Freedonia

US outlook for

Nonresidential Prefabricated Building Systems

with forecasts to 2005 and 2010

New study finds:

- ***US demand for nonresidential prefabricated building systems is projected to advance four percent per year through 2005, including price increases, to $11.5 billion***
- ***Metal building systems will continue to account for over one-half of total US nonresidential prefabricated building system shipments through 2005, displaying annual growth of 4.3 percent***
- ***Regionally, demand for nonresidential prefabricated building systems is projected to be strongest in the South and West. These regions will benefit from relatively strong nonresidential building construction activity, as well as from above-average population and economic growth***

Freedonia Industry Study #1443

Nonresidential Prefabricated Building Systems

Study Publication Date: August 2001
Price: $3,600
Pages: 256

Nonresidential Prefabricated Building Systems, a new study from The Freedonia Group, provides you with an in-depth analysis of major trends in the industry and the outlook for product segments and major markets -- critical information to help you with strategic planning.

This brochure gives you an indication of the scope, depth and value of Freedonia's new study, *Nonresidential Prefabricated Building Systems*. Ordering information is included on the back page of the brochure.

Brochure Table of Contents

Study Highlights

- US demand for nonresidential prefabricated building systems is projected to advance four percent per year through 2005, including price increases, to $11.5 billion.

- Metal building systems will continue to account for over one-half of total US nonresidential prefabricated building system shipments through 2005, displaying annual growth of 4.3 percent.

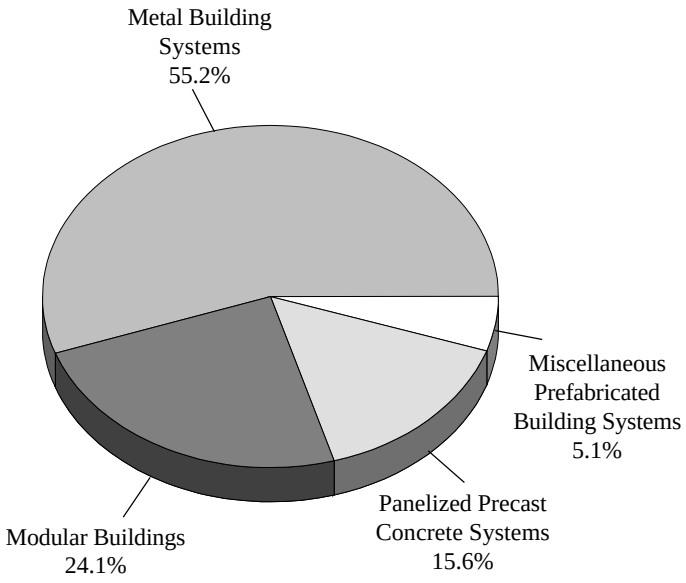
- Among nonresidential prefabricated buildings other than metal building systems, the strongest growth will be displayed by modular buildings.

- Regionally, demand for nonresidential prefabricated building systems is projected to be strongest in the South and West. These regions will benefit from relatively strong nonresidential building construction activity, as well as from above-average population and economic growth.

- The metal building systems segment has the highest concentration of large companies with national scopes, including Butler Manufacturing, MAGNATRAX, NCI Building Systems, Robertson-Ceco and VP Buildings.

Study Highlights

Nonresidential Prefabricated Building Systems Shipments, 2000



Nonresidential Prefabricated Building Systems Supply & Demand

(million dollars)

Item	1995	2000	2005	2010	00/95	05/00
					% Annual Growth	
Nonres Bldg Constr Expend (bil $)	194.2	304.0				
$ prefab bldg/000$ nonres constr	33.1	3				
Prefabricated Building System Demand	6430					
+ net exports	178					
Prefabricated Building System Shpts	6608	9656				
Metal Building Systems	3850	533				
Modular Buildings	1487	2				
Panelized Precast Concrete Systems	907					
Miscellaneous Prefab Bldg Systems	364					
deflator (1996=100)	98.6	108.				
Prefab Bldg System Demand (mil 1996$)	6521	8707				

SUMMARY TABLE

List of Contents, Tables and Charts

Market Environment

The Market Environment Section discusses factors influencing nonresidential prefabricated building systems demand, including building construction and demographic trends.

