Manufactured Housing for Affordable Housing Issues
Taubman Submission

March 15, 2017

Version 2.0

Housing Regulation and Construction

The purpose of the building code is to protect public health, implement best practices of safety, promote energy efficiency, encourage good aesthetics, and ensure uniform building construction, among other public goods. The building code defines what and how structures get built as well as material modifications during the life of the buildings.

Corpus Christi has adopted the 2015 International Codes. For site-built, single family and duplex homes, the applicable regulation is the 2015 International Residential Code (abbreviated as "IRC"). The IRC defines the standards for all aspects of construction.

Manufactured homes are regulated by the Federal Government under the auspices of the Department of Housing and Urban Development (HUD). The section of Federal Code related to this is Code of Federal Regulations, 24 CFR 3280. This code can be found here (included as Appendix A to this report):

http://www.ecfr.gov/cgi-bin/text-idx?SID=a2c5655a37054c584f7dd6a0ed240fb8&node=pt24.5.3280&rgn=div5

or as a pdf:

https://www.gpo.gov/fdsys/pkg/CFR-2010-title24-vol5/pdf/CFR-2010-title24-vol5-part3280.pdf

The HUD code is designed to provide a national set of standards to produce factory built housing that is transportable, safe, and efficient. The primary version of the rules went into effect in 1976, but have seen substantial revisions since that time. Most significant for Corpus Christi, the windstorm protections were re-evaluated and re-regulated in 1994 and 2000, following the review of major hurricane impacts starting with Hurricane Andrew that hit South Florida in 1992. The HUD code is periodically revised by the Manufactured Housing Consensus Committee which is a statutory Federal Advisory Committee body charged with developing proposed model installation standards for the manufactured housing industry and incorporating best practices.

The HUD and IRC building codes are very similar in their specifications. As such, both building codes define similar requirements for: structural, lighting, ventilation, room dimensions, egress requirements, door and window standards, moisture control, thermal efficiency, plumbing, HVAC systems, and electrical, among other elements.

Because the manufactured home is engineered to standards as a unit, no alterations or attachments to the structure are permitted according to code without substantial input of a licensed engineer. As such, a manufactured home owner should not have any expectations of expansion or modification. Correspondingly, Corpus Christi may not issue any permits for modification to any system for which it did not have primary regulatory inspection authority during initial construction or installation of the manufactured home.

Auxiliary structures, porches, or decks are typically not attached to the manufactured home structure but are regulated by the City in conformity with the IRC codes or other local requirements. The City may further regulate aesthetics, skirting requirements, and foundation.

Fire safety is a major emphasis of the Federal HUD code. Design, materials specification, mechanical systems capable of starting fire, and alarms are specified in detail. The National Fire Protection

Association has produced a detailed report on the incidence of fire in manufactured housing. (Summary and full report included as in Appendix B to this report). They summary concludes the following, "Manufactured homes (all ages combined) had roughly the same fire death rate per 100,000 occupied housing units as other one- or two-family homes in 2007-2011. If all pre-standard manufactured homes [i.e. pre-1976] were removed from the inventory of occupied units, it is estimated that the manufactured home fire death rate would be considerably lower than the rate in other one- or two-family homes.

In Texas, the State oversees the sale, installation, and manufacture of the homes. The regulation is defined as the Administrative Rules of the Texas Department of Housing and Community Affairs, 10 Texas Administrative Code, Chapter 80. (Included as Appendix C, source: https://www.tdhca.state.tx.us/mh/docs/Rules-141123-160514.pdf).

Manufactured homes must be installed by a licensed installer and in accordance with manufacturer requirements. In most cases this is a general contractor with additional experience or certifications particular to manufactured housing. The installer is responsible for emplacement and connection of utilities, the foundation, and permanent installation of the home. Variables include proper site preparation for drainage, moisture control, grading, and termite treatment, among other site specific activities. The skirt wall and stairs/landing are constructed on site following emplacement of the home. The final procedure is testing and acceptance of the home and its systems.

