Innovative Practices for Healthier Homes

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A Case Study

Acknowledgments

Project Team

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The Trumbull Neighbourhood Partnership

For a full list of contributors, please refer to page 75. Without their generous contribution, this work would not have been possible. Many Thanks.

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This study was completed in June 2020



Warren Ohio **Innovative practices for Healthier Homes**

A Case Study

Warren, Ohio The Trumbull Neighbourhood Partnership





















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SECTION 1 INTRODUCTION

1a. Case Study Methodology

This report is the fifth in a series of case studies undertaken by the Parsons Healthy Materials Lab to record systems of processes and decision-making that go into the building of new affordable housing developments across the United States. The team investigates developments that incorporate healthier building products and developers that have a stated mission to advocate for and transform standard building practices within the affordable housing industry.

The case studies have an intentional regional distribution. By understanding the regional variation of affordable housing across the US, we are able to identify key regional drivers and obstacles in the process of healthier construction. In particular, we explore the current processes of funding, design, and construction within the affordable housing sector in each locality and highlight the compromises that take place when procuring and installing these building products.

The case studies approach is based on a systems thinking methodology that uses quantitative and qualitative factors to determine key decision-making agents in the affordable housing sector. We adopted a series of research methods including traditional research, stakeholder interviews, videography, photography, analytical mapping and diagramming, media coverage, stakeholder analysis, a review of current census and other data sources. The reports examine and identify the important decision making relationships that exist within these systems to specifically identify how, why and when building product decisions are made. Ultimately, such research has the potential to impact the overall housing sector through demonstrating both the health benefits for residents associated with using healthier products.

The case studies enable a critique of the existing benchmarks and certifications that exist in the industry such as the Living Building Challenge, LEED, Enterprise Green Communities Criteria, Delos[®] Well Build, and state policies that promote better building practices. Positioning these tools within the context of affordability permits an analysis of their accessibility, implementability and replicability.

Additionally, the results provide a list of existing healthy and affordable building products that can be analyzed shared. This list will contribute to the making of a library of better building products to be showcased in different contexts, including the Donghia healthier Materials Library at Parsons School of Design, The New School. Finally, other evaluation tools used by the various designers nationwide can be collected and shared to ease the specification process and to continue paving the road to innovation through collaborative practices.

Cover page: TNP House?

p. 4: Photographic montage of TNP Housing

Left: Regional Distribution of

the Case Studies



Research demonstrates that substantial human health risks can result from exposure to toxic chemicals present in exterior and interior constructed environments. These health risks can include increased cases of asthma, cancer and developmental and reproductive health issues. The health risks are particularly high for children, pregnant women and people living in poverty. The research in this case study focuses on the interior environment within affordable housing developments. Residents and building occupants in the United States spend significant amounts of time indoors, and are therefore vulnerable to the health hazards posed by building products used in interior environments.

Toxic chemicals are used in building products for a number of reasons including performance enhancement, maintenance, and cost. The affordable housing sector is subject to restricted budgets that often results in the installation of inexpensive construction products that can contain toxic chemicals. Employees of manufacturing facilities, contractors and construction workers installing products on site, and apartment residents occupying in interior spaces all have contact with building products and the hazardous toxics they contain at different points in the supply chain. The regulation of chemical use in building products is within the purview of the Toxic Substances Control Act, which has been largely ineffective in chemical oversight. The challenge for all of us working in the affordable housing sector is finding healthier, affordable building product alternatives.

The intention of the reports is to share a range of resources that will support the transformation of construction practices in the affordable housing sector to create healthier housing for all people. Our case study research will be disseminated through various channels, including written reports, short films and animations. The aim is to target a wide audience by communicating difficult and complex topics in a widely accessible manner. These reports and videos will be available on an ongoing basis.

This case study was initiated by Healthy Materials Lab in collaboration with The Trumbull Neighborhood Partnership and community members Bill Mullane and Melissa Holmes in February 2016. Each stakeholder provided critical information about the project during in person interviews with follow-up phone conversations and emails. Without their cooperation and input this case study would not be possible. This study is supported by a grant from The JPB Foundation and is part of the larger Healthy Affordable Materials Project.



1b. Why Warren?

Warren, Ohio is a Rust Belt community located in a northeast pocket of Ohio, between Cleveland, and Pittsburgh, Pennsylvania. Like many post-industrial cities located in regions all across the county, Warren experienced tremendous growth and prosperity throughout the 20th century with the introduction of manufacturing. The Packard car company in 1902, the addition of the Trumbull Steel Factory in 1906, and the expansion or addition of other electric, automotive, and steel fabrication factories after World War II all built a legacy of industry. Adjacent to the factories were quiet suburban neighborhoods filled with single-family homes on tree-lined streets, housing the factory workers and their families.

The contemporary feature of a Rust Belt community is decline. Warren held out longer than most other cities, seeing its population peak in the 1970's instead of in the 1950's like Pittsburgh, PA, Detroit, MI and even nearby Cleveland, OH. Still, when jobs began to disappear in 1978 with the closing of the first steel mills, Warren began to change.

The Rust Belt is a term for the region straddling the upper Northeastern United States, the Great Lakes, and the Midwest States, referring to economic decline. population loss, and urban decay due to the shrinking of its once powerful industrial sector. The term gained popularity in the U.S. in the 1980s.

Left: TNP House?

(Crandall, Robert W. The Continuing Decline of Manufacturing in the Rust Belt. Washington, D.C.: Brookings Institution, 1993.)

Neighborhoods once bustling with families saw a population drop from 63,494 people at the highest in 1970 to 46,832 people in 2000 and 40,768 in 2010. The trend of population loss continues with projections below 40,000 in the next 5 years. (US Census.) The major cause of population loss is lack of work. Employment opportunities are only found farther and farther from Warren, OH, driving families out in search of a livelihood.

For those who stayed, Warren is still home to a series of neighborhoods filled with late 19th and early 20th century architecture. However, the major change in the landscape of the city of Warren is that today many of these once-occupied historic homes are now abandoned, often standing vacant for as long as a decade or more. Warren's vacancy rates are similar to those of Cleveland and Detroit and in some neighborhoods even as high as Pittsburgh's. Warren includes 1500 vacant homes and several thousand vacant residential lots. These derelict houses pose a multitude of threats to the community including: the lack of maintenance to the house and yard leading to ruin and overgrowth that provides a home for vermin and animals of all sorts; the access to vacant property that provides opportunities for criminal activity including drugs, prostitution, vandalism, and arson; and a dramatic decrease in the property values of surrounding, occupied and well-kept properties. Abandoned homes are not located all in one area, instead they are distributed through the communities, often directly between two occupied homes, driving down the property values and overall health of whole neighborhoods as a result.

The Trumbull Neighborhood partnership (TNP) has been working in Warren since 2012. The organization understands that rebuilding a city requires a broad network of support from community members and organizations, the city, county, state, and federal governments, local businesses, and innovative thinkers from within the community and without. TNP facilitates a number of examples of alternative approaches to city revitalization, beginning with the housing stock. It has identified a host of common post-industrial housing challenges including historic toxic materials, limited funds for renovations, and fewer people than houses. TNP's primary solutions for vacant property are demolition or new ownership. Demolition is necessary for properties that are neglected beyond repair, and even for some that are merely neglected past the appraised value of the house (see section 5b "demolitions").



New ownership, however, is the solution that makes this city a great candidate for our case study. Through the efforts of the Trumbull County Land Bank and The Trumbull Neighborhood Partnership, among others, vacant houses entrusted to the Trumbull County Land Bank become available for purchase as is, or with renovations for a fraction of the cost of a new home. These properties, for those who are ready for homeownership, are often a more affordable option than renting. This affordability, though is more complex than just a shift from a rent payment to a cheaper house payment. With housing stock this old, where renovations and updates are required, many of which the new homeowner will do personally, health becomes an affordability factor.

The focus of this case study is the health of the residents of Warren, Ohio amidst all of this change. The material choices of past generations have an effect on the health of those living now. Homes built in the late 1800's/ early 1900's contain materials that are now known to be hazardous. Asbestos, used in insulation, flooring, plaster, and roofing tiles contains tiny fibers that can be inhaled. Once inhaled, these fibers are linked to several fatal lung and body conditions, including asbestosis, lung cancer, and malignant mesothelioma- a cancer affecting the lungs and abdomen, only known to be caused by asbestos exposure. Lead, a metal known to have adverse effects on humans since as early as 150 BC but used widely in the production of paint and pipes until the late 1970's, lives on in old houses in dust, paint chips, water pipes, and soil. Lead toxicity has many symptoms, but is particularly damaging to children, leading to behavior problems, severe developmental delays, and hearing loss. Adults are also affected with confusion, coma, and seizures. Remediation and abatement of these toxic materials is an expensive and challenging process. Our case study follows TNP through this process as well as their other diverse efforts to maintain and create housing that is both affordable and healthy as they work to revitalize Warren.