This information provides you with an understanding and an analysis of the climate in which the nonresidential prefabricated building systems industry operates.

Systems Building Versus Conventional Construction

It is useful when examining prefabricated building systems to analyze the relative strengths and weaknesses of s comparison to conventional construction. Systems d components that are produced in a plant ar delivered to the building site ready for installat assembly there. Conventional construction method eel, reinforced concrete, masonry units and wood framing, use a multilayered design and construction process in which the building components are fitted, joined and assembled on-site.

The two principal advantages of systems building over conventional construction are reduced construction time and costs. Because the majority of prefabricated building system production is conducted in a manufacturing plant, the building site can be prepared simultaneously. This concurrent construction method allows the foundation to cure while the building is being made, eliminating the need to wait for site preparation before beginning to construct the building. Some industry estimates suggest that the total construction time can be cut up to one-half by the use of prefabricated building systems. Moreover, this time reduction enables faster occupancy of the building and faster return on investment.

Although the different types of nonresidential prefabricated building systems range significantly in initial price, all systems-built structures offer some price advantages over conventionally constructed buildings. Factory fabrication of components results in high quality, more precise-fitting components, reducing long-term maintenance costs. In-plant production of components also results in less material waste than conventional construction methods, lowering raw material costs. Moreover, factory work is not subject to weather delays and uses a higher percentage of automation and semiskilled workers, reducing labor costs. In

Building Systems

The Building Systems Sections provide demand for historical years and forecast growth to 2005 and 2010.

This information helps you:

- **Analyze your company's growth potential in the industry.**
- **Outline your strategic plans for five and ten years out.**
- **Establish sales goals.**

Components - Wall Panels

Shi…anels are forecast to advance 4.7 percent per year to …e is slightly lower than that of total metal building …he lower penetration of metal wall panels into the …wever, the development of advanced finishes and highe… …anels (e.g., insulated panels and aluminum composite panels) will stimulate use of metal wall panels in a wider range of applications.

Wall panels are generally made from galvanized, light-gauge steel or structural tube steel, often with aluminum-zinc coatings. The panels are typically made in the factory, shipped to the building site and lifted into place on the structure using a crane. In addition to providing support and strength for the roof and structural systems, wall panels are also used to increase energy efficiency and provide visual appeal.

Metal wall panels can be broken down into three principal groups: single-skin ribbed, insulated and aluminum composite. Single-skin ribbed panels are traditional steel wall panels and are available in exposed- or concealed-fastener varieties. Exposed-fastener ribbed panels, which include corrugated types, have visible screws that attach the panels to the framing and are generally used for such utilitarian applications as manufacturing plants. Concealed-fastener ribbed panels use interlocking panel joints to conceal fasteners from view, making the panels more suitable for use in higher-end, more appearance-focused applications. Because use of single-skin ribbed panels is slipping due to the increasing popularity of other,

Panelized Precast Concrete Building System Shipments

(million dollars)

Item	1990	1995	2000	2005	2010
Nonres Bldg Constr Expend (bil $)	187.2	19…			…4
$ precast bldg/000$ nonres constr	4.2				
Panelized Precast Concrete Syst Shpts	780				…5
% panelized precast concrete	33.6				
Other Prefab Building System Shpts	2321	2…			

Nonresidential Prefabricated Building Systems #1443

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Markets

The Market Sections analyze trends and considers the threats and opportunities in nonresidential prefabricated building systems by market and region.

The information presented will help you:

- **Focus your sales and marketing efforts on high growth areas.**
- **Propose new areas for development.**

Agricultural

Demand fo…ems in agricultural markets is projected to advanc…ion in 2005. Though this pace exceeds that exp…efabricated building systems, it represents a…om the 1995-2000 period, during which agricultural construction activity was boosted by increasing exports of agricultural products. Although the total number of farms in the US is expected to decline over the forecast period, the average size of farms is increasing as part of an overall pattern favoring a large-scale, industrial approach to farming. Among other things, this trend will lead to increased construction of agricultural facilities.

