

# Future Land Use Plan

# Future Land Use Categories

## Housing

There are six residential Land Use designations intended to provide a variety of housing options in terms of style and price range for current and future residents of all ages and abilities in Genoa Township. Intended densities range from one dwelling per five acres to 8 dwellings per acre and are applied in a way that is consistent with the Township's goals. Areas intended to reinforce the rural character of the Township have limited utility access and will serve for large-lot residential homes; these areas are only intended for residential uses or small-scale neighborhood-serving non-residential uses. To advance the Township's walkability and economic development goals, different housing types, from small-lot single-family homes to multiplexes and mixed use residential, are envisioned in areas that can support such development, with available utilities, and offer destinations to which local residents can walk.

**Agricultural/Country Estate:** The intent of this designation is to protect lands for agricultural use or to permit limited development with single family homes. Many of the areas are prime farmland or have significant natural limitations such as wetlands or severe soil limitations. As these areas are not planned for sanitary sewer, they can only support low density residential development. This classification is recommended for single family residences on lots no smaller than 5 acres.

**Rural Residential:** This designation identifies areas to be developed as single family residential on large lots. Many of the areas have significant natural limitations such as wetlands or severe soil limitations and are not planned for sanitary sewer. These areas are only intended for residential uses or small-scale neighborhood-serving non-residential uses. This classification is recommended for single family residences on lots no smaller than 2 acres or clustered development with a net density of 1 unit per acre.

**Low Density Residential:** This designation is for single family residential development located between rural residential areas and the more developed areas of the Township. While these areas are not planned for sewer service, they have fewer environmental constraints found in the Rural Residential. These areas are only intended for residential uses or small-scale neighborhood-serving non-residential uses. Single family residential uses within these areas will be located on lots of at least 1 acre in size.

**Small Lot Single Family Residential:** This designation refers to two distinct groups of single family residential uses: the older homes around Lake Chemung and the Tri- Lakes area and newer, small lot, single family subdivisions located within the more urbanized area of the Township. Secondly are These areas will generally be, or are planned to be, served by public water and sanitary sewer. Single family residential uses located within these areas will typically be located on lots ranging from 14,520 square feet to 21,780 square feet in size or 2 to 3 units per acre.

**Medium Density Residential:** This designation refers to medium density duplexes, attached condominiums and other multiple-family dwelling units. This area may also be developed with single-family homes on smaller ¼ acre lots. This designation is found within areas served, or planned to be served, by public water and sanitary sewer. New residential development should be located close to goods, services and job centers and should accommodate residents of all ages and abilities. Development will be at a density consistent with the infrastructure and land capabilities but will not exceed a density of 5 units per acre.

**High Density Residential:** This designation refers to higher density condominiums, apartments and other multiple family dwellings. This designation is found within areas served, or planned to be served, by public water and sanitary sewer and should primarily be located along the Grand River Corridor. Development should respond to infrastructure and land capabilities and should not exceed 8 units per acre unless designed to minimize impacts on adjacent uses by limiting impervious surfaces, adding green space and including community gathering spaces. This designation includes existing manufactured housing/mobile home parks; no new mobile home park areas are anticipated.

## Commercial

The Township is planning for commercial development that serves both residents and visitors. A small-scale, low-intensity type of commercial closer to existing residential neighborhoods that may include goods, services and limited office uses will serve local residents. The Grand River Corridor will serve both local residents and, closer to the cities of Howell and Brighton as well as near the freeway, visitors and regional residents. In the corridor, commercial uses will include goods, services, offices and, in “hub” or “district” areas, residential uses.

**Neighborhood Commercial:** Retail and service establishments whose primary market area includes residents and employees from within a two-mile radius are designated by this category. These retail businesses and services are intended to serve the needs of nearby residential neighborhoods. Typical uses would include smaller general merchandising/retail establishments such as convenience stores, banks, dry cleaners, and beauty/barber shops, and small retail strips. Low trip-generating professional office uses (not medical) will serve not only local users of such services, but also will allow local residents the opportunity to work closer to home.