1c. Zip Code 44483

While the whole city of Warren has experienced dramatic shifts in population and employment, Central Warren- defined by the Mahoning River to the west, South Street to the south, and Chestnut, Elm, and Paige to the east- has been particularly hard hit by population change and disinvestment. Central Warren includes three distinct neighborhoods. Focusing on zip code 44483 allows us to zoom-in to study these three neighborhoods, review census and other data, and create a picture of industry loss, population loss, disinvestment, and document efforts to bounce back. The "Historic Perkins" neighborhood and Central City (now called "The Garden District") were both built by the Board of Trade in the late 1800's and early 1900's in an effort to attract industry to Warren. As a result, these neighborhoods contain the oldest housing stock in the city. The third neighborhood, called the "North End," is a neighborhood marking the success of the Board of Trade's efforts to attract industry. With smaller homes built around 1927 the "North End" served an Italian, Greek, and Lebanese immigrant population well as other workers for the booming industries of the early 20th century. These neighborhoods flourished at the height of industry success, but when manufacturers started leaving Warren, residents who found themselves without work had to leave too. The City of Warren has a vacancy rate of 7.8%, but the center of the city has a vacancy rate of 14% vacancy in this area. This created a hollowing of the center of the city of Warren, and a great need for new approaches to revitalization.



44410



44483

AN OVERVIEW

1d. General Overview Carmel Place

44483 Zipcode Area 18.3 sq. miles	Total # of Houses 12,771 (estimated 12,700 in 2014 with a +/-377 margin of error)	11,174 houses built be- fore 1978, the year lead paint was banned.	1,740 vacant houses (14%)	oh 13 Congressional District
Number of Residents 26,006	Number of Homeowners 16,855 (32.4%) Number of Renters 8,427 (32.4%)	Vacan Rented and unoccupied: 22 (1%)	cy Reas Sold and unoccupied: 40 (2%)	ONS For occassional use: 57 (3%)
Median Household Income \$38,367 (Ohio \$48.081)	Median Gross Rent \$602	For rent: 597 (34%)	For sale only: 258 (15%)	For migrant workers: 0 Vacant for other reasons: 766 (44%)
33.9 Individuals Liv Poverty Level	% ving Below	\$1-\$24,999: 509 houses \$25,000-\$49,999: 784 houses	\$150.000-\$199,999: 862 houses \$200,000-\$399,999: 259 houses	Owner occupied house value:
56% Households Rent (37% nat.average)	35.6% are Single Person Households (6.7% higher than state average)	\$50,000-\$99,999: 3,264 houses \$100,000-\$149,999: 1,426 houses	\$400,000-\$749,999: 8 houses \$750,000 or more: 11 houses	\$750,000 \$750,000

1e. Lessons Learned

Community Partnerships are vital	 There are limits to what one of members, local organizations, a more sustainable change. Coalition building is one of T
Budget is a key factor in material choices	 Most materials are chosen bas Because of the number of dem sorting, storing, and making to these materials may also be in Healthy material choices almos renovations. Considering energy-saving mat this is a difficult decision in al in the future. The immediate initial cost.
The past has a lasting effect on residents.	 Many chemicals from industr materials. Understanding of toxics has in choices still have to be considered.
Community Assets	 Warren city has the Infrastruct proximity to rivers and raw m Land is available in and around buildings are also available for The housing stock is diverse, i The small footprint of Warrent neighborhoods.
Financing	 The revitalization of Warren is Neighborhood Partnership an This funding is mostly diverse programs and state grants and Federal funding falls short in used as needed or requires ma application process.
Programming is required to revitalize the neighborhood	 Demolition, new homeowner current housing stock in Warr estate market, and provide saf It's not just about housing. Ci continued education and job

organization can do. Forming partnerships within the community , and city governments create a broad range of skills and talents to create

Frumbull Neighborhood Partnership's greatest strengths.

sed on affordability and local availability at national chain stores. molished homes, there are many materials available for reuse. Harvesting, these materials available to the community is challenging. The safety of a question because of historic toxics like lead and asbestos. ost always take a back seat to cost considerations in common home

aterials will reduce future energy costs for the homeowner. However, ffordability between saving money in the renovation and saving money savings often outweighs the future savings because of the hurdle of the

ry and common practice were left behind in soil, water, air, and structural

ncreased and although material choices are different now, past material lered in modern renovations of early 20th century buildings.

cture to accommodate manufacturing on all scales. It is located in close naterials. The strong community is filled with a skilled labor force. nd Warren for building larger buildings, but many vacant commercial r renovation, offering diverse options for new business.

inexpensive, and widely available.

n promotes communities with access to walkable/bikeable

is spearheaded, in large part, by the efforts of The Trumbull nd the funding they acquire.

e, coming from banks and private foundations as well as Federal d city programs.

this city and likely many cities like it because it doesn't allow funds to be any city/county organizations to match the funds or be involved in the

rship, renovation, and remediation are all required to gain control of the ren Ohio and halt the plummeting property values, stabilize the real fe affordable housing for everyone.

itizens in Warren support each other in gaining access to healthy foods, help, entrepreneurial opportunities, and community beautification.

3. THE CONTEXT OF WARREN OHIO



3a. History of Warren, OH

INDUSTRIAL PAST

16

Warren, OH, during the 18th and 19th centuries was the county seat of Trumbull County and known as a religious, social, and commercial hub of the early Western Reserve. Although it was the largest and most prosperous town in the region, farmland made up much of the area. By 1888, four railroads connected Warren to other parts of the country. This rail hub and the access to or abundance of water, coal, and iron ore made this community an ideal manufacturing location. By establishing a Board of Trade in the early 1900s, the leaders began to attempt to draw industry to the city of Warren actively. Goods once manufactured in Warren include linseed oil, furniture, barrel staves, wool fabric, blinds, and carriages. Support businesses grew around the manufacturing industries, including wheat, lumber, and iron rolling mills, grocery shops, hardware stores, hotels, newspapers, banks, and churches. The Packard Family, a prominent family in the building of the city of Warren and the greater area of Youngstown, built many

businesses including the Packard Electric Company (formed in 1809) manufacturing incandescent light bulbs and illuminating the streets of Warren with electric lights (the first US city to use electric lights.) This same family went on to manufacture motor cars in Warren as The Packard Motor Car Company until the 1960s. The early 1900's also brought steel into Warren. Trumbull Steel Company established circa 1913 was one of many steelworks established in the area. It would change owners and names several times while growing into one of the area's most dominant employers until the 1970s, and 1980s when all steel production left Warren, OH. (image) An industrial legacy continues today with the General Motors Assembly Plant 8 miles away from Central City Warren in Lordstown, Ohio. The plant opened in 1966 with its first vehicle, a 1966 Chevrolet Impala sport sedan, but continues assembling from start to finish every Chevrolet Cruze that General Motors sells.



BUILT CHEMICAL PAST

metals including lead, manganese, zinc, aluminum oxide The industry brought tremendous growth to Warren, (fibers), aluminum (dust), ethylene glycol, methanol, OH. The population grew from 5,973 in 1890 to 11,081 in 1910 and then doubled again from 27,050 glycol ethers, xylene, nickel, copper, hydrochloric acid, in 1920 to 41,062 in 1930. Industry-led growth had a benzene, ammonia, ethylene, naphthalene, and toluene. tremendous environmental impact. Steel, light bulbs, Some of the water-soluble toxics, making their way to the groundwater, rivers, and streams in the area. Many and cars all require a range of chemicals and heavy can also become airborne, landing in soil and dust all metals to manufacture them. These metals and chemicals around the city. Other chemicals remain in the soil, can be toxic if they leach into the ground and water rendering the site difficult and expensive to remediate through spills and dumping and into the air through and adaptively reuse. smoke and steam of production. Three brownfields are left behind in zip code 44483, and apart from five others in the city of Warren. (Source: http://worldpopulationreview.com/us-cities/ These toxic sites contain a lengthy list of chemicals and warren-oh-population/)

Left: Image from (year) of xxx

Right: Data Visual of Industry

polutants and populations

growth over the years.



