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CHAPTER FOUR

Adventures in Sales and Marketing

Houses are built to live in and not to look on: therefore let use be preferred before uniformity, except where both may be had.

—Francis Bacon, Essays, Civil and Moral, No. 45, “Of Building”

The Lustron factory came alive in September 1948. From the balcony of his office at the Columbus plant, Carl Strandlund could overlook nearly twenty-three acres of production machinery. He loved to escort visitors to the balcony and chuckle as they stood speechless before this spectacle of American engineering and manufacturing prowess. Even a staid, somewhat condescending reporter from Architectural Forum dispatched to profile Lustron admired “the throb and pound of the big presses, the clash of steel against steel, and the sigh of the blowers” that defined the rhythm of the factory. Strandlund’s office contained numerous mementos reflecting Lustron’s brief and tumultuous history. Behind his desk stood autographed photos of President Truman, Senator Flanders, and Housing Expediter Wyatt. Selected newspapers articles and Lustron advertisements adorned the walls, and souvenir ashtrays made from the first run of porcelain-enamelled steel sat on every table.¹

Because the company had evaded so many potential disasters, Strandlund believed that his “tempered” organization could withstand and even capitalize on adversity. He claimed 20,000 “firm” orders on the books and announced a 1949 production goal of 45,000 houses. The company designated its original offering the “Westchester,” a model similar in design to Blass and Beckman’s prototype “Esquire” but with numerous improvements. The model name evoked the upscale New York county, a choice intended to associate the house with established and desirable suburban communities. With pilot production underway, sales, marketing, and distribution operations evolved and expanded as the company implemented strategies to accommodate the demands of mass marketing.

Unusual among manufacturers of factory-made housing in this era, Lustron
established methods for integrating its house within the context of traditional neighborhood and community settings. The careful staging of the exhibition houses had reflected this concern. The company formalized and codified its vision in the “Lustron Planning Guide,” which offered specific strategies to encourage “the proper placement” of the house within “the proper environment.” This reflected a holistic approach to the sales and marketing of prefabricated houses that the industry had often neglected. The adaptability of Lustron houses to suburban development represented a crucial marketing element. The company either had to take on the role of developer or forge relationships with merchant builders who were beginning to construct large-scale suburban developments on the periphery of cities across the nation.

Lustron’s sales and marketing functions necessarily developed quickly. It established, refined, and extended its franchised dealer network, addressed the difficult issue of financing the purchase of prefabricated houses, and forged an innovative relationship with a mortgage-lending firm that made it easier for dealers and customers to obtain financing for the house before it was assembled on a lot. The company also created a Fleet Sales Department to facilitate the development of large-volume merchant business and began to court the military housing market. Traditionally the Achilles heel of the prefabricated housing industry, the sales and marketing functions were extraordinarily complex and nuanced due to the particularistic character of the American housing market. Lustron’s top management nevertheless believed that the company “had the house Americans want[ed]” and confidently asserted that the organization stood “right on the eve of success.”

**Market Realities**

Lustron had demonstrated that it could design and manufacture a desirable factory-built house. What had yet to be determined—by the company and by the industry—was whether such a house could be marketed successfully. Unless the company had an efficient sales and distribution organization, economies realized through mass production were irrelevant. Lustron’s scale and scope revealed a confidence in its abilities to capture sufficient market share to implement its “countrywide production line” concept. Indeed, to contemporary observers Lustron personified the daring, vision, and expertise required to bring the product and the market together.

Yet the unification of product and market presented formidable challenges. Management accepted new responsibilities that producers of conventional housing typically did not face. Foremost, sales and marketing systems had to be large enough to generate a continual flow of orders to rationalize mass production. Ideally, sales had to precede production to allow for efficient scheduling of fabrication and distribution.
The greater control manufacturers exerted over the sales function, the greater their control over production and distribution costs. However, the market environment faced by prefabricators made it extremely difficult to rationalize sales efforts as readily as the manufacturing process.

Compounding these problems were the enormousness of the enterprise and the innovative aspects of its product. A benefit in terms of publicity and general excitement, fitting the square peg of a porcelain-enamed steel house into the round hole of long-established traditions in the residential construction industry presented unique challenges. Considering that the company was new, the product was new, the pressure from Washington unremitting, and the level of public scrutiny intense, Lustron did an outstanding job in a remarkably short period of time.

The practical aspects of marketing a prefabricated house differed markedly from conventional homebuilding. In conventional construction, builders procured materials from a variety of suppliers and relied on subcontractors to provide the labor and expertise for each construction specialty. Depending on the type of sale, financing could be handled one of two ways. If the house was built for an existing customer, the customer paid as the work progressed with his own money, or on terms arranged with a mortgage provider. Builders thus had little of their own capital tied up in construction costs. Additionally, materials suppliers typically extended thirty- or sixty-day credit terms that carried builders financially until the customer made the next payment. If builders initiated construction before securing a customer or if they intended to market a subdivision on a merchant basis for sale upon completion, they could approach banks or savings and loans for a construction loan. Either way, the conventional builder had access to reliable sources for financing a proven product.

Lustron’s factory-built house required the conceptualization and implementation of an entirely different marketing and financing approach. Indeed, significant variances from conventional techniques had to be developed for the company to succeed. Because Lustron houses arrived at the site complete, dealers needed only to arrange for site preparation, foundation construction, utility hook-ups, and assembly of the house. However, this meant that the house had to be paid for all at once since the company initially operated on an F.O.B. basis. Dealers had to prearrange financing or provide their own capital. Complicating the financing process was the radical nature of the house and the newness of the company. Lenders had to be convinced of the quality of the house and the ability of the dealer to complete assembly, a process that transformed the house from chattel property on the trailer to mortgage-qualified real property.

Obtaining financing for builders and customers also complicated the company’s marketing efforts. Lustron had to convince lenders that its house was mortgage-
qualified property, a decision that involved the consideration of numerous factors including market appeal and acceptance, location, lot characteristics, and an assessment of its value compared with conventionally built houses. The company also needed to secure approval by the Federal Housing Authority (FHA) to reach the broadest possible market. An FHA-insured mortgage reduced the required down payment since it covered a higher percentage of the appraised value of the house. This meant that the house was within reach of families lower on the income scale, a key factor in rationalizing the company’s production capacity. FHA approval had a larger meaning as well by representing acceptance in the eyes of the public that had come to recognize the agency’s stamp of approval as an arbiter of quality and stability.6

Lustron and most other prefabricated housing firms relied on a franchised dealer system of sales and marketing. Independent dealers became the middlemen of the prefabricated housing industry primarily because of the great variation in building codes, mortgage practices, consumer tastes, and real estate laws and customs throughout the nation. The franchised dealer system initially held a number of advantages for the company and the dealer. Franchising provided broad market coverage at a reasonable cost to the company since dealers assumed the financial responsibilities of distribution. Lustron could share promotional costs and exercise pricing control through the dealer contract. The sales department also believed that the franchising system furthered public acceptance of the Lustron house by associating it with “exclusive sponsorship.”7

For Lustron’s dealers, the franchise system guaranteed the right to market one of the nation’s most well known commodities free of competition within a geographic territory. The system also afforded dealers the flexibility to choose which type of operation best suited their financial and operational goals. Dealers could sell to individuals before installation of the house on a particular site via a contract for delivery; they could become project developers and construct subdivisions on a speculative basis; or they could broker the house and subcontract the installation process to another firm. Lustron preferred project developers who obtained large tracts of land for subdivision and thus generated a large sales volume. The company believed this offered the best option for the homebuyer as well since the Lustron house would be situated in an area where the dealer and the company had worked together to develop a “modern community.”8

Since manufacturers could not possibly master an infinite number of market variations in an efficient manner, dealer selection and facilitation became crucial functions. The success or failure of a prefabricator was largely determined by the ability of its dealers to generate sufficient sales volume to keep both the factory and the dealer in business. Further, the dealer also assumed responsibility for meeting con-
sumer demands such as competitive pricing and access to financing. Dealers faced important labor issues as well, including training installation crews and providing them with steady work. Workers naturally wanted assurances of steady employment before they invested their time in specialized training. Servicing houses also presented problems since dealers needed to maintain a parts inventory as well as train their crews in the proper techniques for repairing any damage to the structure or to the porcelain-enameled surfaces occurring during assembly or in the future. It was a complex relationship subject to many variables. For the prefabricated housing industry, it was also largely uncharted territory.

These difficulties and other unknown factors inherent in marketing the Lustron house greatly influenced the organization and strategic direction of the company’s sales and dealer relations efforts. A fundamental concept embraced by top management was that Lustron would “start big.” Of course, this approach was essential to recover the tremendous investment in plant capacity and to realize economies of scale, which had been the reason for Lustron’s existence in the first place. However, creating an organization capable of marketing 30,000 to 50,000 houses per year proved no easy task.

The sales organization initially included a sales vice president, sales manager, assistant sales manager, seven sales representatives, and clerical personnel. The Sales Promotion Department, which handled advertising, and a Franchise Committee, which evaluated and selected dealers, completed the organizational structure. The sales vice president’s primary responsibilities included recruiting dealers, helping them to initiate operations, and assembling a field sales organization to support dealers and customers. The vice president also participated in the establishment of criteria for dealer selection and retention as a member of the Franchise Committee. Additional members of the Franchise Committee included the sales manager, assistant sales manager, the president of the company, legal counsel, and the vice presidents for accounting and finance. The Committee met weekly in lengthy sessions to evaluate numerous applications for dealerships and conducted personal interviews with finalists before granting approval.