Unlike nonresidential construction markets, in which various types of prefabricated building systems are used, agricultural market demand is limited almost exclusively to metal building systems. Metal building systems are used in a variety of agricultural applications, including on-farm grain and crop storage facilities, barns, livestock shelters and garages. The use of metal building systems in these various agricultural applications can be attributed partially to the design flexibility …igid …barns …le buildings …lves to use …acing.

…r prefabri- …s. For …livestock

SAMPLE PAGE

West Nonresidential Prefabricated Building System Demand
(million dollars)

Item	1990	1995	2000	2005	2010
West Construction Expend (bil $)	115.6	131.1			
$ prefab bldg/000$ constr	9.9	10			
West Prefab Bldg Syst Demand	1142	138			
Mountain	365	629			
Pacific	777	751			
% west	19.8	21.5			
Prefab Building System Demand	5757	6430			

SAMPLE TABLE

Industry Structure

Gain a better understanding of your competition and analyze your company's position in the industry with information about:

- **industry composition**
- **market share**
- **competitive strategies**
- **product development**
- **manufacturing**
- **marketing & distribution**
- **mergers & acquisitions**
- **cooperative agreements**

Product Development - Other Product Enhancements

The conservative nature of the building construction industry is reflected in the relatively low levels of produ[illegible]ithin the nonresidential prefabricated building system [illegible]ers do engage in product development efforts [illegible]ce characteristics of the systems, reducing the [illegible]g the range of end uses for which the systems are use[illegible]

The metal building system segment has the highest levels of product development within the nonresidential prefabricated building system industry. Major development efforts within this segment are aimed at improving the performance features and cost efficiency of the systems. Advanced finishes used on wall and roof panels provide an important method of improving the performance of metal building systems. The majority of metal building system manufacturers offer panels coated with zinc-alloy or fluoropolymer treatments, such as GALVALUME aluminum-zinc coatings from BIEC International or KYNAR fluoropolymer coatings from Atofina (France), a subsidiary of Total Fina Elf (France). These coatings are primarily used to decrease the building's maintenance requirements through increased durability and resistance to fading. Upstream suppliers, such as steel companies and coating producers, are continually developing advanced coatings that allow metal building system producers to offer long-term warranties. These firms also develop coatings that provide specific performance characteristics. For example, in 2001, Classic Products, BASF and Ferro developed HI-R HEAT BARRIER finishes that contain infrared reflecting pigments. These finishes reduce the temperature of metal roofing panels for lower air conditioning costs.

Metal building system manufacturers also focus developmental efforts on improving the cost efficiency of the systems through the use of advanced components and materials. For example, American Buildings is developing a cold-

Company Profiles

The Profiles Section analyzes 39 companies active in the U.S. nonresidential prefabricated building systems market. These profiles represent a sampling or cross-section of the types of companies involved in the industry.

Divisions, subsidiaries, joint ventures, etc., are discussed under appropriate parent companies.

Sources for profiles included:

- **Information provided by key staff members in the respective companies**
- **Annual reports**
- **10-K reports**
- **Security analysts reports**
- **Corporate product literature**

Whitley Manufacturing Company Incorporated
201 West First Street
South Whitley, IN 46787
219-723-5131
http://www.whitleyman.com

Whitley Manufacturing Company is a privately-held producer of temporary and permanent modular buildings for nonresidential applications. The Company provi[illegible]ufacturing and set-up services, and sells its buildings t[illegible]butors. Whitley has estimated annual sales of [illegible]ately 350. (Sales and employment verified by co[illegible]

