-Atlantic Building Systems Council (MABSC), the PHRC initiated a project to develop and document data on the nature, scale, and significance of the modular housing industry in Pennsylvania. A confidential survey of all modular manufacturers in the state was carried out with the following objectives:

1. Determine the economic impact currently made on Pennsylvania by the modular housing manufacturers and their suppliers.
2. Determine the market share currently held by the industry in Pennsylvania.
3. Gather statistics on the number of homes shipped outside Pennsylvania.
4. Identify factors hindering market growth.
5. Identify the availability of public funds and programs to increase the modular share of publicly funded housing projects.
6. Identify issues, problems, or developmental needs that the PHRC might be able to address on behalf of the modular housing industry in Pennsylvania.

### Survey Results

Pennsylvania's manufacturers of modular units generated about \$290 million in sales of units in 1996. In total, 6,455 units were sold. Of these totals, 2,128 housing units (33%) valued at some \$97 million (33%) were shipped to locations within Pennsylvania. Out-of-state business thus amounted to 4,327 units (just less than two-thirds of all modular production in Pennsylvania), valued at \$193 million. Of the total production, about 86% of the sales were single-family houses, 11% were multi-family units, and 3% of the sales were for commercial purposes.

Manufacturers also provided services worth over \$11.6 million during the 1996 year. This income was generated from site work and set crews (about \$6.6 million), transportation (about \$4 million) and other activities (about \$1 million).

Therefore, the total sales of all modular housing products and related services from all Pennsylvania manufacturers for 1996 was approximately \$300 million.

Pennsylvania modular manufacturers employ more than 3,500 persons. About 3,000 are employed in plant production, and more than 120 employees perform site work, act as set crews, and are involved in transportation. The others are occupied in administration and marketing.

Of the more than \$300 million in total sales for Pennsylvania modular housing manufacturers, the value of the resources procured in Pennsylvania are as follows:

- Materials such as lumber, plywood, and other building products comprised 55% or \$165 million.
- Labor costs amounted to about 25% of sales, or about \$74 million.
- Margin, which includes overhead and profit, was 20% of sales or \$60 million.
- Federal, state, and local taxes account for slightly less than 5% or about \$15 million: these taxes are included in the costs of materials, labor, and margin.

Modular accounts for about 6% of the new housing in Pennsylvania. However, two-thirds of all modular product is sent out of state, and the associated jobs and direct economic returns to Pennsylvania are probably even more important than the in-state contribution.

With 1,700 units going to New York and 911 to New Jersey, Pennsylvania provides 4.7% and 3.7% of all the new housing units (including multi-family) in those states respectively. Within the Commonwealth of Pennsylvania, the modular industry produces 11% more housing units than the entire multi-family sector and, in dollar terms, considerably more than this proportion. Given the obstacles and constraints to trade that the modular industry has to face, its performance is quite remarkable, and the statistics given here attest to the economic importance of the industry to the Commonwealth of Pennsylvania.

### **Obstacles to Growth**

The factors that hinder growth were clearly identified by survey respondents. The modular housing industry faces a number of difficulties that could adversely affect all aspects of the business:

1. The paper and regulatory burdens are considered to be excessive, particularly in other states.
2. Inconsistencies and differences in the regulations and practices between states, especially in New York and Ohio, are a major obstacle that impact sales, production, taxes and transportation costs.
3. Because of the nature of prefabrication some building code issues can have a more significant impact on modular houses than on traditional housing.
4. Pennsylvania has still to adopt and enforce a single building code and continues to be one of only two states in the Northeast without a state-wide building code. However the modular industry does have to work to and meet BOCA and CABO standards. The fact that the housing industry does not, on a state-wide basis, have to do so means that the playing field is not level. In qualitative terms this can work to the advantage of modular; in simple money terms it can be a disadvantage.

In addition to the obstacles identified by the survey respondents, current economic conditions within Pennsylvania and the age of the workforce affect the competitiveness of the modular industry in Pennsylvania. The improved economy has led to increased labor costs and has made

it more difficult to retain competent workers. As the average age of the workers in the modular plant increases, labor costs, as a percentage of sales, also increase. In many respects modular housing in the state is a mature market. Companies, however, need not only to maintain but also to expand market share. It is the out-of-state markets that hold the most promise for the Pennsylvania modular industry.

## **2. A Builder's Guide to Modular Housing**

(PHRC Research Series Report #52, June 1997)

One way to increase the market share of modular housing is for a builder or a developer of traditional, on-site “stick-built” construction at least to consider and then, hopefully, to try a modular approach to house building. Deciding to begin building with modular systems is an important business decision for any builder, and should be made only after careful examination of many issues. It would help if the builder or developer has an easy-to-read primer that provides some background and identifies the pros and cons of using modular.

The PHRC set out to produce such a document, titled *A Builder's Guide to Modular Housing*, aimed at helping the builder who is considering adopting modular building practices. The guide briefly describes the modular building process, identifies the questions that need to be answered if the builder is to make use of modular housing, and discusses the important marketing issues for modular builders.

The information presented in this guide complements a software product entitled *Evaluating the Costs of Modular and Stick-built Construction: Alternative Construction Estimating (ACE)*. It is described below.

### 3. Evaluating the Costs of Modular and Stick-Built Construction Using ACE (PHRC Research Series Report #54, June 1997 – PC disk format)

To reach an informed decision as to whether to adopt modular building practices, builders need to identify and weigh the hard and soft construction-related costs. ACE is intended to help them do so.