As Lustron’s “point men,” the sales representatives served essential entrepreneurial functions. The company expected them to develop territories by locating prospective dealers and acting as their advocate before the Franchise Committee. They also functioned as corporate liaison in all matters of dealer–home office relations and were held partially accountable for dealer performance. Sales representatives also had to devise methods of operation that suited a wide variety of circumstances depending on geographic variation or the preferences of individual dealers. It was a demanding, high-pressure job with few rules other than “succeed.” The entire company depended heavily on the efforts of the sales representatives to recruit and facilitate good working relationships with dealers.
Lustron began to assemble its dealer network shortly after securing the first RFC loan in October 1947. In consultation with marketing experts, the company focused on the eastern United States, particularly the Northeast and the Great Lakes states, sometimes known as the “prefab belt,” where market research indicated the highest level of consumer acceptance of prefabrication. Lustron projected that it would need approximately 100 dealers immediately and decided to use geographically exclusive marketing territories. By mid-1948, Lustron had received over 6,200 applications for dealerships “with every state and a number of foreign countries represented.”

The company also adopted basic policies for dealer selection. Foremost was the preference for established, well-financed businessmen with construction experience since a significant initial capital investment was necessary to rationalize an exclusive territory. Indeed, sales were contingent upon a large “up-front” investment by dealers because the company was not initially in a position to finance dealer start-up costs. “We want people of standing and recognized ability in the communities throughout the country . . . [w]e want people who both understand and will practice our philosophy,” wrote sales vice president Richard Jones. Yet dealers had to possess the initiative to accommodate regional and local variations in site selection, financing, and customer acceptance. Lustron expected dealers to develop their territories to full potential and initially left them free to implement tactical decisions without consulting the home office. The dealer was essentially a customer of Lustron operating under certain conditions, but in some respects the relationship resembled a partnership.

The Dealer Franchise Agreement provided the legal basis for dealer relations and defined in detail the limits of exclusive territories. The only exception to exclusivity was in the case of “fleet sales,” a special marketing category in which the home office reserved the right to handle all sales to high-volume customers such as large-scale suburban developers or the military. The Agreement also set payment terms and capital requirements, outlined the factory warranty against defects for one year after delivery to the site, and reiterated the company’s commitment to providing support for crew training and marketing assistance.

Many initial dealer contacts occurred during the national “unveilings,” Lustron’s term for the model home publicity tour of 1948. Some prospects even harassed Lustron receptionists in their fervor to campaign for a franchise. A formal approach to dealer recruitment began in March and April 1948 when Lustron hired several sales representatives to serve in a recruitment and liaison function. Additionally, a full-page advertisement in Life during April encouraged interested prospects to contact the factory for a dealer information packet. The sales department reported a very high level of enthusiasm among prospective dealer candidates. So confident of the
opportunity, some requested more houses than the entire projected production run for the year. “There is not the slightest doubt in their minds about the public acceptance of this house,” sales manager Carl Rolen wrote, “and they stand ready to put up large sums of money on this belief.”

Stanley Crute, who organized C-B Homes in late 1948 as Lustron’s exclusive dealer in Connecticut, provides a good example of the type of individual who became interested in the company. A civil engineer, Crute operated a general contracting firm before the war and served as state director of the Office of Price Administration through 1945. He describes his attraction to Lustron:

After the war I couldn’t stand the price of lumber. I didn’t think any kind of house-building involving the inflated price of lumber would be a sound operation. I decided to see what had happened in prefab. When I saw the Lustron prototype in Hinsdale, it looked to me like the first soundly engineered house in which it could be fairly said that machines had replaced men.

C-B Homes also hired Gregory Bardacke, a veteran of the prefabricated housing industry. He had served as a consultant to Wilson Wyatt at the National Housing Agency, and had aided Lustron as an independent consultant during the company’s labor contract negotiations with the American Federation of Labor.

Other dealers and their employees reflected similar technical backgrounds. Svend Ericksen, the New York City dealer, was a partner in the Gotham Construction Company, a commercial builder. Joseph Miele, the New Jersey dealer, was a civil engineer, while Chicago-area dealer Kuhne-Simmons Company included several construction engineers. Partnerships between people with construction experience and other local businesses likely to profit from an association with Lustron represented another promising approach. Prospective partners included real estate agencies, ready-mix concrete firms, and merchant builders. A number of dealers expressed concerns about “static” from entrenched residential construction interests, but interestingly saw themselves as part of Strandlund’s “educational force” of Lustron constituents who would “change the misunderstandings” about the role of industrialized housing in the post-war marketplace.

Although Lustron benefited from much goodwill and positive anticipation from its dealer community, the company was initially ill-prepared to manage the intricacies of this complex economic relationship. A fundamental issue inherent in the franchise marketing system was geographical exclusivity. Initially, every Lustron dealer held exclusive rights within a certain territory. All of New York City was represented by one dealer, as were the states of Connecticut, New Jersey, Florida, and large areas of Michigan and Wisconsin. Difficulties arose, however, when
several prospective dealers found it difficult to raise the necessary capital to launch a dealership on such a scale. Further, some of the groups or individuals who could raise sufficient capital were initially unwilling to risk their resources on an unproven product. However, a large territory, effectively capitalized and exploited, offered greater flexibility because size enabled dealers to compensate for marketing or acceptance problems in any one locality.20 When prospective dealers turned to Lustron for advice on these issues, the company initially had little to offer. One of the early flaws in its dealer relations program was that the company lacked data that could have informed decision making on issues such as how many total dealers would be needed, or what variables most influenced the determination of an exclusive geographic region.

Lustron expected that a period of adjustment would be necessary to formulate responses to these problems and assured dealers that it would pursue further market research. The company did, however, offer training classes for dealers and their installation crews beginning in June 1948. To prepare dealers for their promotional role, the company also offered seminars in sales and advertising techniques and provided them background information about the inception of the firm and Strandlund’s vision of its future. However, the company remained convinced that the house would sell itself and that problems of installation and financing presented the greatest challenges to individual dealers.21

In November 1948, Lustron held its first “dealer convention” at the plant. For two days, fifty-three men from twenty-two dealerships attended a variety of sessions including technical discussions about the house and the plant, overviews of the prefabricated housing market, and seminars on advertising strategy and financing issues.22 One of the most important aspects of the convention was the introduction of the “Lustron Profit Unit Plan.” Fundamentally, the plan addressed the necessity for sales to exceed the pace of factory production. With the slogan “The Key Is Three,” the company introduced dealers to the “profit unit” concept. The economics of the Lustron sales approach required that dealers erect a minimum of one profit unit, consisting of three houses, each month. Profit unit potential in any given region would thus eventually govern production and pricing policies and serve as a basis for the determination of geographic restrictions on franchises.23

If dealers failed to fulfill their part of the equation to order and erect the maximum number of profit units their territories could absorb each month, the entire operation from raw material purchases to final sales would be disrupted. Thus, Lustron advised dealers to erect houses before they were sold in order to initiate and maintain momentum, reduce financing delays, and maximize sales potential to anxious customers. As sales vice president Richard Jones observed, “there are many people who will buy a house that is ‘ready to live in’ who could not otherwise be sold or
who are in such a hurry to buy that they will not wait.” With over twenty years of marketing and sales experience in the housing industry, Jones was instrumental in the formulation and implementation of Lustron’s profit unit plan.24

The profit unit concept was based on the assumption that dealers could realize consistent profits only if they maintained systematic, sustained activity. Controlling labor costs proved especially important. The plan provided a method to assure the efficient utilization of labor by keeping assembly crews continually employed. Additional advantages included better workmanship and quality control through steady employment of trained crews, better labor relations, and the protection of dealer investment in crew training. In short, systematizing the installation process promised to transfer the economics of mass production to the home site.25

Lustron urged dealers to “start at once” erecting houses for sale after completion. The company also introduced a dealer finance plan to encourage immediate action and outlined profit scenarios based on different types of transactions. Assuming a dealer cost of $6,800 for a two-bedroom Westchester and allowing for geographic variances, Lustron illustrated the advantage of the profit unit approach. Under the finance plan the company advanced $6,800 per house, and the dealer invested $2,200 for site preparation and labor costs. A minimum profit of $1,000 per house was assumed, although geographic and market variations could easily push that figure much higher. Any profit made on land sales was not factored into the example. Lustron estimated labor costs at $2.30 per hour based on 350 hours of assembly for each house. The company estimated a profit potential of at least $3,000 on each profit unit of three houses, assuming a four-man installation crew and a $7,000 initial dealer investment.26

Theoretically, dealers could start conservatively with one or two profit units for a relatively small investment then expand quickly as they gained experience. However, this would be difficult and potentially uneconomic if all sales were to individuals at different locations within a sales territory. Lustron management recognized that profitable operations depended on a proper balance between individual sales and “group” sales. A group sale, for example, containing twenty-four houses, could potentially return a $24,000 profit on a $56,000 initial investment, excluding land profits.27

Thus, economies of scale for dealers necessarily dictated a focus on large developments. But would people want to live in a Lustron-only development or accept the Lustron house in a “traditional” neighborhood setting? Many of the nation’s largest contracting firms had initially given the house a cool reception. Indeed, one of the most attractive features of factory-made housing was that customers could have it wherever they wanted, and large-scale developers existed only in metropolitan areas where the market supported mass developments. The Lustron approach promised
to realize the same economies of scale found in large suburban developments but also to make them available in smaller cities and even rural areas where conventional volume building did not typically occur.28

