

**Justification for Survey Instrument**  
**In Partial Fulfillment of the Paperwork Reduction Act Requirements**  
**For Submission to the Office of Management and Budget (OMB)**

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## **PART A. JUSTIFICATION**

### **A1 Circumstances that Make the Collection of Information Necessary**

The Department of Housing and Urban Development's (HUD's) Annual Performance Plan (APP) specifies six strategic goals. They are: (1) increase homeownership opportunities; (2) promote decent affordable housing; (3) strengthen communities; (4) ensure equal opportunities in housing; (5) embrace high standards of ethics, management, and accountability; and (6) promote the participation of faith based and community organizations. The advancement of new technological innovations for housing production has been viewed as a critical component of the homeownership goal. As a consequence, HUD's Partnership for Advancing Technology in Housing (PATH) has actively sought 3 programmatic goals in support of HUD's strategy, including: (1) study, reduce, and eliminate institutional barriers to technological innovation; (2) invest in collaborative technological research as well as improve the investment rate in housing research and development; and (3) improve the level of information and education regarding housing technology. Associated with each PATH goal are several strategic objectives, and these in turn are linked to specific desired outcomes, PATH activities, and needed inputs and resources—all with individual measurable indicators.

The third PATH goal is particularly focused on the basic market research with regard to behaviors, motives, and practices surrounding innovation adoption and diffusion. Several of the most critical indicators for this PATH goal involve understanding both the level of manufacturer capacity for producing technological changes in housing, and whether that capacity actually translates into appropriate innovation in the market. Though both general industry knowledge and a variety of PATH's industry and policy roundtables, anecdotal evidence abounds that supports the idea that homebuilding product manufacturers bifurcate significantly in size and capacity. On one end, small manufacturers (with aggregate product market penetration rates of less than 10% and single market control rates of less than 30%) often have no resources to perform major development, prototyping, and commercialization. Further, they often are not even familiar with what those processes entail. As such, they cannot even estimate the amount of resources they need to acquire to fully develop and diffuse their innovations. Large manufacturers, on the other and seemingly obvious hand, have well-organized, interdisciplinary staffs to promote diffusion. In reality, however, there is no empirical research in this area for this sector. *Note that there are no additional legislative actions or mandates that require this data collection beyond the general performance monitoring describe above.*

As such, this request is for a study that, generally, will uncover the variety and depth of knowledge that housing innovators have towards the consequent technological, market, regulatory, and marketing requirements for homebuilding technologies. Case studies of a finite number of large manufacturers to document their formalized development and diffusion

processes have already been performed in order to develop a sound survey instrument. This instrument will be utilized in a quantitative survey with a national sample of small and large product manufacturers to document their processes (or lack thereof), and their familiarity with homebuilding regulatory requirements and market expectations. It is for this survey instrument and execution that OMB approval is requested.

This information collection is authorized under Title 12 (12 U.S.C. 170z-1 et seq.). A copy of the legislation is included.

## **A2 How and By Whom the Data Will Be Used**

### **A2.1 Project Overview**

This report will show the current status of industry product development capacity and needs in the housing construction sector, whether certain demographic information can be correlated to those perceptions (like firm size, age, or organizational structure), and whether those perceptions ultimately translate into judgments that impact the decision to invest in product research and development. The study will utilize a survey instrument that is uniform in all aspects except in the identification and screening of the sample respondents; the first segment of the instrument will differ for large manufacturers and for small manufacturers. Both survey instruments include a series of questions regarding company characteristics, existing product development processes, and performance metrics for those processes.

Concerns regarding the understanding, or lack of understanding, that housing innovators have regarding the realities of developing and selling their innovations in the homebuilding market have been prevalent for the past few decades, though largely anecdotal. In particular, it was noted that smaller firms not only do not fully comprehend the scope of the enterprise upon which they are embarking, but also do not have the resources and resource planning available to complete full diffusion of their innovations. A variety of PATH-sponsored roundtables and subsequent white papers confirmed this.

For example, PATH's recently published "Overcoming Barriers to Innovation" documents a variety of institutional barriers in the homebuilding industry. It was particularly noted that:

"Smaller manufacturers offering housing innovations need special assistance. The small size of many housing innovators hinders their understanding of the marketplace and their ability to communicate with the industry. Innovation by big companies such as DuPont could provide a model for these manufacturers."

The roundtables went even further by recommending that such assistance be provided by programs like PATH:

“Innovation programs should help innovators who are not within large companies or supported by a large trade association. Such programs could introduce innovators to key decision makers in the industry, provide seed funding for testing and data collection, facilitate work with code organizations, and help find demonstration sites. These programs will have greater impact by focusing on a limited number of innovations than trying to advance many innovations at once.”

Such assistance focuses on the issue of commercialization—both the institutional problems inherent in the process of commercialization, and the lack of familiarity with that process among the smaller innovators. The fact that no discussion or empirical work has occurred regarding the latter in the main literature or industry analyses is particularly startling given its obvious determining role in innovation diffusion. The “Innovation Centers” created by the Civil Engineering Research Foundation (CERF) have been close conceptually, but they have focused on the innovations themselves—their technical, cost, and regulatory performance. Programs such as Small Business Innovative Research and Small Business Technology Transfer efforts, while realizing that certain innovators have unique capacity or lack thereof, also focus only on the innovation.

No program has focused on the innovators—their business development, market research, methods of communication and marketing, sales and distribution, long-term production capacity, links to other technologies and innovators, and strategic alliances. This knowledge gap was expressed as an explicit recommendation in the “Overcoming Barriers” report, but was also underlying the expert panelists’ reactions to each of the manufacturer presentations during the hearings discussed in that publication. General assistance in business development and innovation commercialization for innovators as opposed to just the innovations are somewhat common, including the Small Business Administration’s offerings. However, specific guidance to housing technology innovators has never been provided. As this discussion shows, there are so many idiosyncrasies in housing that tailored assistance is a marked omission in thinking and policy. PATH must clearly address this.

This assistance, however, is predicated on anecdotal evidence regarding a wide variety of homebuilding innovators and product manufacturers where, in reality, we know very little about the details of either the breadth of knowledge held by the different individuals in this group and whether that breadth can be correlated to issues of size, innovation type, or any other wide variety of potential determinants. While these innovators are usually product manufacturers, they can often be builders themselves (particularly when it comes to management and production

innovations) or researchers and advocacy groups (when it comes to fundamental knowledge creation and broad knowledge exchanges). Little is known about how those innovators in homebuilding-related technology.

## **A2.2 Purpose of the Data Collection**

As indicated, the purpose of the data collection is to gauge the extent of manufacturer-based knowledge and awareness of product development processes and manufacturers' general capacity to invest in innovation. Analysis of this data will assist HUD's PATH program in determining appropriate target audiences and outreach campaigns for further technology research promotion, as well as assist the homebuilding sector as a whole.

## **A2.3 Who Will Use the Information**

PATH's federal and industrial partners, including HUD staff, will use this information to:

- 1) evaluate the effectiveness of current educational and outreach campaigns regarding the benefits of advanced product development and innovation;
- 2) better tailor future outreach and educational campaigns geared towards manufacturers; and
- 3) gauge the possibility of future investment opportunities for encouraging additional research in housing while spurring the same within the sector.

## **A2.4 Instrument--Item-By-Item Justification**

Generally, one single survey instrument is proposed for this study: a verbal, telephone-based instrument that will be collected and analyzed electronically. Respondents will consist of randomly selected representatives of American housing product manufacturers as identified in industry listings, but within two cluster samplings of small- and large-sized manufacturers. As such, the only inconsistency in the application of the instrument will be in the identification and filtering process at its beginning.

The instrument will utilize a series of questions regarding company characteristics, existing product development processes, and performance metrics for those processes within the respondent house product manufacturers.

Note that all necessary OMB requirements regarding the statement of purpose, OMB numbers, and privacy are provided immediately at the onset of the survey, along with incentives for agreeing to complete it.

**Section 0 – Individual and Firm Identification and Screening.** Four (4) preliminary questions are used to identify whether the individual respondent is the appropriate organizational contact, and whether the organization itself satisfies the survey’s clustering sample criteria (by size). Questions include:

- Respondent title and product development decision-making authority (S1 and S2);
- Organizational size as determined by sales volume (S3 or S4a or S4b).

For the majority of these, the respondent is given a selection of answers from which to choose. The only exception is the percentage that the respondent can provide in S4b from which to calculate a response with S4a, if S3 is not answered.

Note also that the justification for these screening criteria is provided in Appendix B.

**Section 1 – Company Characteristics.** This section of the survey is composed of two (2) series of questions, the first involving only general organizational characteristics of the firm and the second including questions regarding the organization’s general product development characteristics (like organizational structure). Questions include:

- Those involving the organization’s years of existence, number of homebuilding related products and product lines, geographic markets, and the amount of financial and personnel resources involved in product development (1a-c and 2-4);
- Then, those questions regarding the firm’s product development triggers, product successes, and product development organizational structure (5-6 and 7a-c).

For all of these, the respondent is either given a selection of answers from which to choose, or is asked to provide a specific number response.

**Section 2 – Existing Product Development Processes.** The next section is the largest in the instrument and includes a variety of detailed inquiries into the firm’s product development processes. It should be noted that the instrument does not inquire about proprietary or even non-proprietary product development processes. Rather, the survey is interested only in whether the firms are acquainted with any such processes, whether they are utilized, and whether this is institutionalized in the firm. Questions include:

- Whether specific product lifecycle stages are managed formally or informally at the firm (8a-b);
- The kind of product changes that the firm focuses on during its product development (8c);
- The organizational or corporate methods of managing product development (9);
- Where product development authority resides within the firm or product line (10 and 11a-b);
- What kinds of resources are utilized during product development and how these resources are acquired (12 and 13);

- The internal allocation of functions for product development (14);
- Whether product development differs based on the kind of product change (15);
- If there is documentation of product development procedures, how closely they are followed, and the reasons for not documenting them or following the documentation (16a-b and 17);
- If documentation exists, how these are created, revised, and communicated and what is there overall maturity (18i-iv); and
- Whether five specific product development stages are performed and how thoroughly (19a-e).

Again, for all of these questions, the respondent is either given a selection of answers from which to choose, or is asked to provide a specific number response. The only exception is Questions 19a-e, for which the respondent is allowed to provide a scale answer (from 1 to 5) to assess the thoroughness of the product development stages.

Here, note that in the event that the respondent is not familiar with specific terms that are commonly used in product development theory and practice, the survey provides brief definitions and descriptions.

***Part 4 – Existing Product Development Performance and Measures.*** The final section of the survey collects information particular to the thoroughness of measuring performance and evaluating success in the product development process. These are asked to verify the formalization of the product development process within the firm, and to better understand where and why informality exists. These are divided into two parts, one dealing with specific evaluation procedures, and the other being open-ended inquiries where procedures are not evaluated formally. Questions include:

- Whether the firm evaluates its product development processes (20);
- If so, the kinds of evaluation metrics, the general rate result of evaluations, and the entity responsible for the evaluations (21-24);
- The reasons for possibly improving or not improving these processes and evaluations (25) and discussions as to responses for these reasons (26i-iv);
- How the firm’s performance might generally rank against competitors (27-28); and
- Finally, what general obstacles or concerns are involved with general formalization of product development within the firm (29).