6- Thomas Steel Strip Corp Delaware Ave, NW Warren OH 44485 12- Ajax Tocco Warren Ohio Plant 1745 Overland Ave NE 5- Ohio Edison TRI Facility Details with Total 2014 Release in lbs Brownfields Tod Avenue Nw Warren OH 44483 275 lbs Warren, OH 44485 1951 lbs 1- Trinity Highway Products LLC 1170 N State St Girard, OH 44420 2108 lbs 1- Gould Steward Park 6- Footbridge Extension Tod Avenue Nw Warren, OH 44485 7- GE Lighting Ohio Lamp Plant 1210 N Park Ave Warren OH 44483 0 lbs 13- Schaefer Equipment Inc 1590 Phoenix RD NE Main Avenue Sw Warren, OH 44481 Warren OH 4483 0 lbs 2- Cleveland Steel Container 412 Mason St Niles, OH 44446 7049 lbs 2- Canalside Park Highland Avenue Sw Warren, OH 44485 7- Mahoningside Tod Avenue Nw 8- Novelis Corp 390 Griswold ST NE 14- North River Road Facility N River RD at Larchmont Warren, OH 44485 Warren OH 44483 59869 lbs Warren OH 44483 11 lbs 3- Former Rg Steel 8- Former Warren Delphi Packard Facility 3- Wheatland Tube Co Niles Plant 1800 Hunter Rd Niles OH 44446 15 lbs 999 Pine Avenue Se Warren, OH 44483 15- Harsco Minerals Warren 101 Tidewater RD NE Warren OH 44483 685 Ibs 9- Tecnocap LLC 2100 Griswold NE Warren OH 44483 37580 lbs 408 Dana Street Warren, OH 44483 4- Warren Coal Gasificatio 4- RTI Niles (AKA RMI Titanium Plant 16- OH Star Forge CO 4000 Mahoning Ave Warren OH 44483 0 lbs 10- John Maneely CO DBA Energex-Warren 901 Dietz RD Company-Niles Plant) 1000 Warren Ave 326 Main Ave. Warren, OH 44481 Niles, OH 44446 2180 lbs Warren OH 44483 524 lbs 5- Ohio Edison 17- Warren Steel Holdings LLC 4000 Mahoning AVE NW Warren OH 44483 3515 lbs 5- Arcelormittal Cleveland LLC DBA Arcelormittal Warren 2234 Main Ave SW Tod Avenue Nw 11- Resco Products 1929 Larchmont Ave Warren OH 44483 179 lbs Warren, OH 44485 Warren OH 44481 57956 lbs

THE IMPACT OF INDUSTRY ON HEALTH Men, women, and children in **Trumbull County have higher** When industries pulled out of Warren, it left behind cancer rates, higher asthma many chemicals and metals in the ground, water, and air. Most chemicals and metals are listed as nonrates, shorter life expectancy, carcinogenic by The Centers for Disease Control and Prevention (CDC) and have noted that they "evaporate and more significant infant quickly" or are "essential for life" and therefore "harmless to humans." While this is likely true for each chemical mortality than the average or metal individually, a case might be made that the sheer volume and combination of chemicals and metals person in the United States. dumped each year has had an impact on overall health in Warren (located in Trumbull County Ohio.)

Incidence Rate (Cancer Cases per 100,00 population/year)



Left: Map of Toxic Release Inventory(TRI) facilities

Right: Data Visual of Cancer cases in Trumbull county, Ohio, United States



(Statistic source)

WATER AND LEAD PIPE

Beginning in January 2016, The Tribune Chronicle (a local Warren Ohio newspaper) began to run articles about lead and lead-based drinking water contamination regularly. The controversy was sparked by national stories of city-wide lead contamination in other cities, but when procedures and results from a 2015 Warren, OH city-wide lead test were made public, the entire subject became openly scrutinized, including speculation of lead sources. The EPA's acceptable level of lead in municipal drinking water is 15 parts per billion (ppb). Although the water tested the source of Warren's municipal water was well below that level, and none of the city-owned water lines (or pipes) are lead or even lead-lined, some of the houses in Warren tested at 16 ppb and an even more alarming 64 ppb. The blame, according to Warren's utility director Franco Lucarelli, is once again, the aging housing stock. Laterals, or pipes that connect houses to the city water lines, depending on their age, can be made of lead. Houses built in the 1920s and the 1930s may have had lateral lead lines as well as lead solder used to fuse copper pipes. To complicate matters, City officials believe that the water's pH level may have exacerbated the problem. In 2007 a decision was made to start the

process of chlorinating water by adding an additional amount of ammonia to the water. This pretreatment process ended up hurting the lead pipes as it lowered the water's pH level and made it more corrosive. The department then added lime to increase the pH level and decrease the corrosive properties.

This pH juggling has to do with responsibility. It is not the city's responsibility to replace the lateral lines of individual homes. The responsibility for those lines falls to the individual property owners. Still, the city is responsible for providing clean water and held accountable when the lead levels get too high. Instead of eliminating the lead, the solution then becomes additions and corrections to the water treatment process. However, in a March 20, 2016 article, Vince Romeo, superintendent at the city's water filtration plant, was quoted as having begun to work with the EPA to find grant money that might be offered to city residents who want to replace these older lead lateral lines in their homes. "Replacement of lateral lines can range between \$3,000 and \$5,000," Romeo said. "If there is anything we can do to lower those costs, we will do it."

SOIL AND GARDENS

TNP has many approaches for revitalizing Central City Warren, but gardening is one of the most active strategies. The standard procedure after demolishing a house is to do the basics- fill and level the ground, add grass seed, and walk away. TNP and gardeners in Central City Warren go a giant step further and take many of these newly empty lots and turn them into community gardens. Most of the gardens include a grouping of raised beds, a welcome sign, and public artwork. This work has earned the neighborhood from Atlantic St. NE to High St. NE and N Park Ave to Elm Rd NE the nickname "The Garden District." The residents of Central City Warren rally around these gardens, taking ownership of their neighborhood revitalization plans.

Gardens are a success in Warren with one rather glaring challenge: the past. Soil tests on many properties in Warren- including some of the community gardens have uncovered elevated levels of heavy metals and chemicals including lead and arsenic. While it is not entirely possible to prove the origin of these chemicals and metals, a great deal of it can be tied to industry and historical use of materials. Emissions from lead-

Contamination in Water **Right: Community gardens**

Warren, Ohio.

working on a vacant lot in





based gasoline products before 1980 has been proven in other cities to be a leading cause of lead in soil. Lead-based paint applied to houses before the 1978 ban of lead in residential paint is now chipping and falling from the exterior of homes and into the soil. Arsenic was historically used as a pesticide, widely applied to gardens and soil, but was also as an ingredient in the same chipping lead-based paint. Other metals and chemicals dumped into water or soil or released into the air by nearby industrial manufacturing facilities could have migrated to residential properties through the movement of topsoil with either water or wind. These elevated levels dictate that the ground soil cannot be used for gardening without taking further precautions to verify that these plants which are grown in this soil, specifically edible plants, will be safe for consumption. These precautions might include remediation or removal of the first several inches of topsoil, composting, or growing specific plants that either draw out these metals and are discarded, or are proven not to draw these metals up out of the soil. To be safe, though, TNP recommends gardening only in beds of soil built above the ground and away from the metals and chemicals left over from the city's industrial past.

3c. Affordability in Warren and other rust belt/post industrial cities

The standard measure for housing affordability in the United States is measured as a percentage of the household income. Federal housing assistance programs, like those at the U.S. Department of Housing and Urban Development (HUD) and most other state and local housing organizations, deem housing affordable if its at 30% of total household income. Households spending more than 30% of their total income on housing are considered "rent burdened" and government programs are available to relieve their burden by supplementing the housing cost until it is below that 30% mark. This affordability measure, while standard, is inadequate in cities like Warren, Ohio. This measure does not take into account additional costs incurred by people who are able to find affordable housing, but not close to other opportunities for education and work. The **no more than 45% of** H&T affordability index includes transportation in the assessment of housing affordability and stipulates that, in order to be considered affordable, a household should spend no more than 45% of its income on housing and transportation combined.

Apart from transportation, the removal or safe handling of pre-existing toxic materials in the housing stock significantly adds to the cost of housing. Human exposure to lead can mean a lifetime of medical expenses and treatments, lowering the overall quality of life for

both the person exposed and his or her caregivers and family. Exposure to asbestos can cause cancer and other breathing challenges leading to medical expenses and treatments, lowered quality of life, and shortened life. These concerns dramatically increase the cost of living in the older homes in Warren and other post-industrial cities.

"In order to be considered affordable, a household should spend its income on housing and transportation combined."

Housing and Transportation Affordability Index (H&T). The Trumbull Neighborhood Partnership's Central Warren Neighborhood Plan (2015)



If we use typical housing affordability calculators, rent in zip 44483 would be deemed "affordable".



44.5%

But this above federal calculation of average rent excludes:

- 1. Transportation
- 2. Aging housing stock
- 3. Toxic Remediation

H+T INDEX WARREN, OH

of their income on housing + transportation costs

Transportation Costs

which drives up the living cost.



Autos Per Household

5.2

As compared to neighborhoods in all 955 U.S. regions in the Index

JOB Left: Old housing stock in ACCESS

Moderate access to jobs

Right: Transportation access to housing and other services

Warren ohio



- Past Construction materials choices 4.
- 5. Lasting effects of industry on air, soil and water quality.

In the City of Warren, the H&T affordability calculator shows that although Warren residents have affordable housing, when transportation costs are included 86.7% of Warren residents are paying greater that the 45% of income standard of affordability. According to the H&T Affordability index, Warren households on average spend 54% of their income on transportation and housing. The below map illustrates the Housing and Transportation cost affordability throughout the city. In Historic Perkins, residents are spending 45-50% of their income on Housing and Transportation. In parts of the central city, this goes as high as 50-60% of residents' income. The North End shows the same trend, some places only 45-50%, but others are at 50-60%. None of the neighborhoods fall below the recommended 45% threshold for affordability.