House, Lot, and Neighborhood

The company addressed the potential for Lustron-only developments and the larger issue of prefabrication and community setting in a lengthy “Planning Guide” that it distributed to dealers in late 1948. Its creation evidenced an understanding of the context in which dealers would operate as well as a realization of the need for a holistic view of housing, one which had to reach beyond the factory shipping dock if the company were to survive and prosper.29 The introduction to the Planning Guide reminded dealers that “the product which you merchandise is essentially a house, lot and its environment—the Lustron Corporation provides the house—the dealer and the customer provide the lot and environment.” Significantly, the company asserted its responsibility and leadership in educating and assisting dealers in the planning process. “Good planning is good Lustron business,” the Guide intoned as it set about illustrating “how Lustron’s ‘New Standard for Living’ [could] be extended to the outdoors.”30

The first part of the Planning Guide addressed site planning for Lustron houses on individual lots held by customers or dealers. Elements of location and physical characteristics of lots received special emphasis. “Select lots located in a neighborhood of owner-occupied homes—pride of ownership results in better maintenance of yards and buildings,” the company advised. A chart comparing favorable and unfavorable aspects cautioned dealers to locate houses near schools, churches, recreational centers, amusements facilities, and shopping centers. Access to convenient transportation, fire and police protection, and public utilities also served to enhance the marketability and retained value of the Lustron house.31

The Guide also emphasized the need to avoid locating houses near “unsightly areas” such as dumps or industrial districts and to avoid streets bearing heavy or fast traffic. Locations where adjacent property values were lower, or where “long established adverse trends” of neighborhood decay were evident, also merited rejection. Above all, the Guide cautioned dealers to make sure that sites were “located on the ‘right side’ of town.”32 The physical characteristics of lots also played an important role in controlling costs and assuring a favorable setting for the house. Since the Westchester was 35-feet wide and 35.6-feet deep, the Guide recommended a minimum lot size of 60 by 120 feet. Heavily wooded or severely sloped lots were ill suited due to increased clearing and foundation costs, although the Guide advised
selection of “lots having one or more existing trees—they will add to the overall value of the property.” Lustron also cautioned dealers to avoid irregularly shaped lots, especially where side lot lines were at an acute angle with the street, and to avoid using deep, narrow lots.

To assist dealers in identifying suitable sites, the Guide outlined an “Action Plan” with a checklist that surveyed aspects of lot selection such as utilities and improvements; distances to schools, churches, and shopping centers; taxes and assessments; and a price survey of neighboring properties. The Action Plan had the dual purpose of providing dealers with a method for quick field surveys of potential sites and later as a list to match prospective customers with lots suited to their neighborhood and aesthetic preferences. The company advised dealers to focus their attention first on “areas of subdivided lots which have been left as a residue from past periods of subdivision expansion.” Typically well-located with existing water and sewer connections, these areas held many cost and time benefits since they were “ready to go.” Dealers only had to locate and market them as “qualified Lustron sites.”

Next, the Planning Guide offered advice on the proper placement of the house on the lot and suggested numerous landscaping schemes designed to display the Lustron house to best advantage. “When the house is properly placed on the lot, rooms will be well related to suitable exterior areas and make for maximum convenience and use,” the guide instructed; “plan the lot and house as a unit.” The separation of public and private areas became a key planning objective. The public and service areas consisted of the front yard, approach walks, and driveway. The private area was the rear yard, which included the garden, play and recreation area, and space for drying laundry. The Guide advised careful planning of the private area, because “the purchase of a Lustron Home releases the owner for leisure.” Freed forever from the mundane tasks of painting and redecorating, the Lustron owner needed ample space in which to grow things, “putter around,” or enjoy the children safely at play.

The final section on individual sites included detailed landscaping examples. Because “the mere planting of trees and bushes is not landscaping,” the Guide encouraged restraint, for “a small amount of plant material carefully chosen and organized can supply a dramatic effect.” The company also suggested using curved walks and diagonal arrangements of gardens and flowerbeds to create the illusion of space. Fencing or hedges around the back yard also served to delineate the private area. Most important, the Guide reminded dealers to consider the entirety of the landscape design as a crucial element of the “Lustron lifestyle.”

The second part of the Planning Guide, entitled “Lustron Developments,” addressed site selection and planning issues for subdivisions consisting solely of Lustron houses. Again, the Guide stressed the importance of proper location, defined as areas near schools, churches, and shopping centers on the “right side” of town:
“Remember, the Lustron Home should be set in a sound economic surrounding upon a well-ordered arrangement of land and ground forms.” Here was an expression of the key to successful integration of prefabricated housing and a demonstration of how conventional thinking about planning could be used to bring a truly radical house to the market.

The company urged dealers to consider broader issues of development beyond “the drafting of street and lot lines.” The transformation of raw land into building lots represented the difference between a wholesale and a retail product. Consequently, dealers had to pay special attention to “image” issues such as the placement of Lustron houses in relation to the natural environment, roads, surface utilities, and other Lustron houses. “This must be done in good taste,” the Guide admonished, for “through variation in setback line, orientation, color, and plant material, it is possible to develop outdoor spaces, vistas, and a variety of frontages and enclosures which can enhance the entire relation between the outdoors and the interior of the Lustron house.”

Effective planning of a Lustron subdivision included lots designed to conform to the topography of the land and the creation of greenspaces such as playgrounds and parks within a subdivision. Setbacks of open land around entrances to the development also provided space for shopping centers and sites for schools. The Guide also recommended long blocks and the creation of cul-de-sacs to discourage through traffic. Regarding lot size and density, it encouraged dealers to focus on determining the maximum number of “saleable lots,” rather than on the greatest total number of lots. As the Guide explained, “unsold lots of odd shape and size become the infestation points of future blight and neighborhood decay.” Minimum recommended lot size was 60 by 120 feet, with a net recommended density (after a 25 percent reduction for land allocated to streets and recreational areas) of 4.3 Lustron houses per acre. Houses also had to be grouped “with the minimum resemblance to arrangement in rows.”

As with individual sites, effective landscaping played a crucial role in creating the ideal Lustron development. The Guide offered specific instructions for creating planting schemes that would screen undesirable views, deflect noise from heavy traffic areas, and emphasize variations in house placement. Liberal use of flowering trees such as hawthorne, dogwood, flowering crab, and cherry served to attract prospective Lustron buyers. Planting schemes also should not emphasize individual houses or attempt to imitate older developments by using “quick growing but short-lived varieties.”

The Guide also offered dealers a core of “packaged” planting designs for individual lots that could be alternated throughout a subdivision. Each design came with a list of primary and supplementary planting materials and a chart that provided detailed information about the physical characteristics and maintenance requirements of the
suggested flora. By offering dealers the “services of a landscape architect,” the company encouraged the creation of a “unified harmonious planting composition” for all Lustron neighborhoods.42

Color selection was another planning factor unique to the Lustron development. Since the company offered only four colors—“surf” blue, “dove” gray, “maize” yellow, and “desert” tan—the Guide presented several examples of proper aesthetic arrangement. Rejecting the idea of simply alternating the four colors, it advised working from the center of a block outward and evaluating the color selection of houses across the street as well as next door. It did not rule out placing houses of like color side by side, as long as dealers remained sensitive to creating “harmonious groupings” within blocks. Recognizing the challenges of working with only four colors, the Guide informed dealers that the factory was moving quickly to develop a wider range of color choices.43

The final section of the Guide offered a number of “good vs. bad” examples of subdivision planning that encompassed all of the elements previously outlined. The emphasis on Lustron-only developments reflected an increased sensitivity to the need for high-volume sales in order to achieve economies of scale on the distribution side of the profit equation. Emphasis of aesthetic aspects in such detail also revealed an understanding of the importance of public acceptance of the Lustron house in settings that held the greatest profit potential for dealers. The rationalization of mass production could not be accomplished without a strategic and tactical understanding of factory, dealer, and consumer needs and desires.