Licensed electricians and plumbers and other trade specialists are responsible for the appropriate construction outside of the structure itself. This includes taps with the relevant public utilities.

The City of Corpus Christi inspects the plans prior to commencement of installation and issues the permit following acceptance and payment of relevant fees. There are City inspections of site placement and setbacks, underground plumbing, electrical utilities, the foundation, the stair/landing construction, tie-down anchoring, and final inspection upon completion. In most instances, a State Inspector also inspects the anchoring of the structure to the foundation.

There are many producers of Manufactured Housing among them are American Homestar Corporation, Clayton Homes, and Palm Harbor Homes as examples. Each manufacturer produces many models of homes which are standardized in their construction and structure but may have finishing options that are primarily cosmetic. Each model is evaluated by one of six Federally authorized engineering and inspection entities who certify that the structure meets the applicable requirements.

The homes are inspected during the construction process by one of fifteen Federally authorized inspection entities who certify that the structure meets the applicable requirements. Each of the factories also has dedicated supervisory and line personnel responsible for quality assurance, documentation of the construction, and compliance with the various regulations.

The homes are constructed in assembly-line fashion within enclosed factory space. Most important, the partially built structure of a manufactured home is shielded from the weather. Conversely, site built homes may have rain or moisture damage when partially built or by exposure of the raw materials which has the potential to cause warping, structural weakening, mold, or insect damage.

Within the manufactured home factory, It is possible to build around-the-clock and to work simultaneously on many of the home systems. The factory environment allows the use of bulky,

specialized equipment which would be impractical to use on site built homes. Labor efficiency is maximized through scheduling efficiency, low mobilization time, familiarity with designs, the use of jigs/templates, and task specialization.

Manufactured homes are completed in a few days. Site built homes take months.

Here are the primary factors that cause the price of manufactured homes to be low:

- Absence of delays for inspections, weather, season related
- Bulk purchasing of raw material inputs
- Reduced waste of raw materials
- Labor efficiency of assembly line process
- Efficiency of controlled environment installation
- Regular build shapes without customization between units
- Labor specialization of repetitive tasks.
- Availability of centralized, specialized equipment
- Low mobilization costs

It is my supposition that the materials cost between site-built homes and manufactured homes is approximately the same. The bulk of the savings is labor, mobilization costs, financing costs and administration. Because the intensity and quality of the raw materials is similar, irrespective of construction methods, the quality of the finished home should be comparable.

The typical installation interval for manufactured housing is 8 to 12 weeks. Site built homes general take 16 to 36 weeks to construct.

Because of the simplicity of the emplacement of a manufactured home, a typical home buyer does not need the involvement of a home developer. The buyer can visit model homes from numerous providers and negotiate for the best deal for the preferred model. The total price is known upfront with little risk of change orders or construction surprises that often occur in site built homes. As such, the purchase of a manufactured home is within the capabilities of an individual on a fixed income and without prior homebuilding experience.

Because of the complexity of building a site-built home on a custom basis, it is most likely that any potential infill homes which were site-built would be built by a developer on a spec-home basis. Because the developer is taking the risk of sale in this situation, they typically have expectation of substantial profit or financing cost associated with a long build/hold time which they add to the home price. As such, the home price may make it impractical to build in neighborhoods with low value of existing housing stock.

Representative pictures of manufactured housing being built in a factory setting:

Windstorm and Hurricane Considerations

The HUD building code defines hurricane windstorm risk into three categories, with Wind Zone-I being appropriate for most of the Country. All of the Texas coast-adjacent counties, including Nueces County, are Wind Zone-II. Wind Zone-III is required in extreme wind areas.

