Affordable Manufactured Housing Best Practices: Opportunities for California Affordable Housing Developers

California Coalition for Rural Housing
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Executive Summary: Major Findings and Recommendations

That manufactured housing isn't more widely used by the affordable housing community is especially surprising given the advantages offered by this housing type and the types of development challenges affordable housing faces in rural areas. Manufactured housing promises quality units at lower costs than comparable site-built housing through mass production economies of scale. Further, by constructing the unit at a factory and then transporting a completed unit that is exempt from local building standards to a prepared site for installation offers developers the potential for significant project time savings. These inherent advantages are amplified today by manufactured housing industry advances in unit quality, architectural appeal and increased product customization. Increasingly, market rate developers have recognized the potential cost and time savings and are using manufactured housing in an ever growing number of their developments. Yet affordable housing developers have been much slower than their private sector counterparts to take advantage of the opportunities offered by manufactured housing.

Las Serenas, Coachella, California

The California Coalition for Rural Housing (CCRH), through funding from the Corporation for Enterprise Development's Innovation in Manufactured Homes (I'M HOME), took up this challenge. CCRH examined the experience with and perceptions of manufactured housing within the affordable housing development community through a survey of affordable housing developers, interviews with affordable housing agencies, and an examination of development experiences with manufactured housing and in-depth research of six exemplary case studies of affordable manufactured housing projects. This guide sought to achieve four aims:

- Assess the extent to which manufactured housing is being used by the affordable housing community.
- Identify the factors that inhibit or encourage the use of manufactured housing.
- Evaluate the effectiveness of manufactured housing for affordable housing applications.
- Identify "best practices" manufactured housing development methods to both encourage and guide affordable housing developers in the use of manufactured housing.

Based on the research activities and aims of this project, CCRH made the following findings:

Manufactured housing can deliver substantial cost savings over comparable site-built housing from 5% to 55%.

Simply put, the developers of the case studies found that manufactured housing offered significant cost savings over comparable site-built homes. Of the six developers, five reported cost savings over comparable site-built housing ranging from 20% upwards to 55%. The other developer, with a much more customized housing product for a small infill development, still reported a 5% savings, or about $500,000 for the 22-unit development. These savings primarily derive from the scale economies of mass production that allow even small projects to significantly reduce unit production costs. Essentially the developer is purchasing manufactured homes out of a larger mass production run of similar units which benefit from bulk purchasing of materials, assembly line efficiencies and production standardization.

Manufactured housing development can be faster and more efficient than comparable site-built housing

All six developers of the case study projects reported important development efficiencies in the form of a shorter project completion time, reduced local project review and reductions in project management staff time. Development efficiency especially benefitted from the much smaller number of contractors required to complete the project, insulation from materials price increases and less site security concerns.

Manufactured housing is a versatile product capable of performing efficiently and effectively in varied and demanding development settings

The case studies show that manufactured housing is a versatile product that can perform competitively in a wide range of affordable housing applications, settings and conditions. Especially important, the case studies showed manufactured housing continued to provide important cost and times over site-built housing even when it had to meet challenging design, architectural and density standards. Even for small projects where units had to be customized and architecturally enhanced, manufactured housing still retained its cost advantages, time savings and other development efficiencies. Overall, the case studies show manufactured housing was successful in the following situations:

- Replacement housing
- Scattered site
- High density
- Infill
- Remote rural
- Smart growth
- Time sensitive
- Demanding design and architectural standards
- Unit customization
- Upscale communities
- Customized unit design

Manufactured housing cost savings can be the deciding edge in making ownership and asset development possible for very low income populations

Two of the case studies, the Haley Ranch and the North Shore developments, demonstrate how the cost savings advantage of manufactured housing over site-built housing provided the edge needed to realize homeownership opportunities to very low-income populations. In both cases, site-built housing was too costly to make the projects work within tight financial constraints. By using manufactured housing, the North Shore development was able to provide homes at prices very poor farmworker households could afford. With Haley Ranch, manufactured housing savings made possible very low rents that both preserved the assets of the displaced, very poor population residents of an old trailer while simultaneously stabilizing their housing situation. This stability, in turn, allowed residents to undertake asset building activities in employment, education and savings. It also enabled the nonprofit owner to undertake home ownership programs and services that helped families eventually purchase homes.

Manufactured housing is effectively 'purpose built' for remote rural development and can have a demonstrable advantage over site-built housing in some rural conditions

Manufactured housing offers a marked advantage over site-built housing for affordable housing applications in remote rural communities. Three case studies demonstrated an advantage, based on cost and time savings that enabled manufactured housing to surmount many of the development constraints in rural locations. These challenges stem from higher development costs that result from limited infrastructure, smaller scale projects, inclement weather, topographical challenges, environmental constraints and long commuting distances for contractors and construction labor. Cost savings from factory production and the faster project completion time that results from limited local review and quick installation of a factory-delivered unit enabled manufactured housing to overcome these rural conditions more effectively than site-built housing.

The manufactured housing industry can work collaboratively with affordable housing developers to produce customized, high quality and attractive projects within tight budget and time constraints

The case study developers who procured units directly from the factory point to an emerging business model for affordable housing developers and the manufactured housing industry. The manufacturers in these projects were able to work within a collaborative design-build modality in which housing units have to be customized to meet a variety of project specifications, needs and constraints. These manufacturers collaborated with developers to develop project-specific processes in areas such as unit design, production scheduling, change orders, quality control and installation of the finished housing units.

Manufactured housing products can be both attractive and durable

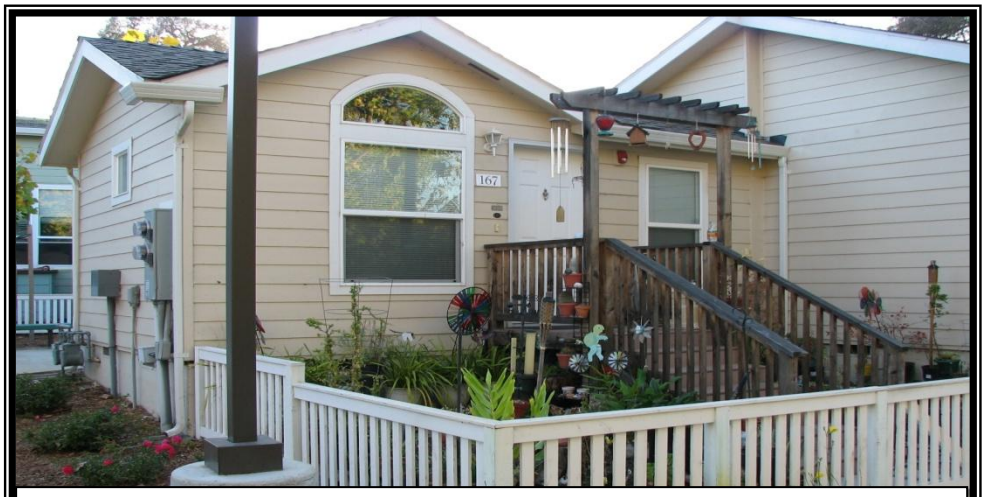
The case studies show that manufactured housing products can be quite attractive and architecturally appealing. Further, the Haley Ranch rental development shows that the units are durable, hold up well under rental use conditions, and maintain their visual appeal after nearly twenty years of use. The operational experience is that the units are not more costly to operate than comparable site-built rental units.

Unfamiliarity and lack of basic development knowledge is retarding increased use of manufactured housing by the affordable housing sector

Most of the developers surveyed for this guide had not used manufactured housing and were unfamiliar with its development process. Developers expressed concerns about the quality of manufactured housing and whether the promised cost savings would actually materialize. In a few cases, prior problematic development experiences led to unfavorable evaluations of manufactured housing. Targeted informational outreach and training activities may be necessary to fill this information gap and encourage affordable housing developers to consider undertaking manufactured housing projects.

Get the first project right: developer training and technical assistance

The survey of developers suggests that a negative first development experience may sour a developer regarding future use of manufactured housing. Further, a negative impression of manufactured housing may spread through a state or regional affordable housing network as other developers learn of the problem project. Accordingly, manufactured housing advocates should strive to provide the informational resources, training and technical assistance that will increase the chances of a successful first project and avoid development problems that arise from developer inexperience.



Villas del Paraiso. Multifamily manufactured housing rental development, in Watsonville, Ca. developed by Mid-Peninsula Housing

Section I: Introduction:

This Best Practices Guidebook was undertaken as part of the Corporation for Enterprise Development's Innovations in Manufactured Housing or I'M HOME initiative. The I'M HOME program was established to advance the Corporation's primary purpose of expanding economic opportunity for disadvantaged populations. I'M HOME's part of this mission is to promote more widespread use of manufactured housing to provide affordable homeownership and asset accumulation for millions of low- and moderate income households who are locked out of homeownership.

Growing Market Rate Development: Recent advances in quality, versatility and architectural appeal of manufactured housing now promise to combine the traditional cost savings offered by factory production into a housing product comparable to site-built housing in both quality and cost. These advances have opened the door to expanding the use of manufactured housing beyond its two traditional primary applications: manufactured home communities (aka "mobilehome parks") and individual homeowner purchases. Increasingly, profit-motivated developers are taking advantage of these features to use manufactured housing in large and small market rate subdivisions, planned communities and infill projects. Townhome, attached, two-story as well as traditional detached one-story single family models now feature significant exterior architectural enhancements, high-quality interior finishes and upscale amenities. California also permits duplex and other multifamily manufactured housing.

Westport Village, Visalia
Developed by: Visalia Affordable Homes

Yet within the affordable housing sector, which develops primarily for lower and moderate income households using an array of subsidized financing programs, the use of manufactured housing outside of mobilehome parks or manufactured housing communities has been very limited in comparison with the private sector. Much of this is due to an overall lack of familiarity with manufactured housing development combined with negative images of manufactured housing, both of which have inhibited its more widespread use outside of mobilehome park preservation.

Even if inclined to consider the model, many affordable housing developers are not sure how to go about developing ownership, infill, rental or special needs projects using manufactured housing. Typically, they are not fully acquainted with the specific

elements of the manufactured housing development process such as procurement, transport, custom unit design, installation and quality control processes. All too often, affordable housing developers have heard much about problems with manufactured housing but know very little about the growing number of successful and attractive affordable manufactured housing developments.

Purpose of Best Practices Guide: CCRH was commissioned by the I'M HOME program to try to fill some of these knowledge gaps and address some of the concerns about manufactured housing within the affordable housing community in California. To do this, CCRH developed this best practices guide that is based on the experience of the affordable housing community with manufactured housing. Building on research of actual applications of manufactured housing for affordable ownership, rental and special needs housing, this guide seeks to fill the following information gaps:

- Assess the extent of manufactured housing's use for subsidized affordable housing
- Appraise the quality and versatility of manufactured housing
- Document cost savings and development efficiencies
- Identify factors that contribute to or prevent successful use of the model
- Identify situations and conditions most amenable to the use of manufactured housing

Westport Village, Visalia
Developed by: Visalia Affordable Homes

The ultimate goal of this guide is to encourage more consideration of the manufactured housing model by the larger affordable housing community for homeownership, rental and other applications. By identifying the strengths and weaknesses of manufactured housing, the applications it is best suited for, and the factors that contribute to its

successful use in subsidized housing applications, this guide seeks to encourage more utilization of this housing type by the affordable housing community.

In doing so, it should be emphasized that the purpose of this guide is not to argue that manufactured housing is inherently superior or always preferable to site-built housing. The intent, rather, is to fill some of the information and experience voids that currently inhibit use and prevent consideration of manufactured housing, even in situations where it may, in fact, be the best overall housing choice.

Overview of Guidebook: This guidebook will begin with a discussion of methodology. Next, background information on the definition, manufacture, regulation, distribution and development of manufactured housing will be overviewed so that the reader may better understand the developer survey, case studies and overall findings. From there, the guide will present information on the use of manufactured housing for subsidized affordable applications in California and the results of the CCRH developer survey. Following that, the case studies will then be presented to evaluate the performance of manufactured housing in representative affordable housing applications and development strategies. The guidebook will then conclude with a summary of "best practices" development methods and recommendations.

Westport Village, Visalia
Developed by: Visalia Affordable Homes

Section II: Methodology

CCRH began this study with interviews of strategically selected affordable housing developers and housing program administrators to help scope out manufactured housing development issues and usage within California. These interviews yielded potential case studies and also informed the next phase of the research process – a developer survey regarding experience with manufactured housing.

In the survey, developers were queried about their use of manufactured housing and their perceptions of it. Developers who had not completed a manufactured housing project were questioned about the reasons they had not developed with it and their perceptions of the advantages and disadvantages of manufactured housing. For developers who completed projects, CCRH inquired about the types of projects they developed, their experience with the development process, overall satisfaction with the manufactured housing, and what they perceived as its strengths and weaknesses.

Through the strategic interviews and developer survey, CCRH identified key issues pertaining to the successful employment of manufactured housing for affordable applications, formed criteria to select case study projects, and compiled a case study short list of prospective ownership and rental manufactured housing developments. CCRH then conducted site visits for developments on the short list and interviewed staff regarding their experience with manufactured housing.

Based on the first round of project interviews and site visits, CCRH then selected the six case studies that are presented in this guide. These developments were selected because they were representative of common affordable housing applications, offered important lessons for effective utilization of manufactured housing, readily demonstrated important advantages of manufactured housing, and showed the kinds of conditions and situations where manufactured housing can be particularly effective. These six developments were studied in depth with the aim of distilling the factors that contributed to their success, identifying the challenges they faced and documenting cost savings and other development efficiencies that were achieved through the use of manufactured housing.

Pueblo Orchard, 14 unit affordable infill rental
Napa, CA. Developed by James Jones Development

Section III: Types and Descriptions of Factory Built Housing

Manufactured Housing Defined: Although manufactured housing is a distinct type of factory built housing, it is often mislabeled, confused with or lumped together with several other forms of factory constructed housing. Often the terms trailer, mobile home, modular home and prefab are used interchangeably with the term manufactured home. Much of this stems from a lack of experience and corresponding unfamiliarity with the manufactured and factory built housing industry and the state and federal policies regulating construction and engineering of different forms of this type of housing.

Factory Built Housing: As a starting point, factory built housing usually is a generic term for a housing product characterized by construction of most or all of a housing unit at an industrial facility. In California and a few other states, the term refers to a specific type of factory-constructed housing that complies with state building codes. Under these codes, factory construction can entail the production of a fully completed housing unit, sections of a unit or components in the form of modules, panels or materials. Once completed at the factory, the housing unit is then shipped to a prepared site where it will then be installed or assembled upon its foundation. Typically, at least some components of the house, such as a garage, porch, or roof will be added or built at the site.

Unless factory built housing is granted either federal or state preemptions from local building codes, such housing is subject to local standards, inspections and approvals. Absent policies that provide parity with site-built housing, local jurisdictions are free to develop specialized regulations targeting factory built housing that can severely limit where and how it can be placed. Also, without state protections, private codes, covenants and restrictions may also contain provisions that significantly limit or prohibit the use of factory built housing.

Mobilehomes: Mobilehome is a somewhat generic term that refers to factory built residential housing units completed prior to the establishment of federal standards effective in 1976. Before 1976, mobilehomes were manufactured to whatever building standards – if any – that were established by state and/or local jurisdictions. Mobilehomes grew out of an evolution within the travel trailer industry in which recreational trailers were adapted and upgraded for long-term residential use. Although mobilehomes were designed for long-term residential use, they typically were not recognized as real property by state and local governments and instead treated as trailers or vehicles. Parallel lending standards evolved that relegated financing to the higher interest and unfavorable consumer terms of chattel or personal property lending. As a result, mobilehome owners were forced to obtain expensive and sometime predatory financing and had few protections as consumers.

A major consequence was that mobilehomes became stigmatized and stereotyped. The very term “mobilehome” often conjures up images of very large travel trailers or long, rectangular, flat-roofed structures with aluminum siding and little visual appeal. Because of its low cost and perceived – although not always warranted – lack of quality, mobilehomes gained a reputation as inferior and undesirable housing. This negative

perception was reinforced by concentrations of manufactured housing in residential communities or "parks" – even though most units are outside these communities.

Manufactured Homes: Manufactured homes, which are the focus of this guide, are residential units built in a factory to standards established by the Manufactured Housing Construction and Safety Standards Act of 1974. Commonly known as the "HUD Code", this law authorized the U.S. Department of Housing and Urban Development (HUD) to establish and enforce a federal building code for factory built residential units that previously had been known as mobilehomes. Under this law, the term "mobilehome" became synonymous with "manufactured housing." Now manufactured housing had to meet strict engineering, energy efficiency, structural, and safety standards established by HUD. It should be emphasized that the HUD Code does not establish standards for architectural appeal and nonstructural quality such as interior closet doors, plumbing fixtures, floor coverings and the like. Most of the HUD Code standards are performance standards and are not prescriptive or specific as building codes are.

Once completed, manufactured homes must pass a factory inspection and have a red HUD inspection seal placed in the unit that certifies the unit meets HUD Code standards. The HUD Code also preempts almost all local building codes and thus allows manufacturers to build homes that can be installed in any state or jurisdiction in the United States. Unfortunately, absent state protections such as those in California, the HUD Code does not prevent either private deed restrictions or local land use and zoning policies that preclude or severely restrict the use of manufactured housing. The HUD Code does not regulate certain items such as fire sprinklers or ignition resistant exteriors; these can be regulated by local governments unless states develop preemptive standards.

Manufactured homes are built in the factory on a nonremovable steel chassis. Wheels are installed on the chassis that allow the unit to be towed to the site. All the major elements of the home such as exterior and interior walls, electrical wiring, HVAC, roofs, floors, plumbing, cabinetry, doors and windows are constructed or installed into a complete home. Depending on the size and number of stories, the homes may be constructed into one or more completed sections and then joined together when the house is installed on its site. The HUD Code, since 2008, also includes installation standards and minimum procedures which allow for more stringent state standards and procedures.

Modular Homes: Modular homes are constructed at a factory in multiple three dimensional boxes or modules. In California and a few other states, modular homes are called "factory-built housing". Almost all of the exterior and interior components of the modules are completed at the factory. Once the modules are completed, they must be inspected by an authorized third-party inspector and certified to be in compliance with the appropriate state and/or local building standards. These components are then transported to the intended site of use and joined together upon a foundation.

In California, modular homes must be constructed to meet California Building Standards Code (CBSC) standards that are incorporated into Title 25, Chapter 3 of the California Codes of Regulations. Homes built to these standards are inspected by third party,

certified inspectors at the factory. If the unit meets state standards, an insignia will be issued and placed on the unit. Under Section 19981 of the California Health and Safety Code, housing units bearing this insignia are considered "factory-built homes" and are deemed to have met all local ordinances and regulations pertaining to housing construction. Factory-built homes are exempt from local building standards and they cannot be treated differently by local jurisdictions than other residential units of similar size. They do however have to meet the same zoning standards that apply to site-built homes in terms of setbacks, minimum lot sizes, garages, etc., and must meet the local jurisdiction's foundation requirements which are inspected by a local inspector.

Panelized Homes: Panelized house production consists of factory construction of all of the wall or "panel" sections of a home at a factory instead of building them onsite. The degree of completion of the panels and their size is flexible. Panels are large wall sections that are partially or fully completed. Typically they include windows, doors, wiring, and outside sheathing. However, panel sections can be produced as turn-key with all components, exterior siding and interior drywall and finishes completed. Once the panels are inspected at the factory, they are trucked to the site and assembled. Using the panels as the structural foundation of the house, additional finishes and components such as the roof are added onsite. Like modular or factory-built housing, panelized homes must meet applicable state or local building codes.

Pre-Cut Homes: Pre-cut homes are essentially kit homes. All of the building materials, such as lumber, are assembled at the factory and cut to specifications. Once completed, they are assembled into a 'kit' and shipped to the home site for assembly. They are subject to the same building code requirements as panelized homes.

Market-rate infill developed by Winslow-Edwards, Inc.,

Section IV: Production and Development of Manufactured Housing

Manufactured Housing Production: Manufactured housing is constructed in factories certified by HUD as capable of producing homes that meet HUD Code standards. This requires demonstrating that a factory quality assurance program is in place and an approved set of plans, called structural approvals, for the home models the manufacturer wishes to construct have been completed. These structural approvals also serve the same function as the local government plan check for site-built housing. Finally, the manufacturer must contract with a HUD-approved third-party entity to inspect and certify completed units.

Factories that produce manufactured housing range in size from 30,000 to 250,000 square feet and employ from 100 to 450 workers. Large factories can easily turn out 30 to 50 standard to large homes a week with smaller factories produced 10 to 15 homes weekly.

Houses are built as fully completed sections, known as floors. The home is generally made up of one to four floors. Each section or floor is constructed on a steel undercarriage or frame to provide structural and transportation support. Construction occurs on assembly lines that are organized around the construction of major components and systems of the units. Large-scale industrial tools and machinery enable factories to work with large, one-dimensional unit components such as roofs, walls and floors at one time. Tolerances are quite tight and construction accordingly must be quite precise to keep the assembly line moving. This is in contrast to site-built construction where house components such as floors or walls must be broken down into components small enough to be manhandled and installed largely by human labor and hand tools.