Again, for all of these questions, the respondent is either given a selection of answers from which to choose, or is asked to provide a specific number response. The only exceptions are Questions 20, 25, and 27 (for which the respondent is allowed to provide a scale answer from 1 to 5 for more richness) and the open-ended inquiries in Questions 26 and 29.

### **A3 Use of Improved Technologies**

The survey will be conducted by telephone. HUD has selected a contractor for the telephone survey instrument that will make full use of the latest methodological and technical

developments in telephone-interviewing. The telephone survey questionnaire will be programmed into a Computer Aided Telephone Interviewing System (CATI) using Sawtooth Ci3/CATI software. Software will automatically route the interviewer through the questionnaire, producing each appropriate question in turn, thus eliminating one source of interviewer error. On closed-ended questions, all acceptable answers are programmed into the Ci3 questionnaire, and only those responses may be chosen by the interviewer. Open-ended questions are recorded verbatim. All data are automatically entered into a computer file by the CATI system, thus eliminating data entry errors. The CATI system facilitates the creation of final respondent data files, which will be analyzed using SPSS (Statistical Package for the Social Sciences).

#### **A4 Efforts to Identify Duplication**

There is no other national survey assessing the change in the nature and extent of the housing product manufacturers' product development processes. Prior to the development of this survey instrument, a literature search as well as an inquiry of experts found no other comparable survey. Experts consulted included staff in HUD's Office of Policy Development and Research, the Supply Chain Council, the National Association of Home Builders' Research Center, and Virginia Polytechnic Institute.

#### **A5 Involvement of Small Entities**

All respondents to this survey will be members of the general public.

#### **A6 Consequences of Less Frequent Data Collection**

This is the first time this survey instrument will be implemented and, as such, the first data collection. There currently are no resources to make this data collection more frequent. Less frequent measurement will allow more time to go by without benefit of information about changes of housing manufacturers behaviors and operations, and with the progress of outreach and educational campaigns. As these perceptions are not considered to change frequently, however, an annual data collection would not be needed.

#### **A7 Special Circumstances**

The proposed data collection activities are consistent with the guidelines set forth in 5 CFR 1320.6 (Controlling Paperwork Burden on the Public--General Information Collection Guidelines). There are no special circumstances that require deviation from these guidelines.

#### **A8 Consultations Outside the Agency**

In accordance with the Paperwork Reduction Act of 1995, HUD published a Notice in the *Federal Register* announcing the Agency's intention to request an OMB review of this data collection. The Notice was published on August 24, 2006 (Docket No. FR-5043-N-08), and provided a 60-day period for public comments. A copy of this Notice appears in Appendix A.

No requests for additional information were made. As such, no changes were made to the instrument after the closing comment period.

The data collection instruments for the survey were developed and pre-tested by McGraw-Hill Analytics in the winter of 2005.

#### **A9 Payments to Respondents.**

Payments of \$50.00 are being made to respondents who voluntarily agree to participate in this data collection, along with specific publications from McGraw Hill Construction valued at \$540.00 are also being offered.

#### **A10 Arrangements and Assurances Regarding Confidentiality**

The data set to be provided to the Government from this survey will not contain any identifying information—such as name, address, etc.—that would permit disclosure or identification of respondents. Standard demographic information will be provided, but in a random digit dial (RDD) national cross sectional telephone sample, such information will in no way disclose the identity of respondents.

All respondents to the survey instruments are also informed of their confidentiality prior to any data collection.

#### **A11 Sensitive Questions**

The questions being asked are not considered sensitive as no proprietary product development process information is being requested (only whether product development processes exist within the respondent firms).

#### **A12 Estimate of Annualized Burden Hours**

Total annualized burden hours are estimated at 87.5 hours. Exhibit 1 provides detailed information on the estimated time to complete the data collection and the total burden for the data collection effort.

**Exhibit 1**

	A	B	C	D	E	F	G
	Number of Respondents	Burden per Respondent (Minutes)	Total Annual Burden (Minutes)	Total Number of Responses per Respondent	Total Project Burden (Minutes)	Total Project Burden (Hours)	Total Project Burden per Respondent
			(A x B)		(C x D)		(E / A)
Survey Phone Instrument:	150 rspds.	35 min/rsdp	5250 minl	1 rsp/rspd	5250 min	87.5 hrs	35 min

**A13 Estimated Recordkeeping and Reporting Cost Burden on Respondents**

The cost burden to respondents is the time required to respond to the survey questions. The survey is testing respondent general knowledge and perceptions of product development processes. No additional record keeping is required.

**A14 Estimated Cost to the Federal Government**

The total contracted cost to the Federal government for the study including implementation of both survey instruments is \$325,000 per government estimate of contractor costs and subsequent cost proposals based on expected labor hours and direct material costs, and on industry-standard labor rates. This includes the data collection costs as well as the cost to analyze and report the results. The total project, including other unrelated tasks, is for \$423,582.

**A15 Reasons for Changes in Burden**

This is the first time this survey instrument is being implemented. As such there is no change in burden.

**A16 Tabulation Plans, Statistical Analysis, and Study Schedule**

When the data collection is completed, the contractor will analyze the data using industry-standard statistical analysis software, and prepare an initial report for HUD/PATH. The report will include the summary of data responses and will provide a preliminary measure of the product development processes within housing product manufacturers, as well as preliminary performance measures for outreach and education campaigns related to this sector. This work is scheduled to take place, and be published, within six months of the final data collection.

#### **A17 Expiration Date Display Exemption**

Any reproduction of the data collection instrument will prominently display the OMB approval number and expiration date.

#### **A18 Exceptions to Certification**

This submission, describing data collection, requests no exceptions to the Certificate for Paperwork Reduction Act (5 CFR 1320.9).

### **PART B**

#### **STATISTICAL METHODS OF DATA COLLECTION**

##### **B1 Potential Respondent Universe**

The telephone survey will be based on approximately 150 telephone interviews with adult men and women working in homebuilding product firms in the coterminous United States (48 States plus the District of Columbia) with a cluster sampling from firms with specific income streams (small and large).

##### **B2 Sampling Method and Respondent Universe**

Part of the difficult in establishing the sampling for this project is that there is no clear accounting of the population universe (smaller manufacturing firms often leave the sector while large firms are diversified beyond the sector). As such, the contractor has proposed utilizing the databases of one of the largest construction market research firms (McGraw-Hill Construction Analytics) in order to develop an adequate sampling.

###### **B2.1 Sampling Plan**

Note that the survey instrument described below contains assurances of full confidentiality for respondents during the introductory statements—that is, prior to any data collection.

The method used is to draw random samples from the within the database of homebuilding product manufacturers owned and maintained by McGraw-Hill Analytics, a construction market research firm. Because there is no existing public database of homebuilding product manufacturers, the only possible method of completing this survey is through such private listings. Through the process of federal procurement, HUD was able to select the most robust of these listings.

From this database, a stratification based on profit and sales was generated (see Appendix B). This was performed because of the primary hypothesis regarding the formalization of product development firms and their subsequent “success” (as measured through revenues). This resulted into a categorization broken down by sales revenue into quintiles. Given the limited resources for this project, it was felt that a sampling of the approximate first quintile (that is, the largest revenue organization) and the approximate fourth/fifth quintiles (that is, those grouped into the second to last sales quintile) would be the most appropriate and revealing; the first quintile essentially contains the firms with the most “success” and, assumedly, the most advanced product development processes. Rather than focus only on the smallest revenue quintile in contrast (which likely contains many firms with limited sales histories and resources, no product development awareness and, it was assumed, reduced response rates), the survey will combine a portion of the fourth and the fifth quintiles to include those that have likely developed some awareness of the product development process and have a sales history that would qualify them to discuss their processes. These two sub-populations are appropriate indicators of the concepts under study.

From these two sub-populations within the McGraw-Hill Analytics database, a random digit dialing approach will be performed among the contacts identified within the database and additional screening within the survey instrument itself will insure the appropriate selection of the individual respondent. No more than one respondent per firm or product line (if the respondent’s organization is a large manufacturer with multiple lines) will be surveyed.

### **B3 Procedures to Deal with Non-Response and Sampling Errors**

In addition to sampling errors, all surveys are subject to other sources of errors, including: population coverage, non-response, reporting, and processing errors. Industry telephone samples fail at generally a lower rate than household telephone samples since most firms have telephone access. As such, this bias is not severe and probably is within the accuracy requirements for most, but not all, survey research projects. Since not all selected respondents agree to participate in the survey, non-response errors are also present. In order to decrease this

effect, monetary and non-monetary incentives in the form of free publications are offered as inducement. In addition, factors such as question wording and the ability of respondents to recall factual details and articulate answers and opinions also affect the accuracy of survey finding. There are no standard measures of these effects, but their presence should be acknowledged when using these and other survey data.

Some additional sampling errors may be introduced by the sub-population if weighting is used to create a facsimile of a national sample; this is not possible given both that the database being utilized has not been tested fully for representativeness nor have the sub-populations within it. Non-response biases produced by differential refusal rates among groups may also introduce some biases (such as between small and large manufacturer respondents). Other factors such as question wording and the ability of respondents to recall factual details and articulate answers and opinions can also affect the accuracy of survey findings. The research team will work to minimize these biases.

#### **B4 Pre-Testing of Procedures**

McGraw-Hill analytics is implementing initial pre-testing of the phone survey instrument.

#### **B5 Persons Responsible for Statistical Aspects of the Design**

Carlos Martín, Research Engineer in the Affordable Housing Research and Technology Division, is responsible for the statistical aspects of the survey design. He can be contacted at (202) 708-4370 x 5845.

### **ANNEX**

The Annex contains:

- The survey instrument in both large (A1) and small (A2) manufacturer screening formats;
- The justification for the sample population; and,
- A copy of the *Federal Register* announcement for the survey.

## **Appendix A1**

### **PATH SURVEY OF HOMEBUILDING PRODUCT MANUFACTURERS**

#### **LARGE MANUFACTURER SURVEY INSTRUMENT (QUESTIONNAIRE MODULE)**

**HUD Residential Large Manufacturer Product Development Research**

**August 11, 2006**

ID#: \_\_\_\_\_

Length of Interview: \_\_\_\_\_

May I please speak with <<ASK FOR NAME ON LIST>>?

IF UNAVAILABLE, ASK TO SCHEDULE CONVENIENT CALL BACK TIME.