**Interchange Commercial:** Rather than typical interchanges where gas stations and fast food establishments are built piecemeal with little consideration for aesthetics, the intent of this designation is to promote planned development of these interchange commercial uses with high quality architecture. The Latson interchange is envisioned to be the premier exit for travelers along I-96: a destination where they can get out of their vehicles to walk around, dine, and shop.

- Appropriate uses include fast food, sit-down restaurants, gas stations, retail, and entertainment
- This area may be subject to design guidelines promoting walkability, increased landscaping standards, pedestrian-scale building siting and massing, and outdoor dining/gathering.
- Very few access points: each development shall provide access connections to adjacent properties so that there may be a shared access connection to a future traffic signal.

**Interchange Campus:** The intent is to create a district in the I-96 corridor that will accommodate large-scale institutional campuses close to the interchange without leap-frog development further south. The Future Land Use Map includes a “future transition area” south of this designated area. The Township will evaluate when it is appropriate to allow more intensive development in this area, based on surrounding development, demand for growth, and the ability for the area to accommodate the additional demands on utilities, transportation network and public services.

- Possible principal uses alone or in combination: medical center/clinics, higher education satellite, corporate offices, high-tech research & development (with no external impacts), indoor sports center, conference center/hotel, health clubs, office centers, or senior living. Ancillary uses that have a direct connection to the principal use are allowed and should be part of the overall plan, such as limited restaurants and professional services when included as part of an overall development.
- Any large-scale development should be a well-planned, campus-like setting, planned in close coordination with the Township. Upon submittal of the first development proposal for this area, an overall development plan must be provided. This plan shall guide development in the interchange campus area including signs, access/circulation, building design, landscape, and streetscape.

See the Appendix for additional information about this area as developed in the 2013 Master Plan.

## Industrial

**Industrial:** The intent is to develop industrial uses such as research, wholesale and warehouse activities and light industrial operations which manufacture, compound, process, package, assemble and/or treat finished or semi-finished products from previously prepared material. The processing of raw material for shipment in bulk form, to be used in an industrial operation at another location is found only in very defined and limited portions of this area.

**Research and Development:** This area should be developed as a light industrial/R&D/office park. High quality building architecture should be utilized to convey a high-quality image. Enhanced landscaping and screening should be provided along adjoining major thoroughfares. Flexibility in some zoning requirements may be considered in exchange for these aesthetic enhancements. There are two areas designated as R&D: one in the eastern end of Grand River near Euler Road that is partially developed and the second in the northwest, bounded by I-96 and the railroad, bisected by Chilson Road. These may be good areas to consider for alternative energy facilities, notably solar energy. Particularly along the Chilson Road corridor, as the eastern portion is land-locked with the highway and railroad. This area could serve as workforce housing, if it had non-motorized access over the railroad to Victory Drive or Grand Oaks Drive.

## Other

**Public/Quasi-Public:** These are institutional land areas to be occupied by government, utility or civic uses such as churches, parks, state, county and municipal facilities and major utility lines.

**Private Recreational:** These are areas designated for private recreational facilities such as golf courses, ski hills, campgrounds and private parks. Because they are primarily located in residential areas, should these uses cease, any future redevelopment is anticipated to be consistent with low density residential and compatible with the surrounding area.

### Redevelopment of Public/Quasi-Public and Private Recreational Sites:

Development pressures may lead to a demand for some public sites or private recreational property to be developed

## What are “regional” uses?

Regional uses are typically located in geographic area, or “regional centers,” intended to serve as the focal points of regional commerce, identity, and activity. They cater to many neighborhoods and communities and serve a significantly larger population than the community in which they are located.

Regional centers contain a diversity of uses such as corporate and professional offices, retail commercial shopping centers and malls, government buildings (county or district-serving), major health facilities, major entertainment and cultural facilities and supporting services. Housing may be integrated with commercial uses to serve as workforce, support services, recreational uses, open spaces, and amenities.