Manufactured Housing Procurement: A manufactured housing project begins when a developer sets out to procure a unit. Ideally, the procurement process is informed by a clear project concept for a site that has been determined suitable for manufactured housing. Presumably, some type of feasibility analysis has been conducted that not only has assessed financial feasibility but also evaluated different housing types such as manufactured, site-built or modular. This process should have yielded specifications in terms of affordability levels for prospective buyers, house sizes, basic design, desired amenities and architectural standards. Armed with a clear project goal and requirements for the housing units, the developer then is in a position to begin the procurement process. The manufactured housing industry has two main procurement systems.

Dealer or Retail Procurement: Most manufactured homes are sold on a retail basis through local and regional independent retail dealers. Dealers purchase or order manufactured homes from factories and then sell them to individual consumers. Typically, dealers also provide transport of the units and installation services as part of the sale. Often dealers arrange for chattel or property financing at rates and terms much less favorable to borrowers than home mortgages. Increasingly though, consumers and lenders, are treating manufactured homes as real property if they are installed on permanent foundations and financing purchases through traditional real estate mortgages.

If a developer procures units through a dealer, it essentially will be making a retail purchase. Depending on the number of units, the developer might be able to negotiate some volume discount as dealers receive financial incentives from factories for their sales volume. But whatever the ultimate price, it will include a dealer mark-up or profit. The developer also will have to select from the models available through the dealer and whatever upgrades or options the factory offers.

For very small unit projects, purchasing from a reputable dealer offers some definite advantages. The dealer can often provide a one-stop purchase by providing the unit, transport from the factory and installation services. For larger project, the mark-up or dealer profit may negate the cost advantage of using manufactured housing. Also, if the sale is through a dealer, and there are construction defects, both the dealer and manufacturer are jointly responsible for remediation under California law.

Factory Direct Procurement: The other distribution system is a direct sale by the manufacturer to the developer. Increasingly manufacturers are investing in this market sector by creating model lines specifically designed for developer projects, dedicating sales and support staff and increasing marketing to developers. The developer and manufacturer will have to negotiate the following areas:

- Final specifications of units
- Purchase price of units and delivery dates
- Payment terms and invoicing systems
- Shipping and installation
- Additional quality control measures

Dealer License: In California, factory direct purchasing requires that the developer obtain a manufactured housing dealer license from the California Department of Housing and Community Development Department (HCD) unless the sale is to a general contractor with 5 or more homes sold each year, the homes are for a specific subdivision and are delivered directly to the site for installation on a permanent foundation. Government entities such as a redevelopment agency or housing authority are not required to have a dealers license for factory direct purchases.

Purchase and Specifications: Factory direct purchases are negotiated between the developer and the manufacturer in terms of price, specifications and delivery date. Developers either purchase unmodified manufactured models or require some

customization of the units to meet project needs. If units are customized, it will usually require collaboration between the developer and manufacturer to arrive at a redesign. Whether the purchase is for customized units or a standard model line, it is imperative that specifications for dimensions, components, standards, systems, materials, finishes and amenities are spelled out in great detail using terminology that both the developer and manufacturer understand and agree upon.

Shipping and Installation: Dealers, rather than factories, typically contract with a transporter to ship the units to the site as part of the sales price. The developer, however, must arrange their own site preparation, foundation and installation services - although the factory may be able to recommend contractors who are experienced with their products.

Payments: Factory procurement systems customarily work through invoicing for delivery of a specified number of units that meet certain specifications by a specific date with complete payment made at the end of the production run. This is very different from site-built construction contracts that provided for a series of phased payments or draws that correspond to construction progress. Construction contracts include a substantial retention for each draw to protect the developer and construction lender from general contractor nonperformance and ensure that the project is completely finished before the general contractor receives its entire payment.

Factory invoicing, by contrast requires the developer make a substantial payment in order to commence production with the balance due to be paid when the units are completed and ready for shipping. It should be noted, however, that as manufacturers work with more market and affordable housing developers, they are becoming more flexible regarding invoice, payment and even retention terms in order to accommodate developer and project needs.

Quality Control: Especially on customized projects, the developer may negotiate additional quality control measures besides those of the factories. These may include measures such as building a prototype unit before commencing a production run, developer inspections during production, and inspection of units prior to shipping. Enhanced quality control can be both worth its weight in gold and also add to production costs. As a rule of thumb, the more customization deviates from a manufacturer's model and entails structural changes, the more likely enhanced quality control will be cost effective.

Shipping: Typically the shipping is included as part of the purchase price whether procurement is done through a retail dealer or directly from a factory. Once a manufactured unit is completed, a specialized transport company will transport the unit, using the wheels attached to steel undercarriage, to a prepared site. Thanks to HUD Code standards, manufactured homes are engineered to be structurally very durable and are able to handle the strain of being transported several hundred miles to their ultimate destination.

Installation: Installation entails transporting manufactured housing sections to a prepared site, successfully installing the sections onto a prepared site and completing additional onsite enhancements or additions to the unit(s). Successful installation requires the following conditions to be present:

- Suitable site has been selected
- Site has been prepared for a manufactured housing installation
- An appropriate foundation has been laid to receive the unit

Evaluating Site Suitability: In many ways, site assessment for manufactured housing is no different than it is for site-built housing. Standard activities such as reviewing zoning requirements, availability of utilities, soils testing, evaluating drainage issues and environmental assessments differ little. There are however a few areas with crucially different assessment issues when using manufactured housing:

- Soil conditions
- Unit transport access: road system free of impediments
- Obstacles to the movement of house sections onto the property and foundation

Soil Conditions: The soil must be suitable for the type of foundation system to be employed and meet weight-bearing requirements. Manufactured homes are more heavily constructed than site-built, with weights of 20% to 30% higher than comparable site-built homes.

Shipping Access: The site must be accessible by a road system suitable for the transport of long (forty-foot to sixty-foot) rigid sections or "floors" that comprise the house. This means the route must be assessed for obstacles such as bridges, sharp curves, tunnels, trees and other physical impediments that could obstruct transport of the sections. Since the manufactured housing industry has developed technologies and methods of navigating many of these types of obstacles the transport assessment should be conducted by someone with experience with manufactured housing transport.

Lot Size and Dimensions: The lot must have sufficient size to maneuver the manufactured unit's floors or sections onto the site where it can be set onto the foundation. A rough rule of thumb is that required space equals the house footprint plus sufficient staging area to temporarily park and maneuver the manufactured sections onto the foundation. If the area coverage of the foundation/unit footprint takes up most of the sites space, there must be sufficient off-site space available. Potential off-site space could include adjacent unobstructed public or private property or public streets. Whether on-site or off-site space is used, the dimensions needed for staging and maneuvering of sections and equipment during installation should be carefully established and checked.

Site Accessibility: The site must be examined to identify existing or potential physical obstacles that would prevent the installation of a manufactured home. These types of obstacles are usually readily observable and typically related to terrain, vegetation, structure or other physical objects on or adjacent to the site. Some obvious ones are trees

on or overhanging the site, tree stumps, telephone poles, street lamps, large boulders and existing structures. Any obstacle that can impede installation must be removed or otherwise mitigated.

Site Preparation: Prior to the arrival of the manufactured unit, the site must be prepared. The site will need to be graded and leveled with any soil remediation necessary to support the weight of the manufactured unit completed. Plumbing and utility hook-ups must correspond exactly to the location of their corresponding hook-ups in the units. Unlike site-built houses, it is very difficult to make adjustments of receptor and hook-up locations as these components already will have been constructed and integrated into the unit. Finally all structural, physical, terrain or vegetation impediments to movement of the unit onto the site must be removed or mitigated.

Foundations: The final piece in preparation of the site is the construction and installment of a foundation. The foundation consists of all the components and systems that support and anchoring a home to the ground. There are various types of manufactured housing foundations. Depending on the type installed, foundations are composed of systems of piers, jacks, straps, tie-downs and footings. Foundations may also include a weight-bearing concrete perimeter wall. Whatever the type of foundation used, it is imperative that the fit with the manufactured home is exact. Precision in the preparation of the foundation is essential in order to avoid utility and plumbing hook up problems or damage to structural elements and components of the unit such as walls, floors, doors and windows. For this reason, the installation contractor frequently also installs the foundation.

Generally, the manufactured unit will need to be placed on a foundation that will permanently attach it to the land in order for it to be treated as real property. Such a foundation must provide long-term, durable support and stability for the manufactured unit and protect it from adverse weather and wind conditions, seismic activity and water intrusion. This generally requires that the foundation be built to meet FHA guidelines and technical specifications that are published in the Permanent Foundations Guide for Manufactured Housing (PFGMH). Compliance with these guidelines and standards must be certified by a licensed professional engineer, or registered architect, who is licensed or registered in the state where the manufactured home is located. Permanent foundations may also have to meet other standards established by lenders and/or state regulations.

Installations: Once the site and foundation are ready, the manufactured home can be installed. Installations are best done by an experienced installation company with specialized crews and equipment. The method used depends on the type of foundation used and the size of the overall project. Work on manufactured homes in California must be done by a licensed "B" contractor or licensed "C-47" contractor.

Drive-On Method: For individual or small projects with certain types of foundations, house sections are maneuvered onto the foundation by backing or pulling them over. They are then lowered by hydraulic jacks onto the foundation.

Roll-on Method: When foundations prevent sections from being backed or pulled onto the foundation specialized equipment is used. The section is maneuvered lengthwise alongside the foundation and special equipment is used that essentially rolls the sections onto the foundation.

Crane Method: In this method, an industrial crane simply picks the unit up and lowers it onto the foundation. They must be used for two-story installations. Crane installations are expensive but are much faster than either the drive-on or roll-on methods. For large projects where costs can be spread across a number of units, this method can be quite cost-effective.

Completing the Installation: Once the section is lowered onto the foundation, the installation contractor will then level that section. For multi-section homes, the installer will join the sections together to form a complete home. Leveling is critical to make sure that weight is evenly distributed and structural components such as floors and walls don't sag or crack. Once the unit is leveled, the installer will anchor it to the ground to protect the unit from crosswinds and shifting.

The remaining work, known as finish work, consists of setting up and finishing the remaining components. In this stage, the roof will be set up, any exterior siding or skirting work will be finished and the utilities will be hooked up. In the unit interior, carpets are joined, interior doors, drawers and other such 'loose' items are installed and adjusted. Any transit or installation damage is repaired and the unit and job site cleaned up.

Other onsite work that may be completed at this stage is the attachment of garages, porches and architectural enhancements. Structural attachments like garages must be free standing and cannot be supported by the home even though they are attached to it. Consequently, manufactured units will come with built in tie-ins so that they home can receive the structural attachment seamlessly and without architectural impairment of the house's appearance.

Final Approvals: Upon final completion of the installation, a careful inspection is necessary. As noted previously, the factory and/or dealer are liable for any construction defects under the standard one year warranty. However this warranty does not apply to damage caused by transportation or installation. Thus, any problems and their causes should be identified at this time and correction arranged. In addition, depending on state laws, some type of government or third-party inspection will be required, similar to the final inspection of site-built housing.

Section V: Manufactured Versus Site-built Housing

Advantages of Manufactured Housing: The advantages offered by manufactured housing are rooted directly in industrial production efficiencies. Factory production not only reduces the direct cost of a manufactured housing unit but also creates other economic gains in the form of time savings and a more efficient development process. The principal advantages of manufactured housing are in the following areas:

- Production cost savings
- Industrial quality control standards
- Small project can take advantage of mass production savings
- Prevailing wage exemption from most construction labor
- Reduction of project disruptions due to weather, project reviews, material bottlenecks
- Reduction of site-related nuisances and impacts
- Project time savings with reductions of time sensitive costs
- More efficient, simpler and consolidated development process

Production Cost Savings: Factory production allows for assembly line production of standardized models, use of automated and precision machinery, bulk purchasing, climate-controlled construction conditions, establishment of a unified, stable workforce with dedicated skill sets, and consistent quality control. Even when customization of manufactured units is required to accommodate the needs of a development project, the changes still amount to, at most, modest modifications of existing model lines.

Factories themselves can be located at economically optimal locations in relation to markets, suppliers and labor costs. Just by moving production into a factory sheltered from the elements allows for year-round production regardless of weather conditions. This centralization of production also dramatically reduces the theft and vandalism that plague site-built developers. These industrial efficiencies are made possible by federal preemption of local and state building codes that allows manufacturers to produce for a national market without regard for local standards.

Industrial Quality Control Standards: Manufactured housing enhances quality control in six ways. First, industrial production takes place indoors, protecting materials from weather damage. Industrial production also translates into corresponding quality control systems. Second, standardization of materials and components, combined with machine production reduces the potential for human error. Third, pursuant to HUD requirements, systems or components must be tested in accordance with the manufacturer's quality assurance standards. Fourth, factories typically build in redundant quality control systems employing both supervisorial and fully dedicated inspection staff to make sure units are inspected as they move through different sections of the assembly line. Finally, before a unit can leave the factory, it must pass inspection to receive its HUD Code 'red' seal.

Access to mass production savings: One of the principal advantages of manufactured housing is that it allows even small development projects to benefit from assembly line productions efficiencies and bulk purchase savings. Developing with manufactured housing essentially means purchasing a standardized, mass-produced housing product.

Prevailing Wage Savings: Because the developer is essentially purchasing a house *after* it has been built, state and federal prevailing wage requirements do not apply to the bulk of the construction labor used to complete a subsidized manufactured housing unit. This is in contrast to site-built housing developments, which must pay prevailing wage from the beginning to the end of the construction process. Depending on the local prevailing

wage, manufactured housing can achieve substantial production cost savings over site-built housing in this area.

Reduction of Project Disruption Events: The manufactured housing development process is less prone to disruptions from some of the common sources of site-built project delays. Concentration of construction in a factory with a regular workforce and stockpiled materials means production is less vulnerable to contractor performance failure, local labor shortages, adverse weather, and short building seasons.

Project Time Savings: Manufactured housing units can be produced in volume and installed quickly. Once a manufactured unit receives its HUD certification, it can be quickly transported to a site and placed upon a foundation within two days. Depending on the type and extent of onsite additions, a manufactured home can transported and installed, remaining finish work completed and the home be ready for occupancy within 30 days. This quick installation reduces the time required to complete the project along with expenses associated with the land carrying costs, construction loan interest, insurance, site security, staff project management costs, taxes and other carrying costs. HUD Code preemption of local building codes facilitates this industrial efficiency by reducing the level of local jurisdictional design review.

Development Efficiencies: Utilization of manufactured housing can be more efficient than comparable site-built housing in several ways. First, HUD Code preemption of local building standards eliminates time consuming plan checks and design reviews. In some cases, building permits can be secured in a few days as opposed to the weeks and months that are often required for site-built homes. Second, because the bulk of the construction work is done at the factory instead of the site, the overall development process is simplified and less vulnerable to disruption. The reduction, alone, of the number of contractors that are required to complete a manufactured housing development reduces the level of coordination and project management work. Events that consume much project management staff time, such as material shortages, problems with building inspectors, construction draws and prevailing wage monitoring are dramatically diminished. The net effect is to reduce the amount of staff time devoted to project management and simultaneously expand the number of development projects that a developer can undertake.

Reduction of Site-Related Nuisances and Construction Impacts: Production of the housing unit off site and the short installation time translates into substantial reduction of common construction site impacts. Customary construction site disturbances, such as traffic, dust, trash and noise are significantly reduced. Exposure of construction materials and house components to weather is largely removed. Annoyances to the neighborhood such as noise, dust and construction traffic also are reduced by a shorter development time with less onsite work. Site security issues such as theft, vandalism and pilferage are also lessened for the same reasons.

Comparison with Site-built Housing: The advantages of manufactured housing contrast sharply with site-built development starting with the design of the home. Site-built homes

must conform to local building codes and are subject to review and approval by local jurisdictions – adding to cost and time. Once approvals are secured, site-built homes must then be built in a linear, sequential, closely interrelated and phased construction process.

This process requires the assembly and tight coordination of numerous independent contractors – some of whom may have other jobs in process or pending. Phased construction work performed by different contractors and work crews on multiple sites that are sometimes spread out over a large tract of land presents an ongoing quality control and project management challenge.

Consequently, site construction is an inherently vulnerable process that can easily be disrupted by the failure of contractors and suppliers to perform. Weather conditions constitute another wildcard that can easily disrupt a construction schedule. Once a disruption occurs, it can easily cascade through the construction scheduling creating delays and increasing project costs. These effects can be especially amplified when material prices are increasing and construction contractors are in high demand.

Bulk purchasing of materials provides both cost savings for manufactured housing and, at the same time, provides some protection from cost fluctuations. By contrast, except for very large projects and builders, it is very hard for small to midsize developers to capture these kinds of bulk purchasing savings that manufactured housing factories readily achieve. Further, fluctuations in material prices can and do play havoc with a development budget if the project becomes delayed.

Advantages of Site-built Housing: Site-built housing can also offer advantages over manufactured housing. These advantages are primarily:

- Widespread acceptance of site-built housing
- Superior financing available for home buyers
- Easier to customize design to meet site/project requirements
- Unit modifications still possible during construction
- More forgiving of construction and design errors
- Construction feasible on sites with transport and equipment access barriers
- Variations in local construction costs and project scale may reduce or nullify manufactured housing production cost advantage

Familiarity: Site-built housing is a familiar and trusted form of housing without the negative stereotypes and concerns that are attached to manufactured housing. This familiarity on the part of lenders, investors, elected officials, planning staff, developers and the general public is a distinct advantage in many critical aspects of the housing development process.

Homebuyer Financing: Although manufactured homes are increasingly recognized by the home lending industry as real property when installed on a permanent foundation, and thus treated as equivalent in risk and quality to comparable site-built housing, buyers still

face barriers. Many lenders will either not provide mortgage loans for a manufactured house or will impose less favorable terms than a comparable site-built home. Much lending on manufactured homes on piers or similar installations is through personal property loans that have high interest rates and much less consumer protection.

Customized Design: For very small scale development, which requires a high degree of customization of the unit design to accommodate site conditions, on-site construction more readily accommodates these kinds of unique or "one-of-a-kind" homes.
To be sure, manufactured housing can be customized to accommodate project design and quality needs. And manufacturers are becoming more adept at incorporating design changes into the production process for developer sales. However a modification of a manufacturer's model does increase the costs. Also, some changes that deviate too much from the base model design may be infeasible within HUD Code engineering standards.

Flexibility and Construction Forgiveness: Construction of a site-built unit is much more forgiving in terms of exactness and has a wider margin of error than manufactured housing. Because site-built housing is constructed in stages from the ground up, it is often possible to make corrections and modifications of units while they are in construction without major cost or expenses. By contrast, manufactured housing units are fully completed at the factory rather than onsite. Once delivered to the site, it can be very difficult and expensive to fix substantial design or manufacturing flaws.

Site Accessibility: Because the home is constructed on-site with various components and materials shipped in piecemeal, site-built houses can be built on virtually any location that is accessible by pick-up truck. Conversely, manufactured housing requires road access to a site that can accommodate long, rigid house sections. The site itself must also have sufficient unencumbered space in which the house sections can be maneuvered onto the site. It should be noted that the manufactured housing industry has developed transport technologies and methods to circumvent or overcome many of these types of obstacles. Nevertheless, site access obstacles constrain the employment of manufactured housing much more than site-built homes.

Production Cost Variations: In terms of construction, the lower cost production advantage of manufactured housing may be reduced or even nullified based on local construction costs, degree of unit customization required, project size, and unique manufactured housing development costs. As noted previously, increased customization of a manufactured housing unit can result in increases in the production cost depending on the nature of the modification. In areas where the cost of key construction inputs such as labor, contractors, services and materials are low; the cost advantage of comparable manufactured units may diminish or be eliminated altogether. Finally, very large developers or development projects can also achieve bulk purchasing savings comparable to the manufactured housing industry.

Section VI: Affordable Manufactured Housing in California

Growing Manufactured Housing Use: Manufactured housing is growing in California, not only in numbers, but in uses. Manufactured housing use has expanded to subdivisions, planned unit developments, condominiums, multifamily housing, and infill projects in addition to its traditional role in manufactured home communities (formerly mobile-home parks) and individual house purchases. Since 2001, almost 60,000 manufactured housing units have been shipped or produced for California – the third highest in the country. There are currently over 275,000 manufactured homes built after 1980 within the state according to the California Department of Housing and Community Development (HCD). This is in addition to another 260,000 units of manufactured and mobile-home units identified by HCD that were constructed before 1980. The combined total is well over one half million (535,496) manufactured and mobile-home units. Approximately two thirds of these units, or 365,382, are found in the 4,707 manufactured home communities and mobile-home parks regulated by HCD.

Given this widespread and growing use of manufactured housing for a wide range of housing applications, CCRH sought to quantify the number of manufactured units that have been financed for and/or are restricted to affordable housing applications – households with incomes 120% or below of area median income. Unfortunately, while some limited data on manufactured housing use was available, CCRH found that most funding programs do not track this information and/ or maintain easily retrievable records, summaries or databases on the type of housing – e.g. manufactured, modular, site-built – being assisted. Consequently CCRH was only able to gather fragmentary and incomplete data on the number of units financially assisted. Table I summarizes the results:

Table 1: California Affordable Manufactured Housing Ownership, Rental Development and Rental Units Units and Projects Funded by Agency*

Housing Agency Financial Assistance	Ownership	Rental Projects	Rental Units
California Housing Finance Agency	345	0	0
Cal. Dept of Housing & Community Development	1,579	1	52
US Department of Agriculture	83	3	167
Ca. Tax Credit Allocation Committee	0	2	148
Totals:	**2,007**	**6**	**367**

***Funding by agency instead of program to avoid duplication of units due to overlapping funding**

Affordable Housing Developer Manufactured Housing Use: To assess use of manufactured housing by the affordable housing sector, CCRH surveyed twenty four affordable housing developers. The survey focused on the extent and type of manufactured housing usage and sought to identify factors which encouraged and inhibited its use. The developers were nonprofit profit housing development corporations or public housing authorities. All of the development entities surveyed operated in urban, rural and agricultural areas. These development organizations were full-fledged, affordable housing developers who had completed numerous types of ownership and rental projects.