The Company's standard modular buildings consist of a welded steel frame covered by a wooden frame, insulation and a thick layer of plywood for a solid floor. Alternative structural options include a secondary steel frame, as well as clear span and panelized construction. The walls and roof of the building are built while the floor is being constructed and then attached using a crane. Whitley offers a variety of roofing profiles, such as single-wide bow truss roofs with side or mansard side elevation, two-unit gable roofs with side elevation, three- to five-unit step-up roofs with a gable roof line and side elevation, transverse ridge roofs and transverse ridge roofs with a concealed roof line. Exterior building options include mansards, metal or concrete steps, ramps and decks, as well as aluminum, vinyl, stucco, brick or steel exterior finishes. Among the interior options for buildings are floor tiles, wall vinyl, carpet and plumbing, electrical, heating, air conditioning and ventilation systems. The Company also offers a wide range of windows and doors.

Whitley can install its buildings as temporary, semi-permanent or permanent structures, depending on the application. Temporary installation is primarily used

Companies Profiled

A-Z Precast Concrete Products Incorporated
ACCO Aerated Concrete Systems Incorporated
Alfa SA de CV
  Galvamet Incorporated
Alliance Steel Incorporated
Babb International Incorporated
  Matrix Precast Autoclaved Aerated Concrete LP
Behlen Manufacturing Company
  Inland Southern Corporation
Blazer Industries Incorporated
Butler Manufacturing Company
  BUCON Incorporated
  Lester Building Systems
  Liberty Building Systems
Carr Concrete Corporation
Chief Industries Incorporated
Clayton Homes Incorporated
Coachmen Industries Incorporated
  KanBuild Incorporated
  Miller Building Systems Incorporated
  Mod-U-Kraf Homes Incorporated
CRH plc
  Central Pre-Mix Prestress Company
  Cloud Concrete
  Eastern Prestressed Concrete
  Oldcastle Precast Incorporated
  Spancrete Northeast Incorporated
  Strescon Industries
  Thorn-Orwick
CSR Limited
  American Precast Concrete Incorporated
Flexicore Systems Incorporated
Hebel AG
Kullman Industries Incorporated
LTV Corporation
  AEP-SPAN
  Graham FRP Composites Limited
  United Panel Incorporated
  VP Buildings Incorporated
Modtech Holdings Incorporated
  Innovative Modular Structures Incorporated
  SPI Manufacturing Incorporated
  United Modular
Modular Technology Incorporated
Morgan Buildings and Spas Incorporated
Mueller Incorporated
NCI Building Systems Incorporated
  A&S Building Systems
  American Building Components
  Insulated Panel Systems
  Mesco Metal Buildings
  Metal Building Components Incorporated
  Metallic Building Company
  Mid-West Steel Building Company
  Midland Metals Incorporated
  Steel Systems Incorporated
NewBasis
  Quikset
Nucor Corporation
Onex Corporation
  American Buildings Company
  Architectural Metal Systems
  CBC Steel Buildings
  Gulf States Manufacturers
  Jannock Limited
  Kirby Building Systems
  MAGNATRAX Corporation
  VICWEST North America
Penn Lyon Homes Corporation
RMC Group plc
  Metromont Prestress Company
  Ytong Holding AG
Robertson-Ceco Corporation
  Ceco Building Systems
  Star Building Systems
Rubb Incorporated
Ruffin Building Systems Incorporated
Smith-Midland Corporation
  Easi-Set Industries
STEELOX Systems Incorporated
United Structures of America Incorporated
Universal Fabric Structures Incorporated
WedgCor Incorporated
Whirlwind Steel Buildings Incorporated
Whitley Manufacturing Company Incorporated
  Evergreen Mobile Company
  Modular Buildings Incorporated