Financing and Fleet Sales

As factory production moved beyond the pilot stage during December 1948 and January 1949, the sales department faced a difficult period of adjustment and growth. Now was the time for the company’s best efforts if sales were ever to match production potential. One goal had been achieved with the recruitment of 100 dealers. However, sales fell short of expectations. Ironically, this was exactly the opposite of what the company anticipated. Top management had believed that the limiting factor for Lustron would be production capacity, not sales potential.44

The intensification of the company’s sales efforts included a redefinition of strategy and a structural reorganization of sales department personnel and functions. One of the most important additions was the establishment of a Finance Department to assist in locating financial institutions willing to provide interim financing for dealers and mortgages for customers. Another essential function of the Finance Department was to secure FHA approval of the Lustron house, a necessary prerequisite
for securing widespread private financing and an effort that paid off quickly when
the FHA granted Lustron provisional approval in December 1948.45

Close coordination between the Finance Department and the sales representa-
tives also established a functional linkage to improve dealer relations. A reevalua-
tion of the dealer finance plan, implemented through the sales representatives, extended
additional credit to dealers for installation costs and reimbursed them for expenses
above factory estimates. Since installation costs varied from region to region, deal-
ers found it difficult to advertise a set price for the house. With greater flexibility
built into the financing plan, dealers felt more confident in advertising set prices
for Lustron homes since their profit was easier to determine.46

Lustron itself, however, could not afford to finance all of its dealers. For the dealer
finance plan to work in the long term, the company had to secure external financ-
ing and limit its participation to serving as a clearinghouse or agent in the search
for dealer credit. The Finance Department envisioned a “Lustron Acceptance
Corporation” to provide interim financing for dealers and ease their burden of car-
rying the cost of the house until customer financing could be secured. A successful
plan would thus stimulate the flow of credit and focus it where it was most needed.
Only then could the company’s large production capacity be rationalized.47

The Finance Department negotiated an innovative arrangement with the
Galbreath Mortgage Company of Columbus, Ohio, during the first months of 1949.
Though complicated, the advantages of the Galbreath-Lustron plan can be seen in
the following scenario. When a dealer sold a Lustron house, the customer applied
for a mortgage. If successful, the customer’s bank agreed to pay the dealer when
the house was completed or when installation reached a certain stage. The innov-
ative element began at this point. The customer and the dealer then executed a mort-
gage assignment that authorized the customer’s bank to pay Galbreath a portion of
the mortgage money to cover the cost of the house to the dealer. The dealer then
sent the mortgage papers to Lustron along with an application for interim financ-
ing and a promissory note made out to Galbreath. When Lustron granted
approval, it released the house for shipment and forwarded the mortgage docu-
mentation to Galbreath. Galbreath then immediately paid Lustron for the house.
Finally, when the customer’s bank was satisfied with the progress of installation, it
sent a check to Galbreath covering the advance and interest on the interim loan.48
The successful implementation of the plan held benefits for each party. Buyers of
prefabricated housing could more easily obtain mortgages; dealers secured a
method to carry their costs; Lustron received prompt payment; Galbreath
received interest for its services; and banks could participate in a reliable method
to tap the prefabricated housing mortgage market. The plan was also significant as
a model for the prefabricated housing industry as a whole, since creating and main-
taining an effective distribution network presented tremendous challenges for every firm.

The creation of the Financing Department represented a positive response to difficult problems. Lustron also created several new departments to further its marketing efforts. The Service Department assumed responsibility for dealer relations other than financing. Its mission and functions included the establishment of channels of communication between the factory and dealers, the quick resolution of dealer complaints, and the presentation of sales and marketing programs developed by the company. The Service Department also encouraged mentoring relationships among dealers with the hope that more experienced dealers would pass along advice.49

The Service Department initiated an important change in the function of the sales representatives as well. Lustron now sent an experienced representative with the first order placed by a new dealer and recruited new sales representatives to monitor and assist dealers during the assembly process. This represented a differentiation of function for the sales representatives, who initially had responsibility for both sales and the house installation process for specific regions. Dealers now had greater access to factory expertise during the start-up phase, and considerable burden was relieved from individual sales representatives.50

Another important addition to Lustron’s sales organization was the Fleet Sales Department. This department operated independently of the dealer network and remained the only type of sales activity directly and exclusively implemented by the corporation itself. The Dealer Franchise Agreement exempted fleet sales from territorial exclusivity. Lustron did not specifically define what constituted a fleet sale in the Agreement, but evidence indicates that it meant sales to merchant developers, the armed services, or rental builders. The focus on fleet sales represented an attempt to retain corporate control in a market that held tremendous potential.51

Because military sales held special promise, the Fleet Sales Department focused its marketing efforts on procurement officers. Top management also realized that involvement in the military housing market could provide a powerful rationale for the continuation of government financial assistance. In December 1948 the Navy granted Lustron a contract for sixty houses to be erected at the Marine Corps base in Quantico, Virginia. Lustron outbid six conventional prefabricators on the basis of lowest cost per square foot of useable space. Realizing the significance of this opportunity, the company assembled an “elite crew” culled from factory workers and construction engineers to guarantee timely installation of the houses. A key factor in the Navy’s interest in prefabrication was the high labor costs of conventional construction in a remote location. Lustron’s factory-made houses demonstrated an important competitive advantage in this market that Lustron could exploit over both conventional
construction and prefabricators using conventional materials and producing only parts of houses in a factory.  

Major General Lemuel Shepherd, Jr., Commandant of the Marine Corps Schools at Quantico, praised the company in a series of letters to other commanders interested in the Lustron house. Shepherd reported that he was “more than satisfied” with the houses, particularly “because their attractive architecture, their trim appearance, and their varied colors do so much for the appearance of the [base].” Further, the Commandant relayed positive reviews from various constituencies. Engineers liked the house because of its durability and efficient design; the quartermaster liked the house because its efficient insulation reduced fuel costs; the maintenance officers liked the house because it was not subject to rot or termites and presented no fire hazard.  

Officers’ wives told Shepherd that they loved the house because it was easy to clean, contained large amounts of storage space, and was virtually impervious to assaults by “lively youngsters.” Indeed, he mused, the most attractive feature of the house from the husband’s perspective was the automatic dishwasher. The overall advantages of the Lustron house led Shepherd to conclude that

those of us who have studied this problem at some length feel sincerely that the Lustron Corporation has opened the door to a tremendous future. I, myself, believe that the techniques used in building these houses will be perfected as time goes along, so that with reduction in housing costs there will be a corresponding rise in housing standards throughout the Country.

Developing fleet sales in the private sector presented different challenges and opportunities. The company relied on field sales representatives and dealers to refer fleet prospects to Columbus and expected the Fleet Sales Department to assist potential customers with the integration of Lustron houses into their plans for suburban developments. A good example of fleet sales development was the “Park Forest Project.” Lustron began negotiations with American Community Builders, Inc. in January 1949 for the sale of 2,000 Lustron houses to be placed in a new subdivision near Park Forest, Illinois, a new planned suburb of Chicago rendered famous by William H. Whyte in the 1956 bestseller *The Organization Man.* After months of wrangling over a price structure, the parties signed an agreement on August 3 that offers insight into a number of marketing issues inherent to fleet sales.

Lustron knew that high-volume sales were essential to the success of the enterprise, especially during its formative years when its dealer network was not yet prepared to handle full-scale production. Further, Lustron sought relationships with developers in part to obtain experience in land planning, site preparation, landscaping, and mar-
keting techniques necessary “to promote the use of our house in large project developments.” Testing public acceptance of the house in such a setting also served corporate interests. Additionally, the relationship with American Community Builders, one of the largest developers of project housing in the nation, would be influential in attracting other developers to the Lustron house.56

Lustron agreed to provide American Community Builders with a high level of service during the one-year term of the contract, including special factory training for American Community’s workmen, foremen, and supervisors, and a team of “on-call” factory representatives to assist with any difficulties. Lustron also guaranteed the houses against all defects for a period of one year after the date of delivery. In return, American Community agreed to abide by Lustron’s contract with the American Federation of Labor and to permit Lustron fleet sales personnel to observe its methods and procedures concerning land use and planning, site development, landscaping, marketing, and customer financing.57 The Park Forest project represented an important initial effort to establish a favorable reputation as a volume supplier of housing and to develop marketing and planning savvy that would feed symbiotic relationships with large developers.

By the summer of 1949, the Fleet Sales Department negotiated additional contracts with the military and private firms. Military sales included a development contract with the Army, which tested Lustron houses for cold weather applications in Alaska and Greenland. Contracts with the Army at Fort Dix, New Jersey, for 300 houses and with the Air Force at Westover Air Base in Massachusetts for 1,400 houses evidenced Lustron’s steady penetration of this market. The Strategic Air Command also approached Lustron for bids on 2,000 houses for use at eleven air bases throughout the nation. In the civilian market, initial contacts with Parkbrook Homes, Inc. of Cleveland, Ohio, produced an interim agreement to supply over 3,000 houses for a rental housing project in the Cleveland suburbs. As Strandlund previously noted before various congressional committees, the Lustron house was ideal as a rental property due to its durability and ease of maintenance.58

Considering the complexities involved, the company had created and refined its sales and marketing approach with remarkable speed. The Sales Department expanded from fifteen persons in September 1948 to over seventy persons by mid-1949. Over the same time span, Lustron increased its dealer network from seven to 185. Further, the company demonstrated a growing sophistication regarding differentiation of sales functions and the necessity of a new organizational structure to assist dealers and customers. The addition of the Finance and Service Departments were important steps in defining corporate responsibility for difficult marketing issues. Employee morale in the sales department remained strong, and several internal publications mentioned that “Lustron widows”—spouses of Lustron sales personnel—
were anxious to discuss topics other than the company or its product at the dinner table.\textsuperscript{59}

Lustron learned quickly that no product, however great the demand, sells itself. The company’s genesis in the midst of a housing shortage initially produced a tendency to underestimate the intensity of effort required to market a factory-made house, and overconfidence in the ease of surmounting obstacles such as local building codes and mortgage availability. By August 1949 these attitudes had vanished. Lustron realized that its long-term survival depended on innovative solutions to complex problems in marketing and dealer relations. However, such solutions required time to formulate and implement, and it remained unclear whether Lustron’s primary creditor—the federal government—would allow the company to survive long enough to develop the necessary expertise.