Manufactured Housing Use: CCRH's survey of affordable housing developers suggests that progress towards using manufactured housing outside of manufactured home community applications is mixed. Just under half (11) of the developers had completed sixteen projects involving some type of manufactured housing development. Half of the development activities were mobile-home park projects. But six of the projects were single-family or multifamily manufactured housing developments that normally would have been site-built. There were also two developers who operated homeowner rehabilitation programs in which individual substandard housing units were replaced with manufactured homes. In two cases, the developer's manufactured housing projects were done well over a decade ago. Three developers reported problems with the costs and quality of their manufactured housing projects and were, to varying degrees, reluctant to develop with it again because of that experience. Table 2 summarizes this data.

Table 2: Developer Use of Manufactured Housing
CCRH Survey of Nonprofit Developers and Public Housing Authorities

MH Development Experience	Number of Developers
No MH Development	13
MH Development	11
Totals	24
Types of MH Development	**Projects/Programs**
Mobile Home Park (MHP) Preservation	8
New MHP Ownership Development	1
Single Family Ownership Developments	4
Multifamily Rental Developments	2
Rehab Program - Individual MH Replacement Housing	2
MH Projects in Process	3

Factors Promoting Use of Manufactured Housing: Whether the developers had actually experience with manufactured housing or not, CCRH queried them as to what they believed were the positive development features of manufactured housing. The most frequently cited factors were a previous positive experience with developing manufactured housing, a more efficient and quicker development process, cost savings over comparable site-built housing, the necessity of preserving at-risk mobile-home parks and suitability of manufactured housing for rural development conditions. Developers

with no manufactured housing experience identified only a few features that attracted them to the model. Table 3 summarizes these results.

Table 3:Factors Promoting Use of Manufactured Housing
Survey of Nonprofit Developers and Public Housing Authorities

Factor Promoting MH	MH Development	No MH Development	Total
Positive Experience with MH Development	7	0	7
Cost Savings over Site-built Housing	4	1	5
MH Suited for Rural Development Conditions	4	1	5
More Efficient, Faster & Easier Development Process	4	1	5
Necessity of Preserving of At-Risk MHPs	3	1	5
Totals	**22**	**4**	**27**

Factors Inhibiting Use of Manufactured Housing: Similarly, CCRH asked developers what they thought were the negative features of manufactured housing, again regardless of actual experience with manufactured housing. The most common factors inhibiting manufactured housing use were unfamiliarity with it, concerns about unit quality, doubts about whether the promised cost savings would materialize, concerns about the difficulty of the development process, and negative experiences with manufactured housing on the part of the developer or community they worked. Table 4 summarizes these responses.

Table 4: Factors Inhibiting Use of Manufactured Housing
Survey of Nonprofit Developers and Public Housing Authorities

Inhibiting Factors	MH Development	No MH Development	Total
Unfamiliar with Manufactured Housing (MH)	3	8	11
Concerns about Product Quality	5	5	10
Concerns MH will not Deliver Cost Savings	3	5	8
Difficult or Complex Development Process	4	2	6
Negative Experience with MH	4	2	6
Totals	19	22	41

The Knowledge Void: Unfamiliarity with manufactured housing and its development process coupled with uncertainty about whether it will actual deliver its promised benefits are major obstacles to more widespread use of the model by the affordable housing sector. This unfamiliarity is not that affordable housing developers do not understand the basic theoretical or conceptual advantages offered by industrial mass production, exemptions from local building codes, or a quick installation process. The problem, rather, is that developers lack information in two key areas. First, they lack concrete evidence and actual examples of affordable manufactured housing projects where the advantages are realized. Secondly, many affordable housing developers do not understand the basic elements and process of developing manufactured housing beyond a very general conceptual level. When these two factors are combined, it become very

easy and understandable for affordable housing developers to take an attitude of "if it ain't broke, don't fix it" and stay within the familiar and seemingly safer harbors of site-built housing.

Negative Development Experience: Negative experience with manufactured housing can discourage use of manufactured housing in three ways. The most obvious is a negative experience with manufactured housing that discourages a developer from using it again. However, the negative experience can have a secondary impact as other developers who have yet to try manufactured housing learn about the problem project and become discouraged from attempting a manufactured housing project. A third problem reported by one developer who uses and endorses manufactured housing occurs when a community has been subjected to low quality and substandard manufactured housing. The experience can imprint an association of manufactured housing with undesirable housing and discourage its future use.

Negative Experience of First Project: Three developers reported problems with their first manufactured housing projects. These were a mobile-home park preservation project, a single family subdivision and a multifamily rental development. In one case, the developer will not consider another manufactured housing project again. The other two were less adamant but expressed reluctance to undertake another manufactured housing project.

Projects with Mixed Success: Interestingly in all three negative experiences, the developers reported the projects were completed without any substantial financial loss to the developer. The projects were reported to have more or less broken even financially. Further, they all expressed that the projects were, in terms of meeting the housing needs of the populations being served, performing satisfactorily.

In the case of the multifamily rental development, management staff reported that the units had proved durable and that operating costs were fairly comparable to their site-built rental housing. For both the single-family and multifamily projects, the primary difficulties were that manufactured housing did not deliver any substantial cost savings, many aspects of the development process were difficult, and the units experienced troublesome defects that were not fully resolved by the manufacturers.

Developer Inexperience: The common thread for the single-family and multifamily rental projects were inexperience with manufactured housing. This inexperience contributed to breakdowns in unit design and specifications, procurement, quality control and installation. Both of these developers believe that the factory in one case and the retail dealer in the other, both failed to perform in these areas. They attribute this, combined with their inexperience, as the sources of the problems that emerged. The other developer with the mobile-home park preservation project was not pleased with the overall quality of the units. Further, its attempt to transition residents into ownership was not successful and the organization ended up operating the development as a rental project.

Blame Goes to the Model: These negative experiences point to an important challenge to increased use of manufactured housing: the tendency to blame the manufactured housing model when development problems occur. This happened in these two cases when obvious, and correctible, mistakes and breakdowns in the various aspects of the development process were the actual cause of the problems.

While this tendency to blame the model as inherently flawed or difficult to develop with when problems occur is understandable, it also casts into sharp relief the challenge manufactured housing faces in gaining acceptance within the affordable housing sector. Numerous developers have experienced problems with their first site-built housing project. Yet they seldom tend to blame site-built housing as inherently problematic or flawed and abandon the model. Instead, they are much more likely to attribute the problems to a combination of inexperience and the resultant breakdowns in the development process. The tendency is to learn from the mistakes and give the site-built housing model another try.

This willingness to forgive site-built housing stems from it being the conventional and most widely utilized housing type. By contrast, many affordable housing developers regard manufactured housing as the new and unproven kid on the block that must compete with familiar and proven site-built housing. They don't *have* to use manufactured housing and if it doesn't work, they have site-built housing to fall back on. Consequently, manufactured housing may get only one chance to prove itself with a developer and may be held to an unfair standard for a first project.

Get the First Project Right: This finding, when combined with the knowledge void, points to the need for the manufactured housing industry and its advocates to make more informational and training resources available to the affordable housing sector. Further, making some measure of technical assistance and consulting services available to developers who are undertaking their first projects may do much to ensure success and also ensure that the wider regional and state affordable housing networks know about that success. The Corporation for Enterprise Development's I'M HOME initiative with project planning grants combined with a mix of free and very low cost consulting assistance serves as a model for this type of assistance that technical assistance providers, local governments and state and federal housing agencies might want to emulate.

Section VII: Urban Case Studies

Meeting Demanding Design Standards and Financial Constraints: Haley Ranch, Brotherton Square and Las Serenas

Historically, the core strength of manufactured housing is rooted in assembly line efficiencies and mass production runs of standardized factory models. But there also is an emerging and promising track record of adapting manufactured housing to meet demanding financial constraints, customized design standards, special housing needs and unique community applications. This flexibility is particularly important if the model is to be more widely employed by affordable housing developers who typically confront these kinds of constraints in most, if not all, of their developments.

The three case studies that follow - Haley Ranch a 65-home single-family subdivision-style rental development, the 22-home Brotherton Square planned unit development and a twelve-unit senior infill rental project - demonstrate precisely how the manufactured model can thrive in situations with demanding design standards, multiple project goals, tight financial constraints, unforgiving development timelines and the need for a customized housing product. These developments show that not only can a high quality customized manufactured housing product be produced to meet such circumstances, but it can also achieve significant costs savings over site-built alternatives.

Challenges of Revitalization: Haley Ranch demonstrates how the efficiencies offered by manufactured housing can enable communities to balance the sometimes competing needs of redevelopment to both accommodate economic revitalization and provide high quality replacement housing to maintain displaced populations within the targeted area. At the core of this classic revitalization dilemma is the need to redevelop economically underutilized properties, such as old trailer parks, in order for communities to keep pace with the demands for retail and commercial facilities resulting from economic expansion and a growing and more upscale population. At the same time, these underutilized and blighted properties often perform an essential function by providing low-cost housing for low-wage sectors of the local workforce, seniors, disabled persons, farmworkers and other low-income households.

Las Serenas and Brotherton Square, like Haley Ranch, exemplifies the capability of manufactured housing to perform in an urban redevelopment setting within the constraints of a limited budget and high design standards. What sets Brotherton Square apart from Haley Ranch and Las Serenas was the ownership challenge. First, as an ownership development, Brotherton Square had to attract moderate-income buyers who had some degree of choice. This meant that manufactured housing produced within subsidized cost constraints still had to be attractive enough, and sufficient in quality, to compete with other lower-cost site-built housing on the market that was available and affordable to moderate-income buyers.

Smart Growth: Second, jurisdictions within the state are increasingly embracing "Smart Growth" principles such as more compact housing, jobs-housing balance and infill

development. With the shift away from sprawl and low-density single-family tract homes also comes a greater emphasis on multistory and higher density housing. Historically, manufactured housing has been driven by its potential to provide a lower cost substitute for traditional detached single-family homes on conventional lots. Brotherton Square and Las Serenas addresses whether the manufactured housing industry can produce customized and competitive housing products that can fit into the contours of small urban infill Smart Growth developments and the fiscal constraints imposed by affordability and subsidy restrictions.

Low-Income Asset Building and Preservation: These case studies have much to say regarding the contributions manufactured housing can make to asset building and preservation. At their core, revitalization and redevelopment initiatives essentially are about the building of new community assets and the conservation of existing ones. It is this rationale that ultimately underlies redevelopment and revitalization activities such as new retail facilities, upgrading public infrastructure, historical preservation, environmental protection, and housing rehabilitation.

Within this context, diversity increasingly is being recognized as a social asset essential to successful redevelopment and revitalization. Indeed, it has become axiomatic within community development circles that economically and environmentally self-sustaining, vibrant communities require a diverse social population. In this view, lower-income populations are considered an asset to the community. Typically, they constitute a large segment of the local workforce and retail base. Their talents, ambitions, cultures, skills and civic involvement are an important source of social capital that contributes much to the vitality of local economic, political, social and cultural systems and sectors. Diversity, however, requires affordable housing and opportunities for economic advancement are available to attract new, or retain existing lower-income households in the community.

Affordable ownership housing provides one of the most direct routes to such asset building. To be successful, such housing must be both affordable and appealing. In terms of affordability, the price must be within the economic reach of the lower-income segments of the population who are otherwise ready for homeownership. Just as important, the quality and appeal of such housing must constitute a real asset with the potential of appreciation. Like their higher income counterparts, most lower-income buyers will not purchase a property solely for shelter. The property must offer the potential for appreciation and economic gain.

Contributions of Manufactured Housing: The challenge is to produce such housing within the tight fiscal, time and design constraints that characterize many redevelopment and revitalization initiatives. Affordable ownership typically requires significant public subsidy in the higher cost housing markets that predominate in California – even within a market downturn. Moreover, in many revitalization and redevelopment situations the development of such housing is connected to other activities such as conversions of old housing to new uses or construction of retail facilities that will depend on the housing as part of their customer base. In these cases, the production of affordable housing must

occur on a tight schedule in order to not impede or adversely impact other interconnected projects. As all three of these case studies will show, the time and cost savings that manufactured housing offers over onsite construction is ideally suited to the exigencies of these kinds of development challenges

Asset Preservation: For those not able or ready for ownership, affordable rental housing must be made available for two purposes. One is to protect especially vulnerable populations, such as the elderly and disabled, who are not likely to become homeowners, from outright displacement and the resultant loss of their meager assets. The other purpose affordable rental housing serves is to stabilize lower-income households in the community and allow them to undertake activities such as education, job training and savings that will eventually lead to economic improvement and eventual ownership. To achieve this in revitalization and redevelopment settings requires the production of attractive and high quality housing with very limited public funding. Such housing, again, often faces an additional burden of tight development time lines when replacement housing must be developed for those facing imminent displacement.

Computer lab symbolizes the resident services provided by Mid-Peninsula Housing at their multifamily manufactured housing rental development, Villas del Paraiso in Watsonville, Ca.

Collaborative Manufacturer Developer Model: In accomplishing their respective project goals, Haley Ranch, Brotherton Square and Las Serenas Ranch point to a new and emerging business model for affordable housing developers and the manufactured housing industry. On the developer side, these case studies reveal that successful use of the manufactured model requires that they clearly convey project goals and needs to the manufacturer. Developers must actively participate with factory staff in designing a model that fulfills those requirements. To do this, developers must understand how the manufactured industry operates and what the capabilities and limitations are of

production technologies. Armed with this knowledge, affordable housing developers then can identify and establish collaborative business relationships with manufacturers who are willing to embrace the challenges and rewards of project development.

The corresponding challenge for manufacturers is to break with the established retail model of producing solely pre-established floor plans, models and options to be sold through a dealer network to individual buyers. As Haley Ranch, Brotherton Square and Las Serenas show, however, manufacturers who wish to participate in the housing development market – whether subsidized or not - have to shift over to a more collaborative design-build modality. Here, manufacturers will have to produce housing units that have been designed to meet a variety of project specifications, needs and constraints. This in, turn, will require manufacturers to play a proactive role by understanding the larger context of project goals and work with developers to design the housing product that fits the requirements of the project.

This inevitably will require manufacturers to collaborate with developers, installation companies, local government and financing agencies to develop project-specific processes in new areas such as design, production schedules, change orders, payment procedures, quality control, and integrated delivery and installation of the finished housing unit. The rewards, however, for individual manufacturers willing to embrace project development are a lucrative second market for their products in addition to the retail dealer market. Steve Truslow, Developer Sales Director of Silvercrest describes these benefits:

> "Silvercrest has found that working with development projects has been invaluable to the company. It has expanded the market for our products and is important for the bottom line of our company. Silvercrest has become a developer-friendly manufacturer with the onboard expertise and production capability to work collaboratively with nonprofit housing developers to successfully employ affordable housing. "

Haley Ranch: Demanding Architectural Standards and Fiscal Constraints

Location: Poway, San Diego County
Developer: Poway Redevelopment Agency & Poway Land, Inc.
Manufacturer: Fleetwood Homes of California
Completed: 1992
Funding Sources: Redevelopment grants & loans, conventional bank loan

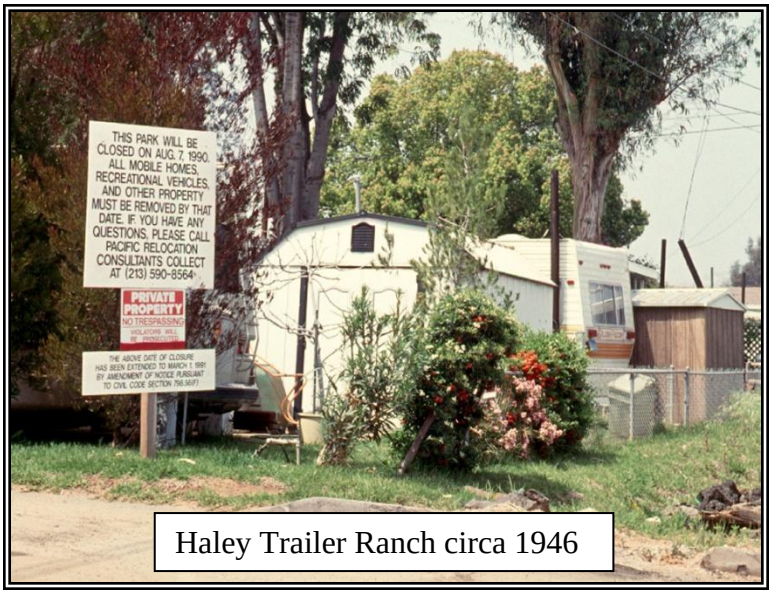
Development Type: Rental
Affordability: Very Low-Income
Number of MH Units: 65 Units
Dwelling Types: Detached single-family
Applications: Replacement housing, redevelopment, architecturally appealing design standards

Development Lessons

- Cost savings of 30% or $18,000 per unit over site-built homes
- Manufactured housing efficiencies met architectural standards, fiscal constraints and timeline that traditional site-built housing was unable to meet
- Asset preservation of vulnerable displaced population
- Factory direct purchase for large scale development
- Identification of qualified manufacturer willing to work with a development project instead of retail production run
- Manufactured housing expertise on development team to translate between manufactured and site-built housing worlds
- Integrated development, manufacturer, installation design and planning team
- Negotiations with manufacturer for customized unit design, materials upgrades, production and delivery adjustments to accommodate project needs
- Factory production planning to accommodate development schedule
- Use of prototype unit before final design and production run
- Thorough inspections of units at factory before delivery and installation
- Crane-based installation method to capture cost and development time efficiencies

- Maximize manufactured and site construction efficiencies through a complementary development process

Background: Haley Ranch was developed as replacement housing for the aging and blighted Haley's Trailer Ranch that was built in the1940s. This trailer park was located in a prime city redevelopment area that was far more appropriate for retail and commercial development and already bounded by newer, single-family subdivisions. In 1989 the park and other adjacent acreage had been assembled by a developer, Poway Land, Inc., who planned to build a modern retail shopping center and office space.



Haley Trailer Ranch circa 1946

Homes and Assets at Risk:
Although badly deteriorated, the park constituted an affordable housing oasis in an upscale and growing community with very little other affordable housing available. Residents of the park mainly were very low-income and long-term residents of Poway who generally owned their own units. Most would have preferred keeping the park as it was and continuing to live in their aging homes. However, with or without redevelopment, the property was economically underutilized in this high income and growing community.

Sooner or later, Haley's Trailer Ranch would have been converted to a higher economic use. When that happened, the residents would not only be displaced but their meager assets placed at risk. The old manufactured homes had little if any economic value. With their very low-incomes, it was unlikely that park residents would be able to purchase housing elsewhere, even if it were subsidized. And along with their assets, the residents' ties to the community, jobs, family, friends, services and other social resources would be irretrievably lost once they were displaced.

To its credit, the City of Poway took a strong stance regarding displacement of the residents of the trailer park. The City Council essentially required that a replacement community be built near the site of the old park. Residents from the park would be

relocated into new and attractive affordable single-family units that would blend in with surrounding single-family subdivisions and complement the retail development slated for the old site. The residents were technically home owners. But their old and, often, dilapidated, homes had very little economic value. Given the very low-incomes and limited assets of the residents, a homeownership project was ruled out, and the replacement housing was developed as rentals.

Development Plan: Implementation of this ambitious plan called for Poway Land, Inc., to first build the replacement housing community – Haley Ranch Estates - according to a schedule and specifications established by the City. A private-public development team comprised of Poway Land, RDA staff and consultants would manage the development of a low-density affordable rental project of 65 detached dwellings. These units would be developed on adjacent property owned by Poway Land – thus keeping the residents in the same neighborhood. Upon completion, ownership of the property would be transferred to the City of Poway Redevelopment Agency. David Narevsky, the City's Redevelopment Manager, headed up the project team and served as the overall project manager.

Selection of Manufactured Housing Model: The primary challenge facing the project was the identification of a housing product or model that could meet the exacting requirements of the project. Standard high density multifamily rental apartments, which might have been the best financial fit, could not meet the single-family design criteria without sacrificing its economic advantages. At the same time, traditional site-built

single-family detached dwellings, which could meet the design requirements, were simply too costly to build within the tight financial parameters and timelines presented by the project. Also political realities suggested that Haley Ranch, the first "affordable housing" development in Poway, needed to blend in architecturally with the adjacent neighborhood. Consequently, community acceptance of this development plan was critically important to city staff.

These constraints go to the heart of the advantages offered by manufactured housing over site-built housing. The high cost of site-built housing made it difficult to achieve the kinds of cost savings needed by the project without compromising the relatively high design standards set by the City. This problem was further compounded by the very limited cash flow that would be generated by the project due to its low density and rent structure. During the first four years, rents would be kept at very low levels that were comparable to the old space rents in order to mitigate the economic impact of relocation on the residents.