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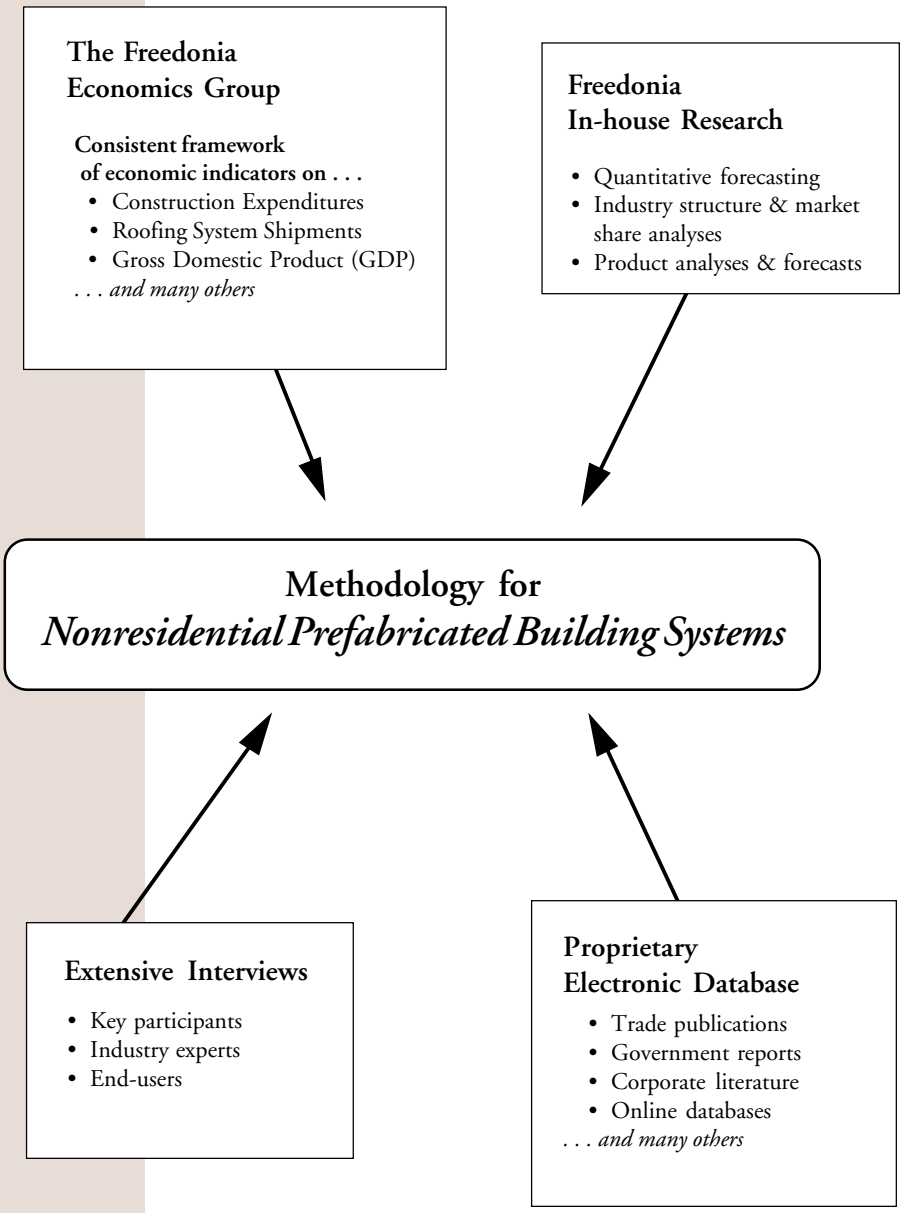
Forecasting Methodology

Freedonia does not just collect and reprint data; Freedonia develops data. Our analysts thoroughly investigate an industry by extensively interviewing key industry participants and analyzing information from sources such as associations, government and trade literature. Once this research is complete, Freedonia establishes one set of forecasts. All writing, editing and forecasting is done in-house to assure quality and consistency. In cases where data does not exist, Freedonia develops the data based on input/output ratios, bills of materials and flow charts. The following chart summarizes Freedonia's methodology:



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Since 1985, Freedonia has published over 1,600 titles covering areas such as chemicals, coatings and adhesives, building materials, plastics, industrial components and equipment, health care, packaging, household goods, security, and many other industries.

Freedonia has produced a wide variety of titles, including:

- ***Siding***
- ***Prefabricated Housing***
- ***Roofing***
- ***Insulation***

Because Freedonia is a reliable information source, our forecasts are cited in numerous publications such as *The Wall Street Journal, Building Systems Magazine* and *The Financial Times.*

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Because all of our staff work at the same location, interaction between analysts and departments provides a strong system of checks and balances.