Call back time: \_\_\_\_\_

Call back date: \_\_\_\_\_

**INTRODUCTION:** Hello. My name is \_\_\_\_\_, and I'm calling on behalf of McGraw-Hill Construction. We have been hired by HUD's [PRONOUNCED 'HUH-D'] Partnership for Advancing Technology in Housing or PATH [PRONOUNCED 'Path'] to conduct a study on homebuilding product manufacturers. The goal of the study is to understand manufacturers' product development. PATH will use this information to improve its public services for the manufacturing community. As part of this study we are contacting manufacturers like you to understand how your organization develops new products.

We know your time is valuable. **As a thank you for completing the survey, you will receive an honorarium of \$50 as well as a copy of the *Construction Outlook 2006*, which covers industry trends and detailed economic forecasts on the construction industry in 2006, valued at \$249. In addition we would like to send you a summary of the *Residential Green Building Smart Market Report (July 2006)*, valued at \$295, that you will receive if you choose to participate in the research.**

[Email Residential Green Building Overview PDF]

[IF ADDITIONAL DETAILS ON ***Construction Outlook 2006*** NEEDED]

The McGraw Hill *Construction Outlook 2006* is a widely respected resource for the design and construction industry. It is the preeminent economic forecast that construction professionals seek for sound economic information and forecast of the construction year ahead. Authored by Robert A. Murray, Vice President, Economic Affairs, for McGraw-Hill Construction, the Outlook provides commentary on Single Family Housing, Public Works & Utilities, Income Properties, Institutional Buildings, and Manufacturing Buildings. National and regional forecast tables are included for 18 Residential and Non-Residential Categories and 4 Non-Building Categories.

The survey will take approximately 20 to 25 minutes of your time. Participating in the survey is voluntary; you can refuse to answer any question and you are not required to answer in order to obtain any benefit. We are conducting the study under CASRO (Council of American Survey Research Organization) guidelines. The information we obtain from this survey will be presented only as statistical summaries. No individual respondents will be identified in our reports or the data we provide to HUD. You cannot be identified in any way. The survey is being conducted under OMB approval # \_\_\_\_\_.

Your opinions on product development are important to this study. May I continue?

- ( ) Yes → SKIP TO S1
- ( ) No → ASK: May we schedule another time that is more convenient for you?
  - ( ) Yes → ASK: When should I call back?

Indicate Time: \_\_\_\_\_

Indicate Date: \_\_\_\_\_

- ( ) No → **THANK & TERMINATE**

**Screening**

S1. What is your job title? (SELECT ONE)

**Single Code**

1	CEO or COO or Owner or Partner or President	
---	---	--

2	CFO or Controller	
3	Senior Vice President or Vice President or Director Business Development	
4	Senior Vice President or Vice President or Director Marketing or Sales	
5	Senior Vice President or Vice President or Director Research & Development	
6	Senior Vice President or Vice President or Director Product Development	
7	Other Manager (Specify) _____	
8	Other (Specify) _____	Thank and close

S2. Do you participate in your firms' day to day product development management process?

By **product development** I mean involvement with the overall process of product concept generation, planning, strategy, production, marketing and commercialization of a product. Product development encompasses developing a new product that does not exist or bringing about changes or improvements to an existing product.

1	Yes	Continue
2	No	Ask for a Referral. Thank and close.

[IF NO AT S2: Could you please refer me to a senior manager within your firm that is involved in the product development process?]

S3. What was your company's annual sale revenue from all home building products in 2005? (SELECT ONE)

**SingleCode**

1	Under \$100 million	Thank and close
2	\$100 million to \$249.9 million	
3	\$250 million to \$499.9 million	
4	\$500 million to \$749.9 million	
5	\$750 million to \$999.9 million	
6	\$1 billion to \$ 4.99 billion	
7	\$5 billion or more	
8	Don't know [DO NOT READ]	Ask if annual sales revenue from home building products is over \$100 million. If 'Don't know', ask S4a&S4b.
9	Over \$100 million	

ASK S4a & S4b IF UNABLE TO DETERMINE ANNUAL SALES REVENUES FROM HOME BUILDING PRODUCTS

S4a. What was your company's annual sale revenue from all products in 2005? (SELECT ONE)

**SingleCode**

1	Under \$100 million	Thank and close
2	\$100 million to \$249.9 million	

3	\$250 million to \$499.9 million	
4	\$500 million to \$749.9 million	
5	\$750 million to \$999.9 million	
6	\$1 billion to \$4.99 billion	
7	\$5 billion to \$9.99 billion	
8	\$10 billion to \$19.9 billion	
9	\$20 billion or more	
10	Don't know [DO NOT READ]	<a href="#">Thank and close</a>

S4b. Approximately what percentage of your firm's annual sales volume in 2005 came from home building products? (RECORD RESPONSE)

**Write-in**

\_\_\_\_\_ %

Don't know [DO NOT READ]: 1 ([Thank and close](#))

[Check response at S4a & S4b:](#)

Firm's annual sales volume from home building products = [Percentage at S4b] / 100 \* [Mid-point of response category at S4a]

If the answer above is less than \$100 million, thank and close.

**SECTION I: Company Characteristics**

1a. For how many years has your firm been manufacturing homebuilding products? (SELECT ONE)

1	Less than 5 years	
2	6 to 10 years	
3	11 to 20 years	
4	21 to 30 years	
5	31 to 50 years	
6	51 to 70 years	
7	71 to 100 years	
8	101 years or over	
9	Don't know [DO NOT READ]	

1b. What homebuilding product categories does your firm offer? (READ CHOICES. SELECT ALL THAT APPLY)

**Rotate list**

**Multi Code**

1	Foundation	
2	Framing	
3	Exterior Walls (Cladding, Siding)	
4	Insulation, House Wrap	
5	Windows, Doors	
6	Roofing	
7	Interior (Cabinetry, Millwork)	

8	Paint, Wall Finishes	
9	Flooring	
10	Electrical, Mechanical (HVAC, Plumbing Fixtures)	
11	Other (Specify) _____	

1c. How many different home building product lines does your firm currently manufacture? (RECORD RESPONSE)

**Write-in**

\_\_\_\_\_ total number of different product lines currently manufacture

Don't know [DO NOT READ]:

2. Approximately what percentage of your firm's annual sales volume from home building products is spent on product development for home building products? (RECORD RESPONSE)

**Write-in**

\_\_\_\_\_ %

Don't know [DO NOT READ]: 1

3. What is the approximate total number of employees involved with home building product development in your firm, across all locations? (RECORD RESPONSE)

**Write-in**

\_\_\_\_\_ number of employees

Don't know [DO NOT READ]: 1

4. Where are your firm's markets located? (READ CHOICES. SELECT ALL THAT APPLY)

**Multi Code**

1	Local or Regional	
2	National	
3	International	

5. What triggers product development at your firm? (READ CHOICES. SELECT ALL THAT APPLY)

**Multi Code**

1	Strategic plan of top management or Business unit decision	
2	Feedback from home owners	

3	Feedback from home builders	
4	Feedback from distributors or intermediate customers	
5	Product line extensions	
6	New technology development from outside the firm	
7	New technology development from within the firm	
8	The need to integrate solutions	
9	Compliance with government or environmental regulations	
10	Compliance with anticipated standards or regulations	
11	Other (Specify) _____	

6. What would you say is the ratio of product development ideas that are proposed to actual product launches or market introductions at your firm? For example if 10 product ideas are proposed and only one is launched or introduced in the market, then the ratio would be 10:1 and so on.

- a. Please tell me what is the ratio of product ideas to market introductions in your firm in the last 12 months? (READ CHOICES. SELECT ONE)
- b. And what is the ratio of product ideas to market introductions in your firm in the last 3 years? (READ CHOICES. SELECT ONE)

**Single Code**

**Single Code**

	<b><u>In the last 12 months (6a)</u></b>	<b><u>In the last 3 years (6b)</u></b>
1:1 (i.e. almost every product idea is introduced in the market)	1	1
2:1	2	2
5:1	3	3
10:1	4	4
20:1	5	5
50:1 or greater	6	6
Don't know [DO NOT READ]	7	7

Thinking specifically about the business unit you are a part of.....

7a. In your business unit is product development managed centrally for all product lines OR does each product line have an independent process or strategy? (SELECT ONE)

**Single Code**

1	Product development is managed centrally for all product lines	
2	OR Each product line has an independent product development process or strategy	

7b. What was the annual sales revenue in 2005, from all the products, of the specific business unit that you are a part of? (SELECT ONE)

**Single Code**

1	Under \$500,000	
2	\$500,000 to \$999,999	

3	\$1 million to \$4.9 million	
4	\$5 million to \$9.9 million	
5	\$10 million to \$24.9 million	
6	\$25 million or more	
7	Don't know [DO NOT READ]	
8	Do not have separate business units in the company [DO NOT READ]	

7c. Approximately what percentage of your business unit's annual sales volume is spent on product development activities for home building products? (RECORD RESPONSE)

**Write-in**

\_\_\_\_\_ %

Don't know [DO NOT READ]: 1

Do not have a separate business unit in the company [DO NOT READ]: 2

**SECTION II: Product Development Process**

The next few questions refer to your firm's product development processes.

By **product development** I mean involvement with the overall process of product concept generation, planning, strategy, production, marketing and commercialization of a product. Product development encompasses developing a new product that does not exist or bringing about changes or improvements to an existing product.

**Product Lifecycle** refers to the different stages that a product goes through from birth to death - introduction, growth, maturity, and decline.

8a. Which of the following aspects of the product lifecycle are managed at your firm? By managed I mean there is a defined role, or a department, or a structured process to handle these aspects? (READ ASPECT.SELECT ONE FOR EACH)

**Single Code**

	<b>Managed</b>	
	<b>'Yes'</b>	<b>'No'</b>
Evaluation of product requirements	1	2
Product development, introduction and production	1	2
After-market support	1	2
Product discontinuation	1	2
Firm's internal (other departments) relationships	1	2
Firm's external supplier and customer relationships	1	2

ASK Q8b FOR EACH ASPECT THAT IS ANSWERED 'No' AT Q8a

8b. You said that \_\_\_\_\_ (ASPECT THAT IS ANSWERED 'No' AT Q8a) is not formally managed at your firm. Would you say that this aspect is performed in some other way at your firm, such as informally or indirectly? (READ ASPECT.SELECT ONE FOR EACH)

**Single Code**

	<b>Performed in an informal or, indirect way</b>	
	<b>'Yes'</b>	<b>'No'</b>
Evaluation of product requirements	1	2
Product development, introduction and production	1	2
After-market support	1	2
Product discontinuation	1	2
Firm's internal (other departments) relationships	1	2
Firm's external supplier and customer relationships	1	2

8c. I will readout three different types of product development: incremental changes to an existing product; significant changes to or new applications for an existing product; and products that are completely new to the firm. From a total of 100%, please provide a rough percentage for each type in your current product development portfolio. All items must add up to 100%.

(READ CHOICES AND RECORD A PERCENTAGE FOR EACH. ALL PERCENTAGES MUST ADD UP TO 100%. IF A PARTICULAR TYPE OF PRODUCT DEVELOPMENT NOT CARRIED OUT AT THE FIRM, RECORD 0% FOR THAT TYPE.)