Finally, the amount of time required to develop single-family units along with its more complex development process could easily conflict with the need to quickly produce units in order to relocate families from the existing park and allow the commercial development to proceed. Here the concern was a series of chain-reaction delays due to the sequential and time-sensitive nature of the site-built construction process. Timetables for site-built housing easily can be thrown off by the availability and performance of subcontractors, materials delays and weather.

For all of these reasons, the project team turned to manufactured housing. It would allow them to take advantage of assembly line production and scale economies in materials purchasing to turn out a completed housing unit at a far lower cost than a comparable site-built product. These completed manufactured units could provide much more certainty on timing, since they could be quickly installed and be ready for occupancy much quicker than site-built homes.

Selecting the Right Manufacturer: Finding a manufacturer who would work with the customized-design requirements and tight timelines of the project was the next challenge. The project team compiled a short list of manufacturers with a reputation for high quality products and the capability to handle an intensive production schedules. After several

site visits and interviews with different manufactures, Fleetwood Homes emerged as the best candidate for several reasons.

First, the company was highly regarded for the quality of its homes and large production capabilities. More importantly, the company was interested in expanding beyond its dealer network into subdivision development and was willing to meet the challenges posed by Haley Ranch. To support this business expansion, Fleetwood had created a special subdivision development manager position. This position was staffed by Steve Hullibarger, who brought considerable experience with both site-built and manufactured housing. It was this experience that would enable Fleetwood to help facilitate the design, production and installation processes. In short, Fleetwood had both the willingness and capacity to participate in a collaborative design-build process.

Collaborative Design, Planning and Implementation: With the manufacturer now in place, a process for design, production, quality control, payments and installation procedures had to be established. This was achieved through a collaborative, integrated project management approach in which Fleetwood became an active member of a development team seeking to implement a housing project. To do this would require a departure from more accustomed and passive retail approach of producing a standardized product with little involvement regarding its ultimate installation and use. For the City of Poway, the challenge would be to refine and translate its concepts of a single-family product into a design that could actually be produced within the parameters of factory technologies.

Manufactured Housing Expertise: For this collaborative process to work, expertise in both the site-built and manufactured housing worlds was needed to merge and synthesize these different sectors. It was here that Fleetwood's subdivision manager's background with these two housing worlds came into play. Hullibarger was able to bridge the divide between site-built and manufactured housing through a combination of education, training, technology translation and, at times, shuttle diplomacy. To do this required numerous meetings and phone calls with the City of Poway, Poway Land and Fleetwood factory managers to reformulate the basic project concept into a development plan that could work with a manufactured model. This facilitation, almost de facto consulting, provided much of the technical assistance that enabled the RDA staff to understand the possibilities and limits of manufactured technology. His experience enabled the project team to develop house plans and specifications that could be converted into a format that the Fleetwood factory managers could decipher and produce.

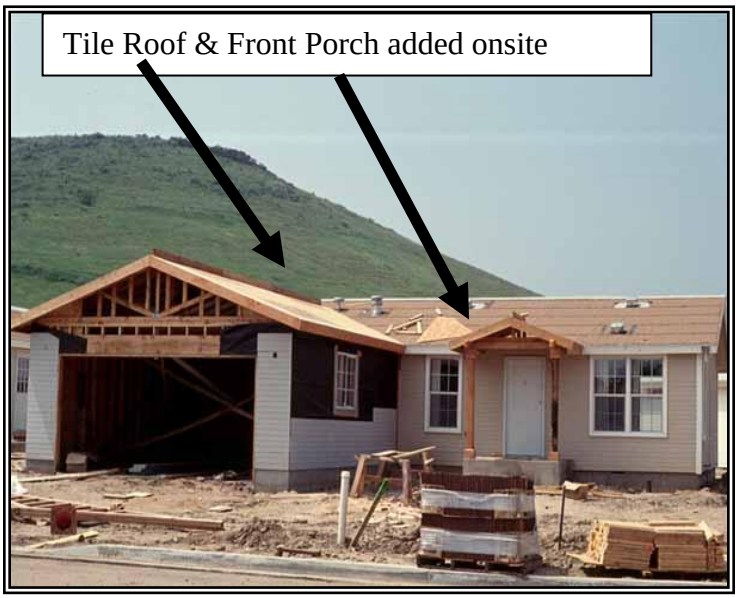
It should be emphasized that this process was mutual and not a one-way street. RDA staff had bottom-line design, quality and timing requirements. These requirements meant the difference between an obvious cluster of "low-income" manufactured homes or an attractive low-density rental community with the visual appearance of a new single-family subdivision. The City challenged the manufacturer to innovate and adopt to meet the timing, quality and financing demands of an affordable housing project. Because the City's had retained an architect, Louis J. Villaescusa, with manufactured and modular housing experience, they were able to provide informed and realistic suggestions and

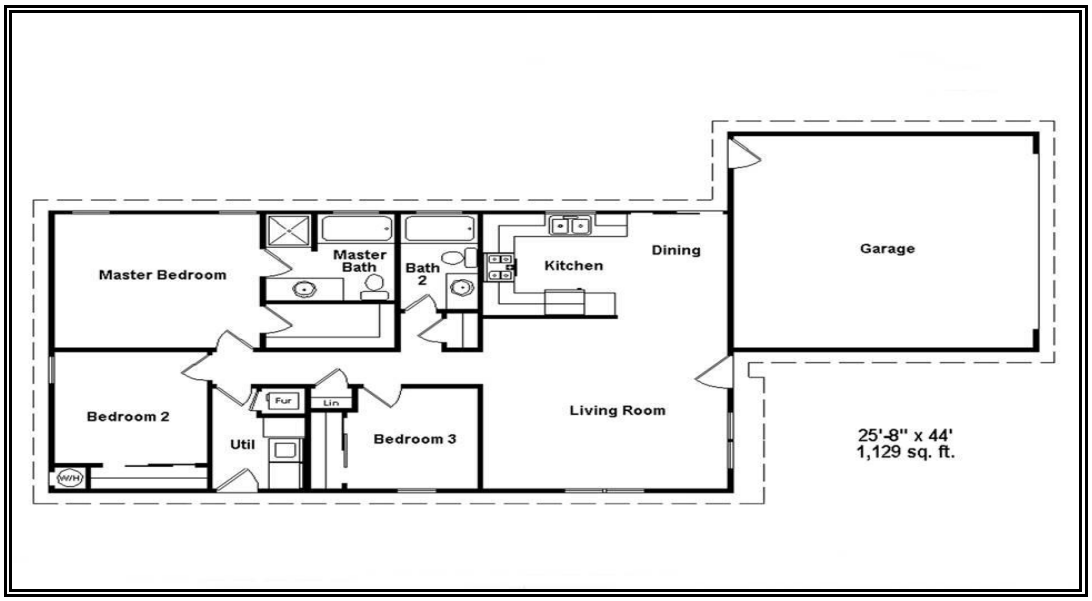
feedback. They were not afraid to bargain with, question, or make informed suggestions to Fleetwood and, when necessary, push Fleetwood to find solutions to these issues. The kind of creative tension that came out of this process often led to innovative and effective solutions. This process was described by David Narevsky, Redevelopment Manager, as an interesting exchange between two diverse cultures, ultimately leading to a common benefit:

> Fleetwood wanted very much to have a successful development. The City wanted very much to have a successful development. Fortunately for both groups, Steve Hullibarger, who served as the project manager for Fleetwood, was bilingual. He spoke the languages of both the manufacturer and the City; and truly understood the needs of the City, while working within the framework of the manufacturer. Fleetwood was at all times respectful of the many questions of the City, and the City trusted Fleetwood, even though at times they did not understand the process. City staff toured the factory, and another city staffer spent two days following the construction of a specific home to have a true understanding of the manufacturer's process.

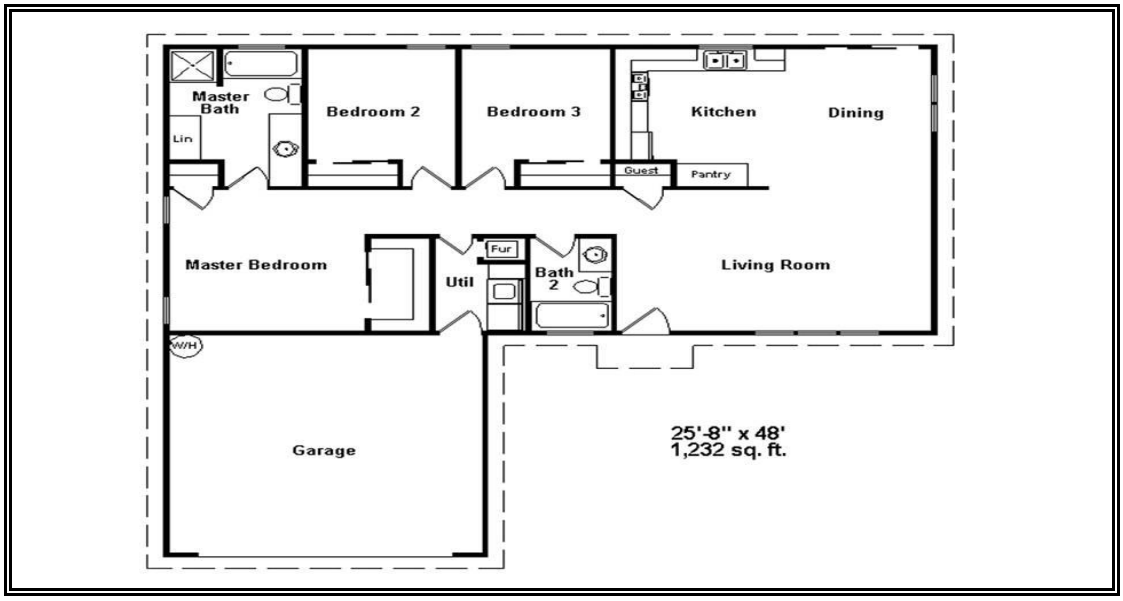
Certain items, such as copper plumbing and tile roofs, were of concern for the City due to architectural and quality standards. These were not standard items for Fleetwood models at the time and would require customized changes in the manufacture of the units. In each instance, Steve was able to bridge the gap to accommodate the wishes of the City. For its part, Fleetwood provided the flexibility that no other manufacturer at that time had been willing to consider. It was an unusual partnership; however a partnership that continues to be respectful on both sides seventeen years later.

Maximizing Factory Production Advantages: A major outcome from this collaborative process was a design and development plan that maximized the advantages of both factory and onsite production of the units. Here the strategy was to employ factory efficiencies where they were most cost-effective: production of the home structure, systems and components. Exterior components critical to appearance and best suited for onsite completion could then be added to the manufactured units. The outcome of this design process was the production of 65 three-bedroom, two-bath homes with two-car garages ranging in size from 1,129 to 1,232 square feet.





Units would then leave the factory largely completed with walls, floors, HVAC systems, cabinetry, vinyl and carpeted flooring, major appliances, interior and entry doors, textured and painted sheetrock and dual-paned windows in place. On-site construction then transformed the largely complete but relatively plain unit exteriors into attractive single-family tract homes by adding attached garages, porches, tile roofs and hardboard lap exterior siding.



This required much more than simply grafting on components to the manufactured units. The unit design itself had to anticipate and mesh factory-built and site-built components so that they would fit together seamlessly. It was here that the manufactured and site-built

housing experience of the project architect and subdivision manager were crucial in translating between the site-built and manufactured housing worlds to secure design changes in factory floor plans and unit tie-ins necessary for attractive roofing, porches, unit orientations and garages that would mesh with upscale character of the larger neighborhood.

Quality Control: Haley Ranch is instructive of how to address one of the key challenges to the use of manufactured housing for larger projects. Quality control began at the customized design stage and continued with the production of first prototype unit. After the prototype was built at the factory, it was subjected to a rigorous inspection by the City, its architect and engineer, consultants and the subdivision manager. Through these test-runs, a number of potential problems were identified in time to be corrected before the main production run. As an added quality control measure, once production began, onsite factory inspections of completed units continued to be conducted by the City and subdivision manager before they were delivered to the site for installation. This practice proved a win-win for both developer and manufacturer by allowing production flaws to be more efficiently corrected at the factory.

Material and Design Upgrades: The collaborative planning process facilitated materials and design upgrades that improved the quality of the ultimate product. Through the joint efforts of the City development team and the subdivision manager, areas where Fleetwood could adapt its manufacturing process to incorporate design and materials changes were identified. This resulted in materials and design upgrades such as:

- Plywood floors instead of particle board
- 16-inch eaves instead of Fleetwood's standard 12-inch eaves
- Roof angles and pitches increased over factory standards
- Copper plumbing instead of plastic
- Factory preparation for onsite installation of heavy tile roof
- 10 percent of houses meet Fair Housing Act disability requirements
- Relocation of floor vents

Time Savings Realized Through Factory Production Planning: For the project to succeed, 65 manufactured housing units needed to be produced and installed in a twelve-week period. Production and installation of the units would occur in batches of ten homes. This tight timeline was essential to both realize some of the cost savings offered by the manufactured model over site-built housing and also to allow the retail development to proceed. Until the trailer park was vacated and the residents relocated to the replacement community, little work could proceed on the new shopping center.

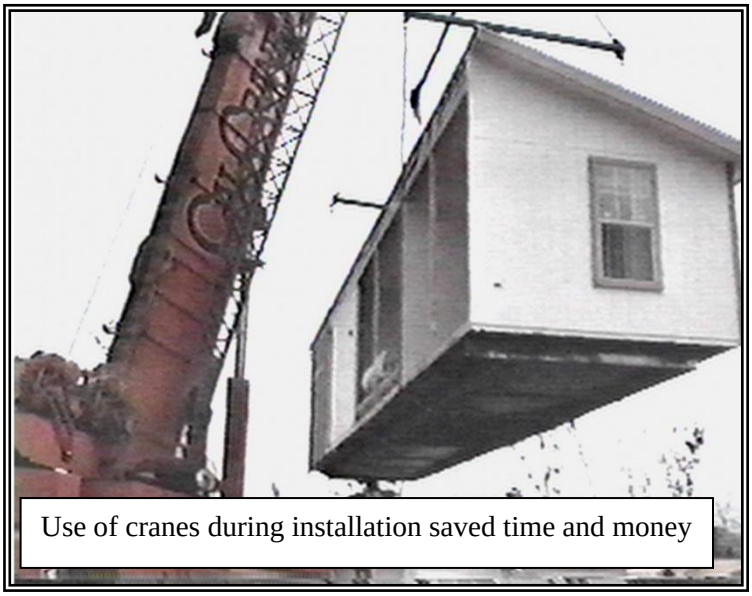
Meeting this timeline presented two challenges. First, the compressed production period meant that Fleetwood would simultaneously have to meet the production demands of both Hailey Ranch and its dealer network. This meant more than simply ramping up production. Since the Haley Ranch units were customized, they would take longer to assemble due to different materials, nonstandard specifications and worker familiarity. Fleetwood would have to find a way to integrate standard and customized units on the same production lines. Second, the installation of each batch of units would have to proceed strictly on time. Otherwise installation problems could throw off both the project timetable and snarl factory production schedules.

Meeting the Timing Challenge: To meet the production challenge, the subdivision manager worked with the factory managers to rearrange the timing and staging of factory assembly lines and deployment of multi skilled workers. This entailed identification of specific assembly line choke points where Haley Ranch units would take more time due to customization and potentially throw production off. Once these points were identified, a strategy was adopted of interspersing a batch of Haley Ranch units with standard Fleetwood models and then scheduling their progression through different assembly lines so that logjams did not develop. From there, extra labor could be strategically deployed to these customization points to minimize the amount of time for the nonstandard work.

In the meantime, standard units would still be moving forward on the assembly line. This process is described by subdivision manager Steve Hullibarger:

> This plant was run by a very accommodating general manager, without whom the project would not have succeeded. Additionally, the production manager was a 30-year veteran of the industry and was widely considered a top-level person who enjoyed the admiration and support of the complete assembly line. Time was invested in training key persons to perform the new tasks necessitated by the custom order, such as using torches and solder to sweat copper fittings, and using tongue-and-groove plywood floors in lieu of square-edge particleboard. Multi-skilled "utilitymen" were deployed throughout the factory to keep departments from lagging. Haley Ranch orders would be interspersed as needed in order to keep the assembly line in "balance" throughout the work day.

Installation Innovation and Scale Economies: Once the units were produced, the project then faced the challenge of phased installation of units in batches of ten. To ensure that installation problems were kept to a minimum, an experienced and highly qualified installation company was selected based on its capacity to handle a large number of installations and, just as important, extensive experience with Fleetwood management and its products.



Use of cranes during installation saved time and money

The economies of scale offered by the size of the project also were exploited to further maximize installation efficiency. Although costly, a crane was utilized for even quicker installation of the units. The standard, but less expensive, method was to maneuver and line up each unit with its concrete foundation and then roll it off onto its foundation. In a standard installation of rolling units onto foundations, the installation time for ten units would have required about three to four days. With a crane the same number of units - ten two-section houses, or twenty "floors" - could be done in a single day. Saving time on installation, in turn, allowed for more efficient employment of onsite construction crews to construct garages, install porches and perform other onsite work. And, because of the large number of units being installed, the higher cost of the crane could be spread out across the ten units.

Timely Completion with Significant Cost Savings: These combined planning, design, production and installation measures resulted in the timely completion of the project in early 1992. Not only did the project meet its tight timing and financial parameters it also achieved significant financial savings. According to project manager David Narevsky the project achieved an estimated cost savings of approximately 25% over site-built homes – excluding land costs and environmental remediation. This amounted to an approximate $16,000 savings per unit in 1992 dollars of $52,000 for a manufactured unit versus $68,000 for a traditional site-built home. In 2008 dollars, this savings would have been $24,000.

Post-Development Asset Preservation and Accumulation: Over the past sixteen years, Haley Ranch has met its original goals of protecting a very vulnerable population from the economic and social harms they would have inevitably suffered in the event they had been displaced. This has been accomplished by creating a high quality and affordable community with resources that helped stabilize economically vulnerable residents.

Amenities such as a community room, resident services, youth programs and outdoor recreational space reinforce this sense of community. The large detached single-family units with individual yards provide residents with significant living and storage, privacy and personal space not found in high density rentals. In providing experience with living in detached, single-family living, it also encourages and prepares residents for future home ownership. And, for the relocated residents from the old trailer park, the detached unit character of Haley Ranch fits well with the old trailer park style of living.

Platform for Asset Building: Over the years, many residents have used the stability and affordability of the housing as a platform for economic advancement. These residents have gone on to stabilize their families, upgrade job skills, obtain more education, secure jobs, increase savings and purchase homes. It is the quality of the housing and its management that has produced this spring-board effect.

Haley Ranch Design Potential for Home Ownership: Interestingly, Haley Ranch also demonstrates the viability of manufactured housing to provide affordable ownership because of its "dual use" design. Although its tenure is rental, Haley Ranch was essentially developed as attractive, detached single-family housing. But for the very low-incomes of the population it had to serve, Haley Ranch could have easily served as an affordable or subsidized ownership development.

Demonstrated Durability for Ownership: During sixteen years of operation as rental housing, Haley Ranch has proven its durability and maintained its attractiveness. In doing so, it addresses concerns within the affordable housing community regarding the quality and durability of manufactured housing. The concern is that if manufactured housing cannot hold up to normal wear or systems and components deteriorate prematurely, there will be very little appreciation for lower-income home owners.

Haley Ranch has passed this challenge with flying colors. In 2001, ownership and responsibility for management of Haley Ranch was transferred to Community

Housing Works, a regional nonprofit housing corporation. During its period of ownership, Community Housing Works, which manages a number of subsidized rental developments, has not found the manufactured units to be any less durable overall than site-built rentals. There has been virtually no deterioration of visual attractiveness.

Perhaps the best indicator of whether Haley Ranch would have been successful as an ownership development comes from the market itself. The Haley Ranch management office regularly receives inquiries from middle-income households who mistakenly think the development is a regular site-built subdivision and are interested in buying a unit.

Haley Ranch units contrast favorably with adjacent site-built market homes

Conclusion: Haley Ranch demonstrates how the cost saving, development efficiencies and versatility of the manufactured housing model can successfully meet a number of seemingly conflicting demands. Essentially the manufactured housing model was able to simultaneously deliver architecturally appealing relocation rental units at a lower cost than comparable site-built units in less time. It reconciled a tight development budget with unusually low project rents to accommodate relocation of very poor displaced households. At the same time, Haley Ranch meshed with the design requirements of an upscale section of the community while offering a housing product that provided living arrangements far superior to the substandard units that resident of the trailer park had been accustomed to. It was for these reasons the City of Poway received the 1991 "Award of Merit" by the San Diego Chapter of the American Planning Association. Over 15 years later, Haley Ranch stands as testament to the kind of contributions manufactured housing can make to the displacement, housing affordability, social diversity challenges presented by urban redevelopment in higher income urban areas.