\textit{\textdollar}\textsuperscript{11 Million and More Questions}

Strandlund claimed that the reorganization of sales functions, the focus on dealer training and service, the interim financing arrangement with the Galbreath Mortgage Company, and the commitment to high-volume sales demonstrated a “total market approach” unique among prefabricators.\textsuperscript{60} He announced in January 1949 that the company would reach its break-even point of 1,000 units per month and would achieve its target production rate of 3,000 units per month within the year.\textsuperscript{61} Neither Strandlund’s friends nor his enemies ever accused him of lacking optimism. However, as the year’s events unfolded, even the “rock-like confidence” of Lustron’s president began to wane. The company faced two fundamental, enduring problems. First was the generation of sufficient capital to move beyond the pilot stage and toward a profitable level of commercial production. Second was the expansion of the dealer network and fleet sales efforts to a level that rationalized large-scale production. Lustron faced a vicious cycle. A low-production volume meant a high unit cost, and a high unit cost reduced the potential market for the house, which in turn called into question the viability of large-scale manufacture. The situation became more acute in Lustron’s case because political pressures threatened to cut off access to capital and deny the company time to overcome initial manufacturing, distribution, and dealer relations problems.

Citing increased production and marketing expenses, the company raised the price of its house in January. The Westchester now cost dealers nearly \textdollar\textsuperscript{7,000} in the large urban markets of the East Coast, well above the initial desire to provide the nation a “good \textdollar\textsuperscript{5,000} house.” With an estimated consumer cost, excluding lot, of \textdollar\textsuperscript{8,000–10,000}, depending on region, the Lustron house began to creep out of the “middle market” so necessary to sustain plant capacity. In 1949, the federal government
defined as middle class a household with approximately $3,500–4,000 in annual income. However, with veterans’ annual income at approximately $2,500 annually, few could expect to obtain credit for a $9,000 house.62

Even though the initial price exceeded what most veterans could afford, Strandlund maintained that Lustron’s first house should not be a “bare bones” offering. With public acceptance at risk, he wanted to provide a well-equipped, midlevel house with lots of “extras.” Once acceptance was achieved, the company could then offer an entry-level model that lower-income families could afford. Strandlund also argued that lower-income buyers would benefit as second-time Lustron owners moved up the model line, leaving their homes for the economic class below. For Strandlund, “style depreciation” became a method of providing housing to lower-income families.63

However, speculation about the potential secondary market for Lustron houses would have to wait as the company again confronted a financial crisis. Responding to a shortage of operating capital, in February 1949 Lustron requested an additional $7 million loan from the RFC. The RFC board approved the loan on February 21 but required full repayment within six months. Lustron’s total debt to the federal government now stood at $32.5 million, and the lack of sufficient cash reserves placed the firm in danger of defaulting on the original $15.5 million loan. Operating losses for the first two months of the year exceeded $1 million.64

The RFC’s position was becoming increasingly problematic. It had consistently defended the Lustron loans, but its precarious political situation meant that further congressional scrutiny would surely be forthcoming. The directors were beginning to lose their taste for public assaults on their fiduciary judgment and winced at the prospect of opponents using the Lustron loans as a justification for eliminating the agency altogether. Some directors began to formulate scenarios for extracting the agency from the Lustron enterprise while saving their personal reputations. Although Strandlund could not have known at the time, the agency that facilitated Lustron’s birth was beginning to consider infanticide.

Faced with few other options to ease the financial crunch, Strandlund announced a “temporary” layoff on February 22 affecting 400 of Lustron’s 3,200 employees, blaming “the need to retool and streamline certain parts of the manufacturing process.” The affected workers, who had been fabricating roof trusses largely by hand, faced a one- to two-month furlough until new tools, dies, and production machinery could be installed to complete the automation of the roof truss department. Just three weeks later, Lustron announced the layoff of an additional 400 employees. Strandlund again cited “manufacturing bottlenecks” and delays in the installation of automated machinery as the reasons for the layoffs.65 Production line imbalances such as these were not unusual for such a large and complex plant, but they proved
particularly troublesome since they were widely publicized. Their timing also worked against the company, as the need to solicit additional capital again brought Lustron’s critics to the fore just when the company needed breathing space.

Between January and May 1949, Lustron produced an average of 130 houses per month, well below the thirty-five per day break-even target. However, summer brought renewed hope, for in June the plant achieved a record of forty-two houses in one day and averaged over 100 houses per week by the first of July. Although Lustron by this time had produced only 1,298 houses, many in the company sensed a turning point. “We are very close to a breakthrough,” Strandlund reported in the company newsletter. Yet operating losses continued to mount. Lustron reported a loss of nearly $1 million for the month of May, which forced the company to seek an additional loan from the RFC.

It was not an opportune moment to approach the increasingly embattled agency. In the summer of 1949, the RFC faced mounting political pressures, especially among conservatives in Congress who continued to question the necessity of federal capital allocation in a peacetime economy and who regarded the RFC’s lending practices, especially the Lustron loans, as unwise and potentially corrupt. Conservatives raised a number of embarrassing questions that refocused national attention on Lustron during hearings on legislation affecting the RFC and the prefabricated housing industry.

The most important issue for Lustron was the extension of Section 102 of the Housing Act of 1948, which authorized the RFC to make loans and purchase equity obligations of any business to assist in the production of prefabricated housing or housing components. The authorization was due to expire on September 1, 1949. Among the proposed amendments to the 1948 Act was the authorization of an additional $50 million for the production of prefabricated housing and $25 million to assist dealers with interim financing arrangements.

During hearings before the Senate Banking and Currency Committee, RFC director Harvey J. Gunderson offered a cautious defense of the Lustron loans in much the same manner as his colleague John D. Goodloe had done in early 1948. Gunderson told the committee that he was “reasonably satisfied” with Lustron’s prospects for reaching the break-even point within the year. Despite his knowledge that Lustron planned to request an additional $3–5 million to “tide them over,” Gunderson remained convinced “that [the RFC] should support the company until [it is] certain whether it is a success or a failure. The importance of this venture is, if it works, that you will get cheap housing.”

Gunderson insisted that additional funds were necessary to expand Lustron’s distribution network and to support interim financing arrangements for dealers. As he observed, “it is a lot easier to build the houses at the plant than it is to get them out
to where the customer wants them. Unless the distribution system is built up to the point where anyone... anywhere in the country, can talk to a dealer and get a house, the program will not work.” A lucid assessment, yet several members remained skeptical that the American public would embrace porcelain-enameled steel houses.

J. William Fulbright (D-AK), chairman of the committee, expressed “grave doubts” about Lustron’s potential market and questioned “whether it [was] wise to continue spending $1 million a month. That is a lot of money... I would hate to come around next year and find that we have $50,000,000 invested in it without any appreciable change for the better.” Fulbright also focused on the issue of public acceptance. “I have only seen one of them,” he said, “but it sort of reminds you of a bathtub.” No, Gunderson replied, the first ones looked “a little like hotdog stands.” However, he quickly added that Lustron was concentrating its efforts on developing more attractive color schemes with the help of industrial designers and architects. Responding to Fulbright’s query about the overall prospects of the company, Gunderson said that he thought that it had “about a 50–50 chance” of success. Nevertheless, the RFC director recommended continued support for Lustron until the government could be “completely satisfied of the likelihood of success or failure for prefab housing ventures.”

Before hearings began in the House, Strandlund and Representative Frederick Smith (R-OH) rekindled an old debate in the press over the level of private equity capital invested in Lustron. The company, Smith observed, appeared to be “the RFC under another name.” Strandlund, though, saw “nothing abnormal” in the relationship and argued that since the loans originated under the Veterans’ Emergency Housing Act, Lustron did not have to contribute any private capital. “The transaction,” Strandlund said, “should not be judged by conventional ideas.” Smith curtly replied that “there’s a limit to how unconventional the RFC can be in lending $34,000,000 or more of public funds.” Yet Strandlund held his ground, asserting that “there’s a limit to how unconventional the RFC can be in lending $34,000,000 or more of public funds.” Yet Strandlund held his ground, asserting that “it would be tragic” if the congressional inquiries adversely affected Lustron’s opportunity to borrow additional funds. “I am not afraid of the inquiry as such,” Strandlund told a reporter from the New York Times; “there is nothing wrong or unwholesome that the investigation could uncover.”

In front of the House Banking and Currency Committee, Strandlund faced a stern assault from Representative Albert Cole (R-KS), who reminded him that Lustron’s total losses to date exceeded $14 million. Although Strandlund admitted that additional loans were necessary, he assured Cole that “nothing has gone wrong with the project but the timetable.” Cole then announced that he had learned that the RFC was prepared to lend another $14.5 million to Lustron, which would exhaust the remaining funds allocated to manufacturers of prefabricated housing under the Housing...
Act of 1948. In effect, Cole noted, the “RFC may have to put all of its prefabricated housing eggs in one basket.” Strandlund replied that he had no control over RFC lending practices but maintained that once Lustron “has found its feet and proved itself” it could easily obtain sufficient private capital investment to pay off its full debt to the RFC in a very short period of time. 

Cole then addressed a blunt question to Richard C. Dyas, chief of the RFC Housing Branch: “I want to inquire whether the Reconstruction Finance Corporation is now satisfied with the loan. Is it a good investment?” “That,” Dyas replied, “is a question of philosophy. As a loan—and that may be the wrong name for it—of course it cannot be supported by any consideration of security in the sense that an ordinary loan would be . . . I think you have to consider this whole project as a pilot undertaking. I do not believe that anyone in the RFC could say that it is satisfactory or unsatisfactory. There are no yardsticks.”