**Write-in**

Incremental changes to an existing product	_____ %
Significant changes to or new applications for an existing product	_____ %
Products that are completely new to the firm	_____ %
<b>Total</b>	<b>100%</b>

9. How is product development managed at your firm? (READ CHOICES. SELECT ALL THAT APPLY)

**Multi Code**

1	Exclusively within the firm *	
2	Through acquisitions or joint ventures	
3	Collaboratively with upstream organizations such as suppliers	
4	Collaboratively with downstream organizations such a distributors or intermediate customers	
5	Through government assistance, commercialization laboratories or business development centers	
6	Through outsourcing to the private sector	
7	Through other ways (Specify) _____	

\*: Multi Code not possible if the choice selected

10. What is the lowest management level that has overall responsibility for product development at your firm? (READ CHOICES. SELECT ONE)

**Single Code**

1	Executive / Corporate management	
2	Business unit management	
3	Product Management	

4	Other (Specify) _____	
---	--------------------------	--

11a. In which group or function does authority over product development primarily reside for your business unit? (READ CHOICES. SELECT ONE)

**Single Code**

1	Finance	
2	Manufacturing (including Engineering and Production)	
3	Research & Development	
4	Sales	
5	Marketing	
6	Customer Service	
7	Human Resources	
8	Executive / Corporate Management	
9	Other (Specify) _____	

11b. Does the group or function with product development authority allocate resources for other business units?

**Single Code**

1	Yes	
2	No	

12. Are the following resources utilized by your firm for product development efforts? (READ LIST. SELECT ONE FOR EACH)

**Single Code**

	<b>Resource utilized</b>	
	<b>'Yes'</b>	<b>'No'</b>
Dedicated research laboratories or facilities	1	2
Product testing facilities	1	2
Engineering and design staff	1	2
Regulatory compliance specialists	1	2
Business development staff	1	2
Production or manufacturing staff	1	2
Customer service or sales staff	1	2
Other (Specify) _____	1	2

ASK Q13 FOR EACH RESOURCE THAT IS UTILIZED I.E. ANSWERED 'Yes' AT Q12

13. How are \_\_\_\_\_ (RESOURCE THAT IS ANSWERED 'Yes' AT Q12) utilized? Are they available in-house, are outsourced, or are both available in-house as well as are outsourced. (READ LIST. SELECT ONE FOR EACH)

**Single Code**

	<b>In-house</b>	<b>Outsourced</b>	<b>Both</b>
Dedicated research laboratories or facilities	1	2	3

Product testing facilities	1	2	3
Engineering and design staff	1	2	3
Regulatory compliance specialists	1	2	3
Business development staff	1	2	3
Production or manufacturing staff	1	2	3
Customer service or sales staff	1	2	3
Other (Specify) _____	1	2	3

14. Are product development teams at your firm drawn from diverse organizational functions across the firm such as Finance, Customer Support, Engineering, Marketing, Research & Development or do the product development teams consist of only dedicated product development personnel or is there another kind of organization? (SELECT ONE)

**Single Code**

1	Product development teams are drawn from diverse organizational functions such as Finance, Customer Support, Engineering, Marketing, Research & Development etc.	
2	Product development teams consist of only dedicated product development personnel	
3	Other type of organization (Specify) _____	

15. At your firm, would you say that product development procedures for new products are the same, a little different or very different as compared to product development procedures for changing an existing product? (SELECT ONE)

**Single Code**

1	Product development procedures for new products are <u>the same as</u> product development procedures for changing an existing product	
2	Product development procedures for new products are <u>a little different</u> from product development procedures for changing an existing product	
3	Product development procedures for new products are <u>very different</u> from product development procedures for changing an existing product	

16a. Are your firm's product development procedures documented in writing?

**Single Code**

1	Yes	<a href="#">Ask Q16b and skip to Q18</a>
2	No	<a href="#">Ask Q17 and skip to Q19</a>

16b. How closely are the written product development procedures followed? Please provide your answer on a 5-point scale where '5' stands for 'written procedures followed very thoroughly' and '1' stands for 'written procedure followed not at all'. (SELECT ONE)

**Single Code**

	<b>5 Followed very thoroughly</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1 Followed not at all</b>
Written product development procedures	5	4	3	2	1

17. I have with me list of reasons for not using formal, written, repeatable product development processes. As I read out each, please say to what extent you agree or disagree with each as applicable to your firm. Please provide your answer on a 5-point scale where '5' stands for 'agree completely' and '1' stands for 'disagree completely'. (READ LIST.SELECT ONE FOR EACH)

**Single Code**

	<b>5 Agree completely</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1 Disagree completely</b>
Our people can do the job without a formal process.,	5	4	3	2	1
It interferes with creativity	5	4	3	2	1
It adds bureaucracy + regimentation	5	4	3	2	1
It's only useful on large projects	5	4	3	2	1
It hinders agility in fast-moving markets	5	4	3	2	1
It costs too much	5	4	3	2	1
It takes too much time.	5	4	3	2	1
We're still a small company and haven't thought about documenting the process.	5	4	3	2	1
We don't know how to document the process.	5	4	3	2	1

18. I would like to ask you in detail about the product development process procedures at your firm.

(i) Who authors product development process procedures? (READ CHOICES. SELECT ONE)

**Single Code**

1	Senior management	
---	-------------------	--

2	Product teams (Ongoing)	
3	Project or Task teams (Time limited)	
4	External organizations or consultants	
5	Other (Specify) _____	

(ii) How often are product development process procedures revised? (READ CHOICES. SELECT ONE)

**Single Code**

1	On a Project-by-Project basis	
2	Annually	
3	Less frequently than annually	
4	Never	
5	Other (Specify) _____	

(iii) How are product development process procedures communicated? (READ CHOICES. SELECT ONE)

**Single Code**

1	General guide	
2	Forms	
3	Software Tools (e.g. Database)	
4	Checklists	
5	Detailed Procedures or Manuals	
6	Other (Specify) _____	

(iv) How would you rate the 'maturity' level of your firm's product development process procedures? (READ CHOICES. SELECT ONE)

**Single Code**

0	Incomplete (chaotic)	
1	Process unpredictable, poorly controlled, and reactive	
2	Process characterized for projects and is often reactive	
3	Process characterized for the organization and is proactive	
4	Process measured and controlled	
5	Firm focused on continuous process improvement	

19. I will now describe five broad business processes related to product development. These are broad definitions only and may or may not align closely with your firm's product development processes. Based on the broad description of each process, please indicate whether the process is followed at your firm.

**a. Plan:** prioritize, allocate resources, and schedule product development projects.

(i) Does your firm perform this process for each product's development?

1	Yes	<a href="#">Ask Q19a (ii)</a>
2	No	<a href="#">Skip to Q19b (i)</a>

(ii) How thoroughly is the process performed at your firm? Please provide your answer on a 5-point scale where '5' stands for 'process performed very thoroughly' and '1' stands for 'process performed not at all thoroughly'?

### Single Code

	<b>5 Performed very thoroughly</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1 Performed not at all thoroughly</b>
Plan	5	4	3	2	1

**b. Research:** identify and decompose development topics, publish findings, validate materials/products against requirements, identify suppliers. (Includes product idea 'exploration' – idea screening / in-depth feasibility)

(i) Does your firm perform this process for each product's development?

1	Yes	<a href="#">Ask Q19b (ii)</a>
2	No	<a href="#">Skip to Q19c (i)</a>

(ii) How thoroughly is the process performed at your firm? Please provide your answer on a 5-point scale where '5' stands for 'process performed very thoroughly' and '1' stands for 'process performed not at all thoroughly'?

### Single Code

	<b>5 Performed very thoroughly</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1 Performed not at all thoroughly</b>
Research	5	4	3	2	1

**c. Design:** define, create, analyze, test and release the form, fit and function of a product; develop manufacturing, testing, installation, servicing and disposal processes. (Includes product idea by 'development' – product / process design / validation)

(i) Does your firm perform this process for each product's development?

1	Yes	<a href="#">Ask Q19c (ii)</a>
2	No	<a href="#">Skip to Q19d (i)</a>

(ii) How thoroughly is the process performed at your firm? Please provide your answer on a 5-point scale where '5' stands for 'process performed very thoroughly' and '1' stands for 'process performed not at all thoroughly'?

### Single Code

	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>

	<b>Performed very thoroughly</b>				<b>Performed not at all thoroughly</b>
Design	5	4	3	2	1

**d. Integrate:** synthesize design definitions, release product and product documentation to production, business development, and customer support organizational elements. (Includes product idea 'industrialization / commercialization' – preparation for hand-off to production / distribution / marketing / sales)

(i) Does your firm perform this process for each product's development?

1	Yes	<a href="#">Ask Q19d (ii)</a>
2	No	<a href="#">Skip to Q19e (i)</a>

(ii) How thoroughly is the process performed at your firm? Please provide your answer on a 5-point scale where '5' stands for 'process performed very thoroughly' and '1' stands for 'process performed not at all thoroughly'?

#### Single Code

	<b>5 Performed very thoroughly</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1 Performed not at all thoroughly</b>
Integrate	5	4	3	2	1

**e. Amend:** gather and analyze product design issues and manufacturability feedback from production, suppliers, and downstream customers.

(i) Does your firm perform this process for each product's development?

1	Yes	<a href="#">Ask Q19e (ii)</a>
2	No	<a href="#">Skip to Q20</a>

(ii) How thoroughly is the process performed at your firm? Please provide your answer on a 5-point scale where '5' stands for 'process performed very thoroughly' and '1' stands for 'process performed not at all thoroughly'?

#### Single Code

	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
--	----------	----------	----------	----------	----------

	<b>Performed very thoroughly</b>				<b>Performed not at all thoroughly</b>
Amend	5	4	3	2	1

**SECTION III: Product Development Process Performance Metrics**

20. To what extent does your firm evaluate its product development performance? Please provide your answer on a 5-point scale where '5' stands for 'the product development process is evaluated formally and thoroughly' and '1' the product development process is not evaluated or at all'.

**Single Code**

	<b>5 Formally evaluated</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1 Not evaluated at all</b>
Product development process at firm	5	4	3	2	1

ASK Q21 TO Q24 ONLY IF '3', '4' OR '5' RATED AT Q20. ELSE SKIP TO Q25.