Regional centers, typically, provide a significant number of jobs and many non-work destinations that generate and attract a high number of vehicular trips. They are typically high-density places whose physical form is substantially differentiated from the lower-density neighborhoods of the community. Such uses are ideally located with convenient access to major thoroughfares and freeways that can sustain high vehicle travel without generating traffic on local streets (i.e. contained to Grand River and 96).

with other types of uses. If there is any redevelopment of public sites or private recreational lands, proper Land Use relationships must be maintained to ensure design and uses are compatible with the planned character of the surrounding area. In addition, since most of those sites have significant open space or natural features, some element of those features should be preserved. The Planned Unit Development (PUD) option contained in the Zoning Ordinance would be a good approach for this type of redevelopment. PUD provides design options to permit flexibility in the regulation of land development and innovation in design.



## Grand River Corridor Mixed Use

This designation generally covers most of Grand River Avenue as it runs east-west through the northern part of Genoa Township and intends to allow flexibility of Land Uses while ensuring quality development and redevelopment. In these areas, commercial and residential uses, provided in a horizontal or vertical mixed use development pattern, will complement each other, creating “hubs” or “districts” of mutually supportive uses. It is envisioned that people may live near their places of work as well as near goods, services and entertainment uses and visitors to the areas who arrive by car can park once and walk to a variety of destinations. Site layout, landscaping, building design and connectivity will be important. Throughout these areas, walkability is encouraged, and identifiable “places” will be created to reflect a unique identity to Genoa Township.

A mix of uses may occur as vertical mixed-use, horizontal mixed-use or a mix of the two in one development. Vertical mixed-use is intended to allow for a combination of different uses in the same building where non-residential uses occupy the bottom portion of the building and residential on upper floors. Horizontal mixed-use allows commercial and residential uses on adjacent parcels that together may create a “hub” or district. Buildings will range from one to three stories and be set back from single family neighborhoods when they’re adjacent to the corridor. Screening to buffer single family neighborhoods from noise, light and traffic will also be important; however, pedestrian access should be maintained. Placemaking elements, such as street lights, trees and furnishings, along with public art and signage, will help reinforce the identity of this important corridor.

A variety of housing is envisioned in these areas as an alternative to some of the larger lot residential areas elsewhere in the Township. Housing in the mixed use areas will be smaller homes on smaller lots and multi-family dwellings. This housing will generally be more affordable than larger homes on larger lots, easier to maintain and serve a broad range of age groups, from college students to young professionals and older residents.

Regional commercial uses, such as auto-oriented uses (including fast-food) are only intended at interchange uses and where otherwise currently existing along Grand River Avenue. See page 3.34 for more details.