There are windstorm standards for manufactured homes and site-built homes within Corpus Christi. The different regulatory authorities define the standard using different measurements. However there is an accepted convention to convert values between standards for comparison purposes:

- The HUD Zone II is defined as a standard of 100 mph Speed Fastest Mile.
- The Speed Fastest Mile = (Speed 3-second gust in mph – 10.5) / 1.05
- The equivalent 3-second gust for Wind Zone-II is 115.5 mph.

In comparison with site built homes, TDI categorizes Corpus Christi (other than Padre Island) as Inland I. The requirement for Corpus Christi as inland I is 120 mph for a 3 second gust (source: http://www.tdi.texas.gov/wind/maps/nueces.html). Thus the difference between manufactured homes and site built homes is relatively small at 4.5 mph.

With respect to windstorm, the focus on current site-built standards and current manufactured housing standards is not the most appropriate comparison. Most important is that the windstorm standards of manufactured housing are likely superior to much of the existing neighborhood housing stock that was built before modern windstorm considerations or that has degraded due to rot, termite damage, or aging of metal fasteners.

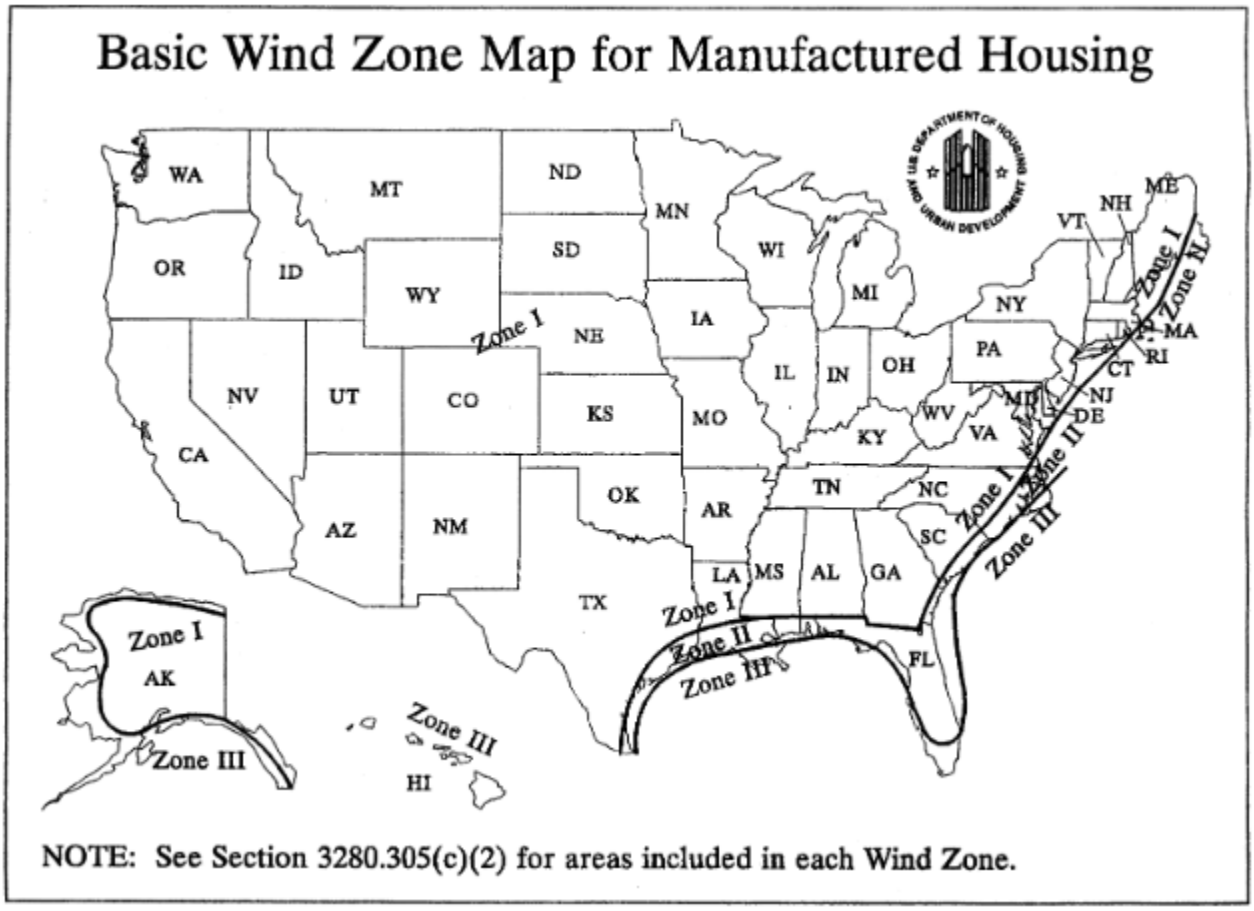
Windstorm protection is achieved primarily by specification of fasteners or strapping which stiffens the home and provides solid connection between roof, walls, and flooring. The entire system as a whole is then anchored to the foundation to prevent movement in high winds including those of hurricane strength.