21. Which of the following metrics do you track as part of the formal evaluation of your firm's product development process? (READ CHOICES. SELECT ALL THAT APPLY)

**Multi Code**

1	Time or Duration	
2	Cost	
3	Deviation from plan	
4	Assets	
5	Other (Specify) _____	
6	None	

ASK Q22 IF 'Deviation from plan' SELECTED AT Q21

22. You mentioned that your firm evaluates 'Deviation from plan' as part of the product development process? What percent of the time does a project deviate from plan? (READ CHOICES. SELECT ONE)

**Single Code**

1	1 to 9%	
2	10 to 24%	
3	25 to 49%	
4	50% or more	
5	Don't know [DO NOT READ]	

ASK Q23 IF 'Time or Duration' SELECTED AT Q21

23. You mentioned that your firm evaluates 'Time or Duration' as part of the product development process? What is the typical or average product development cycle time in months? (WRITE-IN RESPONSE BELOW. USE WHOLE NUMBERS FOR RESPONSE)

\_\_\_\_\_ months

Don't know [DO NOT READ]: 1

24. What organizational element within your firm tracks these, or other, product development metrics? (READ CHOICES. SELECT ONE)

**Single Code**

1	Finance	
2	Manufacturing (including Engineering and Production)	
3	Research & Development	
4	Sales	
5	Marketing	
6	Customer Service	
7	Human Resources	
8	Executive or Corporate Management	
9	Other (Specify) _____	

25. I have a list of statements related to product development process improvement. As I read out each, please say to what extent you agree or disagree with each as a reason for which your firm would undertake product development process improvement. Please provide your answer on a 5-point scale where '5' stands for 'agree completely' and '1' stands for 'disagree completely'.

**Single Code**

	<b>5</b> Agree completely	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b> Disagree completely
(i) My firm would improve the product development process to expand the number of products in development	5	4	3	2	1
(ii) My firm would improve the product development process to decrease development costs	5	4	3	2	1
(iii) My firm would improve the product development process to reduce development cycle time	5	4	3	2	1
(iv) My firm would improve the product development process to increase or better use development assets	5	4	3	2	1

ASK Q26 FOR EACH REASON DISAGREE WITH I.E. RATED '2' OR '1' AT Q25

26 (i). You mentioned you disagree with 'expand the number of products in development' as a reason for which your firm would undertake product development process improvement. Why do you say so? (RECORD RESPONSE VERBATIM)

**Open ended**

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26 (ii). You mentioned you disagree with 'decrease development costs' as a reason for which your firm would undertake product development process improvement. Why do you say so? (RECORD RESPONSE VERBATIM)

**Open ended**

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26 (iii). You mentioned you disagree with 'reduce development cycle time' as a reason for which your firm would undertake product development process improvement. Why do you say so? (RECORD RESPONSE VERBATIM)

**Open ended**

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26 (iv). You mentioned you disagree with 'increase or better use development assets' as a reason for which your firm would undertake product development process improvement. Why do you say so? (RECORD RESPONSE VERBATIM)

**Open ended**

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27. Finally, how does the success of your firm's product development compare to that of your competitors? Please provide your answer on a 5-point scale where '5' stands for your firm's product development 'is much more successful' and '1' stands for your firm's product development 'is much less successful'.

First, please compare the success of your firm's product development to that of your competitors?

**Single Code**

	<b>5 Is much more successful</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1 Is much less successful</b>
a. The success of firm's product development compared to that of competitors	5	4	3	2	1
b. The success of firm's product development compared to that of other firms in the building products industry	5	4	3	2	1

ASK Q28 IF OWN FIRM'S PRODUCT DEVELOPMENT ACTIVITIES RATED '2' OR '1' I.E. LESS SUCCESSFUL THAN COMPETITION AT Q27a.

28. You said that your firm's product development activities \_\_\_\_\_ (RATING FROM Q28a FOR 'competitors') when compared to those of your competitors? Why do you think so? (READ CHOICES. SELECT ALL THAT APPLY)

1	Customer needs or preferences	
2	Availability of capital	
3	Allocation of resources	
4	Access to appropriate technology	
5	Management leadership	
6	Supplier issues	
7	Customer feedback loop from market	
8	Technical performance of the product	
9	Other (Specify) _____	

29. What is the one biggest obstacle related to product development facing your firm? (RECORD RESPONSE VERBATIM)

**Open ended**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Thank you very much for taking the time to participate.**

[REFER TO Q7a. IF PRODUCT DEVELOPMENT PROCESS / STRATEGY IS DIFFERENT FOR EACH PRODUCT LINE I.E. '2' CODED AT Q7a, THEN ASK FOR REFERENCE:

Could you please provide me a reference for another senior manager within your firm that is managing product development for a product / product line different from yours?]

Name: \_\_\_\_\_

Telephone Contact: \_\_\_\_\_

**[More than one interview per firm allowed only if the firm has multiple product lines and each product line has an independent product development process / strategy. Same respondent cannot be interviewed twice.]**

Thank you. In order for us to be able to send you the honorarium for responding to this survey as well as copies of **Construction Outlook** [MOST RECENT EDITION] and the **Residential Green Building Smart**

**Market Report (July 2006)**, we would need your contact details. Please be assured that your contact details and email address will remain confidential and will be used only for the purpose of sending the honorarium and these reports to you.

Name: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

\_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Telephone: \_\_\_\_\_

Email Address: \_\_\_\_\_

**Appendix A2**

**PATH SURVEY OF HOMEBUILDING PRODUCT MANUFACTURERS**

**SMALL MANUFACTURER SURVEY INSTRUMENT  
(QUESTIONNAIRE MODULE)**

**HUD Residential Small Manufacturer Product Development Research**

**August 11, 2006**

ID#: \_\_\_\_\_

Length of Interview: \_\_\_\_\_

May I please speak with <<ASK FOR NAME ON LIST>>?

IF UNAVAILABLE, ASK TO SCHEDULE CONVENIENT CALL BACK TIME.

Call back time: \_\_\_\_\_

Call back date: \_\_\_\_\_

**INTRODUCTION:** Hello. My name is \_\_\_\_\_, and I'm calling on behalf of McGraw-Hill Construction. We have been hired by HUD's [PRONOUNCED 'HUH-D'] Partnership for Advancing Technology in Housing or PATH [PRONOUNCED 'Path'] to conduct a study on homebuilding product manufacturers. The goal of the study is to understand manufacturers' product development. PATH will use this information to improve its public services for the manufacturing community. As part of this study we are contacting manufacturers like you to understand how your organization develops new products.

We know your time is valuable. **As a thank you for completing the survey, you will receive an honorarium of \$50 as well as a copy of the *Construction Outlook 2006*, which covers industry trends and detailed economic forecasts on the construction industry in 2006, valued at \$249. In addition we would like to send you a summary of the *Residential Green Building Smart Market Report (July 2006)*, valued at \$295, that you will receive if you choose to participate in the research.**

[Email Residential Green Building Overview PDF]

[IF ADDITIONAL DETAILS ON ***Construction Outlook 2006*** NEEDED]

The McGraw Hill *Construction Outlook 2006* is a widely respected resource for the design and construction industry. It is the preeminent economic forecast that construction professionals seek for sound economic information and forecast of the construction year ahead. Authored by Robert A. Murray, Vice President, Economic Affairs, for McGraw-Hill Construction, the Outlook provides commentary on Single Family Housing, Public Works & Utilities, Income Properties, Institutional Buildings, and Manufacturing Buildings. National and regional forecast tables are included for 18 Residential and Non-Residential Categories and 4 Non-Building Categories.

The survey will take approximately 20 to 25 minutes of your time. Participating in the survey is voluntary; you can refuse to answer any question and you are not required to answer in order to obtain any benefit. We are conducting the study under CASRO (Council of American Survey Research Organization) guidelines. The information we obtain from this survey will be presented only as statistical summaries. No individual respondents will be identified in our reports or the data we provide to HUD. You cannot be identified in any way. The survey is being conducted under OMB approval # \_\_\_\_\_.

Your opinions on product development are important to this study. May I continue?

- ( ) Yes → SKIP TO S1
- ( ) No → ASK: May we schedule another time that is more convenient for you?
  - ( ) Yes → ASK: When should I call back?

Indicate Time: \_\_\_\_\_

Indicate Date: \_\_\_\_\_

- ( ) No → **THANK & TERMINATE**

**Screening**

S1. What is your job title? (SELECT ONE)

**Single Code**

1	CEO or COO or Owner or Partner or President	
2	CFO or Controller	
3	Senior Vice President or Vice President or Director Business Development	
4	Senior Vice President or Vice President or Director Marketing or Sales	
5	Senior Vice President or Vice President or Director Research & Development	
6	Senior Vice President or Vice President or Director Product Development	
7	Other Manager (Specify) _____	
8	Other (Specify) _____	Thank and close

S2. Do you participate in your firms' day to day product development management process?

By **product development** I mean involvement with the overall process of product concept generation, planning, strategy, production, marketing and commercialization of a product. Product development encompasses developing a new product that does not exist or bringing about changes or improvements to an existing product.

1	Yes	Continue
2	No	Ask for a Referral. Thank and close.

[IF NO AT S2: Could you please refer me to a senior manager within your firm that is involved in the product development process?]

S3. What was your company's annual sale revenue from only home building products in 2005? (SELECT ONE)

**SingleCode**

1	Under \$5 million	Thank and close
2	\$5 million to \$9.9 million	
3	\$10 million to \$14.9 million	
4	\$15 million to \$19.9 million	
5	\$20 million to \$24.9 million	
6	\$25 million to \$29.9 million	
7	\$30 million to \$34.9 million	
8	\$35 million or more	Thank and close
9	Don't know [DO NOT READ]	Ask if annual sales revenue from home building products is between \$5 and \$35

		million. If 'Don't know', ask S4a&S4b.
10	Between \$5 million and \$34.9 million	

ASK S4a & S4b IF UNABLE TO DETERMINE ANNUAL SALES REVENUES FROM HOME BUILDING PRODUCTS

S4a. What was your company's annual sale revenue from all products in 2005? (SELECT ONE)

**SingleCode**

1	Under \$5 million	Thank and close
2	\$5 million to \$9.9 million	
3	\$10 million to \$24.9 million	
4	\$25 million to \$49.9 million	
5	\$50 million to \$99.5 million	
6	\$100 million or over	
7	Don't know [DO NOT READ]	Thank and close

S4b. Approximately what percentage of your firm's annual sales volume in 2005 came from home building products? (RECORD RESPONSE)

**Write-in**

\_\_\_\_\_ %

Don't know [DO NOT READ]: 1 (Thank and close)

Check response at S4a & S4b:

Firm's annual sales volume from home building products = [Percentage at S4b] / 100 \* [Mid-point of response category at S4a]

If answer above is less than \$5 million or greater than \$35 million, thank and close.