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Prefabricated Housing
US demand for manufactured, panelized, modular and precut housing will outpace site-built housing through 2005, when prefabricated will account for 30% of all housing starts. The cost advantages of factory production such as improved scheduling, bulk purchasing of materials, and insulation from weather delays, will aid demand. This study analyzes the $17 billion US prefabricated housing industry to 2005 and 2010 by product and region. It also presents market share data and profiles leading producers.
#1458. . . . . 8/01. . . . . $3,600

Siding
Demand for exterior cladding in the US will reach 109 million squares in 2005. Fiber cement will be the star performer, experiencing unit gains of nearly 5% annually and continuing to wrest market share from wood and vinyl. However, vinyl will remain the market leader, benefiting from expenditures on residential remodeling. This study analyzes the $8.6 billion US siding industry to 2005 and 2010 by material, market and region. It also profiles selected industry participants and presents market share data.
#1413. . . . . 4/01. . . . . $3,700

Roofing
The best opportunities in roofing will be found in reroofing applications, which account for three-quarters of demand. Thermoplastic membrane roofing will grow the fastest, with thermoplastic polyolefin (TPO) making inroads against built-up roofing and elastomeric roofing. Asphalt shingles will remain the dominant roofing material. This study analyzes the $9.6 billion US roofing industry to 2005 and 2010 by product, market, and geographic region. It also profiles key companies and presents market share data.
#1394. . . . . 3/01. . . . . $3,700

World Insulation
The world market for insulation will reach US$18 billion in 2004. Gains will be boosted by energy efficiency efforts in buildings and industrial processes. Foamed plastics will be the fastest growing material, assisted by economic growth in developing Asia/Pacific countries where foamed plastics are used in appliances and buildings. This study analyzes the world insulation industry to 2004 and 2009 by material, market, region and for 18 countries. It also evaluates market share and profiles key competitors.
#1375. . . . . 1/01. . . . . $4,500

World Prefabricated Housing
World demand for prefabricated housing will reach 1.3 million units in 2004. Gains will be bolstered by housing activity in developing Asia/Pacific and Latin America, where prefabricated housing will find use as both low-cost units to reduce shortages and as high-quality, well-insulated houses for well-to-do consumers. This study analyzes the US $54 billion world prefabricated housing industry to 2004 and 2009 by type, market and region, and for 19 countries. It also details market shares and profiles key companies.
#1370. . . . . 1/01. . . . . $4,300

Construction Chemicals
US demand for on-site construction chemicals will grow nearly 6% per year. Gains will accrue from increased chemical use per project and a shift toward higher value formulations offering more eco-friendly profiles and greater ease of use. Protective coatings and sealers will remain the largest product category, while polymer flooring grows the fastest. This study analyzes the $5.9 billion US construction chemical industry to 2004 and 2009 by product and market. It also evaluates market share and profiles key firms.
#1344. . . . . 1/01. . . . . $4,300

Sealants & Caulks
Annual growth in US sealant and caulk demand will benefit from strong demand in residential repair and improvement, which will partially offset slowing OEM growth. Construction will remain the largest market, while aerospace and other transportation equipment will lead gains. This study analyzes the 2.2 billion pound US sealant and caulk industry to 2004 and 2009 by raw material, type and market. It also details market share and profiles key companies.
#1287. . . . . 6/00. . . . . $3,600

Insulation
Thermal and acoustical insulation demand in the US will reach $6 billion in 2004. The best growth will be found in appliance, equipment and HVAC uses, based on efforts to reduce energy use and machinery noise, and improve indoor air quality. Foamed plastic will be the fastest growing insulation material, with fiberglass remaining the largest type by weight. This study analyzes the US insulation industry to 2004 and 2009 by material, market and region. It also profiles key firms and presents market share data.
#1248. . . . . 4/00. . . . . $3,600

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