For Corpus Christi, any home that is Wind Zone-II rated is allowed to be placed in areas that allow manufactured housing, including near the coast within Nueces County. This is defined by Federal regulation and thus cannot be preempted by State or local regulation. However, there is a portion of the regulation included in Sec. 3280.305 that states. “Consideration of local requirements. For areas where local building code requirements exceed the design wind speed requirements of these standards, the Department will consider the adoption through rulemaking of the more stringent requirements of the State or local building authority.” As such, in the future, perhaps there may be the opportunity to designate the area within the City of Corpus Christi as requiring Wind Zone-III specification.

While the City cannot mandate Wind Zone-III construction, purchasers may purchase the Wind Zone-III homes. The City should consider incentives to encourage consumer choice of the Wind Zone-III models.

Only a subset of manufactured housing is available as Wind Zone -III. However, in those instances, in many cases the engineering drawings specify the differences which are usually minor in terms of fasteners or shear panels. As a matter of cost, the difference between Wind Zone -II and Wind Zone -III are relatively small.

The old joke is that manufactured housing is the only type of housing that is hurricane tested as it is driven from the factory to the site of installation.



Office of Asst. Sec. for Housing, HUD

§ 3280.305

Flooding is a major component of hurricane or weather-related property destruction. Manufactured housing is typically installed at 18” to 36” above grade. As such, manufactured housing has a substantial ability to withstand flooding as compared with conventional construction on slab which is generally at or near grade.

There is a substantial safety and financial advantage of manufactured housing with respect to stormwater. This should be a major consideration in neighborhoods with poor drainage or insufficient lot elevation.

In my experience (Taubman), in Flour Bluff, the drainage along the street is insufficient to prevent minor flooding during periods of flash-flooding type rains. We have observed the flooding of site built homes while the elevation of our modular duplex, built three years ago, is far above the stormwater.

Financing and Insurance of Manufactured Housing

For the situation under consideration in Corpus Christi, the manufactured home would be affixed to the land and owned by the same person. As such, the manufactured home would be considered "real property".

Borrowers with a credit score of 620 or better have the ability to borrow using loans that are backed by the Federal Housing Administration (FHA) or the Veterans' Administration (VA). By protecting mortgage lenders against the risk of default, Federal participation has encouraged lenders to finance manufactured homes at a longer term and lower interest rate than with conventional loans. The maximum amount of a loan under the FHA program for a home and lot is $92,904 on a 20 year term.

For an owner occupied dwelling meeting FHA or VA eligibility:

- Rates range from 4.25% to 5.00% fixed
- Downpayment for FHA loans can be as low as 3.5%
- Downpayment for VA loans can be as low as 0%
- The manufactured home must meet quality standards for structure, lot, and foundation, among other certifications
- Possibility of staged lending to allow separate land and structure fundings
- New manufactured homes and resale transitions

For high-quality borrowers within a qualified PUD, a Freddie Mac backed mortgage is available. The loan is a 30 year term and current rate is 4.875%.