### East Grand River District

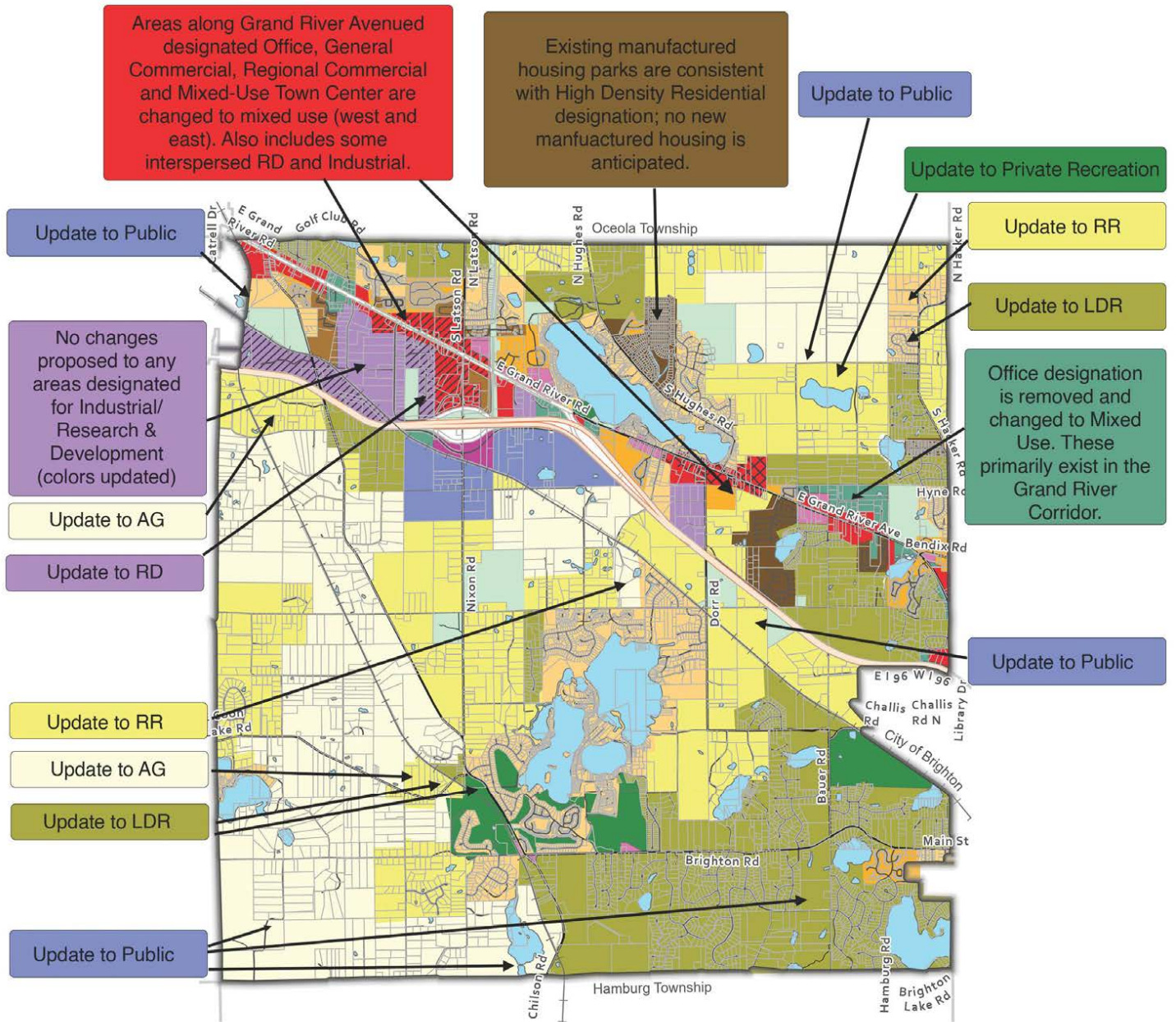
This district covers the area from the Township’s eastern border (north of Herbst) west to the I-96 interchange. It includes the “lake district,” where public access to Lake Chemung is provided on Grand River Avenue and also the “health hub,” which is a potential development area centered around St. Joseph Mercy Health Center. Both of these recognizable amenities offer opportunities to locate jobs, retailers, restaurants, recreation/entertainment, office and residential uses in a way that focuses on and supports community health. Buildings are intended to be one- to two-stories and sites developed in a way that minimizes the importance of the automobile and prioritizes the pedestrian. Housing in this area could focus on housing for older residents, providing them easy access to nearby medical facilities as well as other goods and services.

### West Grand River District

This district will reach from the I-96 interchange at the east end to the western boundary of the Township, west of Golf Club Drive. This area is envisioned for a higher intensity of commercial and residential uses than the East Grand River District. Currently developed with general commercial and office along Grand River, this area is intended to continue to promote these uses that are supported by area and regional residents as well as pass-by traffic along Grand River Avenue, including interchange traffic from I-96. Buildings of one- to three-stories are envisioned, with higher and larger buildings set back from single family residential. Residential uses could range from attached units to stacked flats and will contribute to the workforce and customer base for the district.