In dispersed areas, people need to own more vehicles and rely upon driving them farther distances

VEHICLE MILES TRAVELED

20.206 Average Household VMT

(+)	
1.5	
\sim	_

\$11.660 Annual **Transportation Costs**



Neighbourhood Characteristics Scores (1-10)



Car-dependent with very limited or no access to public transportation



Moderate density and walkable

4. FORMING PARTNERSHIPS & BUILDING TRUST

4a. The Trumbull Neighborhood Partnership

Warren Ohio is a changing community. In 2012, the U.S. Department of Housing and Urban Development (HUD) awarded the City of Warren (in partnership with The Trumbull Neighborhood Partnership and the Mahoning Valley Organizing Collaborative) a community challenge grant. This started a new movement for change. After decades of job and population loss resulting in thousands of vacant properties and increasing disinvestment, a new movement started to take place.

This movement was primarily spearheaded by The Trumbull Neighborhood Partnership (TNP), a nonprofit Community Development Corporation that uses programming and projects to improve the quality of life in the neighborhoods of Warren, Ohio and surrounding communities. TNP was active in the community from the start with community discussions and a working database to monitor vacant houses and properties.

TRUMBULL COUNTY PROSECUTOR'S OFFICE:

This office takes tax foreclosures to court. The Land Bank pays back some of the fees incurred in the work of cleaning the titles of properties turned over to the Land Bank, such as title searches, but relies on the County Prosecutor's office to handle much of the paperwork.

TRUMBULL COUNTY TREASURER'S OFFICE:

They are a crucial member. The county treasurer is an elected official with 5-10 staff members. They allocate Delinquent Tax Assessment Collections (DTAC) funding, initiate foreclosures, and turn the property over to the land bank instead of offering foreclosed houses in Sheriff's sale. The County Treasurer is also the president of the Land Bank.

Soon they developed a strategy for dealing with vacant properties: demolitions, rehabilitation, land re-use and neighborhood-specific plans to address the problem of "blight" and to facilitate revitalization.

"The more fragile the neighborhood. the more likely we are to restrict the end-use of the property."

(Matt Martin Feb 2016)

In 2013, TNP took over the management of the Trumbull County Land Bank, an essential partner in rebuilding the community. TNP functions with the support of the communities of Warren Ohio and surrounding areas. The diagram below illustrates the partnerships TNP relies on to accomplish the work required to run the land bank.

Keeping a record of all housing deeds amounts to a significant task for TNP that is managed by the County Recorder's office.

TRUMBULL COUNTY COMMISSIONER:

TRUMBULL COUNTY

RECORDER'S OFFICE:

The county commissioners office is the county government taxing, budgeting, appropriating, and purchasing authority. They support the Land Bank in concept, funding, and logistics.



OHIO HOUSING FINANCE AGENCY:

Grants from OHFA provide the majority of TNP's housing demolition fund.

BANKS:

Huntington Bank partners with TNP for their Side Lots Program, sometimes a bank will turn a foreclosed property over to the Land Bank including a small sum to offset the cost of demolition (\$5,000-\$10,000 per house).

TNP also advocates for a potential homeowner with local banks to help them get an appropriate loan for the renovations or purchase of a home.

TRUMBULL COUNTY AUDITOR'S OFFICE:

The county auditor's office is a resource for any past information about a property as TNP works to clear the title.

Before the Land Bank, tax-foreclosed properties were sold to the public through Sheriff's Sale to the highest bidder. This meant that, "anybody [could] show up and buy a property for \$1000, stop at the hardware store on the way home, get a bucket of paint and a 'for rent' sign and our neighborhoods continue to slide further down" (Matt Martin Feb 2016). The Land Bank offers parameters on the purchase of properties. They will practically give away a property for \$1 or sell it for \$1500 or \$3500, but the buyer must live in it for 3 or 5 years and renovate to a specific standard.

The idea is to promote homeownership and discontinue the rampant disinvestment in the city of Warren. TNP's we renovated a house down the street that and got it work in the past three years has proven successful with hundreds of derelict house demolitions, over 500 side lot Manager for TNP sales (see section 5b "Side Lot Incentive Program), and Mr Carvin attributes this increase in appraised the sale of over 150 houses. Throughout this work, they market value to participation in community gardens, rely on the community for support in caring for newly demolition, and an increase in housing renovation in vacant lots and participation in programming such as the neighborhood. He sees it as just the beginning of a the Adopt-a-Home program (see section 5b "Adoptturnaround in the neighborhood. a-Home") in which community collaboration saves homes from demolition and makes new homeownership possible.

Tax foreclosure requested by the land bank on vacant, delinquent property.



Left: TNP's Land Bank Partnerships Right: Land Bank Acquisition-

Disposition Chart

The most significant source of community support, however, comes in the purchase or acquisition of properties. TNP and the land bank rely on members of the community to buy homes and commercial properties and build lives and businesses in the community of Warren, OH. Shawn Carvin the Land Bank Project Manager for TNP, notices a change happening.

"We renovated a house in 2014, and it sold for \$24,500, and we put \$25,000+ into it. The sale price was so low because the appraisal came in so low. Later, after our work in the neighbourhood had picked up pace, appraised at \$45,000."Shawn Carvin, Land Bank Project

ACQUISITION-DISPOSITION CHART



4b. TNP's Funding

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The stability of the city of Warren relies, in large part, on affordable, safe housing options for all who live there. The high cost of repairs, renovations, and maintenance on homes built in the early 20th century is tough on existing homeowners and almost impossible for potential first-time and low income homeowners trying to purchase vacant (and often derelict) homes through the Trumbull County Land Reutilization Corporation (TCLRC or The Land Bank). The Trumbull Neighborhood Partnership (TNP) recognizes this challenge and has become a funding advocate for

the whole community. The funding secured by TNP supports a balance of neighborhood building initiatives and careful management of the housing stock in the Land Bank in an effort to stabilize the neighborhoods. Lisa Ramsey, Assistant Director at the Trumbull Neighborhood Partnership, says that funding for TNP's work in the city of Warren requires "every tool in the toolbox." She's referring to the need to seek funding from every outlet whether locally from business and city or state government organizations, or nationally through private or federal programs.



** TNP does not secure the funds. The funds are allocated to the Land Bank as part of the Trumbull County Comr er's organization of the Land Bank

4c. TNP's Impact

The Trumbull Neighborhood Partnership Program transformed nearly 300 homes in 2018 which is up 100 from last year and up around 200 from the year before. They looked at over 3000 properties out of which twothirds needed to be torn down.

This year they invested \$3,852,669.97 countywide for residential demolitions through their neighborhood initiative program (NIP).

(TNP Annual report 2018)

From their first year of operation in 2013, they have transformed 697 residential properties to date, 3 commercial properties, and 80 private properties. They work diligently with the residents of the neighborhoods for their input and programming through



2015 - 2018 **IMPROVED** Left: Illustrating TNP's Funding PROPERTY INVENTORY

Right: TNP's property

improvement chart

organized workshops and events. 800 resident reached to receive input on properties in their community, educate them about potentially hazardous materials emitted through demolition and renovation, and to discuss how the Land Bank can better serve their community in Warren.

TNP has different legs of contribution- housing renovation and homeownership being one of their many areas of impact. They work on responsible demolition for derelict housing, working on creating better food access through the mitigation of food deserts and its consequences. Their projects approach topics from the ground up from creating farmers' markets, community organizing to grassroots activism. They also work towards property rehabs, vacant land-use, through public art, to create public engagement and awareness of their projects.

In summer 2018, they worked with the Fine Arts Council of Trumbull County and a group of local artists to host Occupied Warren. The project was meant to challenge ideas of vacancy, and expand the collective imagination of what is possible.





Market Value: \$68,575 Fully renovated home through the TCLRC's Deed-in-Escrow Program

FOR SALE





RESERVED FOR RENOVATION

8

5. COMPLEXITY IN HOUSING SALES



Warren, Ohio, is a community with many assets. The labor force is not only plentiful but also highly skilled. The area has the infrastructure needed to accommodate large and small scale manufacturing. There is ample available housing, and at first glance, the housing is extremely affordable. That affordability, though, comes with some unexpected challenges.

VACANT HOUSING

At the beginning of 2016, the inventory of the Trumbull County Land Reutilization Corporation (TCLRC) revealed over 1600 vacant houses in the city of Warren. The area has more properties than people to live in them, which has resulted in a deteriorating neighborhood. For those who live in this area, there is a lot at stake, and without the families to occupy the houses, this community must consider new ways to manage the excess housing stock.

DETERIORATING NEIGHBOURHOOD

In the 1950s and 1960s, the city of Warren had one of the highest rates of homeownership in the country. Jobs were plentiful and well-paying, and houses were well-maintained and protected. As industry pulled out, taking jobs and neighbors with it, preserving the properties and neighborhoods was too difficult for those who stayed. As a result, properties once desired instead deteriorated, taking the property values of the entire neighborhood with them. With fewer children, schools were consolidated and closed. Stores and shops were shuttered, and visually, the neighborhoods once bustling with children playing on carefully manicured lawns gave way in some spots, to decay and crime. This has created a difficult hurdle for recovery.