**SECTION I: Company Characteristics**

1a. For how many years has your firm been manufacturing homebuilding products? (SELECT ONE)

1	Less than 5 years	
2	6 to 10 years	
3	11 to 20 years	
4	21 to 30 years	
5	31 to 50 years	
6	51 to 70 years	
7	71 to 100 years	
8	101 years or over	
9	Don't know [DO NOT READ]	

1b. What homebuilding product categories does your firm offer? (READ CHOICES. SELECT ALL THAT APPLY)

**Rotate list**

**Multi Code**

1	Foundation	
2	Framing	
3	Exterior Walls (Cladding, Siding)	
4	Insulation, House Wrap	
5	Windows, Doors	
6	Roofing	
7	Interior (Cabinetry, Millwork)	
8	Paint, Wall Finishes	
9	Flooring	
10	Electrical, Mechanical (HVAC, Plumbing Fixtures)	
11	Other (Specify) _____	

1c. How many different home building product lines does you firm currently manufacturer? (RECORD RESPONSE)

**Write-in**

\_\_\_\_\_ total number of different product lines currently manufacture

Don't know [DO NOT READ]:

2. Approximately what percentage of your firm's annual sales volume from home building products is spent on product development for home building products? (RECORD RESPONSE)

**Write-in**

\_\_\_\_\_ %

Don't know [DO NOT READ]: 1

3. What is the approximate total number of employees involved with home building product development in your firm, across all locations? (RECORD RESPONSE)

**Write-in**

\_\_\_\_\_ number of employees

Don't know [DO NOT READ]: 1

4. Where are your firm's markets located? (READ CHOICES. SELECT ALL THAT APPLY)

**Multi Code**

1	Local or Regional	
2	National	
3	International	

5. What triggers product development at your firm? (READ CHOICES. SELECT ALL THAT APPLY)

**Multi Code**

1	Strategic plan of top management or Business unit decision	
2	Feedback from home owners	
3	Feedback from home builders	
4	Feedback from distributors or intermediate customers	
5	Product line extensions	
6	New technology development from outside the firm	
7	New technology development from within the firm	
8	The need to integrate solutions	
9	Compliance with government or environmental regulations	
10	Compliance with anticipated standards or regulations	
11	Other (Specify) _____	

6. What would you say is the ratio of product development ideas that are proposed to actual product launches or market introductions at your firm? For example if 10 product ideas are proposed and only one is launched or introduced in the market, then the ratio would be 10:1 and so on.

- c. Please tell me what is the ratio of product ideas to market introductions in your firm in the last 12 months? (READ CHOICES. SELECT ONE)
- d. And what is the ratio of product ideas to market introductions in your firm in the last 3 years? (READ CHOICES. SELECT ONE)

**Single Code**

**Single Code**

	<b><u>In the last 12 months (6a)</u></b>	<b><u>In the last 3 years (6b)</u></b>
1:1 (i.e. almost every product idea is introduced in the market)	1	1

2:1	2	2
5:1	3	3
10:1	4	4
20:1	5	5
50:1 or greater	6	6
Don't know [DO NOT READ]	7	7

Thinking specifically about the business unit you are a part of.....

7a. In your business unit is product development managed centrally for all product lines OR does each product line have an independent process or strategy? (SELECT ONE)

**Single Code**

1	Product development is managed centrally for all product lines	
2	OR Each product line has an independent product development process or strategy	

7b. What was the annual sales revenue in 2005, from all the products, of the specific business unit that you are a part of? (SELECT ONE)

**SingleCode**

1	Under \$500,000	
2	\$500,000 to \$999,999	
3	\$1 million to \$4.9 million	
4	\$5 million to \$9.9 million	
5	\$10 million to \$24.9 million	
6	\$25 million or more	
7	Don't know [DO NOT READ]	
8	Do not have separate business units in the company [DO NOT READ]	

7c. Approximately what percentage of your business unit's annual sales volume is spent on product development activities for home building products? (RECORD RESPONSE)

**Write-in**

\_\_\_\_\_ %

Don't know [DO NOT READ]: 1

Do not have a separate business unit in the company [DO NOT READ]: 2

**SECTION II: Product Development Process**

The next few questions refer to your firm's product development processes.

By **product development** I mean involvement with the overall process of product concept generation, planning, strategy, production, marketing and commercialization of a product. Product development

encompasses developing a new product that does not exist or bringing about changes or improvements to an existing product.

**Product Lifecycle** refers to the different stages that a product goes through from birth to death - introduction, growth, maturity, and decline.

8a. Which of the following aspects of the product lifecycle are managed at your firm? By managed I mean there is a defined role, or a department, or a structured process to handle these aspects? (READ ASPECT.SELECT ONE FOR EACH)

**Single Code**

	<b>Managed</b>	
	<b>'Yes'</b>	<b>'No'</b>
Evaluation of product requirements	1	2
Product development, introduction and production	1	2
After-market support	1	2
Product discontinuation	1	2
Firm's internal (other departments) relationships	1	2
Firm's external supplier and customer relationships	1	2

ASK Q8b FOR EACH ASPECT THAT IS ANSWERED 'No' AT Q8a

8b. You said that \_\_\_\_\_ (ASPECT THAT IS ANSWERED 'No' AT Q8a) is not formally managed at your firm. Would you say that this aspect is performed in some other way at your firm, such as informally or indirectly? (READ ASPECT.SELECT ONE FOR EACH)

**Single Code**

	<b>Performed in an informal or, indirect way</b>	
	<b>'Yes'</b>	<b>'No'</b>
Evaluation of product requirements	1	2
Product development, introduction and production	1	2
After-market support	1	2
Product discontinuation	1	2
Firm's internal (other departments) relationships	1	2
Firm's external supplier and customer relationships	1	2

8c. I will readout three different types of product development: incremental changes to an existing product; significant changes to or new applications for an existing product; and products that are completely new to the firm. From a total of 100%, please provide a rough percentage for each type in your current product development portfolio. All items must add up to 100%.

(READ CHOICES AND RECORD A PERCENTAGE FOR EACH. ALL PERCENTAGES MUST ADD UP TO 100%. IF A PARTICULAR TYPE OF PRODUCT DEVELOPMENT NOT CARRIED OUT AT THE FIRM, RECORD 0% FOR THAT TYPE.)

**Write-in**

Incremental changes to an existing product	_____ %
Significant changes to or new applications for an existing product	_____ %
Products that are completely new to the firm	_____ %
<b>Total</b>	<b>100%</b>

9. How is product development managed at your firm? (READ CHOICES. SELECT ALL THAT APPLY)

**Multi Code**

1	Exclusively within the firm *	
2	Through acquisitions or joint ventures	
3	Collaboratively with upstream organizations such as suppliers	
4	Collaboratively with downstream organizations such as distributors or intermediate customers	
5	Through government assistance, commercialization laboratories or business development centers	
6	Through outsourcing to the private sector	
7	Through other ways (Specify) _____	

\*: Multi Code not possible if the choice selected

10. What is the lowest management level that has overall responsibility for product development at your firm? (READ CHOICES. SELECT ONE)

**Single Code**

1	Executive / Corporate management	
2	Business unit management	
3	Product Management	
4	Other (Specify) _____	

11a. In which group or function does authority over product development primarily reside for your business unit? (READ CHOICES. SELECT ONE)

**Single Code**

1	Finance	
2	Manufacturing (including Engineering and Production)	
3	Research & Development	
4	Sales	

5	Marketing	
6	Customer Service	
7	Human Resources	
8	Executive / Corporate Management	
9	Other (Specify) _____	

11b. Does the group or function with product development authority allocate resources for other business units?

**Single Code**

1	Yes	
2	No	

12. Are the following resources utilized by your firm for product development efforts?  
(READ LIST. SELECT ONE FOR EACH)

**Single Code**

	<b>Resource utilized</b>	
	<b>'Yes'</b>	<b>'No'</b>
Dedicated research laboratories or facilities	1	2
Product testing facilities	1	2
Engineering and design staff	1	2
Regulatory compliance specialists	1	2
Business development staff	1	2
Production or manufacturing staff	1	2
Customer service or sales staff	1	2
Other (Specify) _____	1	2

ASK Q13 FOR EACH RESOURCE THAT IS UTILIZED I.E. ANSWERED 'Yes' AT Q12

13. How are \_\_\_\_\_ (RESOURCE THAT IS ANSWERED 'Yes' AT Q12) utilized? Are they available in-house, are outsourced, or are both available in-house as well as are outsourced.  
(READ LIST. SELECT ONE FOR EACH)

**Single Code**

	<b>In-house</b>	<b>Outsourced</b>	<b>Both</b>
Dedicated research laboratories or facilities	1	2	3
Product testing facilities	1	2	3
Engineering and design staff	1	2	3
Regulatory compliance specialists	1	2	3
Business development staff	1	2	3
Production or manufacturing staff	1	2	3
Customer service or sales staff	1	2	3
Other (Specify)	1	2	3

_____			
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14. Are product development teams at your firm drawn from diverse organizational functions across the firm such as Finance, Customer Support, Engineering, Marketing, Research & Development or do the product development teams consist of only dedicated product development personnel or is there another kind of organization? (SELECT ONE)

**Single Code**

1	Product development teams are drawn from diverse organizational functions such as Finance, Customer Support, Engineering, Marketing, Research & Development etc.	
2	Product development teams consist of only dedicated product development personnel	
3	Other type of organization (Specify) _____	

15. At your firm, would you say that product development procedures for new products are the same, a little different or very different as compared to product development procedures for changing an existing product? (SELECT ONE)

**Single Code**

1	Product development procedures for new products are <u>the same</u> as product development procedures for changing an existing product	
2	Product development procedures for new products are <u>a little different</u> from product development procedures for changing an existing product	
3	Product development procedures for new products are <u>very different</u> from product development procedures for changing an existing product	

16a. Are your firm's product development procedures documented in writing?

**Single Code**

1	Yes	<a href="#">Ask Q16b and skip to Q18</a>
2	No	<a href="#">Ask Q17 and skip to Q19</a>

16b. How closely are the written product development procedures followed? Please provide your answer on a 5-point scale where '5' stands for 'written procedures followed very thoroughly' and '1' stands for 'written procedure followed not at all'. (SELECT ONE)

**Single Code**

	<b>5 Followed very thoroughly</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1 Followed not at all</b>
Written product development procedures	5	4	3	2	1

17. I have with me list of reasons for not using formal, written, repeatable product development processes. As I read out each, please say to what extent you agree or disagree with each as applicable to your firm. Please provide your answer on a 5-point scale where '5' stands for 'agree completely' and '1' stands for 'disagree completely'. (READ LIST.SELECT ONE FOR EACH)

**Single Code**

	<b>5 Agree completely</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1 Disagree completely</b>
Our people can do the job without a formal process.,	5	4	3	2	1
It interferes with creativity	5	4	3	2	1
It adds bureaucracy + regimentation	5	4	3	2	1
It's only useful on large projects	5	4	3	2	1
It hinders agility in fast-moving markets	5	4	3	2	1
It costs too much	5	4	3	2	1
It takes too much time.	5	4	3	2	1
We're still a small company and haven't thought about documenting the process.	5	4	3	2	1
We don't know how to document the process.	5	4	3	2	1

18. I would like to ask you in detail about the product development process procedures at your firm.

(i) Who authors product development process procedures? (READ CHOICES. SELECT ONE)

**Single Code**

1	Senior management	
2	Product teams (Ongoing)	
3	Project or Task teams (Time limited)	
4	External organizations or consultants	
5	Other (Specify) _____	

(ii) How often are product development process procedures revised? (READ CHOICES. SELECT ONE)

**Single Code**

1	On a Project-by-Project basis	
2	Annually	
3	Less frequently than annually	
4	Never	
5	Other (Specify) _____	

(iii) How are product development process procedures communicated? (READ CHOICES. SELECT ONE)

**Single Code**

1	General guide	
2	Forms	
3	Software Tools (e.g. Database)	
4	Checklists	
5	Detailed Procedures or Manuals	
6	Other (Specify) _____	

(iv) How would you rate the 'maturity' level of your firm's product development process procedures? (READ CHOICES. SELECT ONE)

**Single Code**

0	Incomplete (chaotic)	
1	Process unpredictable, poorly controlled, and reactive	
2	Process characterized for projects and is often reactive	
3	Process characterized for the organization and is proactive	
4	Process measured and controlled	
5	Firm focused on continuous process improvement	

19. I will now describe five broad business processes related to product development. These are broad definitions only and may or may not align closely with your firm's product development processes. Based on the broad description of each process, please indicate whether the process is followed at your firm.