Cole also wondered how the RFC could have interpreted the National Defense Section of the RFC Act so broadly as to include the original Lustron loan under its provisions. Dyas argued that the intent of the Lustron venture was to provide housing for returning servicemen that could be considered “a move on behalf of the national defense.” Cole responded, “I hope in the future that the RFC doesn’t interpret the statutes so broadly.” Dyas again reminded the committee of the enormous scope and innovative character of the venture and asked for additional time before rendering harsh judgments that could imperil Lustron’s future.

Despite the attacks in Congress, the RFC agreed to extend four additional 60-day operating loans to Lustron during the summer of 1949. Three loans of $1 million each were executed on July 7, July 15, and August 10. The final loan, executed on August 30, totaled $2 million. Lustron’s indebtedness to the federal government now stood at $37.5 million. Despite negative press attention aroused by the hearings and the loans, economic pressure prompted Strandlund to announce on August 31 the layoff of 700 factory workers due to “continuing production line difficulties.” His assertion that the company was “right on the eve” began to be interpreted by the public as a prelude to failure rather than success.

Although congressional inquiry had not prevented the RFC from extending additional credit, the agency grew increasingly sensitive to criticism about its relationship with the company. The national media, once a firm ally of Lustron, reflected many of the concerns of congressional opponents and gave the firm considerable negative coverage. Time magazine’s coverage of the hearings included an article entitled “Bathtub Blues” that played up Fulbright’s remark and concluded that Lustron “had been far from a success.” Reflecting its conservative nature, Fortune chronicled various aspects of the company’s history in an article entitled “That Lustron Affair,” which implied scandal and favoritism at the RFC. “It’s what happens when
government starts handing out ‘risk capital,’” the author asserted; “this is the first time the government has appropriated, in peacetime, any considerable sum for private venture capital. Does anyone in his right mind want the government to decide who deserves it?”

These criticisms prompted the RFC to retain the renowned management and engineering consulting firm Booz, Allen & Hamilton to begin a detailed evaluation of Lustron’s operations. At the same time, Strandlund and his management team undertook a similar evaluation during the summer of 1949. Continuing difficulties with the automation of several departments created additional production delays and placed more jobs in jeopardy. Increasing complaints from dealers regarding assembly problems with the Westchester model also forced the company to reassess the house within the context of production efficiency.

Reengineering the House

The manufacturing bottlenecks and site assembly problems had the same origin. The Westchester was essentially identical to the original prototype Esquire, which had been designed with market acceptance as the first priority. Architects Blass and Beckman had placed less emphasis on whether the design could be efficiently mass-produced since neither they, nor the company, knew exactly how each component would be fabricated. Consequently, numerous manufacturing difficulties inherent in the design emerged when commercial production began. Since time and monetary pressures had prevented a wholesale redesign of the prototype, Lustron now faced the consequences of those circumstances.

Dealers complained that “you could paper the walls with the assembly blueprints.” For example, installation crews had to hand assemble roof trusses and spend an inordinate amount of time fitting polyvinylchloride plastic gaskets around each two-foot-square panel. The design prevented a higher level of factory preassembly that could save dealers time and money at the assembly site. Indeed, many dealers reported that assembly of the Westchester took approximately 1,200 man-hours, more than three times company estimates of 350 man-hours. Few dealers could absorb the higher labor costs, both for training and overtime, which resulted from inefficiencies inherent in the design. Although the number of hours required to erect the house dropped significantly as assembly crews became more experienced (one dealer reported a decrease from 1,211 hours for the first house to 436 hours for the tenth house), most dealers experienced less of a reduction because they split their experienced crews up to train new crews. Yet this proved problematic because each new dealer would face the same costly “learning curve.”
Realizing these “designed-in” problems would continue to plague operations, Lustron sought the aid of Carl Koch, a prominent Boston architect. Koch had been a senior architect at the National Housing Agency during the war and served as a master planner for the U.S. Air Force. His firm, Carl Koch and Associates, had extensive experience in community planning and in prefabrication techniques. Assessing Lustron’s dilemma, the firm initiated a fundamental reassessment of the product line with the goal of reengineering the house to achieve two basic objectives: streamlining the manufacturing process by reducing the number of component parts and emphasizing a greater degree of factory preassembly; and enabling the introduction of additional models, both at the low end and the high end of the market, without increasing production complexity. Koch also provided a valuable ideological outlook, stressing the interrelationship and interdependency of each element of the “Lustron process” and challenging the company to work toward a truly unified approach to product and market.85

Koch began the process by “starting at the end”—the assembly site—and “working [his] way back” to the factory floor in an attempt to understand each element of the design and its relationship to manufacturing efficiency. As Koch observed, “the design of a house is in no way separable from the ways in which it is to be made.”86 He identified several fundamental problems. First, the prototype “had never been architected in a real sense.” Although Koch praised Blass and Beckman’s work as “remarkably good and workable,” he argued that production delays would remain inevitable due to the excessive number of parts in the house that forced workers to “hitch the house together by hand” at many points in the manufacturing process. Drawing on the often used analogy to automobile production, Koch reminded Lustron that a multiplicity of parts was not a concern for automobile companies because their dealers did not have to assemble the final product. The cost and headaches of site installation remained a crucial issue for the company since dealer profit was closely tied to the ease and pace of the assembly process.87

Koch’s team began a thorough analysis of Lustron’s operations. Primary challenges included improving the efficiency of the company’s current machinery and sequence of production, reducing the number and complexity of component parts, and expanding the product line without increasing plant capacity. The introduction of a three-bedroom model also received priority. Market research predicted great success for a three-bedroom model since such a house, whether prefabricated or conventionally built, was rare in Lustron’s market segment. Further, a steady increase in birthrates since the end of the war meant that the successful introduction of a three-bedroom unit would serve an important consumer desire and sustain the future growth of the enterprise.88

Such plans, however, were predicated on a reassessment of the entire design con-
cept. Koch initially focused on a key aspect affecting both production and site assembly. He noted that the system of two-foot-square porcelain-enameled steel panels wasted the opportunity to use the steel as a structural element of the house. The original design employed steel framing members, much like the studding in a conventionally built house, with the panels affixed to the members. To prevent leaks, each panel also required a polyvinylchloride gasket surrounding its edge. Every exterior wall thus used a large amount of polyvinylchloride and required labor-intensive operations at the factory to guarantee proper installation. This design also added to installation costs since workers had to attach hundreds of panels. As Koch observed, “the house weighed about twelve tons altogether, half of it holding the other half up.”

Koch’s revision called for an increase in the size of the porcelain-enameled steel panels from two-feet square to two-feet wide by eight-feet long. Company engineers initially balked at the idea because they thought that the enameling ovens could not be modified to accept the enlarged panel. However, with creative assistance from consulting engineers from the Massachusetts Institute of Technology, the engineering department accepted the revision. Koch also suggested that the panels be rolled out and cut to length in a continuous process, rather than cut and punched intermittently. Since the panels now served as load-bearing members, his team devised a method for “ribbing” the steel, or bending it back upon itself, which increased the strength of each panel. Ribbed edges also created an improved joint, which eliminated the need for polyvinylchloride gaskets while increasing weather resistance. Although the panel redesign required additional equipment, retooling, and a revised production layout, Lustron approved because Koch demonstrated that the new system would pay for itself within several months due to savings in labor and material costs. Additionally, dealers would benefit from a more efficient design that required less site labor, and customers would benefit from cost reductions and improvements in the performance of the house.

Koch’s team also assessed the design of the roofing system. The roof employed panels formed to simulate Spanish tile, and fit together without the use of gaskets. Concerned with potential leakage, the company assigned an engineer to test different sizes and shapes of panels in an effort to increase weather resistance. Koch thought the panels looked awful. However, Lustron resisted his plans for a major redesign because the present system proved cost effective. The company, moreover, had invested nearly $5 million in equipment to produce the panels and was unwilling to consider fundamental changes. “We resolved this problem,” Koch mused, “by deciding that the roof didn’t look so bad after all.”

Koch’s team also argued for a new window design. The Westchester used four different window sizes. Koch developed a modular unit that was completely interchangeable with the new wall panels. This design enabled a multiplicity of window
placements and combinations adaptable to different models, yet retained the modularity essential to reduce manufacturing costs. Impressed with Koch’s effort, Strandlund suggested adding electric windows as a unique marketing feature. Koch considered the idea frivolous until he discovered through a cost analysis that Lustron’s economies of scale made an electric unit only slightly more expensive than conventional window assemblies. Koch also suggested eliminating the front bay window since it could not be adapted to the modular design concept. Besides, he found the bay window “incongruous” with the overall appearance of the house.92

Interior spaces also received close attention. Assessing the floor plan of the Lustron house, Koch discovered that by increasing the size of the house from twenty-nine by thirty-seven feet to twenty-nine by forty-five feet, the company could offer four different interior plans and three different three-bedroom models. Each of the floor plans could also be inverted, which doubled the options available to customers and produced a marketing advantage without using additional component parts.

Most significantly for dealers, Koch’s team reduced the number of separate components on the delivery trailers from over 3,000 to thirty-seven by advocating pre-assembly at the factory of the window sections, storage units, and plumbing walls. Koch predicted increased quality control as well as cost savings, noting that experienced factory workers created a better product than “builder’s crews slithering around in rainy weather.”93 With fewer parts to assemble at the site, dealers could erect the houses quickly and in sufficient quantities to rationalize their operations. Successfully implemented, this idea solved one of the most vexing and costly problems facing dealers.