Brotherton Square: Competitive, Smart Growth Home Ownership

Location: Escondido, San Diego County
Developer: Trinity Housing Group
Manufacturer: Silvercrest Homes
Completed: 2007
Funding Sources: Redevelopment loan, Conventional financing, CalHFA and HOME

Development Type: Ownership
Number of MH Units: 22 Units
Affordability: Low & Moderate Income
Dwelling Types: Detached, Single-family
Applications: Smart Growth, Workforce, Redevelopment, Architecturally Attractive Affordable Housing, High density

Development Lessons

- 25% reduction in project management staff time
- $10,000 to $15,000 per unit cost savings over comparable site-built
- Reduction of development time by one-third using manufactured housing
- Factory direct purchase achieves cost savings for small, customized development
- Identification of qualified manufacturer willing to work with a development project
- Manufactured housing expertise on development team to translate between manufactured and site-built housing worlds
- Use one contractor for foundation preparation and installation
- Employ advanced computer modeling and audio visual technologies to win acceptance of manufactured housing
- Developer/ manufacturer collaboration in design, project and production planning
- Negotiations with manufacturer for customized unit design, materials upgrades, production and delivery adjustments to accommodate project needs
- Use of prototype unit before final design and production run
- Thorough inspections of units at factory before delivery & installation
- Crane-based installation method to capture cost and development time efficiencies
- Manufactured housing efficiencies met significant design/quality standards and project budget constraints that traditional site-built housing was unable to meet

Background -Revitalization of Blighted Property: Brotherton Square originated out of the City of Escondido's efforts to revitalize neighborhoods and properties. The old and deteriorated Penny Lodge motel was among the blighted properties being targeted. Built in 1971, and once an attractive property, by 2004 the Penny Lodge had become a squalid flophouse and public nuisance. It was surrounded by an established middle to upper income single-family neighborhood, vacant land and small retail establishments. The goal was to demolish the motel and build affordable ownership housing in its place. This housing was then intended to help diversify the neighborhood, provide workforce housing, increase the property tax base, improve property values and encourage development on the adjacent undeveloped land.

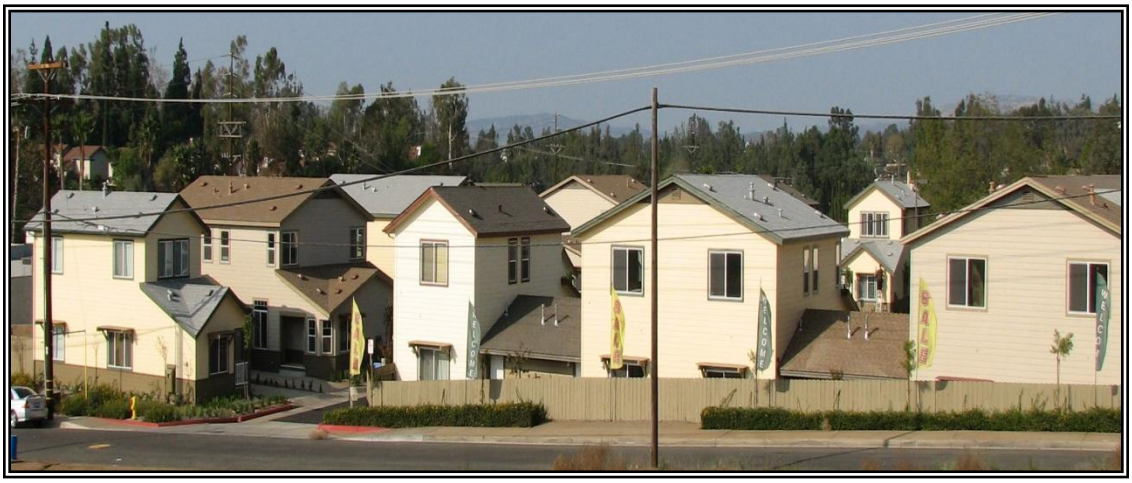
To carry out the conversion, the City turned to Trinity Housing Group (THG), a local nonprofit corporation. The City had worked with THG previously to provide the affordable housing for previous revitalization initiatives and had been pleased with the quality of housing produced. Under the leadership of its president, Steve Kuptz, THG had established a reputation for innovative and high quality projects. In 2004 THG received funding from the city to purchase and convert the Penny Lodge.

Exploration of Manufactured Housing: While the cautious play would have been to simply develop the housing as site-built, Steve Kuptz saw an opportunity ready made for manufactured housing. THG already had begun exploring manufactured housing as a cost saving alternative to site-built housing on a previous project. It had gone so far as to identify a manufacturer, Silvercrest Homes, based on the company's interest in working with developers and its reputation for quality. Silvercrest offered attractive two-story product lines that would work well for high density applications and Trinity had even selected a model for this project. But ultimately THG decided not to use manufactured housing due to the project being a multiple use development with multiple funding sources.

Instead, THG adapted the Silvercrest plans as a model to develop site-built homes. These site-built homes essentially were the site-built equivalents of the Silvercrest models. They used the same dimensions, footprint, interior floor plans, architectural features and exterior appearance. While manufactured housing was not used for that project, THG had gained much valuable information regarding the use of manufactured housing. Also, when the Brotherton Square project emerged, much of the selection process for the manufacturer and models had been completed And, having constructed

the Silvercrest models, THG would have a baseline to compare any savings from the use of manufactured housing with a site-built comparable.

Smart Growth Design: Project planning for Brotherton Square began in early 2005, right after THG took ownership of the site. The planning process reflected core smart growth principles of compact, dense workforce housing development upon infill land close to job centers and transit. Preliminary project plans called for a mix of detached two-story duplex and townhome-style manufactured houses sited on the perimeter of the parcel and clustered around an interior green space. However, the specific number and configuration of the manufactured units and even whether manufactured homes could be used on the site needed to be determined.



Site Planning for Manufactured Housing: Site planning for manufactured housing does entail some different elements than for site-built. Because manufactured housing provides for very little modification once it has been completed at the factory, the site plan is correspondingly less flexible than with site-built housing. Also, the installation of manufactured housing requires sufficient space and appropriate soil conditions to move bulky and heavy manufactured house sections onto the site while simultaneously allowing for the operation of heavy installation equipment such as cranes.

THG addressed these issues through a thorough and detailed site planning process. Site accessibility, heavy equipment feasibility and a comprehensive geotechnical study of the site were conducted. These studies evaluated the suitability of the site for the specific floor plans THG planned to use. This evaluation determined how these manufactured housing units would be laid out on the site, the density that could be supported, and the installation process to be used.

Final Site Plan: The final site plan called for 22 detached units consisting of 1,160, 1227 and 1,420 square foot three-bedroom, two-bath, craftsman-style units on a 1.34-acre lot. To make the project work, density had to be maximized through small lots with sizes ranging from 1,600 to 2,500 square feet. Space allocated for parking was minimized through one-car garages with a 29- to 31-foot driveway capable of accommodating a second vehicle. The homes were to be located along the perimeter of the development

and surround a central, interior green space containing mailboxes, a tot lot, barbecue facilities and visitor parking.

To make this level of density work without compromising visual appeal, modifications of the manufactured units would need to be made. Only eight of the homes could be deployed in their original factory model configuration as fully detached single units. The other 16 homes would have to be installed directly next to one another in pairs on small adjoining lots and separated by just a six-inch air space. In keeping with the single-family architectural character of the neighborhood these units would have to be customized so that the two units would appear as a unified single-family structure and not as attached townhome units or duplexes.

The units targeted the local workforce by requiring that buyers already have lived and worked in the city for at least a year in order to be eligible to purchase a home. Affordability requirements mandated five of the twenty-two units be restricted to low income households with the remaining seventeen units restricted to moderate income households. The City would provide silent second mortgages to make the units affordable.

Fully detached & 'Air-Space' Units

Development Team with Manufactured Housing Expertise: The assembly of a project team with manufactured housing expertise was crucial to the project's success. In a project like Brotherton Square, where custom modifications of units are being made at the factory, the developer must have the manufactured housing expertise to communicate and ensure that the manufacturer understands and is able to produce the units according to the changed specifications. Manufactured housing, unlike site-built housing, cannot be modified once units are delivered for installation. The unit, foundation and utility hookups must all fit together exactly with little room for error. Finally, the manufactured housing and site-built industries each have their own unique conventions, business practices, technology and terminology. Site-built developers like THG who are entering the manufacturing sector for the first time must have access to professionals who can guide them in this transition and translate between these two worlds.

To ensure this kind of expertise was available, Steve Kuptz included the installation contractor, Precision Manufactured Developments, Inc. (PMD) as part of the project team that also included himself, the project architect, a civil engineer and other specialized consultants as needed. PMD's president, Glen White served as an unofficial manufactured housing consultant and translator for the project. Additionally, although not a formal member of the project team, the City Housing Division Manager, Beverley Peterka, had significant experience with the manufactured housing industry. She also proved to be a valuable resource for the project and, at times, served as an informal consultant.

Developing the Project Management Knowledge Base: Finally, the willingness of Steve Kuptz to master the intricacies of manufactured housing development should be emphasized. His determination to learn about the model, conduct site visits to other manufactured housing developments and interview manufacturers helped provide the knowledge base for his overall project management. While no developer new to manufactured housing can become completely proficient on the first project no matter how dedicated a student they are, a certain platform of knowledge and understanding is necessary in order to employ the model. Beverly Peterka, the Housing Division Manager noted the importance of this self-learning:

> "Steve was very determined to learn everything he could about manufactured housing. He looked at other projects and gained a real understanding of how the industry worked, what the experience of other developers was, the advantages the model offered, and what was required to use it effectively. While he didn't learn everything, he didn't have to. He developed a knowledge level that enabled him to articulate a vision of the project and win support for that vision. He mastered enough knowledge and technicalities to negotiate with Silvercrest and effectively employ consultants. And he certainly knew what to look for in terms of assembling a development team."

Winning Acceptance of Manufactured Housing: Negative stereotypes of trailers and mobilehome parks also posed a challenge for the project. Both local homeowners and elected officials had some qualms about the quality and appearance of manufactured housing. The success of the project was dependent on a zoning change, use permit and approval of planned unit development. Additionally, local neighbors were concerned about dust, noise and general construction disruption of a heretofore quiet residential neighborhood. In order to use manufactured housing, THG would have to win acceptance of the model by the neighborhood and elected officials.

To win acceptance, THG pulled out all stops. Steve Kuptz went well beyond talking-head kinds of presentations with written handouts. Instead he relied heavily on state of the art computer graphic and video technology that allowed for a virtual presentation. Virtual technology brings a design plan to life by simulating a three-dimensional virtual walk-through of the site and the units. Realistic simulations of details and conditions such as interior floor plans, paint schemes, light shading, landscaping and parked cars enable viewers to experience the proposed project from a variety of different perspectives and conditions. This strategy was used at council hearings, a city workshop and neighborhood project meetings to provide skeptical neighbors and concerned elected officials with a hands-on, visual "feel" for what the manufactured housing would actually be like. These efforts paid off in early 2006 when the City approved the project as a planned unit development. Steve Kuptz emphasized the advantages offered by this technology:

> "I found the use of computer visualizations and modeling, high quality visual materials and pictures of attractive manufactured housing projects in other communities as critical to winning acceptance of the model. With manufactured housing, you are confronted immediately with people's stereotypes of trailers and mobilehome parks. To overcome those stereotypes you need to visually change people's minds and show them in visual terms the difference between the misconceptions and the realty of modern, high-end manufactured housing products."

Customizing Unit Design: As previously discussed, THG already had the manufacturer and the models in place when Brotherton Square started. However, for the models to meet project density and quality standards, they would need customization at the factory.

Developer/Manufacturer Partnership: To customize the units meant that Silvercrest and THG would have to identify and agree upon modifications and then finalize specifications. This required more than just having the necessary skills, experience and specialties represented at the design table. It also meant that both the manufacturer and developer had to bring an attitude of collaboration and partnership to the process.

From the developer side, this meant going beyond placing demands on Silvercrest for certain design modifications and then waiting passively for them to figure it out. Instead, Kuptz had to use his development team to contribute to the process of finding solutions that would enable the requested modifications to work. On the industry side, it meant shifting out of the customary mode of production for retail distribution and instead becoming a partner in the development process.

Especially important here was the role of Steve Truslow, who managed Silvercrest's development project sales. Truslow became a conduit and facilitator to bring the expertise and capabilities of the Silvercrest factory into the process of finding design solutions. Steve Kuptz described the Silvercrest contribution this way:

> "Silvercrest and Steve Truslow really worked with us as collaborators in this project. It was essential that the manufacturer understand what we were trying to accomplish, what our constraints were and why we needed some of the unit changes. And that we also needed them to help us figure out how to accomplish some of those changes. It was this willingness by Steve and Silvercrest to really harness, not only the production capabilities of the factory, but also their industry knowledge to the project that made Brotherton Square successful."

Reaching a Final Unit Design: It was within this collaborative context that the necessary design changes were reached. The development team began a series of meetings at the Silvercrest factory to work out design issues, production scheduling and quality control issues. Steve Kuptz described these meetings as comprehensive in the scope of design and development issues addressed:

> "We began a series of meetings that included our project architect, installation contractor, civil engineer and utility consultant along with representatives from Silvercrest. We also brought in, as needed, ancillary or specialty consultants such as a structural engineer, water intrusion and fireproofing consultants. We had five or six meetings at the Silvercrest factory where we all worked together to address design, production scheduling and quality control issues"

Customization to Meet Density and Design Standards: The Silvercrest model that was to be used was a two-story unit that was intended to be installed as a detached, separate unit. To make the project density and design standards work, however, sixteen of these units

would have to be modified so that they could essentially be set side-by-side and yet still appear as one single-family unit instead of an attached duplex or townhome. The solution to this problem entailed important modifications of the basic Silvercrest model.

As noted earlier, the units were to be separated by a six inch air space. This air space would be covered over with siding to be installed onsite to provide the visual appearance on an attached unit. To accomplish this meant that the standard two-sided roof had to be changed so that each of the modified units would have a matching half roof. Half of the customized units would have roofs slanting right-to-left while the remainder of the units' roofs would slant in the opposite direction.

The creation of a faux appearance of a single unit also required other adjustments in the design of the unit. Within the interior, adjustments had to be made in the placement of the stairs. The location of the utility hookups also had to be changed due to redesign of the units. Because the model had been intended as a stand-alone unit, the design of the front and rear of the units had to be changed to create the sense of symmetry necessary for the two adjoined units to appear as one.

Also, the use of an air space meant that a firewall on the air-gap side of the unit would have to be substituted for the standard exterior side wall. Since this was not feasible at the factory, the firewall would have to be installed on site. As a result, the units had to be redesigned with tie-ins and other interior modifications so that an exterior, site-installed firewall would fit precisely onto the unit when it was installed.

Architectural Enhancements:

Customization did not stop with the redesign of the sixteen faux units. THG made additional changes in all of the units to enhance the quality and visual appeal of the units. A high-grade Hardie Board siding was substituted for the standard, less attractive and lower quality standard exterior siding. For the sixteen side-by-side units, the Hardie Board was not installed at the factory on the exterior sides that would cover the air space separating the units. Instead, Hardie Board was installed

on site to fully cover the air space. This ensured no telltale "crack" between the units would visually expose the air space where the two units joined.

Window sizes were also increased on the units and transoms were added over the entry doors to increase interior light. Other changes were window overhangs that upgraded appearance and increased energy efficiency.


Transom – front door

Quality Control: The advantages of manufactured housing largely stem from completing most of the unit construction in a factory rather than onsite. As noted, very little modification is possible once a unit has left the factory. The unit footprint has to fit the foundation exactly. The placement of utility and plumbing tie-ins on the unit has to precisely correspond to the location of hook-ups on site.

This is especially crucial in a case such as Brotherton when a standard factory model is not only customized but also entails a redesign that must accommodate onsite additions to the unit. Precision was essential in order to marry the side-by-side units on site. Roofs had to match on site and the exterior fire walls had to fit on exactly on to the units. Consequently, THG instituted stringent quality control measures to ensure that when the units left the factory they would perform as planned on site.

Collaborative Design as Quality Control: The collaborative design process itself served double duty as a quality control mechanism. By engaging all parties - the factory, THG, the project engineer, project architect, specialty consultants and the installation contractor - THG ensured that all design, production, installation and development issues were represented in an integrated manner at the planning table. This process ensured that everyone was on the same page as solutions and decisions were fully vetted by all the major parties.

An important part of the collaborative process was the participation of the city building inspection department in relevant aspects of the design process. Although HUD Code manufactured units are themselves are exempt from local building standards, other

elements such as foundations, site preparations and external additions or modifications of the units are subject to local inspections. To identify and preempt any problems or issues in these areas, the head of the city building inspection department was included in some of the design and planning sessions.

Prototype Unit: Critical to quality control was the production of a prototype unit to ensure that final unit design and specifications actually worked. Once completed, the prototype was scrutinized by the full development team to catch any manufacturing problems or potential installation issues before production and installation.

Steve Kuptz discussed the importance of the prototype unit:

> "We had Silvercrest build a prototype unit before we started the full production run. Once that first unit was built the whole development team went over it thoroughly to make sure that the unit plans worked, that the dimensions, utility hookups and other unit components followed the plan and, most importantly, would work on the site when we went to install them."

Review of Invoice and Production Orders: Once the finalized plans were tested through the prototype unit and approved by the local jurisdiction, the units were ready for production. Production plans called for the units to be built out and installed in batches of six homes. Payment terms were half of the amount due at invoice with the balance due at shipping. Factory production orders were then reviewed by the development team a final time before a production run started to ensure the production order's specifications fully corresponded to plans already approved by the jurisdiction.

Onsite Inspection Prior to Delivery: Once a production run was completed and ready for delivery, the units were inspected at the factory by the development team one last time. Only then would authorization for final payment and delivery to the site be issued.

Installation and Project Completion: As noted, the installation process was the outgrowth of a progressive and carefully planned development process. Installation began after most of the site work and infrastructure was completed. Asphalt interior streets were completed prior to installation to provide support the weight of heavy cranes and also to allow for easy movement of unit sections and installation equipment. The central green space with the tot lot, barbecue area and mailboxes was not completed prior to installation in order to provide more staging and installation space. The units were installed in groups of six. By using crane technology and advanced installation methods, a group of six homes could be fully installed and ready for onsite and remaining finish work in just three days.

Importance of Qualified Installation Contractor: The efficient installation was the direct result of a qualified installation contractor. PMD had the experienced installation crews in sufficient numbers to handle the scale of this job. The company used state of the art installation technology and methods. It also had extensive installation experience

with Silvercrest product lines. PMD also had worked with larger developments before and was familiar with multiple same-day installations and tight timelines.

Perhaps most importantly, PMD had been part of the development team and had participated in the site planning, the design of the units and establishment of quality control processes discussed earlier. Its participation ensured that site planning; unit design, quality control and installation were seamlessly integrated.

Quality Control and Installation: Quality control and coordination with factory production also contributed to the success of the installation phase. Factory inspections, delivery of the units, preparation of the foundations and mobilization of the installation crews and equipment all had to be precisely timed. Because the homes were being assembled in sections on two dimensions with some units virtually attached, it was absolutely essential that the factory inspections confirmed that the house sections shipped from the factory were in fact the right sections.

Lack of Integrated Installation and Foundation Contracting: For Brotherton Square, separate foundation and installation contractors were used. While no fatal errors occurred, some problems did arise because the foundation contractor was unfamiliar with manufactured housing. Used to the site-built world, were adjustments can easily be made if some aspect of the foundation is off, some small mistakes were made that could have led to serious problems. Fortunately, these problems were caught early due to the quality control process. However, they do point to the need for the consolidation of site preparation and installation services into one contractor. In future manufactured housing developments, THG plans to consolidate foundations and installation.

Quick Installation: By December 2006 enough site work and infrastructure had been completed for installation to begin. Installation of all the homes was completed by February 2007. The total installation time for a group of six homes from shipment through installation was approximately three days. Once installed, finishing work began on the homes and onsite components such as garages, siding, roofing and porches. This work was completed in early June 2007. The first homes were sold in early April of 2007.

Advantages of Manufactured Housing: By using manufactured housing, THG achieved significant cost savings and development efficiencies. Because THG had taken the Silvercrest model used at Brotherton Square and constructed it as on-site housing in an earlier project, it had an actual comparable project to assess differences in cost, development times and staff savings.

Project Cost Savings: THG saved approximately $10,000 to $15,000 per unit on pure hard costs while excluding carrying costs such as construction loan interest. These savings came from the efficiency of factory production and time savings.

Savings from Shorter Development Time: Overall development time for Brotherton Square was reduced by the use of manufactured housing. Once the site work was finished and building permits pulled, the homes were fully installed and ready for occupancy in just six months. Had site-built homes been built, this phase of the development would have easily taken an additional two months or more to complete. Manufactured housing allowed THG to achieve at least a 25% times savings in the installation/construction phase. (See Table 1)

These time savings translated into lower development costs. Construction interest savings of about two months were realized. Reduced time also translated into reduced costs for security, project management, land carrying costs and other construction services. When these savings are factored in, THG saved an estimated 5% or approximately $500,000 by using manufactured housing. (See Table 1)

Staff Time Savings: Like other developers who have transitioned from the site-built word, Brotherton Square benefited from the reduced development complexity of manufactured housing. THG found many facets of manufactured housing to be far more efficient, reliable and less complex than site-built homes. Production costs of the units were also found to be stable once they are locked in with an invoice. Once the models were selected and design finalized, THG experienced fewer change orders. The result was a certainty that characterizes much of the manufactured housing process.