For weaker-credit borrowers, there are numerous lenders who provide financing without government guarantee. Most of the lenders are specialized in lending to borrowers with poor credit using manufactured housing to secure the loan. The lenders hold the paper and are the loan servicers.

For an owner occupied dwelling emplaced on owned land, these are the primary considerations:

- Rates range from 6.25% to 8.99% fixed depending on downpayment and borrower credit
- Cash downpayments range from 5% to 35%
- Land can be used in lieu of cash downpayment, best at 10% of total value
- Term is from 15 to 23 years
- Bottom range of credit score is 500
- New manufactured homes and resale transitions

Insurance is available from numerous providers, all of which are regulated by the Texas Department of Insurance. The typical policies cover general liability, straight wind coverage, hurricane, earth movement, flood, and all other events. However, the deductible varies depending on the type of covered event, and the deductible ranges from $750 to $2500, for the most part. Windstorm is available from TDI directly as an insurer of last resort, but separation of windstorm from other events is substantially more expensive.

The whole point of using manufactured housing is to provide affordable housing to working families.

Pro-Forma Cost of ownership:

- Assume $50,000 dwelling cost and $75,000 total cost on owned land.
- Assume $5,000 downpayment, 7.5% loan, 23 year term.

Approximate monthly amount equivalent:

- Mortgage $533
- Insurance $120
- Property Tax $90
- Total $743 monthly or $8,916 per year

NEW MANUFACTURED HOME – 3 BEDROOM / 2 BATH -- $750 PER MONTH

Certainly specifics of the borrower, market rates, and location specifics matter enormously in the determination or cost of ownership. The pro-forma used mid-range assumptions. By way of comparison, a search of craigslist apartments indicates that the lowest cost 3-bedroom / 2-bath apartment rental is $875/mo with most apartments over $1000/mo.

Manufactured housing is a safe, clean, appropriate housing solution for working families.

By allowing manufactured housing in appropriate locations, the City will significantly improve: affordable housing availability, infill development, tax base expansion, utility rate base expansion, neighborhood revitalization, and increased neighborhood commerce, among other social improvements.

Home ownership has been an important builder of family wealth. Irrespective of the ultimate value of the home, the cost of ownership is lower than or comparable to renting and can be relatively fixed for the duration of the mortgage which is approximately 20 years.

Home ownership has been an important pillar of the American dream. It is the traditional method of saving, as home equity is often used for retirement or significant financial needs.

Most significant, a stable, clean home is critical to a happy and healthy family environment.

Lifespan of manufactured housing and maintenance issues.

Manufactured housing did not have nationwide, systematic regulation prior to 1976. As such, the literature would seem to indicate that the quality of manufactured housing was substandard prior to that date. I believe (Taubman) that much of the blighted manufactured housing can be attributed to manufacture prior to current regulation and manufacturing standards.

Conversely, the current regulatory framework produces housing that is well made, subject to installation and construction oversight, and uses conventional materials. As such, I believe that manufactured housing can attain the same lifespan as a site-built home. The housing that I (Taubman) intend to build for the demonstration project has a 50 year warranty on the siding, a 20 warranty on the shingles, a seven year manufactures warranty on everything, and the availability of a ten year wrap-around warranty for a nominal fee.

All housing, irrespective of construction method, needs regular home-owner inspection and maintenance. Manufactured housing which is built using conventional materials is easy and cost effective to maintain. For most manufactured housing which would meet the standards of the program under consideration, the framing is wood, the siding is conventional engineered paneling, the shingles are conventional, the supply plumbing is PEX, the sewer pipe is PVC/ABS, the wiring is standard, and the water heater and HVAC are commercially available.

Because the manufactured home systems use off-the shelf components, replacement items are available, off-the-shelf, at home improvement or construction material retail outlets. Licensed professionals or experienced maintenance professionals should be able to service and maintain the home systems without special training or licensure.