Reflecting on the efforts of his team, Koch considered the reduction of component parts as his greatest contribution:

In general we had reduced the complexity of parts, and as a result the size and complexity of machinery that would fabricate them. We had substantially increased their interchangeability. We had much increased the variety of plans from which the individual buyer might choose, and reduced the price he should have to pay for it.94

Clearly, Koch had shown Lustron the path to increased manufacturing efficiency and produced sound ideas that addressed fundamental problems. But financial restrictions prevented the company from immediately implementing the more ambitious aspects of Koch’s plans. Strandlund envisioned implementation of the necessary production changes by mid-1950, with the “second generation” models reaching the market in 1951. Yet the company needed additional models immediately. During the summer and fall of 1949, Lustron engineers developed several new models, each a variation of the original Westchester design.95
The new models included a three-bedroom Westchester and a Westchester “Standard,” a version stripped of certain features including the automatic dishwasher/washing machine and some built-ins. Next was the Meadowbrook, slightly smaller than the Westchester, in both two- and three-bedroom models. The Meadowbrook also did not include the dishwasher/washing machine but retained all of the built-in storage units. Strandlund saw the Meadowbrook as his “Chevrolet” model “fashioned to suit middle income folks who want the many features of Lustron at an affordable price.” One- and two-car detached garages provided another timely addition to the product line. The “garage package” employed standard two-foot-square
porcelain-enamed steel panels affixed to traditional wood framing furnished by dealers. Package options included plans for breezeways, patios, carports, and screened-in porches that also used porcelain-enameded panels in combination with conventional materials “to give unlimited variety to Lustron Homes.” Rounding out the revised product line was a much needed entry-level model, the Newport. Designed “for buyers who can afford only a minimum investment, or who want to build several houses for rental income,” the Newport fulfilled Strandlund’s long-standing promise to serve the lower end of the market by providing a model “for the average Joe.”

Problems on the Home Front

The development of new models clearly placed Lustron in a better competitive position. However, continued production delays largely undermined its advantage since the company could not quote delivery dates to dealers and their customers. In the New York City area alone, over $200,000 in down payments remained in escrow as production lagged. Several customers who had placed down payments as early as July 1948 and remained without a house initiated legal action against the company and various dealers. Although they frequently vented their frustrations to dealers, most customers chose to wait. Ironically, the company had apparently overcome public resistance to prefabricated housing—people had visited the prototypes, read the national advertisements, and desperately wanted a Lustron house. As sales representative J. C. Tedlie observed, “the enthusiastic acclaim of the public in general was gratifying . . . and exceeded that of dealers.”

The key factors of timing and price represented the primary barriers to Lustron’s success. By mid-1949 the worst effects of the postwar housing shortage had passed for Lustron’s target market. Conventional builders had also overcome materials shortages and stood ready to undercut many potential Lustron sales by dealers. Although shortages remained in the low-income market, even the entry-level Newport proved too costly for this segment. Indeed, the average price for all Lustron houses on a lot was $10,500, well beyond the reach of lower-income families. Such price levels also placed limitations on dealers, who were encouraged by the company to construct houses before securing customers. Most dealers simply refused to follow this directive. Preliminary indications of a recession in the national economy for late 1949 and 1950 also convinced dealers to proceed cautiously.

The inability of the company to advertise a fixed nationwide price for each model became an additional marketing disadvantage. Since land, foundation, transporta-
tion, and labor costs varied, the final cost to the consumer could differ significantly within the same city, or even within the same block. Ironically, Lustron had once claimed that the separation of house and lot pricing would be an “educational force” in the housing market by producing “price stability and predictability for customers.” Instead of price stability, Lustron customers faced numerous variables that affected the final cost of the house. This “unknown” became a serious disadvantage and one over which the company could exert little control.

Further, dealers did not necessarily share the high-volume, low-margin assumptions of the company. Many did not believe that cost savings achieved by prefabrication should be passed along to the customer. Considering the speculative nature of dealer operations, including efforts in site preparation and variations in labor costs, most argued for “charging what the market will bear.” Although Lustron attempted to impose controls over dealer pricing and profit margins, these restrictions proved unreasonable and ultimately unenforceable from the dealer perspective. How could the company possibly determine adequate profit margins for dealers throughout the country? There were simply too many variables. For example, foundations in colder regions had to be deeper, which drove prices up by as much as $700 per house. Regional variations in labor costs also meant that Lustron houses would be more expensive in large urban areas—the very markets the company needed to penetrate to rationalize plant capacity.

The pricing issue illustrates a fundamental weakness in the franchise dealer system for marketing prefabricated housing. The company consistently sought greater control over its pricing structure to establish a competitive position in the marketplace. On the other hand, dealers, especially those just beginning operations, resisted all limitations on profit and rebelled against any form of centralized control over pricing elements that varied at the local level.

In contrast, the postwar success of site prefabrication, best illustrated by the efforts of William Levitt and Sons, indicated the marketing advantages of purchasing materials in volume and focusing on efficient organization of the building process at the site to achieve production economies. Levitt thus retained control over the price of the final product by avoiding high distribution costs and other price uncertainties associated with the franchised dealer system. Consequently, the cost of a Lustron house in the New York City area averaged $9,500 without a lot, while houses and lots in Levittown sold for approximately $8,000.

Lustron defended its marketing strategy by insisting that a high-volume dealer operation based on the concepts advanced in the Profit Unit Plan would in the long run produce greater profits than conventional construction or on-site prefabrication. The company also reminded dealers that it provided them with national advertising and passed along savings from production and purchasing economies, two
factors that reduced dealer overhead costs to levels well below those of conventional builders.\endnote{106}

By mid-1949, however, Lustron dealers had grown increasingly frustrated with the company. Many voiced concerns about production delays and reported an attitude of inflexibility and high-handedness from the Columbus plant. Dealers frequently commented that in areas where they sought guidance and advice, such as a compilation of “best practices” on a number of key topics, the company was unforthcoming. Yet Lustron was willing to exert control and influence in areas where dealers most wanted to maintain flexibility. Dealers believed they understood the vagaries of their markets far better than the company and desired the flexibility to find the proper pricing and marketing strategies that would best cultivate their territories.

Complaints ranged from philosophical differences to practical shortcomings that impacted dealers’ ability to serve customers. They reported “missing parts, wrong plans, damaged parts, and an oversupply of insulation” in many shipments. Parts for one house had to be cannibalized to finish another, and several dealers had to lease warehouse space to store excess insulation. Dealers also complained that the tolerances indicated in the plans and in the installation manual were far too closely engineered. “We people in the field don’t even have rulers as fine as 1/32 of an inch,” one dealer chastised a Lustron engineer. “We production engineers know mass production, it’s got to be done our way,” the engineer replied. The tension between factory engineers and dealers remained a source of continuing friction, and the company seemed unwilling or unable to respond in a satisfactory manner.\footnote{107}

Lustron faced additional obstacles that inhibited its development on the local level. Restrictive building codes and conflicting requirements of FHA state offices continued to present a minefield over which prefabricated housing firms trod uneasily. Regional variations in FHA mortgage insurance approval policies exasperated the company and its dealers by creating numerous financing and installation delays. The FHA in Indiana, for example, insisted on an overhead light in the bedrooms while the Ohio office did not. In Tennessee, the FHA required a wall and a door between the kitchen and the dining room, while most other state offices had no objections to Lustron’s open floor plan. The time and energy invested by the company and individual dealers to obtain variances from these requirements added to the cost of the house and lowered dealer profit margins.\footnote{108}

Although Lustron provided legal assistance and strategies to overcome local barriers, dealers faced day-to-day problems on their own. Tailored to the needs of conventional construction, existing building codes challenged all dealers. The sheer number of individual building codes—600 in New Jersey alone—presented formidable political and economic barriers. The code problem was even more acute in Lustron’s case
due to the radical nature of the steel framing structure and the use of porcelain-enamelled steel exterior and interior panels. Existing codes made no provisions for these materials, and each variance had to be addressed on the local level. Formulated to govern conventional construction, the codes had little relevance to factory-made housing. The prefabricated housing industry actively campaigned for code reform, arguing that codes should assess the performance of building systems rather than judge prefabrication within the context of traditional materials and construction technologies.

Although many codes granted local officials authority to approve new systems and materials, few defined proper procedures for assessing prefabricated construction. Local officials often balked, even in the face of overwhelming evidence indicating that prefabricated designs exceeded performance standards established for conventional construction. The enforcement of anachronistic codes also became a convenient method for conventional builders and their political allies to prevent the introduction of prefabricated housing into specific regions. Even prefabricators working with conventional materials drew the attention of entrenched construction interests. Lustron’s porcelain-enamelled steel construction naturally faced intensive scrutiny and suspicion. One of the key selling points of the house, the combination dishwasher/washing machine, also ran headlong into codes prohibiting clothes and dishes to be washed in the same unit. In an effort to forestall resistance, the company urged dealers to submit plans and specifications of the Lustron house to local officials at the earliest possible date. The company also supported, through the Prefabricated Home Manufacturers’ Institute, a national lobbying campaign for code reform.

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Indeed the company expended considerable resources fighting for code variances, but with mixed results and ongoing frustration. For example, many localities prohibited copper plumbing or required the use of locally manufactured pipe. The city of Chicago did not permit residential construction using steel exterior walls. Other localities required basements. In Lustron’s hometown of Columbus, local codes also severely limited the use of steel for residential buildings.