**a. Plan:** prioritize, allocate resources, and schedule product development projects.

(i) Does your firm perform this process for each product's development?

1	Yes	<a href="#">Ask Q19a (ii)</a>
2	No	<a href="#">Skip to Q19b (i)</a>

(ii) How thoroughly is the process performed at your firm? Please provide your answer on a 5-point scale where '5' stands for 'process performed very thoroughly' and '1' stands for 'process performed not at all thoroughly'?

### Single Code

	5 Performed very thoroughly	4	3	2	1 Performed not at all thoroughly
Plan	5	4	3	2	1

**b. Research:** identify and decompose development topics, publish findings, validate materials/products against requirements, identify suppliers. (Includes product idea 'exploration' – idea screening / in-depth feasibility)

(i) Does your firm perform this process for each product's development?

1	Yes	<a href="#">Ask Q19b (ii)</a>
2	No	<a href="#">Skip to Q19c (i)</a>

(ii) How thoroughly is the process performed at your firm? Please provide your answer on a 5-point scale where '5' stands for 'process performed very thoroughly' and '1' stands for 'process performed not at all thoroughly'?

### Single Code

	5 Performed very thoroughly	4	3	2	1 Performed not at all thoroughly
Research	5	4	3	2	1

**c. Design:** define, create, analyze, test and release the form, fit and function of a product; develop manufacturing, testing, installation, servicing and disposal processes. (Includes product idea by 'development' – product / process design / validation)

(i) Does your firm perform this process for each product's development?

1	Yes	<a href="#">Ask Q19c (ii)</a>
2	No	<a href="#">Skip to Q19d (i)</a>

(ii) How thoroughly is the process performed at your firm? Please provide your answer on a 5-point scale where '5' stands for 'process performed very thoroughly' and '1' stands for 'process performed not at all thoroughly'?

**Single Code**

	<b>5 Performed very thoroughly</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1 Performed not at all thoroughly</b>
Design	5	4	3	2	1

**d. Integrate:** synthesize design definitions, release product and product documentation to production, business development, and customer support organizational elements. (Includes product idea 'industrialization / commercialization' – preparation for hand-off to production / distribution / marketing / sales)

(i) Does your firm perform this process for each product's development?

1	Yes	<a href="#">Ask Q19d (ii)</a>
2	No	<a href="#">Skip to Q19e (i)</a>

(ii) How thoroughly is the process performed at your firm? Please provide your answer on a 5-point scale where '5' stands for 'process performed very thoroughly' and '1' stands for 'process performed not at all thoroughly'?

**Single Code**

	<b>5 Performed</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1 Performed</b>

	<b>very thoroughly</b>				<b>not at all thoroughly</b>
Integrate	5	4	3	2	1

**e. Amend:** gather and analyze product design issues and manufacturability feedback from production, suppliers, and downstream customers.

(i) Does your firm perform this process for each product's development?

1	Yes	<a href="#">Ask Q19e (ii)</a>
2	No	<a href="#">Skip to Q20</a>

(ii) How thoroughly is the process performed at your firm? Please provide your answer on a 5-point scale where '5' stands for 'process performed very thoroughly' and '1' stands for 'process performed not at all thoroughly'?

### Single Code

	<b>5 Performed very thoroughly</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1 Performed not at all thoroughly</b>
Amend	5	4	3	2	1

### **SECTION III: Product Development Process Performance Metrics**

20. To what extent does your firm evaluate its product development performance? Please provide your answer on a 5-point scale where '5' stands for 'the product development process is evaluated formally and thoroughly' and '1' the product development process is not evaluated or at all'.

### Single Code

	<b>5 Formally evaluated</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1 Not evaluated at all</b>
Product development process at firm	5	4	3	2	1

ASK Q21 TO Q24 ONLY IF '3', '4' OR '5' RATED AT Q20. ELSE SKIP TO Q25.

21. Which of the following metrics do you track as part of the formal evaluation of your firm's product development process? (READ CHOICES. SELECT ALL THAT APPLY)

**Multi Code**

1	Time or Duration	
2	Cost	
3	Deviation from plan	
4	Assets	
5	Other (Specify) _____	
6	None	

ASK Q22 IF 'Deviation from plan' SELECTED AT Q21

22. You mentioned that your firm evaluates 'Deviation from plan' as part of the product development process? What percent of the time does a project deviate from plan? (READ CHOICES. SELECT ONE)

**Single Code**

1	1 to 9%	
2	10 to 24%	
3	25 to 49%	
4	50% or more	
5	Don't know [DO NOT READ]	

ASK Q23 IF 'Time or Duration' SELECTED AT Q21

23. You mentioned that your firm evaluates 'Time or Duration' as part of the product development process? What is the typical or average product development cycle time in months? (WRITE-IN RESPONSE BELOW. USE WHOLE NUMBERS FOR RESPONSE)

\_\_\_\_\_ months

Don't know [DO NOT READ]: 1

24. What organizational element within your firm tracks these, or other, product development metrics? (READ CHOICES. SELECT ONE)

**Single Code**

1	Finance	
2	Manufacturing (including Engineering and Production)	
3	Research & Development	
4	Sales	
5	Marketing	
6	Customer Service	
7	Human Resources	
8	Executive or Corporate Management	
9	Other (Specify) _____	

25. I have a list of statements related to product development process improvement. As I read out each, please say to what extent you agree or disagree with each as a reason for which your firm would undertake product development process improvement. Please provide your answer on a 5-point scale where '5' stands for 'agree completely' and '1' stands for 'disagree completely'.

**Single Code**

	<b>5 Agree completely</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1 Disagree completely</b>
(i) My firm would improve the product development process to expand the number of products in development	5	4	3	2	1
(ii) My firm would improve the product development process to decrease development costs	5	4	3	2	1
(iii) My firm would improve the product development process to reduce development cycle time	5	4	3	2	1
(iv) My firm would improve the product development process to increase or better use development assets	5	4	3	2	1

ASK Q26 FOR EACH REASON DISAGREE WITH I.E. RATED '2' OR '1' AT Q25

26 (i). You mentioned you disagree with 'expand the number of products in development' as a reason for which your firm would undertake product development process improvement. Why do you say so? (RECORD RESPONSE VERBATIM)

**Open ended**

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26 (ii). You mentioned you disagree with 'decrease development costs' as a reason for which your firm would undertake product development process improvement. Why do you say so? (RECORD RESPONSE VERBATIM)

**Open ended**

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26 (iii). You mentioned you disagree with 'reduce development cycle time' as a reason for which your firm would undertake product development process improvement. Why do you say so? (RECORD RESPONSE VERBATIM)

**Open ended**

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26 (iv). You mentioned you disagree with 'increase or better use development assets' as a reason for which your firm would undertake product development process improvement. Why do you say so? (RECORD RESPONSE VERBATIM)

**Open ended**

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27. Finally, how does the success of your firm's product development compare to that of your competitors? Please provide your answer on a 5-point scale where '5' stands for your firm's product development 'is much more successful' and '1' stands for your firm's product development 'is much less successful'.

First, please compare the success of your firm's product development to that of your competitors?

**Single Code**

	<b>5 Is much more successful</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1 Is much less successful</b>
a. The success of firm's product development compared to that of competitors	5	4	3	2	1
b. The success of firm's product development compared to that of other firms in the building products industry	5	4	3	2	1

ASK Q28 IF OWN FIRM'S PRODUCT DEVELOPMENT ACTIVITIES RATED '2' OR '1' I.E. LESS SUCCESSFUL THAN COMPETITION AT Q27a.

28. You said that your firm's product development activities \_\_\_\_\_ (RATING FROM Q28a FOR 'competitors') when compared to those of your competitors? Why do you think so? (READ CHOICES. SELECT ALL THAT APPLY)

1	Customer needs or preferences	
2	Availability of capital	
3	Allocation of resources	
4	Access to appropriate technology	
5	Management leadership	

6	Supplier issues	
7	Customer feedback loop from market	
8	Technical performance of the product	
9	Other (Specify) _____	

29. What is the one biggest obstacle related to product development facing your firm? (RECORD RESPONSE VERBATIM)

**Open ended**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Thank you very much for taking the time to participate.**

[REFER TO Q7a. IF PRODUCT DEVELOPMENT PROCESS / STRATEGY IS DIFFERENT FOR EACH PRODUCT LINE I.E. '2' CODED AT Q7a, THEN ASK FOR REFERENCE:

Could you please provide me a reference for another senior manager within your firm that is managing product development for a product / product line different from yours?]

Name: \_\_\_\_\_

Telephone Contact: \_\_\_\_\_

**[More than one interview per firm allowed only if the firm has multiple product lines and each product line has an independent product development process / strategy. Same respondent cannot be interviewed twice.]**

Thank you. In order for us to be able to send you the honorarium for responding to this survey as well as copies of **Construction Outlook [MOST RECENT EDITION]** and the **Residential Green Building Smart Market Report (July 2006)**, we would need your contact details. Please be assured that your contact details and email address will remain confidential and will be used only for the purpose of sending the honorarium and these reports to you.

Name: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

\_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Telephone: \_\_\_\_\_

Email Address: \_\_\_\_\_

## **Appendix B**

### **JUSTIFICATION FOR SURVEY SAMPLE**

## **‘Small’ and ‘Large’ Manufacturer Segmentation Based on Augmented BPM Database**

The McGraw-Hill Construction Building Product Manufacturer database was modified and exercised to provide the following guidance in setting upper and lower revenue bounds for selection the ‘large’ manufacturer survey sample population and the ‘small’ manufacturer survey sample population for the HUD PATH 5 project. As a point of reference, the total population of the BPM sector, which encompasses both commercial construction and homebuilding product suppliers, manufacturers, and dealers, is estimated at roughly 30,000 firms with combined annual revenues on the order of \$1Trillion.