With fewer subcontractors involved, manufactured housing, THG found the project less likely to be delayed due to the unavailability of a subcontractor. This also meant fewer subcontractors for project management staff to contend with regarding scheduling, disputes and reliability. Logistical issues such as storage of building materials and components on site were also reduced significantly, greatly contributing to site security. In terms of neighborhood impact, the shorter development period reduced construction

impacts such as dust, noise and vehicle traffic. It is for these reasons, that THG estimated a 25% savings in staff time. Table 1 summarizes the savings THG experienced.

Table 1: Brotherton Square Time and Cost Savings Comparison is to comparable project with site-built units	
Category	**Savings**
Total Project Costs	**10,500,000**
Total Percentage Cost Savings	**5%**
Total Project Cost Savings	**$521,500**
***Per Unit Hard Cost Savings**	**$10,000 to $15,000**
****Completion Time: Manufactured Housing**	**6 months**
****Completion Time: Site-built**	**9 months**
Staff Time Savings	**25%**
*** Excludes construction loan interest and other carrying costs.** **** From building permit to occupancy**	

Market Downturn and Competition: The market downturn that began right after the completion of Brotherton Square validated the original strategy to create a highly attractive housing product capable of competing for moderate-income buyers. Initially, after completion, sales were slower than anticipated due to City requirements that buyers had to live and work in the Escondido for at least a year to be eligible. Since many workers had been priced out of Escondido due to high housing costs, an important market segment was placed off limits exactly when the housing market began to crash and prices moved down. The City subsequently has modified that policy to bring it more in tune with market realities and sales have once again begun to pick up.

This experience points to the importance of an attractive and affordable manufactured housing product when targeting moderate-income buyers. In urban markets moderate and sometimes even low-income households do have some measure of choice. This becomes even more pronounced during a market downturn when prices are lower and such buyers are less "captive" to the affordable or subsidized homeownership market. By building an attractive and high quality manufactured housing product, THG ensured that Brotherton Square could hold its own during a market downturn and successfully compete for moderate-income buyers.

Las Serenas: Infill for Neighborhood Revitalization

Location: Coachella, Riverside County
Developer: Rancho Housing Alliance
Manufacturer: Silvercrest Homes
Completed: 2007
Funding Sources: Redevelopment, CDBG, HOME

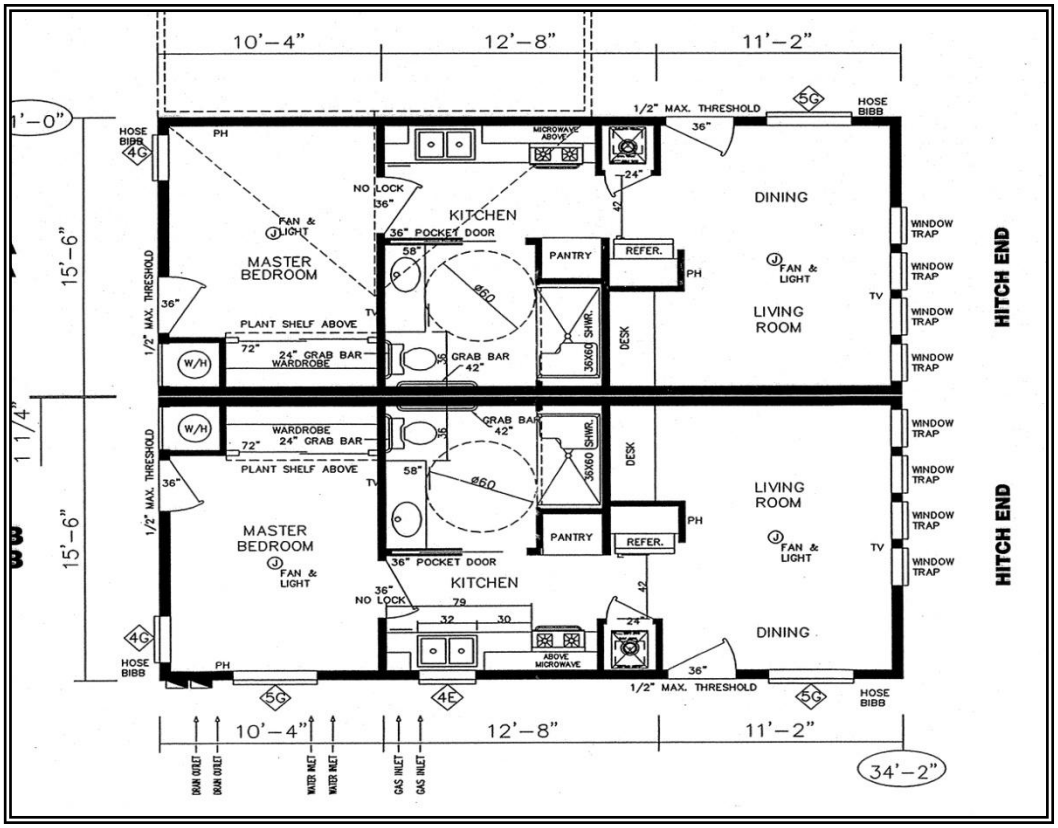
Development Type: Rental
Number of MH Units: 12 Units
Affordability: Low & Moderate Income
Dwelling Types: Attached senior rental
Applications: Smart Growth, Asset Preservation, Redevelopment

Development Lessons:

- ❖ Direct project cost savings of 21% over site-built housing
- ❖ Total project cost savings of $450,000
- ❖ Construction time reduced by one-half
- ❖ Collaborative planning process with Silvercrest allows for customized attached units
- ❖ Reduced staff project management time
- ❖ Project management process less complex
- ❖ Factory direct procurement provides important cost savings.
- ❖ Manufactured housing expertise on the project team

Development History: Rancho Housing Alliance undertook the Las Serenas project in late 2006 at the behest of the City of Coachella to meet the needs of low and moderate-income seniors. The project was slated for a small - two-thirds of an acre - infill location in a mixed-use neighborhood. Due to the lot size, building height limits, and need for onsite amenities, the project would need to maximize density. At the same time, the project had to be appealing to both seniors and the surrounding community. With the small number of units constraining both future debt service and the need to meet local design standards, this project presented a significant financial challenge to Rancho Housing Alliance.

Rancho Housing first looked at traditional site-built housing and found that the project would be financially infeasible due to prevailing wage requirements that would significantly increase construction costs. Consequently, Rancho Housing turned to manufactured housing to see if it could provide the cost savings needed to make the project work while still meeting design and quality standards.



By this time, Rancho Housing had begun to undertake another manufactured housing project and already had established some proficiency working with this housing type. At the time Las Serenas was being planned, Rancho Housing had secured a dealer's license. It also enlisted an experienced manufactured housing installation company, Medina General Housing, to handle installation and assist with project planning and unit design.

Selection of Manufacturer and Collaborative Design: Rancho Housing selected Silvercrest Homes as the manufacturer because of its reputation for quality products and experience working with affordable housing developers. Rancho Housing project manager Katherine Mejia, Medina General Housing vice president Enrique Medina, and Silvercrest's Corporate Sales Director, Steve Truslow, worked together to develop a customized design for the manufactured units.

"Manufactured housing offered great cost savings over site-built housing and was much quicker to complete. Using manufactured housing saved us almost $40,000 per unit when you include prevailing wage requirements. The project management process was simpler and easier to manage. "

Katherine Mejia,
Project Manager

The project would consist of twelve manufactured homes paired into six duets. This space-saving design was necessary to make the project work within the small parcel. To do this required modifications of a standard Silvercrest model so that units could be installed back to back. Each pair would be separated by a six-inch air gap and protected by firewall to be installed on site for each unit.

Also, to meet design standards and enhance the visual appeal of the units, Rancho Housing planned to substitute stucco for the standard Silvercrest siding and add tile roofs to the units at a steeper pitch than could be accommodated at the factory. This required modifications of the units by Silvercrest to change roof pitches and to be able to accommodate tile and stucco installation onsite.

A prototype or 'test' unit was then produced to identify any problems or changes prior to commencing production. This unit was thoroughly inspected by Rancho Housing's staff, Medina Construction, and Silvercrest. Once the prototype unit passed inspection and all parties signed off, production began.

Manufactured Housing Benefits: Rancho Housing Alliance achieved important cost and times savings by using manufactured housing. Overall development time was reduced from the approximately seven months that site-built housing would have required to about three and a half months. Staff project management time and overall project management complexity was also significantly reduced. Perhaps most importantly, manufactured housing afforded significant cost savings of 21% over site-built housing. Reductions in construction and soft costs resulted in an approximately $450,000 savings in total project costs. See Table 1 for savings summary.

Table 1: Manufactured House cost vs. Stick/Site-built Housing Cost		
Stick /Site-built	**Cost per unit**	**Cost per Sq Ft**
Total Direct Const Cost	**$135,608**	**$ 118.75**
Total direct const cost w/ prevailing wage adjustment	**$176,290**	**$ 154.37**
Manufactured	**Cost per unit**	**Cost per Sq Ft**
Total Direct Const Cost	**$97,069**	**$85.00**
Total direct const cost w/ prevailing wage adjustment	**$138,670**	**$121.43**
Percent savings w/ prevailing wage adjustment	**21%**	**21%**

Manufactured Housing Challenges: The use of manufactured housing did present a few challenges regarding onsite enhancements to the units. In a very few cases, Rancho Housing found that there were no established standards and procedures by the manufacturer for some types of onsite work. One example concerned the addition of exterior stucco siding to the units after they had been installed onsite. The manufacturer did not have documentation to guide the general contractor on materials, applications and tolerances for the stucco applications. As a result, the general contractor had to extrapolate from its experience with similar types of stucco applications.

In another instance, the weight-bearing capacity of the roof structure had to be enhanced beyond factory specifications on site due to the weight of the tile. This was because the Silvercrest model used had not previously had roof tile added to it offsite. As a result, there were no reliable standards or experience available to assess weight bearing capacity during the design phase. This problem was only discovered when the units were installed.

There also were some modest delays due to onsite modifications of the units. After they arrive from the factory, onsite require inspection and approval was required by the California Department of Housing and Community Development Codes and Standards Division, and the project was delayed for a couple of weeks until this process was completed.

Conclusions: As a result of some of these problems, Rancho Housing believes the services of a specialized manufactured housing consultant would have been beneficial. Although, Medina General Housing provided important assistance in this area, the project would have benefited from a consultant who could have assisted with the clarification of manufactured housing concepts and terminology that Rancho Housing was unfamiliar with. Such a consultant also could have assisted Rancho Housing with project planning and the unit design process. On the whole, however, Rancho Housing found its first time use of manufactured housing did not present significant problems or challenges. The vast majority of the problems Rancho Housing encountered during this project were normal development issues that would have been present had site-built housing been used instead of manufactured housing. Even with the problems, manufactured housing made a night and day difference in terms of cost and time saving.

Section VIII: Rural Case Studies

Rural Areas and the Manufactured Housing Advantage

One area where manufactured housing exhibits a marked advantage over its site-built counterpart is in affordable housing applications in remote rural communities. This advantage lies in cost and time savings that enable manufactured housing to surmount many of the constraints affordable housing development faces in rural locations. These challenges are related to higher development costs imposed by the lack of infrastructure and developable land, weather conditions, topography, environmental constraints and proximity to important professional, contracting and labor services. As the case studies in this section will demonstrate, it is almost as if manufactured housing was purposely built for the challenges posed by affordable rural housing development. With its cost savings due to factory production and the compressed project completion time that results from the quick installation of a completed unit delivered from a factory, manufactured housing is not nearly as cost and time sensitive to the impacts of rural conditions as site-built housing.

Site-built Housing in Rural Areas: Conversely, the very same rural development impediments tend to amplify less efficient elements of site-built housing when the sales price must be limited. Production costs are sensitive to project scale, travel time to the construction site, proximity to contractors, suppliers and construction services and timely completion of progressive construction phases.

Site-built Housing - Lengthy and Labor Intensive Development: Small rural housing projects, like the ones in these case studies, bring into sharp relief the primary disadvantage of site-built affordable housing applications in remote rural areas: a lengthy, expensive, complex and labor-intensive development process. Site-built construction must be done in interdependent phases. Timing and coordination become especially critical to move different suppliers and contractors in and out of the site. Delays in any one phase can cascade throughout the project and easily both delay completion and increase development costs. Project management necessarily must proceed at the pace of development and provide intensive oversight and coordination at each phase of construction. Unfortunately, many project management tasks of site-built construction are essentially fixed in that the amount of staff time required to perform them varies only slightly in relation to the scale or number of units being built.

Site-built Housing and Development Conditions in Rural Areas: These limitations of site-built housing are further magnified when this model is put to use in rural areas. Insufficient infrastructure, limited developable land, challenging topography, unfavorable weather conditions, short seasons, and limited road networks constitute major material and physical impediments. Remote locations mean that human capital such as contractors, professional services, skilled labor and suppliers can be in short supply. Even when some or all of these resources are available, they still may not be readily available for affordable projects if more lucrative opportunities are present. Going outside

the community to larger population centers for these resources can be prohibitively expensive for affordable housing due to long distances and lengthy driving times.

Remote rural regions often are characterized by small populations with just a few small towns and unincorporated communities dispersed throughout a larger geographic region. As a consequence, the scale and volume of new housing development is much smaller than in urban areas. Unfortunately for site-built housing, the construction of small numbers of units prevents the kinds of cost savings that are essential to make homes affordable. Small construction developments cannot take advantage of bulk purchasing of construction materials or allow certain equipment, labor, contractor and project management costs to be spread across a large number of units.

Rural Challenges for Large Site-built Projects: Even when a large number of site-built housing units are constructed, remote rural areas still can present formidable challenges to the development of affordable site-built housing. Although the larger number of units in such case do offset some of the diseconomies of scale pertaining to project management, materials and labor, they still may not be sufficient to overcome remote rural geography. On the labor front, shifts of subcontractors and their employees must be present at the construction site for considerable periods of time throughout the duration of the project. This means either lengthy commutes with corresponding "dead time" or the added expense of lodging contractors, staff and the workforce near the job site. Also, for project management staff, consultants and some subcontractors, remote locations prevent them from working on other nearby projects when they are onsite. Unlike urban housing sites, a remote rural site is likely to be the only project professionals or contactors are working at in the area. This means that professionals and work crews cannot move from one job site to another during the course of the day on a rural project like they can with an urban project which may be in relative proximity to other jobs site they have contracts with.

Overview of the Case Studies: In this section we will examine how three rural developers have used manufactured housing to overcome these rural challenges to affordable housing. In two of the cases, we will examine the use of manufactured housing in homeowner rehabilitation programs, where it has been used to replace housing that cannot be rehabilitated. Lessons from these case studies point to the cost savings and development efficiencies that enable single unit manufactured housing to outperform site-built and modular competitors in rural environments. The other example takes up the case of a large, scattered-site single-family affordable development in a remote rural location. As this scattered-site case study will show, such a project was made possible and affordable only through achievement of cost savings and installation efficiencies that were not attainable using the site-built model. All of these case studies will show how manufactured housing stacks up against competing housing products, demonstrate cost and time savings, illuminate some of the development efficiencies the manufactured housing model offers, and discuss some of the obstacles that hinder its more widespread use for affordable applications.

Manufactured Housing for Replacement Housing in Rural Homeowner Rehabilitation Programs

Location: Trinity County, Mercy: Counties of Calaveras, Colusa, Placer, Solano and Yolo. Incorporated communities of Biggs, Chico, Jackson, Marysville, Orland, Yuba City and West Sacramento
Agencies: Mercy Housing California Community Development Department; Program and Trinity County Housing Rehabilitation Loan Program
Manufacturers: Skyline, Champion, Fleetwood and Palm Harbor

Funding: Community Development Block Grant, HOME and CalHOME
Affordability: Very low-income to moderate-income
Development Type: Ownership
Number of MH Units:
Mercy Housing -5
Trinity County - 5
Dwelling Types: Modest single-family detached
Applications: Remote rural, infill and replacement homes

Development Lessons

- Significant cost and development time savings over comparable site-built housing
- Project management and quality control for individual replacement homes or very small developments are much more efficient and require less staff time when sales and installation services are provided through a "one-stop" dealer rather than securing these services separately.
- Cultivate a network of capable "one-stop" manufactured housing dealers who understand and can work with the requirements and procedures of replacement housing programs.
- Assess product and service quality before selecting a retailer and its product line.
- Utilize only qualified contractors who are experienced with the installation of the specific manufacturer and the specific product lines being employed.
- Conduct a comprehensive site assessment to make sure a site is suitable for manufactured housing prior to any decision to use manufactured housing.
- Manufactured housing as replacement housing generally is less costly than site-built or modular housing.
- Installation of manufactured housing is generally faster than constructing a site-built home.
- Installation of manufactured housing is easier to manage than site-built or modular housing due to less complexity and HUD Code exemption from much local oversight.

Rural Development Challenges:

Trinity County: Trinity County exemplifies many of the development challenges presented by remote rural areas. A sparse 2006 population of just 14,313 is scattered across a 3,208 square mile mountainous region with no incorporated cities and several unincorporated small towns. Weaverville, with a population of close to 4,000, is the largest town and also the county seat. Many of the County's residents reside outside the small towns in isolated private holdings in the mountains. As is often the case in rural areas, many of the dwellings in the county are older, substandard or deteriorating site-built homes, cabins or trailers. Frequently they are occupied by households with limited incomes who lack the financial means to renovate and upgrade them. The transit system that interconnects these communities and outlying residents consists primarily of two-lane, winding paved roads and highways, and, in some cases, gravel or one-lane asphalt roads. Snow and rain conditions can easily limit both onsite construction activities and the transit of supplies equipment and labor to job sites.

Mercy Housing Service Area: Mercy Housing is a large national nonprofit affordable housing corporation that develops housing and operates a wide variety of housing programs and services throughout the United States. Its Sacramento office provides housing services to 12 cities and counties in California's Central Valley, the Sierra Nevada Mountains and the Sierra foothills. Mercy's service area includes small incorporated and unincorporated rural and agricultural towns in lower farmland elevations as well as mountain and foothill areas similar to Trinity County. In the case study at hand, Mercy Housing Sacramento has employed manufactured housing in response to many of the same conditions and challenges that Trinity County has faced.

Trinity County Housing Rehabilitation Program: As part of its efforts to meet affordable housing needs, Trinity County operates a county-wide homeownership rehabilitation program that strives to upgrade or replace substandard or deteriorating dwellings owned by lower- and moderate-income homeowners. Since 2001, Trinity County has operated a homeowner rehabilitation program that has assisted over 76 lower and moderate income households. Their program is directed by Rachel Allen and includes rehabilitation specialist Jeff Dickey. The program provides the full complement of services including outreach, rehabilitation assessments, production of individual rehabilitation plans, eligibility and loan processing and packaging, identification of contractors, processing of construction draws and final inspections upon completion of work.

As in any homeowner rehabilitation program, invariably some units are far too deteriorated to be rehabilitated and must be replaced. When this happens, Tuolumne County relies on low interest loans through the CDBG, HOME and CalHOME programs to finance replacement housing for these units. With HOME funds, program regulations require replacement units be the same housing product type. This "like-for-like" requirement means, for example, that the replacement unit for a site-built home must be a site house or modular home even if another model is more economical or advantageous.

However, when CDBG funds are used, which permit choice in the replacement housing type, the competition begins between the different housing models.

From 2001 through 2007, Trinity County has had to construct 10 replacement homes as shown in Table 1. During that time, Trinity County has gained considerable experience with all facets of manufactured, modular and site-built housing products. Because Trinity County has established effective relationships with a modular housing factory, several manufactured housing retail dealers and a number of local housing contractors for site-built projects, a level playing field exists in terms of capacity to employ all three housing products. This means that Trinity County is not hindered in employing any one of these three housing products due to the lack of capable manufacturers, installers or construction contractors. Consequently the choice for the replacement housing product is dictated by a mix of program restrictions, site conditions, homeowner preferences and economic or development advantages offered by a particular housing model.

Table 1
Home Owner Replacement Units by Type
Trinity County: 2001-2007
Mercy Housing: 2002-2007

	Manufactured	Site-built	Modular	**Total**
Trinity County	5	4	2	**11**
Mercy Housing	5	2	0	**7**
Totals	**10**	**6**	**2**	**18**

Mercy Housing Homeowner Rehabilitation Programs: Over the last 5 years, Mercy Housing has contracted with twelve rural and small local jurisdictions to operate a homeowner rehabilitation program similar to that of Trinity County. During that time, Mercy Housing has had to replace seven housing units where rehabilitation was not feasible as shown in Table 1. In two of these cases, site-built housing was used for replacement while in five cases the manufactured model was employed. Similar to Trinity County, Mercy also has established a level playing through relationships with both competent site-built contractors and manufactured housing dealers and installers. In this side-by-side use of the two models, Mercy Housing has gained much comparative experience regarding the use of site-built and manufactured housing products for small scale housing applications with limited budgets in both urban and rural environments. Mercy Housing's rehabilitation program has several full time staff, but manufactured replacement housing is managed by its specialist in that area, Jack Kerin.