Lustron adopted a proactive approach where possible. In St. Louis the company used the local press to exert pressure for code reform. The city council voted to amend the codes and adopt performance-based evaluation after the Post-Dispatch published a series of editorials criticizing the city for maintaining highly restrictive codes that effectively banned prefabricated housing. In Detroit, Strandlund personally testified before the city council in support of a Lustron owner who had violated a deed restriction requiring brick construction. The original owner of the property testified that had he known in 1909 that porcelain-enamelled houses would someday be available, he would not have restricted the property. Ultimately, after an unsuccessful appeal to the Michigan Supreme Court, the Lustron owner agreed to construct a brick facade around his house.
Even in its own backyard, the company had to wage a public relations battle with residents of an upscale Columbus neighborhood, who argued that Lustron houses would lower property values. Strandlund emphasized Lustron’s “quality engineered construction” and argued that his house would enhance rather than degrade the neighborhood. “The Lustron house should not be pigeon-holed,” he asserted, “nor seen as a cheap substitute or a slum clearance project.”

Although battles over codes continued, the company believed that it would ultimately overcome the problem. Since the Lustron house was a standardized product, dealers needed to wage a successful fight for acceptance only once to open up their markets for future expansion. Yet neither the company nor its dealers could predict the amount of time needed to gain acceptance on a nationwide level. Another possibility was simply to avoid areas with established codes and focus instead on developing rural and suburban locations where Lustron could exert its influence to establish favorable codes.

In addition to the marketing challenges presented by local building restrictions, issues surrounding the transportation of Lustron houses presented serious barriers to the development of a nationwide distribution system. Sole reliance on the “rolling warehouses”—now painted bright blue and yellow for increased visibility and in homage to Strandlund’s country of birth—became increasingly problematic. Strandlund had favored the Columbus plant in part because two-thirds of the nation’s population lay within a 700-mile radius. However, transportation costs using overland trucking increased sharply beyond a 300-mile radius. Although costs decreased if a tractor could retrieve a trailer from a nearby Lustron site and return it to Columbus with raw materials, this could not be assumed. Relying exclusively on this method of transportation thus severely limited Lustron’s ability to serve a broad market.

One potential remedy that the company vigorously pursued was “piggybacking” its trailers onto flatbed railroad cars. However, railroads based their rates on a unit cost basis. For example, each house shipped to the West Coast from the Columbus plant incurred a prohibitive rate of nearly $1,700. Lustron attempted to negotiate a commodity rate instead, which reduced the cost to approximately $600, on the grounds that commodity rates would apply if the company broke the house down and shipped it in carloads of like parts. But the railroads refused to budge, and the company remained without a long-term strategy for cost-effective national distribution.

Financing difficulties for customers and dealers remained an important obstacle to success as well. Prospective customers faced a conservative banking industry that viewed prefabricated housing with great suspicion. Bankers had no frame of reference for evaluating Lustron’s factory-made house. Further, during the immediate postwar years banks and savings and loans, hedging against inflation in the
high-demand housing market, tended to appraise all houses below construction costs. Prefabricated housing, bearing the burden of a new product with unknown public acceptance, received even lower valuations. One savings and loan executive noted that his firm did not “even invite anyone to sit down and discuss a loan unless he has 40 percent of the purchase price for a down payment . . . and the property he is buying must not be too old or too ultra-modern.”

FHA approval of the Lustron house increased the confidence of mortgage lenders. But local FHA offices could insist on variations that in turn caused lenders to undervalue the house. For example, in determining the amount of mortgage insurance granted on a Lustron house, many FHA offices did not factor in the automatic dishwasher/washing machine, the built-in cabinetry, or the radiant heating system. This meant that Lustron customers had to provide larger down payments based on inaccurate FHA valuations. Although Lustron had proactively addressed the difficulties of financing a prefabricated house with the Galbreath agreement, many dealers complained that finance charges cut too deeply into their already thin profit margins. Further, due to a lack of established valuation and resale guidelines for Lustron houses, the consequences of customer default and repossession could not be fully quantified. Most dealers refused to enter into any financing agreement without knowledge of their potential liability.

Ongoing problems with the dealer relationship reflected a fundamental weakness in Lustron’s sales organization. The company expected dealers to compensate for a lack of vision and organization at the home office. Lustron clearly delegated too much responsibility to dealers to determine their method of operation and needed a more aggressive approach in solving problems common to all dealers. Although the company was fearful of imposing tactical limitations on methods for dealer operations, a clear strategic vision would have created an atmosphere of mutual cooperation rather than an atmosphere of mutual distrust. Evidence indicated that dealers communicated far more with each other than with the Columbus office.

In general, at a time when difficult problems demanded innovative solutions, Lustron approached dealer relations in an ad hoc manner. The company did not even create a comprehensive marketing plan to present to prospective dealers. Because so many unknowns remained, many excellent prospects, especially large-scale developers, proved unwilling to risk an association with the company. Due to a lack of coordination, the company “reinvented the wheel” each time it faced difficulties with new dealers.

Additionally, a high degree of turnover and conflict within Lustron’s top management further strained dealer relations. By October 1949 seven vice presidents and three directors had resigned. The Sales Department also suffered key defections at a time when the company needed continuity of personnel to achieve stability.
Consequently, lines of communication and responsibility frequently broke down or became overloaded. At one point all thirty-eight sales representatives—Lustron’s field troops responsible for dealer liaison and recruitment—reported to one sales manager. Severe cuts in Sales Department personnel also took a toll on morale. During September 1949 the company laid off half of its sales force. Only fourteen remained.\(^{122}\)

Reeling from these setbacks, Lustron initiated a major reorganization in October 1949. The primary goals included developing a strategic sales policy and implementing short- and long-term solutions to the most pressing marketing problems. The company also created a new organizational superstructure, designated the Business Organization Section (BOS), to oversee the restructuring. The BOS immediately created two new departments, Building Codes and Export Sales. It also assigned a team of accountants to create a Lustron Acceptance Corporation with the goal of revolutionizing financing for prefab customers much as the General Motors Acceptance Corporation had done for consumer financing in the automobile industry during the 1920s. As Strandlund observed, “customer financing of a home should be reduced to the simplicity of installment buying.”\(^{123}\)

Lustron also decided to identify profitable dealers and concentrate on assisting them in any way possible. Out of a total of 220 dealers, only sixty reported steady profits.\(^{124}\) The company believed it had little choice but to ignore marginal or unprofitable dealers for the time being. Further, since almost all of the sixty were located within a 400-mile radius of the plant, the company decided to limit its scope of operations and focus the efforts of the remaining sales representatives within that range. As one sales memorandum observed, “every profitable dealer should have a single, known point of contact with the factory at all times. This should not only expedite service, but should eliminate the necessity for day to day contact between top executives of Lustron and individual dealers on matters that should not require executive attention.”\(^{125}\)

Additional elements of the reorganization included a greater emphasis on fleet sales. Lustron instructed sales representatives to provide special assistance to dealers most active in high-volume sales and implemented a quota system with bonus payments to encourage and reward sales representatives who developed high-volume sales projects. Military sales also received priority, and the company considered establishing a subsidiary to develop and service the military housing market. Another change included a revision in the dealer franchise agreement that required dealers to sell a fixed number of houses each month to retain their status. “The volume of business Lustron must have cannot be achieved by ‘custom selling and custom financing.’ Houses should be built before they are sold,” stated the policy circular to dealers.\(^{126}\)
The company also reconsidered other elements of the dealer relationship. First, it ended the practice of granting exclusive marketing territories. “As many dealers should be appointed in any specific locality as are needed to exploit the full market potential,” a BOS directive asserted; “cost and competition will fix economic boundaries of operation.” Lustron also revised the criteria for dealer selection. Dealers would now be chosen from among existing suburban developers, real estate firms, or mortgage finance firms to exploit their experience and knowledge. The company set a long term goal of “at least 1,000 dealers” during the BOS reorganization. Lustron also agreed to sell to any builder or developer interested in using Lustron houses for project development whether franchised as a dealer or not, provided “his local reputation is good and he agrees to accept the responsibilities covered in the franchise agreement as to training, warranties, and erection.”

Lustron recognized the need to reestablish confidence by adopting a more aggressive sales and public relations policy. Though a sound idea, the company could not afford the services of top-level advertising agencies and had to make do with a severely reduced promotions staff after the October layoffs. The BOS also focused on expanding markets for the sale of various component parts, especially bathtubs and porcelain-enameded roofing tiles. The potential for component sales had largely been ignored in the midst of larger difficulties, but the company believed that it might be able to generate sufficient profits from component sales to maintain liquidity while it addressed core issues.

The extent of Lustron’s problems remained difficult to quantify. The company had taken a number of positive steps, especially expanding its product line and focusing on profitable dealerships; it remained a viable concern with strategies for overcoming longstanding barriers to the success of factory-made housing. Carl Koch’s vision for a “second generation” of Lustron houses also promised greater manufacturing efficiency and greater flexibility for the company, its dealers, and its customers. However, increasingly negative appraisals of Lustron’s progress in the national press, a result of the congressional hearings on RFC loan practices, renewed fears in the company that the RFC might “cut its losses” and abandon Lustron to receivership. The company had come a long way in a relatively short time. Now, it needed additional time to demonstrate that its vision was fundamentally sound.