The advantages of pier and beam construction include the ability to:

- Inspect major systems such as supply plumbing, waste plumbing, floor joists, and sill-plates, among other major systems.
- Prevent, find, and treat wood destroying pests and/or rot damage due to moisture.
- Service systems with defined lifespans less than the structure such as supply plumbing.
- Re-level structure if ground movement, subsidence, or foundation failure.

The use of manufactured housing for infill is not subsidized housing for the occupants of those homes. Occupants must be able to demonstrate financial viability to qualify for a mortgage or to be accepted as renters. As owners or renters, these people must be employed or otherwise have a stable source of income. In my experience (Taubman), people in this market segment have jobs such as teachers, mechanics, nurses, refinery workers, small business owners, retirees, and others in similar situations. The social 'bet' that we are taking is that people in this category are capable of maintaining newly constructed homes in good condition.

For certain, there is an abundance of blighted housing in the less-affluent neighborhoods. This is true of site-built housing as well as manufactured housing. Certainly there is the stereotype is that manufactured housing has a shorter lifespan, which was probably historically true. However I believe (Taubman) that a substantial fraction of the housing blight can be attributed to the wealth of the home owner. I believe (Taubman) that in the aggregate, poorer owners have fewer resources to maintain a

home and probably have a lower standard for what qualifies as appropriate maintenance. I believe that this phenomenon applies to all durable goods within that socio-economic status.

Simply stated, most people who live in manufactured housing have few financial means. The housing blight results from their lack of resources, not necessarily the quality of their home.

Many would use the following pictures to observe that the manufactured home is falling apart. However few would ask the following:

City regulation of location of manufactured housing

Zoning is an important aspect of City authority to promote the highest and best use of land, compatible land use among neighbors, orderly development of land, allocation of scarce City resources, and maximization of social value. I support these goals, but believe that manufactured housing is a component that can enhance these elements in limited and well defined areas.

The imposition of manufactured housing in established neighborhoods with high valuations and few empty lots would be wrong, wrong, wrong. Nothing contained herein should suggest, nor does any program being considered intend, to build manufactured housing in areas that are inappropriate. Manufactured housing solves a societal problem within a narrow range of circumstances and is not suitable for general emplacement.

If the use of manufactured housing for infill becomes a program within Corpus Christi, it is imperative that the City defines well-considered criteria for the emplacement of the homes. Of paramount importance is the input of many stakeholders including residents, City Staff and leadership, land owners, and land use experts, among other participants. The process must be subject to substantial outreach and public hearings in order to determine justice for the many participants which would be impacted by doing something or doing nothing.

One aspect is certain: the City has the absolute right to designate where manufactured housing may or may not be built.

However, substantial research demonstrates that over-reaching land use restraints have many unintended consequences. An example from a report from the Urban Institute (included in Appendix D):

> "… excessive or unnecessary land use or zoning regulations have consequences that go beyond the housing market to impede mobility and thus contribute to rising inequality and declining productivity growth. While land use regulations sometimes serve reasonable and legitimate purposes, they can also give extranormal returns to entrenched interests at the expense

> of everyone else." Remarks by Jason Furman, Chairman, Council of Economic Advisors to the President, November 20, 2015

Another example is How Land-Use Regulation Undermines Affordable Housing, November 4, 2015 (included in Appendix E):

> "The study finds that these regulations reduce the supply of housing relative to what it would likely be in a free market and ultimately increase housing costs for consumers. Because lower income households spend on average a larger percentage of their income on housing than higher-income households, the costs of these regulations disproportionately burden low-income households."

City to produce: detailed comparison of manufactured home and site built home

Appendix A – HUD Code

Appendix B – Fire

Appendix C – Texas Department of Housing and Community Affairs, 10 Texas Administrative Code, Chapter 80

Appendix D – Urban Institute

Appendix E – How Land-Use Regulation Undermines Affordable Housing