MAP 3.1. CHANGES TO FUTURE LAND USE MAP



FLU 2015

- Ag/Country Estate
- Large Lot Rural Res
- Low Density Res
- Small Lot Single Family Res
- Med Density Res
- High Density Res

- Manufactured Housing
- Neighborhood Commercial
- General Commercial
- Regional Commercial
- Mixed-Use Town Center
- Office
- Industrial

- Research and Development
- Public/Institutional/Utilities
- Private Recreation
- Interchange Campus
- Interchange Commercial

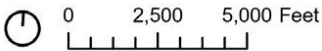
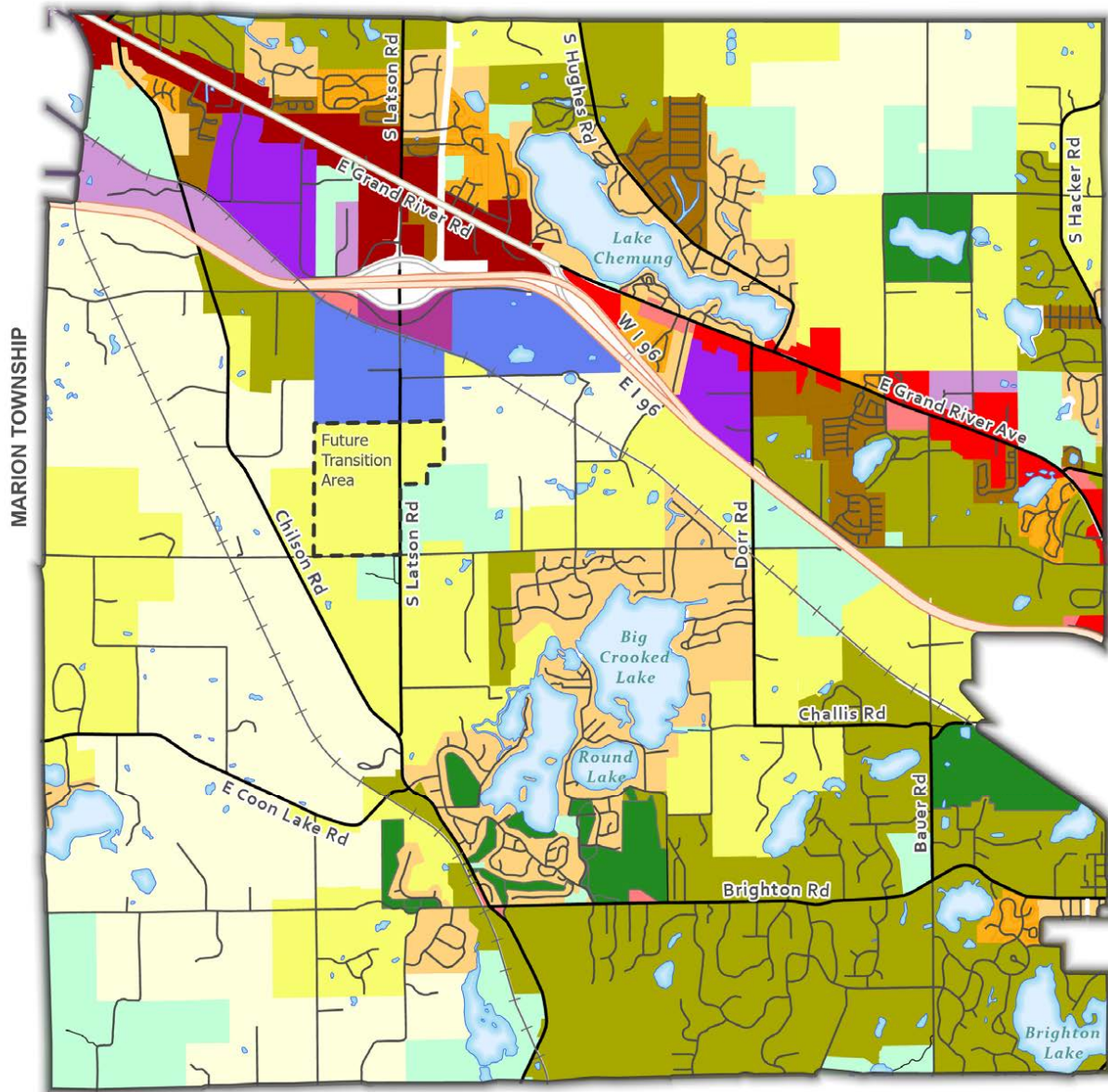
Consolidate land use categories as noted on the map.