The blighted properties make the neighborhood less safe and less desirable. This leads to a significant loss in the value of all the properties in the neighborhood, including the homes that have been maintained for

decades. When the houses have little or no sale value, "All property proposed for the banks recognize that and limit the value of the loans use in HUD programs be offered for both mortgages and home improvement loans. So a house that has been sitting vacant for 5 years, free of hazardous materials. with the plumbing removed and damaged flooring because of a leaky roof will appraise for a fraction of the contamination. toxic cost of restoring the home to livability. That means that the new homeowner must finance the repairs without chemicals and gasses, and the help of traditional financing, and the neighborhood must find a less traditional way of increasing its curb radioactive substances. appeal. where a hazard could affect CURRENT CODES AND POLICIES the health and safety of Buying a home brings a host of challenges, whether occupants or conflict with the home is old or new. Older homes, though, have challenges unique to the history of the home itself. the intended utilization of the Homes that are older or that have been abandoned are often in need of significant updates or repairs. More property." extensive renovations that go beyond flooring, painting,

and replacing cabinets must have a permit and be inspected to comply with the Ohio State residential building codes or face stiff fines and stop-work orders.

Left: A Renovated House in

Warren Ohio.

This mandate affects properties that receive HUD While the Ohio codes are no stricter than national funding in any capacity as well as properties mortgaged codes, they still require foundations that are free from with a Federal Housing Authority (FHA) insured cracks and watertight, a grounded electrical wiring mortgage. TNP tries to utilize HUD funding to lighten system, and lead-free piping. Repairs that comply with the burden for new homeowners whenever possible. the building code requirements for foundations can be That funding makes this policy a required consideration. complicated and cost between \$8,000-\$30,000. Many This HUD policy covers all new materials and older homes in Warren still have Knob and Tube wiring. renovations, as well as the existing building materials While it is not a requirement to update the electricity in the structure. Because most of the housing stock was unless a renovation is done in that room, modern built before 1950, almost all homes at one time had appliances require a grounded outlet, and many asbestos insulation. Until 1977, these same homes likely insurance companies will not insure a home with old had asbestos installed in their textured ceiling paint and wiring because of its fire-safety concerns. Bringing patching compound, plaster walls, vinyl sheet flooring an entire house up to Ohio electrical code can cost as or tiles, or insulation around the plumbing or boiler. much as \$15,000. Foundations and electrical systems That asbestos lay inert until it is disturbed through decay are only the beginning, in any case. Plumbing pipes and or renovation, at which point it becomes a dangerous radiators are often missing from abandoned homes, or airborne carcinogen, firmly in breach of HUD policy. require updating in older homes. Replacing missing pipe The same goes for lead found both inside and outside often expands to include updates to heating and cooling homes. Lead was used in paint until 1978 and in systems, insulation, and any materials that may have lateral lines, and the solder used to fuse pipes into the been damaged by water or the removal of the pipes. All 1980s. Removing these historic toxics and toxins that of these changes must pass the Ohio code inspection and come with the age or disrepair of the building, such as can cost thousands of dollars in materials and labor. mold or termite/vermin infestation, are a vital factor in creating a safe and affordable home. They are also, In addition to general Ohio State Residential Building however, expensive to do. Current, new, and potential Coders, according to a U.S. Department of Housing and homeowners need information and innovative support Urban Development (HUD) policy: to tackle these severe problems.

6. INNOVATION IN DESIGN

6a. Land Bank's Strategic Approach

In a response to the vast number of abandoned properties in Trumbull County, The Trumbull County Land Reutilization Corporation (TCLRC) was established by the Trumbull County Treasurer's office, with support from the Trumbull County Commissioners and the Trumbull County Prosecutor in late 2010. TNP currently has a contract to manage the TCLRC and uses it as a powerful tool for managing vacancy and disinvestment in the community. A majority of the properties available for sale in Warren are available through the land bank. This corporation provides an opportunity for homeowners and investors to return derelict vacant property to productive use through acquisition and renovation. This opportunity promotes responsible home ownership and provides affordable housing to individuals throughout Trumbull County. The land bank improves properties in two ways:

RENOVATED PROPERTIES

Renovated properties have had extensive restoration completed by the TCLRC and are made available for sale in a move-in ready condition. Renovation is pursued through private contract; contractors interested in doing renovation work for the land bank should contact the TCLRC or fill out the Contractor Pre-Qualification Form. Once the renovation of the property is completed, the house is listed on our site for public sale, and will be reserved for sale to an owner occupant.

PROPERTIES TO RENOVATE

Properties to renovate are designed to facilitate the acquisition, renovation, and sale of properties to responsible persons willing to rehabilitate the home and meet the goals and objectives of the Land Bank.

All Properties to Renovate may be made available for acquisition through a purchase agreement wherein the TCLRC will hold title to the property (Deed in Escrow) while the buyer executes the terms of the work plan as agreed upon by the TCLRC and the buyer. The title is transferred upon completion of renovation, certificate of occupancy, and other terms of the contract detailed in the purchase agreement.



All properties are assessed for rehabilitation requirements by a third party contractor and an approximate rehab cost is assigned. Property sale prices or opening bid amounts take needed repairs into consideration and are typically considerably lower than market value. The TCLRC puts home ownership as a primary program goal, and many properties may be reserved for owner occupancy for a period of time; these restrictions are noted on the property entry found on our website.

The TCLRC also acknowledges the important role investors play in returning vacant property to productive

There are homes that through initial assessment receive a "D" or "F" grade and are easy candidates for demolition. use, and significant opportunities for property invest-These homes are as promptly demolished as time and ment exist through unrestricted Properties to Renovate. funding allow. There are other "C" or even "B" rated homes, however that require demolition because of a more complex evaluation. They become demolition 6b. Demolitions candidates when cost of the required repairs of these Demolition is a large part of the work that TNP does in home greatly exceed the appraised value of the home. managing the TCLRC, and likely the most controversial For example a house, because of its location, needed work. Many homes require significant investment to repair, and unkempt appearance, might only appraise bring up to code, or are beyond reasonable repair. These for \$18,000. This appraised amount is the maximum mortgage loan allowed by banks. If the estimated cost homes must be demolished. The demolition process includes the removal of all building materials and then of renovation is \$50,000, a potential homeowner would placement of a topsoil product followed by grading, or be required to fund the remaining \$32,000 without the help of a bank mortgage. For the first time homeowners leveling of the property. Grass seed may then be applied. At the end of this process, the property is treated like a and potential low-income homeowners in Warren, this vacant lot. (see gardens, side lots, lots to love.) hurdle is just too high. TNP has been working to find funding to assist in this endeavor through HOME Demolition is an important tool in restoring a Down-Payment Assistance funding and other similar grants and programs. Still, the deficit is often too great and without the potential of a buyer, the house ends up in the demolition queue instead.

deteriorating neighborhood. Houses that are unsafe or unsellable become opportunities for crime, attractive to animals and pests, and less appropriate, even hazardous havens for the homeless. Vacant homes are often stripped of valuable assets including appliances, wiring, plumbing, and fixtures and left to mold and decay among the overgrowth of grass and bushes. These homes are visually unappealing, requiring surrounding home owners to care for them and even still suffer decreased property values of surrounding properties.

As the homes further degrade, hazardous materials found inside and outside, break down and become part of the water, soil, and air surrounding the home and spread throughout the neighborhood. Arson is a common end to derelict houses, leading to even further spread of heavy metals and toxics. Asbestos, lead, and mercury

IN 2019	RE
TOTAL	P
DEMOLITIONS	

Left: Land Bank's Housing assesment strategies

ESIDENTIAL ROPERTIES 697

all outlast fire and flood. Burning asbestos becomes airborne during fire as a smoke particle, to be breathed in or settled down into the soil to be stirred up again and potentially inhaled through gardening. Arsenic (or lead arsenate, a compound commonly found in paint before 1970) burns into a carcinogenic and poison gas. Burning lead paint both inside and outside breaks down, forming lead dust that can be easily ingested through cleanup or gardening, and moved from the original site to neighboring sites through ground water movement.

Funding for demolition is sought wherever possible. Some homes are demolished through private demolition, a demolition initiated, funded, and managed by a private entity. In 2015, TNP secured seven private demolitions which equates to a potential savings of \$70,000-\$140,000 that would have been spent on public demolition. The majority of funding for demolitions comes from the Ohio Housing Finance Agency's Neighborhood Initiatives Program. The funding from the Neighborhood Initiative Program through 2015 totaled \$1,133,870.25. That equates to 257 demolitions through 2015 and a projected 150-200 demolitions in 2016-2017.

COMMERCIAL

PROPERTIES

3

PRIVATE PROPERTIES 80

6c. Incentivising Home Ownership

The most valuable tool TNP has for fighting the disinvestment and abandonment in Warren is homeownership. Increasing homeownership in a town with more homes than people to live in them, though, presents a number of challenges. There are potential buyers for previously abandoned homes, but they aren't always traditional buyers. Among them are those who have little money but great building experience, first-time homeowners, low income homeowners, and investors.

For those who have little money but can make repairs on their own, TNP offers a Deed in Escrow Sale. For this sale, TNP will sell someone a house, just as it is, for an extremely low price. This allows the self-renovator to acquire materials (perhaps with the help of a small bank loan) and make the needed repairs on the house. The deed for the home is held during the financing (if any) and renovation process until the house is brought to code. After that, the clean title is handed over to the new owner and the house sale is complete.