#### Why the ACE (*Alternative Construction Estimating*) program?

Builders of single-family homes will likely have years of job-costing experience. But they may not be accustomed to planning and evaluating the costs of using modules in home construction.

Builders may find working with modular homes a challenge for several reasons. First, some special terms have to be learned in order to communicate effectively. Second, modular construction makes different labor and material demands on the builder. Third, project-scheduling is a different ball game when module production, delivery dates and large cranes are involved. These differences can lead to costly mistakes in estimating materials, labor, and overhead. Timing and organization are critical. For these reasons builders may decide to avoid using modular products, or they may be disappointed when they do try them.

The ACE computer program enables a builder to overcome these barriers. It's designed as an aid to help the builder/developer to estimate and compare, with reasonable accuracy, the cost to build a **typical** single-family home using modular and stick construction methods. Knowing the costs, the builder can decide which of the two methods of construction is likely to be the most suitable and profitable.

#### Overview of ACE

ACE (*Alternative Construction Estimating*) for Microsoft Excel® is a computerized aid that enables builders to evaluate the use of modules or modular units for their next housing project. It was created using the standard Microsoft Excel® workbook format. By following three easy steps, a builder of single-family homes can estimate and compare traditional stick construction methods with modular construction methods.

ACE can be used in conjunction with whatever system the builder currently uses to price houses. It includes direct and indirect costs to accurately reflect the true costs or savings using stick or modular construction. ACE is specific enough to accurately identify all cost items, yet general enough to apply to most of the modular manufacturers' construction methods.

ACE can run on a wide variety of PC-compatible computers. The program assumes some experience in using a computer and some understanding of Microsoft Excel® spreadsheets. Only a few computer commands are required to use ACE, and it is simple to learn and use.

### **What does ACE do?**

Using a workbook approach, ACE identifies, for both the stick method and the modular method of construction, the common materials and labor required to build single-family houses in three traditional styles: ranch, cape, and two-story.

The workbook contains five worksheets:

1. Stick-built Worksheet (this worksheet is for all three designs—ranch, cape and two-story)
2. Modular Ranch Worksheet
3. Modular Cape Worksheet
4. Modular Two-story Worksheet, and the
5. “Comparison of Overhead” Worksheet.

As these worksheets are completed, ACE helps to identify each and every one of the relevant costs. It then calculates and presents the information for easy comparison.

ACE lists the tasks necessary to set and finish most modular homes. It defines common terms used in the modular industry, and it helps builders understand cost-estimating differences between modular and traditional stick-built construction.

### **What does the user do?**

The user follows three main steps:

1. Using the Stick-built Worksheet, estimate the direct costs of building any style of home (ranch, cape, or two-story) using traditional methods.
2. Using whichever one of the three Modular Worksheets is appropriate, estimate the direct costs of building the same home using modular construction.
3. Using the Comparison of Overhead Worksheet, estimate and compare the overhead and indirect costs of the two construction methods (modular and stick). Also by transferring the results from Step 1 and Step 2, ACE enables the builder to make a complete evaluation and comparison.

Using ACE is in itself a learning exercise as well as a tool to facilitate a decision to choose either the stick or the modular approach.

#### **4. The Modular Housing Training Institute (MHTI)**

The PHRC has two main educational partners: The Pennsylvania State University and the Pennsylvania College of Technology in Williamsport. Penn College has an excellent reputation for training in technology. In addition it has for many years been a major Weatherization training center. The Modular Housing Training Institute was recently set up at Penn College to service the training needs of the modular industry in Pennsylvania as well as the mid-Atlantic and adjacent states. Other partners in this venture are the Pennsylvania Department of Community and Economic Development and the MABSC.

Training is to be directed at modular builders, installers and in-plant personnel. A training program has already been prepared for set crews.

The MHTI is an interesting initiative because it provides a longer-term focal point for the modular industry. It should stimulate dialogue, liaison and interaction between the education, modular manufacturer, builder, research, and buyer communities—to the benefit of modular housing in particular and housing in general. At the PHRC we are hopeful that new developments and new markets will be generated, especially in areas where we have specialist competence such as those initiatives that entail some engineering and developmental research. In fact, the MHTI is considered such a good idea that the manufactured housing industry is pursuing the creation of a similar institute to meet its needs. We are currently cooperating on this project.

#### **Conclusion**

Each of the four initiatives described above represents a collaboration between an industry (both the Association and individual members), the state government, and at least one level of the educational establishment. In addition, the presence of a third-party housing research center, i.e., the PHRC, has been advantageous. The PHRC also has a responsibility to ensure that the Pennsylvanian housing consumer is represented.

The only major player not currently involved in these Pennsylvania initiatives is the materials industry (manufacturers and suppliers). Their involvement would be beneficial not only to the modular industry but also to them. As the Director of the PHRC, I am becoming more and more convinced that many, if not most, of the quality-related problems in the business of housing are due primarily to a lack of collaboration. Why is it that there are so many quality-related problems associated with housing technology? We have the knowledge, we have the ability, and we even have the research facilities. Perhaps it is time to approach housing in a more focused, concerted, and multi-party way. I believe that what we are doing in Pennsylvania for the modular housing industry is one model that holds promise.