Manufactured Housing in Action: The homeowner rehabilitation programs of Mercy Housing and Trinity County offer a laboratory to compare the performance of these three housing models. One type of comparison Trinity County and Mercy offer is direct head-to-head competition between manufactured and site-built housing when CDBG funds are used for the replacement housing. Another contrast compares the performance of HOME-funded replacement units where the like-for-like requirement determines the housing product that can be used. Although the model of housing that can be used is

prescribed by the like-for-like HOME requirement, comparisons can still be done because the size and quality of units do not vary significantly regardless of the model that must be used for replacement. Through experience, then, with both CBDG and HOME funded units, housing models can be compared in four key areas:

1. Project costs savings
2. Installation advantages
3. Project development efficiencies
4. Product quality

Manufactured Housing Cost Savings: Simply put, both Trinity County and Mercy Housing have found that manufactured housing offers significant cost savings over comparable site-built homes. This primarily derives from the scale economies of factory production that significantly reduce production costs of a single manufactured unit. With factory production, the costs of materials and labor for the individual unit that is purchased through the Trinity County and Mercy Housing programs are spread across large production runs allowing for bulk purchases and more efficient utilization of labor. Unlike manufactured housing, the individual site-built homes must be built as "custom" products. They have no way of spreading labor, materials and other construction costs over a large number of units or achieving bulk purchasing advantages.

Cost Savings over Site-built: As Table 2 shows, the cost savings offered by manufactured housing over the other housing models can be impressive. Mercy Housing has found that total project costs savings can amount to up to 30% for manufactured housing. In two instances Mercy Housing was able to utilize CDBG funds, which permit the use of the most cost-effective housing product, to provide a manufactured home instead of a site-built house. The selections are always based on both agreements by the homeowner and a head-to-head comparison of total project costs associated with each model. Jack Kerin, Rehabilitation Specialist, summarizes the kinds of cost savings that Mercy Housing has found with manufactured replacement housing:

> "It was a case where we were able to replace an older home that was beyond repair. There, primarily cost was the issue and we were able to get the same square footage installed on site for less money than a site-built home. We know from having done site-built replacement homes that the cost savings can range from 10% to 40% with an average savings of 30%. In Placer County, we replaced an old mobilehome for a total cost of $124,000. From our experience, we know that if we had to use a stick-built home for replacement, the cost would have been about $180,000. The savings in this case was approximately 32%."

Trinity County also has experienced the same kinds of impressive cost savings in its use of manufactured housing. Trinity County placed the cost of a two-bedroom replacement manufactured home in 2007 at $95,000 while the cost for a similar site-built home was

$150,000 – a cost savings of approximately $55,000. Rachel Allen, program manager, compared the cost savings offered by manufactured housing savings this way:

> "We are always striving to help as many families as possible with our program. Providing manufactured homes with such large cost savings enables us to assist more families."

Table 2: Typical Manufactured versus Site-built Replacement Housing Costs

Unit Size	Total Project Cost: Manufactured	Square Foot Costs	Total Project Cost: Site-built Home	Square Foot Costs	**Net Manufactured Housing Savings**
MERCY					
1066 sq ft	$95,663	$89	$143,910	$135	**$48,247**
1200 sq ft	$80,406	$67	$144,000	$120	**$63,594**
1200 sq ft	$134,416	$112	$167,000	$139	**$32,584**
TRINITY					
1000 sq ft	$95,000	$95.00	$150,000	$150.00	**$55,000**

Cost Advantages over Modular Homes: Somewhat surprisingly, Trinity County, where modular housing is a viable third option due to the proximity of a factory, has found that manufactured housing also offers cost advantages over its factory-built counterpart – modular housing. The reason for this lies in the modular industry in general, and the local manufacturer in particular, not having achieved to date the high production volume and corresponding levels of product standardization that are necessary in order to achieve scale economies comparable to those in the manufactured housing industry. This is partly due to the newness of the modular industry as compared to the manufactured housing sector. It also results from a modular market niche for more customized homes, and hence smaller, production runs. If more expansion of the modular housing industry occurs in the future, production cost differentials may become more equalized.

Installation Advantages of Manufactured Housings: Installation is one area where both Mercy Housing and Trinity County have found that the manufactured model clearly excels when contrasted with the other two housing types. In comparison with site-built homes, manufactured housing is more easily and quickly installed than constructing a comparable unit onsite. It is less susceptible to delays and disruptions due to weather or subcontractor availability. Manufactured housing also does not have to compete for local labor and contractors with more lucrative opportunities offered by custom or market rate homes.

Substantial Time Savings over Site-built: In terms of time, a manufactured unit can be transported to the site, installed and be ready for occupancy within 30 days from the time of purchase from a retail dealer. Since the "construction" of the house is completed in a factory, transport, site and foundation preparation and installation are the only remaining major activities required for completion. By contrast, completion of a comparable site-

built home can easily require from four to six months from submission of Plot Plans and Construction Plans through issuance of a certificate of occupancy. Completion of just the plan check process alone can sometimes take as much or more time than the purchase and installation of a manufactured unit. Jeff Dickey, Trinity County Housing Rehabilitation Specialist explained the time savings offered by manufactured housing:

> "One of the benefits of a manufactured home is the time frame in which our client can actually move in, which on the average is around six weeks from the time the home is ordered. This could be critical if relocation was necessary in order to keep relocation costs to a minimum. This time frame would be regardless of square footage. In comparison, an 1100 square foot stick-built house from the time the permits are pulled until the home is completed would be around four months, weather permitting."

Faster Installation Saves the Day: In one replacement situation, Mercy Housing found that quick installation and completion time offered by manufactured housing saved the day. In Colusa County, a largely rural and agricultural area in California's Central Valley, Mercy found it would not be feasible to rehabilitate an older mobilehome in the rehabilitation program it was operating for the County and that a replacement home would be needed. Unfortunately, the date the home had entered into the rehabilitation program was close to the end of the HOME funding allocation. Under the HOME program rules, all rehabilitation and replacement housing work had to be completed prior to closing date of the HOME funding award to the County. Because of the speed in which a manufactured unit can be purchased, installed and ready for occupancy, Mercy was able to beat the clock and replace the unit. Had the replacement required a site-built home, the replacement could not have been accomplished in time and the replacement would not have occurred.

Installation Efficiency Requires Proficiency: It should be noted that the time compressed installation for manufactured housing, while much quicker than site-built housing, is far less forgiving than site-built. As discussed earlier in this guide, to be successful with manufactured housing, the factory unit purchased must both fit and be placed on the foundation precisely. There is little room for error and when an installation mistake occurs, it can be very expensive and difficult to fix. As Trinity County Rehabilitation Specialist Jeff Dickey, notes, manufactured housing is literally a game of inches when it comes to foundations and installations:

> "It is very important when installing a manufactured home on a perimeter foundation that the foundation is laid out to the factory specified dimensions exactly. Otherwise the home will not sit on the foundation properly. Examples would be the home overlapping the foundation or recessed on the foundation."

Rural Site Access Barriers: It should be noted that one of site-built housing's biggest cost disadvantages – the literal, time-consuming and labor-intensive building of the unit from the ground up – can become an important advantage in some rural conditions. In

one case, Trinity Housing was unable to employ manufactured or modular housing due to the remote rural location of the site. The narrow twisting road in a heavily forested area simply presented too many physical and geographical obstacles to use manufactured or modular housing. Where it is infeasible to truck in long manufactured housing sections or the cranes required for a modular home setup, site-built housing will remain the housing model of choice.

Installation Advantages over Modular Housing: Trinity Housing has found that manufactured housing provides important installation advantages over modular housing. Installation of modular housing requires the use of a crane to unload and set up many of the house components. However, moving a crane to the installation site or even using it on site may be possible in mountainous or heavily forested terrain. Conditions such as trees, cliffs, tunnels, narrow roads and sharp curves easily prevent both the transport to and use of the crane on site. Moreover, the cost of crane technology is quite expensive for a very small affordable project where the expense cannot be shared by a large number of units as is the case in larger projects. In cases where one affordable home must bear the entire financial cost of the crane, the use of this technology can become financially detrimental to the project.

Project Development Efficiencies: The experience of Mercy Housing and Trinity County shows that use of replacement manufactured housing not only is faster than site-built housing, but can also be more efficient to develop. Both entities found that manufactured housing development is a far easier and less complex process to negotiate than site-built housing. Time savings in overall project completion proportionately reduces both the aggregate amount of project management time required of staff. Because most of the project work is completed at the factory before the manufactured unit even reaches the site, project management complexity and the opportunities for something to go wrong are correspondingly reduced. Finally, manufactured housing is exempted from much of the local jurisdictional project review that can add substantially to project completion time and staff project management work.

Limited Onsite Work: Many of the development efficiencies offered by manufactured housing result from a very limited number of major onsite production phases. Unit procurement, site and foundation preparation, transport of the unit, installation and construction/attachment of ancillary house components such as a garage or porch all follow one another sequentially and in a relatively short time frame. By contrast, on-site construction entails numerous sequential construction phases performed by different contractors, inspectors and agency staff. All of these phases have to be carefully

monitored for satisfactory completion of the working. Troubleshooting onsite problems such as coordination of subcontractors, phasing of work, disruptions due to weather, conformance to local building controls and Davis-Bacon compliance monitoring, routinely delay site-built construction and consume significant staff time.

Reduced Local Review and Approvals: Project management advantages also derive from the reduced scope of local jurisdiction review. Thanks to the HUD Code and state laws, local oversight is reduced to verification of the plot plan and installation instructions with specifications. Structures attached to the manufactured unit such as garages and porches also are subject to local codes and jurisdictional regulation and review. Inspections by local jurisdictions generally are limited to yard and setback requirements, permanent foundation, electrical and utility hook-ups, site grading and accessory structures. Local jurisdictions also may require that the certain exterior features such as roof pitch, eaves and exterior walls conform to local building codes. But the completed manufactured units and especially the interiors are largely exempt from local review. As Trinity County Program Director, Rachel Allen notes, this reduced scope of local regulation provides for an easier and faster approval process than site-built housing.

> "Site-built homes require more engineering and plan review than a manufactured home does. In our area we do have snow load requirements to deal with, but manufacturers are able to accommodate our snow loan needs with very little added to the price of the home. The time and costs required for inspections are reduced by installing a manufactured home vs. a site-built home."

Staff and Project Time Savings: The net result is significant time savings in terms of staff resources and overall project completion. Table 3 shows some of the estimated staff, onsite, and total project time savings offered by the manufactured housing model.

Table 3: Estimated Project Management Staff Time Savings: Manufactured Housing versus Site-built Mercy Housing and Trinity County

Compares project management labor efficiencies of manufactured and modular housing against site-built homes in percentages based on overall experience with the different models. Installation vs. Construction compares the amount of time required to construct or install the house once building permits are issued to Notice of Occupancy (site-built) or Notice of Completion (manufactured). Positive % denotes labor savings over site-built.

Housing Model	Installation vs. Construction	Project Management	**Total Project Completion Time**
Mercy Housing	30%	50%	**10% - 40%**
Trinity County	**50%**	**50%**	**50%**

Product Quality: Mercy Housing and Trinity County must deliver a good quality home within the cost limits allowed by the HOME and CDBG programs. In this regard manufactured housing delivered a product quality level comparable to modular housing

and site-built homes. Mercy Housing and Trinity County both found no significant quality differences between any of the three housing models. In this respect, manufactured housing held its own with the alternative models.

It should be emphasized that in a homeowner rehabilitation program, replacement units, whether manufactured, modular or site-built, face significant cost limits resulting in fairly basic units with limited architectural enhancements. As noted earlier, expansion of site-built and/or factory built enhancements will result in increases in costs and development time. Further, replacement units often are placed in very isolated rural locations or communities with overall architectural standards that can be quite modest. Consequently units in these programs, whether site-built, modular or manufactured, will be to some degree limited in their architectural features.

Despite these limitations, modest but attractive manufactured homes are quite attainable. As the following sequence of pictures show, an attractive Mercy Housing manufactured replacement house equals or exceeds the quality and attractiveness of adjacent homes.

Mercy Housing Manufactured Home

Successful Employment of the Manufactured Model: Trinity County and Mercy Housing ensure that the advantages offered by manufactured housing will be realized through project management practices in several key areas. These are:

- ♦ Site suitability evaluation
- ♦ Preliminary transport access assessment
- ♦ Detailed development of product specifications for procurement
- ♦ Integration of procurement and installation services
- ♦ Manufacturer- and model-specific experienced installation contractors
- ♦ Oversight of the installation process

Site Suitability Evaluation: Determination of site suitability for manufactured housing is an essential and early step by Mercy Housing and Trinity County in the decision to use manufactured housing. Many dimensions of site evaluation are the same for manufactured housing as site-built. What is different and crucial for manufactured housing is determining whether a largely completed home can be transported to and then maneuvered onto the site. To make this evaluation, both entities evaluate prospective sites for geographical or physical obstacles such as trees, uneven topography, soil conditions, drainage problems, utility poles, fences and existing structures. They also make sure that there is sufficient staging space to maneuver and install a new unit onto its foundation. This site evaluation process holds true even if a manufactured unit already is on site. Although the original unit may have been successfully installed, subsequent changes to the site such as tree or vegetation growth, improvements on or adjacent to the site, or other types of modification may have occurred since the original installation.

Preliminary Transport Access Assessment: Another early essential assessment concerns whether access routes are available to the site that can accommodate the transport of the unit. This is especially important in rural regions where road systems are more susceptible than urbanized areas to washouts of older road sections, unrepaired storm damage, tree growth and topographical changes. As part of evaluating site suitability, both Mercy Housing and Trinity County will note any potential and obvious obstacles and road conditions that could hinder the transport of the unit. In the event that any actual or potential transport issues are observed, a professional transport driver will then conduct a more in-depth route assessment by driving the transport route to determine access.

Replacement Product Specification: When it comes to unit selection, Mercy Housing and Trinity County do much more than simply pick out a floor model that meets the budget and program specifications in terms of size and number bedrooms. Both entities carefully identify and detail standards, components and materials that the replacement unit must meet. These are presented to the homeowner for selection and reviewed with dealers prior to solicitation of any bids or proposals for a replacement unit. This specification process is especially important when using more basic, low-cost or starter manufactured models. Many of the systems, components, trims, finishes, materials, plumbing fixtures, hardware, flooring and floor plans for these kinds of units may be at minimum standards and inappropriate for a unit that will be a long-term residence for a household, especially in a harsh climate location.

It also should be reemphasized that HUD Code standards relate primarily to the structural and engineering standards that the units must meet. Other critical components of a housing unit essential for long-term quality (such as drywall, carpeting, cabinetry, plumbing fixtures and countertops) are often not required - although the industry has largely moved away from bare-minimum standards. That said, a careful and thorough specification of the product is always an essential part of the procurement process for a satisfactory manufactured replacement unit.

Integrated Procurement, Foundation Preparation and Installation: Mercy Housing and Trinity County both utilize an integrated; 'one-stop' approach to the procurement, foundation preparation and installation of the manufactured unit. Much of the success

they have experienced in based on the simple expedient of carefully selecting reputable retail dealers who will assume overall contractual responsibility for sales, foundation preparation, installation and warranty follow-up.

Both Mercy Housing and Trinity County have found this type of integrated approach provides for a smoother project management process and resolution of any post-installation or warranty repairs. This is because it essentially unifies overall responsibility for the various product delivery and installation tasks into one entity. In addition, unification reduces the potential for misunderstandings or confusion about respective roles and responsibilities that can easily arise when separate entities are assigned different but highly interrelated tasks. In the event of damage to the unit during delivery, foundation mistakes or post-installation damage, it reduces the problem of determining responsibility and liability. Disputes and blame shifting that can easily arise when independent entities are used for interrelated tasks are largely avoided.

***Identification of Qualified "One-Stop" Dealers**:* Identification of "one-stop" dealers with an integrated installation services package entails outreach to explain the replacement housing program, review of the dealer and subcontractor experience; checking out local reputation and consumer satisfaction; site visits to check out the quality of their products, foundations and installation; and assessing the quality and reputation of the manufacturers they represent.

The goal is to identify dealers who appreciate the value of a long-term relationship with a replacement housing program, demonstrate a willingness to work with program procedures and have the capability to produce a bid with necessary specifications. It should be noted that many dealers are unaccustomed, unwilling or unable to produce detailed specifications on materials and components for a unit. They may be accustomed to receiving full payment in advance and can be uncomfortable with not receiving full payment until the installation is satisfactorily completed. Subcontractors likely will not be completely unfamiliar with Davis-Bacon wage requirements and reporting. Participation in affordable housing programs such as replacement programs will mean dealers and their subcontractors must show a willingness to understand and work with established affordable housing program procedures and requirements that can be quite different from the retail world in which they are used to operating.

Manufacturer and Model Specific Experience: Successful use of an integrated procurement and installation process requires installers who are experienced with the specific manufacturers and their models that the program will utilize. Installation and foundation preparation entails more than just simply following the factory installation guide and its specifications by rote. Prior experience with a manufacturer, its product line and required foundations ensures familiarity with unique product line quirks, problems, and work-around solutions that might not be accounted for in the installation guides or product specifications. Mercy Housing's Jack Kerin explained the importance of product line experience:

> "The real key to successful use of manufactured housing, once you've identified the right unit, is the installation. A good installation can make the difference between a successful and unsuccessful project. When you use installers that are experienced with specific manufacturers and their models, they know how to interpret and follow the installation materials provided by the manufacturer, what to look for, how the units go together. They will know from experience any kinds of unique quirks or special problems that might be presented by a particular model. And, because this isn't the first time they have installed the manufacturer's product line, they will be very practiced in installing the unit."

Oversight of the Installation Process: Both Mercy and Trinity County carefully monitor all phases of the installation process through occupancy. This oversight begins with the foundation preparation to make sure that work is proceeding according to specifications; any potential problems are identified prior to the manufactured unit being delivered to the site. Upon delivery of the manufactured unit, Mercy Housing and Trinity County staff carefully inspect the unit for any obvious external transit damage prior to the installation process. Once the unit is installed on the foundation, program staff again inspects the unit to identify any manufacturing defects or damage that may have occurred during installation. Staff then is present at the final inspection by state regulatory staff prior to certify the unit for occupancy. This vigilant approach enables problems to be identified early on before disputes can arise over their cause, and encourages timely remediation.

Lessons: Mercy Housing and Trinity County have found manufactured housing ideally suited for replacement housing. In their experience, manufactured homes offer important cost advantages and time savings that work well within the tight cost constraints of HOME and CDBG funded rehabilitation programs. Their experience also shows that manufactured housing offers significant cost and development time savings over comparable site-built housing and modular housing. Further, manufactured housing is particularly suited for remote rural locations where long driving distances and shortages of qualified construction contractors and workers can easily drive the cost of even a modest home to levels unaffordable to lower-income households. While cost constraints often force the use of basic models, both programs have been able to utilize manufactured homes that are reasonably attractive and architecturally competitive with comparable site-built homes. The larger lesson offered by their experience is that when carefully selected and properly installed, manufactured housing can deliver an attractive and competitive home at a lower cost than comparable site-built and modular homes.

Carefree Homes North Shore Scattered-Site Farmworker Homeownership Project

Location: Mecca, Riverside County at north shore of the Salton Sea
Developer: Carefree Homes
Manufacturers: Skyline, Fleetwood and Palm Harbor
Completed: 2002-2007
Funding: USDA 502 and Affordable Housing Program (AHP)

Development Type: Ownership
Affordability: Very low-income
Number of MH Units: 150
Dwelling Types: Single-family detached
Applications: Remote rural, large scale scattered site developments

Development Lessons

- Manufactured housing cost savings overcame classic rural development inefficiencies of scattered lots, remote location and very low-income buyers that prevented use of site-built homes.
- Manufactured housing was significantly less costly than comparable site-built homes
- Manufactured housing cost savings significantly increased the number of households who could purchase a home as opposed to site-built
- Factory direct procurement achieved important costs savings
- Consolidation of all facets of installation, site work and construction specialties into one contractor resulted in more efficient project management, reduction in delays and important project cost savings
- Utilization of an experienced contractor familiar with the manufacturers' specific product lines was critical for efficient installations.
- Factory backlogs can significantly delay manufactured housing projects.
- Costs of delays mitigated by the structure of factory production – invoiced price, stockpiled materials

Large Scale Rural Homeownership Rural Development Challenges:

When Carefree Home's CEO Ryan Brockbank looked at the unincorporated community of Mecca on the north shore of the Salton Sea back in 2001, he first and foremost saw a need for affordable ownership for the large farmworker community in that area. This rural, desert region in Riverside County lacked affordable ownership opportunities for the large population of hard-working farmworker families who worked year round on local farms. Many of these families were ready for ownership but were consigned to rental housing that often was substandard and overcrowded. Because of the cultural work ethic, these families were generally employed, had good credit and had accumulated some modest savings. But their very low incomes would require a housing product that could both provide quality and be sold at a price point within their means.

At the same time he saw opportunity, however, Brockbank also faced the classic obstacles that hinder the development of large scale and affordable ownership projects in rural areas. Mecca is located a good hour to an hour and a half drive from the nearest labor and urban centers. Because this project began in the overheated real estate market of 2002, the remote location made Mecca area a particularly expensive and unattractive job site for contractors who had other work closer at hand and at premium prices. Further adding to these obstacles were historical development and land ownership patterns in the north shore section of Mecca that made assembly of large, contiguous parcels of land impossible. Previous development had left a hodgepodge of individual homes intermingled with undeveloped lots dispersed in a checkerboard pattern. This meant that Carefree Homes would have to assemble groups of individual lots in relative proximity to one another and build them out in small scale scattered site batches.