For first-time and low-income homeowners, TNP is active in helping to prepare for ownership, providing support through the entire process. This support often takes the form of help with funding and financing. TNP looks for opportunities through localized HUD funding (for example: HOME down payment assistance) to help fund down payments and renovations. They are working to further build relationships with local banks to help make the financing process more available to all potential homeowners. Because the housing stock is so old and often in need of intimidating repairs, TNP funds and coordinates renovations on many older homes called Improved Property Sales. By offering low cost, fully renovated, move-in ready homes for sale, TNP removes the potential stumbling block of organizing these renovations from the process of purchasing a home for the first time.

Renovations aren't just a stumbling block for the firsttime and low-income buyers. Often the cost to repair a house far exceeds the value of the house. This presents a difficult challenge, often resulting in the demolition of the house. TNP, though has created another program to help conquer this. Adopt-a-home is a program that involves community partnership. Private donations, whether monetary or in materials, from community members like those provided by Bill Casey, owner of Warren Glass and Paint, for the first Adopt-a-home, are used to fund the renovations of a home. This home is then sold at cost to owner-occupants. This process brings the community together to bring a home from the brink of demolition to a safe haven for a new homeowner. While, TNP and the community of Warren, OH only have the capacity adopt one home each year, these homes offer a unique work-around many of the challenges to home ownership.





6d. Neighbourhood Revitilisation Efforts

TNP's work with the Land Bank to revitalize the neighborhoods of Trumbull County Ohio includes many vacant lots. Some of those lots precede TNP, others are a result of housing demolitions. Those lots play an important role in the direction a neighborhood might take. According to the Environmental Protection Agency, vacant lots are an issue of concern because they tend to attract illegal dumping of litter, and become breeding grounds for vermin. They then can become unsightly blights on the urban landscape, disrupting a neighborhood's sense of community and lower property values. TNP has programs to help conquer the vacant lot and contribute to neighbourhood revitilisation efforts.

According to the Environmental Protection Agency, vacant lots are an issue of concern because they tend to attract illegal dumping of litter, and become breeding grounds for vermin. They then can become unsightly blights on the urban landscape, disrupting a neighborhood's sense of community and lower property values. TNP has programs to help conquer the vacant lot and contribute to neighbourhood revitilisation efforts. They then can become unsightly blights on the urban landscape, disrupting a neighborhood's sense of community and lower property values. TNP has programs to help conquer the vacant lot and contribute to neighbourhood revitilisation efforts. TNP has programs to help conquer the vacant lot and contribute to neighbourhood revitilisation efforts.

LOTS TO LOVE

TNP's Lots to Love Program has continued to



build partnerships and assets in our communities. The program empowers residents to beautify their neighborhoods through community organizing and vacant lot reuse post-demolition. TNP and the Land Bank currently assist in maintaining and seeking resources for dozens of properties across the City of Warren to include community gardens, urban farms, passive greenspace, pocket parks, and community meeting spaces. The Lots to Love efforts stem from the implementation of TNP's neighborhood plans, where residents identified a need for more active, safe spaces for youth in our community. TNP is working on developing a long-term vacant land reuse strategy to address the glut of vacant land plaguing our city and county. We will continue to partner with residents, political subdivisions and partner organizations to create sustainable green infrastructure projects.

+168 vacant lots sold in 2018 side lot incentive gift cards handed +19out worth \$15000 in private investent side lots sold after NIP demolition +1027total vacant lots sold to date

SIDE LOT INCENTIVE PROGRAM

TNP's Side Lot Incentive Program provides eligible residents who have acquired adjacent residential vacant land through the Trumbull County Land Bank within the 60 days prior to application with a \$250 Lowe's gift card to defray the cost of making improvements to the lot, including tools, materials and supplies for lawn maintenance, gardening, landscaping, fence installation, and other approved projects.

This program is operated in partnership with the Trumbull County Land Reutilization Corporation and Huntington Bank.



VACANT LOT PROGRAM

The Vacant Lot Program gives interested applicants the opportunity to acquire vacant and abandoned tax delinquent land. This program also gives the opportunity to acquire property to construct new housing or buildings on the land. Interested parties must meet the following requirements:

1. The applicant must be current on all property taxes and have no current housing or zoning code violations.

2. The applicant must be able to maintain the lot in accordance with all local building, housing and zoning codes.

GARDEN RESOURCES OF WARREN (GROW)

This initiative supports numerous urban agriculture and local food efforts throughout Trumbull County, including 10 urban gardens on vacant lots that were previously residential or school sites. TNP partners with the City of Warren to provide water on the sites, and TNP offers site support and technical assistance for community plots.

Through a partnership with gregg's gardens, a local group dedicated to greening with wildflowers, TNP has concentrated greening treatments such as community gardens, park spaces, orchards, wildflowers and a vinevard within Warren's Garden District. Located near Warren's central city, the Garden District is a residential area where local partners are reinvesting through greening treatments, gardens and blight removal.



7. RECOMMENDATIONS FOR **HEALTHIER CHOICES**

7a. Healthier Material Choices

The materials we choose for our homes can affect increase the interior value of a home. our health and development, so it's important we The list of materials provided is a collection make sure those materials are nontoxic. Many of the most popular purchases in various building materials appear stable and sturdy product categories at the Home Depot store in on the surface. But these same materials look Niles, Ohio. It's one of the closest hardware or drastically different on a molecular scale. If you home improvement stores to 44483 and likely were able to zoom in with a microscope, you representative of common purchases made for would see chemicals released as dust, fumes, home improvement in Warren, Oh. The list is and liquid-soluble compounds. These chemicals also accompanied by health concerns with the can enter our air, food, and water supplies, and existing products, and alternative products that therefore increase our risk of potential exposure. would ultimately be healthier choices and why.

Budget is the most significant factor of material These guidelines are intended to help you make choices for home renovations and repairs done in informed decisions about what products are Warren, Ohio both by individual homeowners healthier and what products should be avoided and by TNP. Renovation on such a tight budget while renovating your homes. The next section often leads to material choices that have lasting also provides a comprhensive list of suggested negative effects on the health of those doing materials that maybe sourced locally in Warren, the renovations and the home's occupants. This Ohio! financial burden might be lightened by some sort of bulk procurement for renovations. This method would be a larger upfront cost, and require some storage, but the savings could be significant and allow for the use of materials that are healthier and safer.

Warren also has a significant number of houses that are demolished each year. With those demolitions is the opportunity to reuse materials salvaged from these homes. This option has many positive features, like saving material from the landfill and reusing quality materials that would have been unaffordable on a tight budget. The negative features though, include the historic use of lead paint, asbestos and outdated or unsafe electronic components. There is also the challenge of safely salvaging, cataloging, and storing these materials. The job is considerable and might require a person who is employed exclusively to maintain this material collection. That certainly increases the cost. Still, when salvaged and used with care, reusing salvaged materials can save money, decrease waste, and

SECTION 7 HEALTHY MATERIALS LIST PRODUCT ALTERNATIVES

INFORMATION	SPEC GUIDANCE	PRODUCT ALTERNATIVE	_	
It is important to consider alternatives to vinyl or PVC flooring. Dioxin, a chemical released during the manufacturing, burning, and landfilling of PVC, persists in the body for years after exposure and with links to cancer, reproductive disorders, and hormone disruption, they have been called the most toxic man-made substance ever created. PVC floors also contain phthalates, which are endocrine disruptors.	 Is it formaldehyde free? Does it have any kind if coating that maybe toxic? Protect floors with penetrating oils and hard wax finishes, which avoid solvents and allow for spot repairs. Review the ingredient list to ensure that you're using a product without metallic dryers. A matte floor shows fewer scratches and looks fresh longer. 	 Striations BBT by Armstrong Flooring is a durable alternative to PVC flooring for heavy-traffic corridors. Kaswell Flooring's Micro Edge Grain is a durable, VOC and formaldehyde free option. Marmoleum Modular by Farbo Flooring Systems are made from natural materials and has a modular structure that allows you to mix and match to design a unique floor surface. 	COUNTERTOPS	Health concerns in countertops vary greatly depending on the type of surface. Even seemingly healthy natural stone can be sealed with coatings containing perfluorinated substances, which are linked to cancer and developmental problems. Given the range of hazardous substances that may be included in countertops, it is best to look for products that have been assessed for both emissions and product contents.
When it comes to health concerns about paints, volatile organic compounds (VOCs), binders, pigments, and additives can present a variety of other toxicity concerns. Look for paints that not only meet the best standards for emissions, but have also been screened for toxic substances through certifications like GreenSeal-11 (GS-11).	 Look for Linseed oil paints or mineral based paints as an alternative for acrylic paints. Prefer paints with zero VOCs or VOC content of 10g/L or less. Make sure to look out for VOCs in colorants. Avoid paints that contain alkylphenol ethoxylates(APEs). Avoid paints labeled antimicrobial. Limit titanium dioxide contents, a whitening aggregate that is a possible edocrine disruptor. 	 Benjamin Moore Ultra Spec 500 a Cradle-to-Cradle certified water based paint contaning zero VOCs. Sherwin Williams ProMar 200 Zero VOC is a GREENGUARD Gold certified paint. Lime based paint such as The Real Milk Paint makes mineral paints with milk protien, lime, clay and earth pigments making it 100% organic and free of VOCs. 	TLES	Ceramic and porcelain tiles are composed of natural materials like clay, feldspar, and quartz and are generally a healthy choice. They can, however, contain toxic additives in their pigments, frits, and glazes and one should prefer products with full ingredient disclosures. Historically, one major health concern has been the use of heavy metals such as lead in glazes.
Synthetic carpets are complex in their composition and chemistry and present a variety of hazards in their backing, pile and surface treatments. The litany of additives used for resistance to mildew, stains, and fire and make it important to examine the contents of a carpet product before accepting claims that it is "healthy". Looking to established standards like Cradle to Cradle, have HPDs or carpets that Declare labels is reccommended.	 Use carpet tiles with tacks as opposed to adhesives. Avoid carpets with stain-resistant treatments such as PFAS (perfluoroalkyl substances). Avoid carpets with vinyl and polyurethane backings that often contain harmful plasticizers or flame retardants. Avoid carpets containing fly ash, which may contain heavy metals such as mercury. 	Shaw's EcoWorx carpet tile was the first non-PVC backed carpet tile on the market. Cradle to Cradle Silver certified, and guarantees free reclamation and recycling and the end of use.	INSULATION	Insulation has been a much analyzed and observed material category in the green building movement. We should ensure picking materials that are high performance without potential human health impacts. These products address issues of health and sustainability, considering thermal performance and renewable and recycled resources, and avoiding commonly added toxic chemicals such as halogenated flame retardants.