**The ‘large’ manufacturer survey sample will consist of 217 firms in the database with annual revenues >\$100M.** These firms combine to represent 11.6% of the database population and account for 96% of database revenues. The total BPM sector population of firms with revenues >\$100M is extrapolated to be somewhere between 434-759 firms. The ‘large’ manufacturer survey will be conducted to a completion level needed to achieve a 95%-98% confidence level in the statistic results.

**The ‘small’ manufacturer survey sample will consist of 577 firms in the database with annual revenues of \$5M to \$35M.** These firms combine to represent 31% of the database population and account for 1.54% of database revenues. This compares to the remainder of database firms with revenues <\$5M, which comprise 50% of the database population, but only 0.35% of revenues. The ‘small’ manufacturer survey will be conducted to a completion level needed to achieve a 95%-98% confidence level in the statistic results.

Min	Max	Counts	Total Revenues (\$)	Population(%)	Total Revenues (%)
50,000,000	100,000,000,000	292	\$472,182,722,598	15.7%	98%
35,000,000	50,000,000	55	\$2,267,324,674	3%	0.47%
20,000,000	35,000,000	118	\$2,938,318,671	6%	0.61%
5,000,000	20,000,000	459	\$4,515,266,050	25%	0.93%
1	5,000,000	931	\$1,707,041,458	50%	0.35%
DB Total		1855	\$483,610,673,451	100%	100%

Summary stratification characteristics for the existing and augmented BPM database are present in the following tables. The existing database consisted of 1936 firm records with combined revenues of \$278 Billion, as shown in the first tables. Stratification of the database presents a highly concentrated sector.

Min	Max	Counts	Total Revenues (\$)	Population(%)	Total Revenues (%)
10,000,000,000	100,000,000,000	6	\$162,417,000,000	0.3%	58%
1,000,000,000	10,000,000,000	22	\$69,063,136,000	1%	25%
100,000,000	1,000,000,000	107	\$30,413,802,670	6%	11%
10,000,000	100,000,000	441	\$13,120,889,063	23%	5%
-	10,000,000	1360	\$3,591,945,718	70%	1%
DB Total		1936	\$278,606,773,451	100%	100%
SIC GROUP					
BPM		1261	\$185,639,631,154	65%	67%
Other MFG		75	\$41,749,957,785	4%	15%
Distributor		218	\$46,355,290,323	11%	17%
Distributor - Other		96	\$800,785,816	5%	0.3%
Services		132	\$2,815,585,090	7%	1%
All Other		154	\$1,245,523,283	8%	0.4%
Total		1936	\$278,606,773,451	100.0%	100%

In analyzing the existing database, it was noted that about 10% of the records reported “\$0” revenues, tending to understate the average size of firms in the <\$10M category. In addition, it was clear that many of the “\$0” revenue firms were in fact quite large. In addition, many firms that would be expected to be included in the database, such as Home Depot, DuPont, and other high-visibility product manufacturers and distributors, were missing.

It was decided to test the effects of removing “\$0” revenue records and adding known sector leaders from several manufacturing sub-sectors and from among the emerging manufacturer/distributor category of firm such as BuildersFirstsource. Results from analysis of the modified database are presented in the second set of tables. The revised database pictures an even more highly concentrated sector dominated by firms with revenues >\$100M.

Two extrapolations of the augmented database characteristics to the full BPM sector population are investigated below. Regardless, the selection of both these sub-populations as well as the sampling sizes within them are viewed to be representative as well as being the necessary indicators for the hypotheses under consideration for the project.

Min	Max	Counts	Total Revenues (\$)	Population(%)	Total Revenues (%)
10,000,000,000	100,000,000,000	12	\$332,417,000,000	0.6%	69%
1,000,000,000	10,000,000,000	31	\$89,012,136,000	2%	18%
100,000,000	1,000,000,000	174	\$45,468,702,670	9%	9%
10,000,000	100,000,000	441	\$13,120,889,063	24%	3%
1	10,000,000	1197	\$3,591,945,718	65%	1%
DB Total		1855	\$483,610,673,451	100%	100%
<b>SIC GROUP</b>					
BPM		1215	\$309,042,231,154	65%	64%
Other MFG		65	\$41,749,957,785	4%	9%
Distributor		206	\$121,005,290,323	11%	25%
Distributor - Other		104	\$7,752,085,816	6%	1.6%
Services		120	\$2,815,585,090	6%	1%
All Other		145	\$1,245,523,283	8%	0.3%
Total		1855	\$483,610,673,451	100.0%	100%
<b>'Remainder' 28.1K (93%), ~\$516B (53%) extrapolation</b>					
10,000,000,000	100,000,000,000	12	\$332,417,000,000		
1,000,000,000	10,000,000,000	31	\$89,012,136,000		
100,000,000	1,000,000,000	174	\$45,468,702,670		
10,000,000	100,000,000	441	\$13,120,889,063		
-	10,000,000	27487	\$36,557,710,000		
Remainder Total		28145	\$516,576,437,733		
Total Sector		30000	\$1,000,187,111,184		
<b>Extrapolated Total Sector 30K Population, \$1T Revenues</b>					
10,000,000,000	100,000,000,000	24	\$664,834,000,000	0.1%	66%
1,000,000,000	10,000,000,000	62	\$178,024,272,000	0.2%	18%
100,000,000	1,000,000,000	348	\$90,937,405,340	1.2%	9%
10,000,000	100,000,000	882	\$26,241,778,126	3%	3%
-	10,000,000	28684	\$40,149,655,718	96%	4%
Sector Totals		30000	\$1,000,187,111,184	100.0%	100%

Note that the extrapolation presumes that fully half of all large firms (>\$100M) have been identified in the present database--not likely in actuality. If a greater number of large firms exist, which is likely, the relative contribution of small firms will be decreased even further.

On the otherhand, if the existing database over-estimates the average contribution of very large firms by as much as a factor of 2, only two-and-one-half as many firms >\$10M as have yet been identified would be needed to exceed expected sector revenues.

Min	Max	Counts	Total Revenues (\$)	Population(%)	Total Revenues (%)
10,000,000,000	100,000,000,000	12	\$166,208,500,000	0.6%	69%
1,000,000,000	10,000,000,000	31	\$44,506,068,000	2%	18%
100,000,000	1,000,000,000	174	\$45,468,702,670	9%	9%
10,000,000	100,000,000	441	\$13,120,889,063	24%	3%
1	10,000,000	1197	\$3,591,945,718	65%	1%
DB Total		1855	\$272,896,105,451	100%	100%
<b>'Remainder' 28.1K (93%), ~\$727B (73%) extrapolation</b>					
10,000,000,000	100,000,000,000	30	\$415,521,250,000		
1,000,000,000	10,000,000,000	77	\$110,547,330,194		
100,000,000	1,000,000,000	435	\$113,671,756,675		
10,000,000	100,000,000	1103	\$32,817,098,949		
1	10,000,000	26500	\$79,520,936,948		
Remainder Total		28145	\$752,078,372,766		
Total Sector		30000	\$1,024,974,478,217		
<b>Extrapolated Total Sector 30K Population, \$1T Revenues</b>					
10,000,000,000	100,000,000,000	42	\$581,729,750,000	0.1%	57%
1,000,000,000	10,000,000,000	108	\$155,053,398,194	0.4%	15%
100,000,000	1,000,000,000	609	\$159,140,459,345	2%	16%
10,000,000	100,000,000	1544	\$45,937,988,012	5%	4%
1	10,000,000	27697	\$83,112,882,666	92%	8%
Sector Totals		28145	\$1,024,974,478,217	100%	100%

## **Appendix C**

### **FEDERAL REGISTER NOTICE**

[Federal Register: August 24, 2006 (Volume 71, Number 164)]  
[Notices]  
[Page 50081]  
From the Federal Register Online via GPO Access [wais.access.gpo.gov]  
[DOCID:fr24au06-69]

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DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

[Docket No. FR-5043-N-08]

Notice of Proposed Information Collection for Public Comment: The  
PATH Survey of Homebuilding Product Manufacturers

AGENCY: Office of the Policy Development and Research, HUD.

ACTION: Notice.

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SUMMARY: The proposed information collection requirement described  
below will be submitted to the Office of Management and Budget (OMB)  
for review, as required by the Paperwork Reduction Act. The Department  
is soliciting public comments on the subject proposal.

DATES: Comments Due Date: October 23, 2006.

ADDRESSES: Interested persons are invited to submit comments regarding  
this proposal. Comments should refer to the proposal by name and/or OMB  
Control number and should be sent to: Reports Liaison Officer, Office  
of Policy Development and Research, Department of Housing and Urban  
Development, 451 7th Street, SW., Washington, DC 20410.

FOR FURTHER INFORMATION CONTACT: Dr. Carlos Martin, (202) 708-4370,  
extension 5845 for copies of the proposed forms and other available  
documents. (This is not a toll-free number).

SUPPLEMENTARY INFORMATION: The Department will submit the proposed  
information collection to OMB for review, as required by the Paperwork  
Reduction Act of 1995 (44 U.S.C. Chapter 35, as amended).

This Notice is soliciting comments from members of the public and  
affected agencies concerning the proposed collection of information to:  
(1) Evaluate whether the proposed collection of information is  
necessary for the proper performance of the functions of the agency,  
including whether the information will have practical utility; (2)  
evaluate the accuracy of the agency's estimate of the burden of the  
proposed collection of information; (3) enhance the quality, utility,  
and clarity of the information to be collected; and (4) minimize the  
burden of the collection of information on those who are to respond,

including through the use of appropriate automated collection techniques or other forms of information technology (e.g., permitting electronic submission of responses.)

This Notice also lists the following information:

Title of Proposal: The Survey of Homebuilding Product Manufacturers.

Description of the need for the information and proposed use: This request is for the clearance of a telephone survey instrument designed to assess the state of operational and organizational performance among homebuilding product manufacturers (both large and small) with regard to product development and technological innovation. The purposes of the survey implementation and analysis are: (1) To gauge through a national sample the kinds of internal organization and operations associated with homebuilding product manufacturers; (2) ascertain correlations between organizational type and formalization of product development; and (3) improve the activities of the Partnership for Advancing Technology in Housing based on the insight of the survey findings.

OMB Approval Number: Pending.

Agency form numbers: None.

Members of Affected Public: Individuals in homebuilding product manufacturing firms.

Estimation of the total number of hours needed to prepare the information collection including number of respondents, frequency of response, and hours of response: 150 individuals will be surveyed through the telephone survey (100 sampled from small manufacturers and 50 from large manufacturers). The average time to complete the phone survey is 25 minutes. Respondents will only be contacted once. Total burden hours are 62.5 for the survey.

Status of the proposed information collection: Pending OMB approval.

Authority: Section 3506 of the Paperwork Reduction Act of 1995, 44 U.S.C. Chapter 35, as amended.

Dated: August 15, 2006.

Darlene F. Williams,  
Assistant Secretary for Policy Development and Research.  
[FR Doc. E6-13993 Filed 8-23-06; 8:45 am]  
BILLING CODE 4210-67-P