It was only through the use of the manufactured housing that these formidable development barriers could be overcome and a challenging lower-income market served. The story of this successful affordable homeownership project convincingly demonstrates how manufactured housing can be employed to develop a large-scale homeownership project in the face of challenging rural development conditions and tight financial constraints.

Production Costs Drive Selection of Manufactured Cost Savings: When Carefree Homes first began planning this project in 2000, it first looked at using conventional site-built housing. As part of its internal planning, it both performed a financial feasibility

analysis of constructing a modest single-family home and carefully evaluated the local housing market. Within that process, Carefree Homes also used the sales price of site-built housing developed by a local nonprofit as a comparable housing product to further refine estimated development costs.

Site-built Housing Proves Infeasible: The results of the analysis made it apparent that site-built housing simply would not work - even with a subsidy. For one thing, the housing boom was on in Southern California at that time. Contractors and construction workers were in high demand by urban residential construction developments. Carefree Homes would have had to pay a high premium to compete with these more lucrative locations, and even then it still was uncertain whether contractors and construction workers could be lured to such a remote area in the midst of an urban building boom. Further, a premium would only have added to the inherent higher costs of scattered site development. Any significant increases in construction costs simply would have priced out much of the farmworker market that Carefree Homes was aiming at.

Significant Cost Savings: With site-built housing ruled out, Carefree Homes decided to take a serious look at manufactured housing. Carefree Homes began this analysis by identifying suitable models and obtained pricing information for purchase, shipping and installation. With this information it conducted another round of feasibility analysis and planning using manufactured housing. As Table 1 shows, the results of this analysis showed manufactured housing beating site-built hands down. Manufactured housing demonstrated the kinds of cost savings over site-built housing that would be needed to deliver a basic but quality housing product to the very low-income price point that Carefree Homes had to meet. CEO Ryan Brockbank summarized the results of the analysis and cost comparisons between site-built and manufactured housing:

> "Getting a dealer's license would be no problem for us, so we took a hard look at manufactured housing as an alternative that would get our product down to a price point that would work for a very low-income farmworker market. Right away it was clear from our analysis that manufactured housing offered the kind of major savings that we needed to make the project work. When we looked at our own internal numbers comparing site-built homes and then looked at actual comparable subsidized homes in the area, we were looking at a minimum savings of $30,000 to $50,000 right off the bat."

Table 1: Cost Savings Manufactured Housing vs. Site-built Summary of Carefree Homes 2002 Analysis				
2002 Analysis	Sales Price	MH Savings	Sq. Foot	**%MH Savings**
Typical Carefree Manufactured Unit – 1,600 SF	$84,000	N/A	$52.50	**N/A**
Carefree Internal Analysis for Comparable Site-built Home	$150,000	$66,000	$93.75	**78%**
Typical Local Subsidized Site-built Home – 1,400 SF	**$114,000**	**$30,000**	**$81.00**	**55%**

Lending: Winning USDA Support: Early on in the project, it was decided to use the U.S. Department of Agriculture's (USDA) 502 Direct Loan Homeownership Program to finance the sale of the units. This loan program was well suited for this kind of affordable farmworker ownership development. Under the 502 program, borrowers are eligible for mortgages up to 100% of loan-to-value over a 33-year term. However, if manufactured housing is used, the loan term is limited to 30 years. Payment assistance is available for lower income borrowers that can reduce the effective interest rate to just 1%.

Once the decision was made to use manufactured housing, however, Carefree Homes needed to win USDA support for its use. Although manufactured housing is eligible under the 502 program, USDA staff still had some concerns regarding its use of the model. In particular, they were worried about the quality of the manufactured units and concerned that lower income farmworkers might be burdened with a mortgage for an inferior housing product.

Carefree Homes addressed these concerns by demonstrating how it would deliver a quality housing product. Ryan Brockbank met with USDA staff to provide detailed information on the quality of the manufactured units and its development plan.

USDA was assured that the units would be large, family-sized homes with appropriate floor plans and produced with quality materials. Brockbank explained that components such as cabinetry, floors, floor covering, interior doors and plumbing fixtures were to be comparable to site-built homes produced for the 502 programs and not inferior, RV-quality materials. The units themselves would be placed on permanent concrete foundations and the lots would be fenced and landscaped.

These efforts paid off when the first group of families were approved for 502 mortgages and moved into their new homes in late 2002. Robert Anderson, USDA California Single-family Housing Director, described the turnaround:

> "When Carefree first approached us with using manufactured homes instead of customary stick-built, we did have some concerns. Carefree told us they needed to go to manufactured housing because building costs were very high in the area at the time. We wanted to make sure that the units would be of comparable quality to regular site-built homes because manufactured housing can sometimes be inferior in the quality of the components and materials used – almost RV quality. They spent some time with USDA addressing these concerns and that helped a lot. But we really started to be won over when we saw the quality of the manufactured units in their first group of 502 homes. They were good, family-sized units with the kind of quality for flooring, cabinetry, plumbing fixtures, doors, sinks, countertops, drywall that easily made them comparable to site-built homes. By using manufactured housing, Carefree was able to provide a very affordable and quality ownership opportunity for farmworkers with very low incomes."

Development Strategy: The development strategy that ultimately resulted in 150 homes called for a phased build-out of the lots. The project began with Carefree Homes securing a dealer license that would allow it to negotiate with and purchase directly from manufacturers. This allowed Carefree Homes to bypass retailer dealers and their price markups. It also made it possible for Carefree Homes to work directly with the factory to negotiate, plan and coordinate batch production runs and delivery dates.

It was this coordination and timing of the factory production runs with the acquisition and preparation of lots that was essential to making the project succeed. Carefree Home's strategy was to build the project out in small batches of five to 10 homes. The process

would begin with the acquisition of a small group of lots. Then, with the lots in hand, building permits would be secured and site work begun. While these activities were taking place, Carefree Homes staff would market the homes to qualified families and quickly get them into the mortgage pipeline by packaging the USDA 502 loan applications. Taking advantage of the reliability and quick turnaround time to purchase, install and ready a manufactured unit for occupancy, Carefree Homes strived to have the manufactured unit ready for the family when its 502 loan closed.

The overall strategy was to have batches of lots, units and buyers at different phases in the development pipeline to ensure the project flowed in a steady, efficient manner. With the certainly of factory production costs and delivery/installation dates, Carefree Homes could then sequence critical activities such as building permits, site preparation, foundation completion, marketing, loan packaging and mortgage approvals around the anticipated issuance of the certificate of completion.

Development Efficiencies: The success of this phased development strategy hinged on coordination and timing of factory production, site preparation, marketing and loan processing. It was here that development efficiencies offered by manufactured housing contributed much to make this strategy work. Specifically, Carefree Homes was able to achieve important time savings for overall project completion, reduce project management staffing and streamline subcontracting.

Efficient Project Management: Carefree Homes experienced what many other developers who have switched over from site-built housing have found: manufactured housing requires less staff time and a more straightforward and less complex development process than site-built housing. Over the course of the project, Carefree Homes estimated the reduced staffing demands as the equivalent of at least two full-time equivalent staff positions with the reductions in the areas of project management, construction coordination, administration and marketing. Labor cost savings were estimated as at least $500,000 over the course of the project. According to Ryan Brockbank:

> The staffing requirements of the entire project the whole way through really entailed for Carefree Homes two full-time equivalent project and construction management positions and a full time secretarial administrative support position. We contracted with Dace-Rancho, a local nonprofit housing agency, for outreach and loan packaging so we outsourced to make up the fourth full time equivalent. A site-built project, based on our experience with them, would have required a much higher level of staffing with at least two more full-time staff. A conservative estimate is the easier project management and quicker development time at the Salton Sea translated into about $500,000 in staff savings.

Faster Project Completion: Like other developers, Carefree Homes also found that manufactured units could be delivered, installed and ready for occupancy much faster than their site-built counterparts. Generally, Carefree Homes found that that the overall

completion process for a batch of ten to fifteen homes - ordering the units, securing building permits, site preparation, delivery, installation, onsite work and issuance of the occupancy permit – took approximately 90 days. Based on its experience with site-built housing, Carefree Homes estimated that a comparable site build-out process in batches of 10 to 15 units likely would have taken five to six months.

Time savings resulted not only from the factory production and quick installation of a largely completed unit, but also from exemptions from local government oversight due to the HUD code and state law. As a result of this exemption, Carefree Homes found that securing a building permit took at most just a few days while the same process for local site-built developers could easily take several weeks. Table 2 compares some of these time savings.

Table 2: Carefree Homes Project Time Savings Manufactured versus Site-built Housing

Project type	Time Required to Secure Building Permits	Building* Permit to Occupancy	****Total Project Completion Time**
Manufactured Home (15 homes)	3 days	87 days	**90 days**
Site-built Home (15 homes)	21 days	129	**150 days**

***Building Permit to Occupancy* compares the amount of time required to construct or install the house once building permits are issued to Notice of Occupancy (site-built) or Notice of Completion (manufactured). ***Total Project Completion Time* compares time from building permits to occupancy.**

Streamlining Development through Integrated Contracting: Similar to other case studies in this guide, Carefree Homes maximized the efficiencies offered by the simpler and faster manufactured housing development process by consolidating site work, foundation preparation, installation and other functions into one contractor. In this case, Carefree Homes retained a "one-stop" contractor, Medina General Housing, to provide virtually all site, installation and other contracting services.

Medina General Housing's extensive experience with manufactured housing in general, and familiarity with the specific product lines being utilized by Carefree Homes, underscores the importance of these factors when selecting a site preparation and installation contractor. Over the years, Medina General Housing had built up a wealth of knowledge with most of the manufacturers and models that were commonly used in the region. At times, Medina General Housing even had gone into factories to assess changes in product lines or evaluate new models that were going to be used by its clients. The CEO and founder of the company, Jesus Medina had worked for many years in manufactured housing factory and understood the industry from the ground up. As a well

established, regional installation contractor, Medina General Housing had the capacity to undertake and manage a larger, time-sensitive project. CEO Jesus Medina and Vice President Enrique Medina summarized the contributions a contractor like Medina General Housing can make to developers such as Carefree Homes:

> "The site preparation, foundation and installation of a manufactured unit and then getting it ready quickly for occupancy are the secret to making a big project like the Salton Sea one work. To do that you need somebody who has done it before and is not learning it for the first time. Even an installation contractor who is good at individual installations may not have the knowledge and ability to handle a bigger job. You need somebody like us, who has been working with all of these manufacturers and their models for many years. We know them inside out, like the back of our hand. We know their quirks, the tricks of the trade, what is and isn't in the manufacturers' installation guides. Because we have done it for many years, it is easy for us to assemble experienced site and installation crews, bring in and manage other subcontractors."

These sentiments were echoed by Ryan Brockbank:

> "Consolidating all the subcontractors under a specialized manufactured housing contractor like Medina made the whole process so much more efficient and saved us a lot of time, money and problems. When I do site-built housing, I have dozens of trades and subcontractors to manage. There are always problems with scheduling, coordinating and assigning responsibility when something goes wrong. I brought in Medina because they had the knowledge of manufactured housing and knew how to fit the other trades into that model. And I just had one person to deal with to plan and coordinate the development side with. That in turn made it easier to coordinate the loan and sales side of the project."

Challenges: Factory Backlogs: One area where manufactured housing projects can run into delays comes from factory production capabilities and scheduling. Factories do have a fixed amount of production capacity that must be apportioned and scheduled to meet the demands of retailers and other purchasers. When demand is high for manufactured housing, as in any other industry, factory orders can become backlogged and inevitably some purchasers will have to wait in line for their order. At different times over the course of five years, Carefree Homes did encounter factory backlogs that were sometimes as long as four months from the date the order was placed.

To remedy this problem, Carefree Homes simply adjusted its development schedule to correspond to factory production timing. What it found was that even factory production backlogs had a level of certainty and predictability that is not often found in the site-built housing sector. Production delays that afflict site-built housing often result from the uncertainty and lack of control that result from a complex and interdependent production process. When, for example, a subcontractor unexpectedly fails to perform, there often is a pronounced ripple effect throughout the entire project as other subcontractors, suppliers and construction phases get thrown off kilter.

By contrast, factory production delays are essentially contained within a single entity that is responsible for the production of the units. Such delays typically result from the limits of factory capacity to process a certain number of production runs and not from the often unpredictable actions or circumstances of a multitude of independent subcontractors, suppliers, regulators and other entities. Hence, while production delays are troubling, there is a level of certainty and reliability of when the units ordered will eventually be completed and delivered. It was this certainty that allowed Carefree Homes to make adjustments in its development and marketing activities with some confidence that it could be certain when the units would be available.

Manufactured Housing Mitigates Cost of Project Delays: To be sure, disruptions from the factory do adversely impact manufactured housing projects big or small. However, it is worth noting that, unlike many of the delays and disruptions that commonly affect site-built housing, the manufactured model has some built-in safeguards that can mitigate at least some of the adverse impacts. Factory backlogs, while disruptive, primarily impact the delivery of the unit more than the price of the unit. Because the unit has been ordered at a certain price, a delay of even a few months does not mean that the price of the unit will go up. This is partly the result of an agreed-on and binding purchase order that specifies the price of the product to be delivered. Additionally, factory production itself can insulate against price increases due to the bulk purchasing and stockpiling of many common materials and components. Even when a factory produces a custom model, not all of its components and materials are custom. A custom production run may still draw on bulk, stockpiled supplies of sinks, lumber, flooring, plumbing fixtures and the like. CEO Ryan Brockbank explained how this "price protection" helped Carefree Homes weather some of the worst production delays:

> "One thing that can be very different about manufactured housing it that even when there is delay, the prices don't necessarily go up. With site-built housing, if you get a delay and your construction schedule gets thrown off; when you get back on track you are going to find your costs have gone up. But with manufactured housing you already have fixed the price when you invoiced your unit so they have to deliver the unit for the agreed upon price. The big problem is really just the delay. With site-built housing the problem is both the delay and the price increase."

Lessons from the Salton Sea: The North Shore project finally wound down in early 2007. By then land prices had increased dramatically even in this remote rural area. Also, the availability of developable lots was also more limited – in part by Carefree Home's buying up many of the available lots.

This project demonstrates that manufactured housing offers significant cost, labor and time savings that can overcome inherent diseconomies of rural development environments. The lower unit production costs, quicker project completion time, reduced local regulatory oversight, and the simpler and cost-effective project management system combined to lower development and sales costs sufficiently to overcome the obstacles of a remote location, scattered site development and a market with limited buying power.

It should be emphasized, however, that the advantages offered by manufactured housing must be realized through an effective development and project management strategy. In the end, it was the actions that Carefree Homes took – factory direct purchasing, proactive project planning with the factory, a phased development strategy, use of an experienced, integrated contracting system, and education of lenders – that enabled the advantages offered by manufactured housing to be harnessed. Moreover, development is a partnership activity and the willingness of Carefree Home's partners – USDA, Medina General Housing, and Rancho Housing – to participate in an innovative development was key to the strategy that brought homeownership for 150 farmworker families.

Best Practices for Successful Manufactured Housing Development:

- **Compare Housing Products:** financial feasibility analysis during the project evaluation phase should include comparisons between manufactured housing, site-built housing and other types of factory built housing to select the most cost effective housing product.

- **Make sure the Site is Right:** evaluate the suitability of a prospective site for manufactured housing very early in the project planning process.

- **Manufactured Housing Expertise on Board:** Ensure that expertise with all facets of developing with manufactured housing is available to and part of the project planning and management team during all phases of the project

- **Translation:** Developers undertaking their first manufactured housing projects need 'translation services' in the form of an expert who can translate between the different business practices, technologies and terminologies of the site-built and manufactured housing worlds.

- **Vet your Procurement Source:** Whether using a dealer or a manufacturer to procure manufactured units, thoroughly check out their reputations, facilities, capacity, track record and actual in-use manufactured housing units and/or developments.

- **Get it Right at the Factory:** Because manufactured housing units are completed by the time they reach the site and must fit exactly onto their foundations, the *precise establishment of unit specifications* for procurement and *before* the factory produces the unit is essential for success.

- **Integrated Project Team:** Make sure that all necessary expertise is either on or available to the project management team, especially in the areas of:

    - Site evaluation
    - Unit specification and/or design
    - Procurement
    - Transport of units
    - Installation including site and foundation preparation
    - Quality control – especially for factory direct purchase

- **Factory direct purchase for larger projects:** Larger and mid-sized projects may lose some or all of their manufactured cost savings if they procure units through a retail dealer who will include a profit mark-up on the units they sell.

- **Consolidate contractors:** To avoid confusion and ensure accountability, successful developers generally consolidate installation, foundation and site preparation contractors into one master contractor.

Successful Development of Lager Manufactured Housing Projects:

- **Development-oriented manufacturer:** select a manufacturer with a record, production capacity, staff resources and company emphasis on development projects.

- **Collaborative Design Process:** For any customization of units, ensure that the factory, the installer and the developer are engaged in the unit design process. If the project entails substantial onsite enhancements of the units, make sure the local jurisdiction's building inspection department can preview and provide input on the onsite component of the proposed designs.

- **Collaborative Project Management Team:** Project management process should be integrated and incorporate representatives responsible for key components of the development process: project planning, unit design, site and foundation preparation, transport and installation. At a minimum, representation should include:

  - Developer
  - Manufactured housing consultant
  - Manufacturer's developer sales representative
  - Installation, foundation, site preparation contractor(s)
  - Local jurisdiction planning department
  - Local jurisdiction building permit/inspections

- **Institute rigorous quality control procedures:** Successful developers undertake intensive quality control measures:

  - Design plans should be detailed and in format understandable to both factory and developer
  - Developer site review of factory production and quality control process
  - For customized units, develop prototype unit for inspection and review by design team before commencing production runs
  - Developer inspection of completed units at the factory prior to shipping

Successful Small Scale Development of Manufactured Housing:

- **Use 'one-stop' dealers:** Purchase from reputable retail dealers who will assume overall contractual responsible for sales, foundation preparation, installation and warranty follow-up.

- **Dealer education:** Educate dealers on the pertinent requirements of the funding program(s) being used such as affordability and sales price requirements, unit specifications, procurement process, invoices and payments, retention and prevailing wage.

- **Build dealer relationships:** Build long-term relationships with reputable and capable dealers who recognize the business potential of the affordable housing market.

Primary Causes of Manufactured Housing Development Problems:

- **Key problem areas:** Development problems such as installation, foundations, unit defects, cost overruns and quality issues result from breakdowns in three key areas:

  - Procurement
  - Quality control
  - Installation

- **Underlying causes for these problems were:**

  - Lack of manufactured housing expertise on the part of the developer
  - Lack of developer emphasis and capacity on the part of the manufacturer
  - Inadequate unit specifications and plans
  - Insufficient quality control mechanisms for factory procurement
  - Procurement for a larger project through a retailer dealer
  - Improper installation and/or foundation preparation
  - Lack of leverage over manufacturer or dealer for resolution of manufacturing or installation defects

Appendix A: Resources for Manufactured Housing

California Department of Housing and Community Development
Division of Codes and Standards – Manufactured Housing Program
1800 Third Street
Sacramento, CA 95811-6942
Tel: (916) 445-3338

Division of Codes and Standards: http://www.hcd.ca.gov/codes/
Manufactured Housing Program: http://www.hcd.ca.gov/codes/mhp/pd.html

The Manufactured Housing Program administers the construction and alteration of commercial modular, special purpose commercial modular and multi-unit manufactured homes, monitoring design and construction through third party agencies. Program staff also performs activities on behalf of the U.S. Department of Housing and Urban Development (HUD), as a State Administrative Agency.

California Manufactured Housing Institute
10630 Town Center Drive, Suite 120
Rancho Cucamonga, CA 91730
Tel: (909) 987-2599
www.cmhi.org

CMHI Mission: The California Manufactured Housing Institute is a non-profit professional and trade association representing builders of factory constructed homes, retailers, financial services, developers and community owners and their supplier companies. The Institute was founded to advance the availability of factory constructed homes by promoting the sale of factory constructed housing and the development of desirable sites and communities in California.

Corporation for Enterprise Development
Innovations in Manufactured Homes – I'M HOME
1200 G Street NW, Suite 400
Washington, DC 20005
Tel: 202.408.9788
www.cfed.org

The goal of I'M HOME is to make sure that families who choose a manufactured home receive the same treatment and benefits as owners of any other type of home. I'M HOME pursues this goal by supporting and building the capacity of organizations that:

- Build high-quality manufactured homes
- Develop and provide access to fair and responsibly-priced mortgage financing
- Address the challenges facing residents in manufactured housing park communities
- Advocate for public policies that help owners of manufactured homes

ROC USA

7 Wall Street
Concord, NH 03301
Tel: (603) 856-0246
www.rocusa.org

ROC USA, through eight technical assistance providers and investment capital, assists residents of manufactured housing communities form membership associations that will purchase the land when it becomes available for sale.

US Department of Housing and Urban Development
Office of Manufactured Housing Programs
451 7th Street S.W.,
Washington, DC 20410
Telephone: (202) 708-1112
http://www.hud.gov/offices/hsg/sfh/mhs/mhshome.cfm

The Manufactured Housing Program is a national HUD program established to protect the health and safety of the owners of manufactured (mobile) homes through the enforcement of the federal manufactured home construction and safety standards and administration of dispute resolution.

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