Solid wood is considered a natural and healthy material in itself, however, composite wood products often contain formaldehyde by nature of being glued together. Formaldehyde, a known human carcinogen, is also a volatile organic compound (VOC), making it likely to off-gas into the indoor environment. For the healthiest products, look for NAF composite woods that are free of regrettable substitutions.

2. Avoid

WOOD PRODUCT

1. 2. 3.	Less binder means less toxic content. Plywood tends to have the lowest amount in comparison to while MDF, HDF, and particleboard. Or look for soy based binders. (HomeFree) Be mindful of finishes. Shellac, lacquer and polyurethane involve solvents, VOCs and isocyanates, which all pose health risks. Choose an installation method that minimizes adhesives, instead of tongue and groove installation, consider using click-lock flooring.	Columbia Forest's PureBond hardwood plywood is made with a soy based binders and is cost competitive with standard plywood products. Columbia Forest's Classic Core® is a combination core panel construction where cross bands of thin MDF are utilized in place of veneer cross bands. Haley Brother's hollow core doors are NAUF, made with no added urea formaldehyde. Recommended for interior use.
1. 2. 3.	Avoid surface sealants that contain perfluorinated chemicals (PFACsS). Choose solid granite countertops that has low absorption rates (indicated by ASTM C97), and that is mechanically polished rather than chemically sealed. Granite is one of the healthiest options. Specify large-format porcelain tile 5'x10' that eliminate the majority of grout joints and concerns regarding motar and grout.	Coldspring Granite Countertops are made from 100% natural granite. DAL Tile Countertops
1. 2. 3.	Prefer tiles with an abrasion rating of 4 or higher to minimize the potential release of toxins from the coating or glaze. Avoid antimicrobial coatings as they can contain harmful biocides. They are not shown to improve population health. (HBN) Avoid tiles with non-specific post- consumer recycled content. Some manufacturers recycle old cathode ray tubes (CRTs) from TVs and computers, which contain high levels of lead, into their tiles.	Porcelain Tile:DAL tile Limix Tiles are lime-based alternatives to traditional ceramic tiles. They are free of toxic and additional absorb VOCs and carbon improving indoor air quality.
1. 2. 3.	Prefer tiles with an abrasion rating of 4 or higher to minimize the potential release of toxins from the coating or glaze. Avoid antimicrobial coatings as they can contain harmful biocides. They are not shown to improve population health. (HBN) Avoid tiles with non-specific post- consumer recycled content. Some manufacturers recycle old cathode ray tubes (CRTs) from TVs and computers, which contain high levels of lead, into their tiles.	Porcelain Tile:DAL tile Limix Tiles are lime-based alternatives to traditional ceramic tiles. They are free of toxic and additional absorb VOCs and carbon improving indoor air quality.

7b. Health Risks in Demolition

When old homes in Warren, OH are demolished, lead and asbestos are the two primary components that are released or left behind in the debris. These chemicals remain in the pulverized dust and can cause health problems. This is why it is crucial to dispose of these materials safely and immediately. Asbestos is a common building material that can cause a type of lung cancer that can be fatal. For lead, the problems are particularly acute for children, who can suffer developmental problems if they ingest lead paint chips or breathe or ingest particles or dust.

LEAD CONTAMINATION

Lead is one of the most prevalent historic toxic materials found in homes of 44483 zip code. Lead was an ingredient in paint produced before 1978. The lead remains in houses and is leftover in layers of paint and paints dust on interior walls, window frames, appliances, door frames, baseboards, and other painted surfaces, including older furniture. It is also found on the exterior of many homes in the paint on wood porches, siding, trims, and outbuildings. Over time exterior paint peels and chips and drops into the soil, adding lead into the soil close to the house. Lead was also present in plumbing pipes that carried water into many houses in the city. When houses are demolished these lead pipes must be removed and treated as hazardous waste. Lead is also present in many US neighborhoods released by cars from the historical use of leaded gasoline and emitted from local steel production.

While lead is toxic to humans of any age, children and infants are particularly vulnerable. When a baby's body absorbs lead, the body can use that lead—rather than beneficial metals such as calcium or iron-to build its underlying brain and bone architecture. Lead becomes an embedded and toxic material that is never released from the human body. Lead can be measured in elevated blood-lead levels in infants and is an indicator of many physical problems for children including learning disabilities, speech delays, hearing loss, lowered IQ, and increased hyperactivity and aggression.

There are no acceptable safe levels of lead! Even blood lead concentrations as low as 5 µg/ dL, may be associated with neurological damage in children.

The Centers for Disease Control and Prevention (CDC) defines five micrograms or more per deciliter as elevated blood lead (their guidelines were updated in 2012; before that, the "level of concern" was 10 micrograms)but no amount of lead has been proven to be safe. As lead exposure increases, the range and severity of symptoms and effects also increases.

In buildings, lead removal or remediation is an extensive and expensive process involving the scraping off of all paint in a room sealed off from all others. The dust must be contained, removed, and disposed of in accordance with. Once remediation is completed all the surfaces are tested for any remnants of remaining lead before being repainted ready for new habitation. Removal on the exterior paint requires sealed scaffolding with plastic sheathing surrounding the whole house during the lead remediation process and may include the potential elimination of lead contaminated soil. When remediation isn't feasible for homeowners because of money, time, or expertise, encapsulation might take place. This involves sealing old, lead-based paint under a new coat of paint. There are special paints available for this process that also include a bitter additive to discourage children from biting or licking these painted walls, but those products pose health risks themselves. Encapsulation relies on complete coverage of lead paint and is rendered ineffective if the exterior coat of paint is cut or chipped or scraped away to expose the lead paint underneath.

Determining the level of lead in soil requires sampling and testing of the soil. Samples taken from sites in Warren were tested by the Urban Soil Institute at Brooklyn College in Brooklyn, NY. This facility accepts samples from all over the United States and tests them for a small fee. Results were then shared with TNP, and a conversation began about strengthening community composting efforts to increase nutrients in the soil to help bind the chemicals into a healthier soil and thus combat the effects of the chemicals and metals left behind by historic industry and building materials.

LEAD REMOVAL AND SOIL REMEDIATION

When soil is tested and the presence of lead is proven, excavation, and safe disposal of all contaminated soil is a recommended but expensive method of lead removal. There are some scientific studies pointing to the effectiveness of phytoremediation,

Some experts advise planting greens, specifically Indian mustard and spinach, for a couple of seasons as phytoremediation, or plant-based mitigation, before growing crops intended for food. By growing spinach for

three months, researchers at the University of Southern Maine lowered the lead count in one garden by 200 p.p.m. Of course, **the lead-leaching crop cannot be** eaten or composted and must be disposed of as toxic waste.

While there are many benefits to phytoremediation, many scientists maintain skepticism of the effectiveness of using plants to lift lead from soil because of the length of time the process takes and other limitations. The removal and safe disposal of lead ridden plants are also complicated and expensive. A more reliable approach, particularly in areas where lead levels exceed 400 p.p.m., is to build raised or contained beds lined with landscape fabric and filled with uncontaminated soil. But lead dust blowing in the wind or rain splashing off lead-painted structures can sully food grown even in raised beds or containers. Situating gardens away from buildings is, therefore, a good idea, as is washing produce thoroughly with water containing 1 percent vinegar or 0.5 percent (non-toxic) soap.

In one study done by Cornell Waste Management Institute through their Healthy Soils, Healthy Communities project, they recommend adding organic matter and liming (for acid soils [pH less than 6]) may reduce lead uptake by crops, and mulching and other practices to control dust are likely to reduce physical contamination of crops with soil particles. Many scientists recommend using composting as an effective method of stabilizing the lead in the soil. Some visible benefits of composting include:

Reduced dependency on landfills, (and the associated greenhouse gas impacts of reduced



Exterior lead paint

methane emissions from landfills), and reduced truck emissions from the transit of organics to landfills

- Food waste reduction (helping to identify areas where edible food is being wasted, and ideally teaching waste reduction tactics and redirecting it to feed people [or animals] before composting)
- If a self-sustaining organic waste management program is developed for composting local food scraps and organic waste, permanent green jobs will be created
- Improvement of soil health is a direct benefit
- Increased community engagement around sustainable urban infrastructure

In a study done at Kansas State University in 2014, scientists found that compost dilutes the overall concentration of lead in soil. Some substances in compost, such as phosphorus and iron oxides, can help with holding the lead in the soil, reducing the bioavailability of the lead. With this method, the lead stays in the soil, but also can not easily be absorbed by plants and animals. Compost is a very inexpensive and straightforward option to make lead-contaminated soil safe and help to rebuild exhausted soils. Significant additions of phosphate fertilizer have been shown to reduce lead solubility in some severely contaminated soils, but this may not be practical or effective for gardeners. It is important to limit children's exposure to lead in soil by reminding them often to avoid touching their mouths after touching the soil, and make sure they wash their hands thoroughly after touching the soil.

DEMOLITION GUIDE HOW TO DECONSTRUCT RESPONSIBLY



7c. Making Demolitions Safe

The EPA's Lead Renovation, Repair, and Painting Rule, which came into force in 2010, regulates lead dust containment during remodels and partial demolitions-but does not regulate full demolitions.

The cheapest, fastest way to demolish a house is what's known as a "dry" demolition: an excavator, is used to break the house into pieces, and then the rubble is carted away. In dry demolition construction dust can potentially spray lead dust almost 600 feet in every direction from the demolition site-a total area of about six football fields.

A slightly more expensive and time-consuming way to demolish a house is what's known as the "wet-wet" protocol—which involves wetting the house down before and during the demolition to keep dust from spraying so far. This method keeps lead dust to within an approximately 350-foot radius of the demolition.

Another method of demolition is the Baltimore Protocol, which was used to demolish more than 500-row houses in East Baltimore in 2004 and is still widely considered to be the safest way to knock down a house. The team of researchers from Johns Hopkins University that developed the protocol discovered that, by sheathing the house in plastic and keeping it wet with two to four hoses throughout the demolition, you could contain lead dust to a radius of just 60 feet from the demolition site, which is only two housing lots in each direction.

The Baltimore protocol makes some key recommendations for demolition that describe a communications protocols to ensure residents and critical organizations in the neighborhood are informed of the potential demolition. These protocols include the following-

- Training community block monitors to observe the demolition process and assist residents with questions and home safety measures.
- Four days of training on lead safety and related issues for demolition supervisors and two days of training for all other workers.
- Using ample amounts of water throughout the process to reduce the spread of dust.
- Careful demolition using the "picker method" (instead of the more traditional wrecking ball, bulldozing or implosion methods) and high fencing to control the spread of debris and dust.
- Careful procedures for removing debris from demolished buildings, including the use of hoses to suppress dust and plastic covering on trucks to ensure that debris and dust are contained.

MICROGRAMS OF LEAD DUST PER SQUARE FOOT DRY DEMOLITION MICROGRAMS OF LEAD DUST PER SQUARE FOOT "WET-WET" DEMOLITION 17.4 MICROGRAMS OF LEAD DUST PER SQUARE FOOT THE DETROIT PROTOCOL

63.8

MICROGRAMS OF LEAD DUST PER SQUARE FOOT THE BALITIMORE PROTOCOL

- Post-demolition street and sidewalk cleaning and debris removal.
- Removing two inches of topsoil on all properties where demolition has occurred and replacing it with new sod.
- Providing community residents with highefficiency particulate air (HEPA) vacuums and "tack mats," which remove dust from shoes as individuals enter the home, to reduce lead dust exposure in residents' homes following demolition.
- Independent testing of the streets and sidewalks surrounding demolished properties to measure the impact of demolition and debris removal on the local environment.

The Baltimore protocol has many strategic ways of ensuring ways to make demolition safer for the neighborhood- first, to make sure that residents near the demolition site are aware, informed, and have the means to raise concerns. The new law requires prominent signs to be posted on the property at least five days before demolition and photographs documenting precautionary steps that need to be submitted. The city also requires demolition crews meet with city inspectors to review their demolition plans and assure that measures are in place for hosing down the structure during demolition and debris removal to suppress dust.

Community involvement is critical in the demolition process. Residents may well oppose redevelopment or site clearing if they feel their health concerns are not being addressed. Redevelopment leaders need to engage residents in the demolition process, heed their fears, and accept their suggestions as often as possible. Demolition safety should not be addressed using a one-size-fits-all approach and undertake the postdemolition clean up of the site and its surrounding neighborhood area.

DISPOSAL OF TOXIC MATERIALS

After safe demolition methods are employed, demolition contractors have the opportunity to help preserve and maintain Ohio's environment by ensuring that the toxic waste produced is disposed of properly. By conducting an audit for hazardous materials before demolition, and following up with the removal of targeted items, dangerous chemicals can be prevented from entering the environment. Items that need to be reviewed include- asbestoscontaining materials, lead paint in walls, older buildings must be surveyed for PCB Caulking

(polychlorinated biphenyls), fluorescent bulbs, highintensity discharge (HID) bulbs, other specialty bulbs or materials which also may contain mercury must be handled with care and removed before demolition. With lead, primarily, survey information must be provided to the contractor, and the contractor must comply with applicable training requirements as required by OSHA and the EPA.

Disposal of toxic waste is a challenging reality for a city that thrives on do-it-yourself home-improvement but also has significant historic toxics in their housing stock. That unknown makes more sense, though, after researching the most local disposal options. Asbestos materials are accepted at the Stark County landfill in Waynesburg, OH, but that is sixty miles away from 44483. For those who do not have a car, that is impossible. For those who do have a car, it might require several trips to dispose of these materials properly, proving quite cost-prohibitive.

There is also the question of what toxic materials need to go where. An EPA document lists landfills that will accept asbestos material An EPA document details the requirements of managing contaminated soil disposal based on who is doing the removal and why.

Proper disposal of commonly found toxics in Warren, OH, could use both simplification and publication. Until then, it's likely that asbestos, lead, and other toxic materials will continue to find themselves in local landfills, furthering ground and water contamination in the area.

8. CONCLUSION

Our research in Warren Ohio, has begun to detail the complexity of affordable and healthy housing in post-industrial cities like Warren. Despite the abundance of houses, finding a healthy and affordable home is still a challenge. It is crucial to consider historic toxics like asbestos and lead and account for the cost of their removal. Repairs are another necessity while revitalizing and become an added cost. Health is a challenging factor in post-industrial cities and must be considered both inside the home and out. Research must be done to understand the chemicals and metals that are both historically and currently dumped or released into the ground, water, or air nearby.

The Trumbull Neighborhood Partnership is a prolific and creative community advocate. Their work not only leads their community but engages members of the community to take charge and make Warren the place they want it to be. Their holistic approach to community development sets them apart by empowering residents through programming and projects that improve the quality of life in Warren's neighborhoods. TNP's inception of the Land Bank addresses a large part of the financial burden residents face while gaining housing ownership. TNP manages the sale, transfer, disposition, demolition, rehabilitation, and re-utilization of all Land Bank-owned property. The Land Bank, along with the Building a Better Warren (BABW) program, allows TNP to create a resident-driven community revitalization process. This process generates jobs putting residents to work fulltime and offering them training and employment in the renovation, deconstruction, landscape installation, and vacant property maintenance to stabilize the city's empty housing stock, mitigate the impacts of blight, and create homeownership opportunities. Program participants build

marketable skills, gain long-term employment, and have the chance to develop professionally, all while directly improving their community.

TNP has set a firm example of how rethinking strategies for sustaining their citizens and building community becomes an essential part of revitalizing a shrinking city like Warren, Ohio. Creating a sense of alliance and supporting community-driven efforts has to be central in promoting positive changes. Forming partnerships with community members, organizations, and local and national governments to run programs to help manage vacant homes and lots, prepare for homeownership, deter crime, ensure healthy and affordable food options. Funding is a particular challenge for cities that suffer from disinvestment. Federal funding could be significantly improved by allowing funds to be used for small renovations, or further supporting homeownership. The example TNP has set for diverse funding sources specific to the programming offered has been successful.

Warren, like many post-industrial cities, has room for growth. The city that was once booming with the industry still has a reliable infrastructure for manufacturing, available land, and commercial buildings, easy access to water and raw materials, and a knowledgeable community. These assets, when combined with the diverse, inexpensive, and readily available housing stock, Warren's potential walkability and bike-ability, and its easy proximity to the even larger cities of Cleveland and Pittsburgh, there is a lot to draw new people and industry to Warren.



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