FUTURE LAND USE  
GENOA TOWNSHIP



MAP 3.2. FUTURE LAND USE PLAN



The Future Land Use Map, along with the entire Master Plan document, is a policy guide for local land use decisions. The boundaries reflected on the map are general and are not intended to indicate precise size, shape, dimensions or individual parcels. In addition, where the Future Land Use Map and the Zoning Map are not in alignment, it does not necessarily suggest that that rezoning is imminent; rather, the Future Land Use Map sets forward recommendations to achieve long-range planning goals.

- Agriculture/Country Estate
- Large Lot Rural Residential
- Low Density Residential
- Small Lot Single Family Residential
- Medium Density Residential
- High Density Residential
- Neighborhood Commercial

- Mixed Use - East Grand River
- Mixed Use - West Grand River
- Industrial
- Research and Development
- Interchange Campus
- Interchange Commercial
- Public/Institutional/Utilities
- Private Recreation

Interchange Transition Area - future land use and the utility service area will be reconsidered in this area concurrent with a proposal for actual campus uses (see Appendix)



**FUTURE LAND USE**  
GENOA TOWNSHIP

## Growth Area Boundary

The 2013 Master Plan establishes a growth boundary. Areas within the growth boundary include the Grand River Avenue/I-96 corridor between Brighton and Howell and areas surrounding the City of Brighton. This section includes the relevant text from the previous plan. The growth boundary is not intended to be static, but should be evaluated on a regular basis. In the future, the Township should consider updating the growth boundary based on the criteria listed in the following page.

At this time, there is considerable development pressure along Latson, south of the primary growth area to Crooked Lake Road, but the Township is not ready to extend the primary growth area nor infrastructure at this time. This is an area to be reviewed in the next 5-year review of the Master Plan.

The residents of Genoa Township have consistently said that preserving the natural beauty of the Township and controlling urban sprawl are important priorities for planning the community. The Township also desires to be able to provide efficient infrastructure services to support development. One of the most effective ways to meet both of these goals is with a “growth boundary.”

The growth boundary concept in the plan is designed to encourage the following:

- Efficient Land Use,
- Protection of farmland and natural areas,
- Efficient provision of utilities, services and infrastructure,
- An efficient transportation system,
- Locations for economic growth, and
- Diverse housing options.

The growth boundary marks the separation between rural and urban areas and defines land that can efficiently support urban services such as sewer, water and roads. Secondary growth areas are also provided adjacent to the City of Brighton for low density residential.

Development outside the boundary is not prohibited; however, because public utilities are not available in these areas, development needs to be maintained at a relatively low intensity and the character of development needs to not adversely impact natural features and agricultural uses.

Areas within the growth boundary include the Grand River Avenue/I-96 corridor between Brighton and Howell and areas surrounding the City of Brighton. Land within the growth boundary are separated into two distinct areas:

**Primary growth areas** are currently served or available to be served by public sewer and water. These areas include single family and multiple family residential at higher densities with public water and sewer, commercial centers, industrial parks and mixed-use centers.

**Secondary growth areas** do not have sewer and water, but due to their proximity to the cities of Brighton or Howell, are appropriate for infill with low density residential. Typical lot sizes will be around one acre or clustered developments at an overall density of two acres per dwelling.

**Rural Reserve areas** outside of the growth boundary should be maintained at a relatively low intensity rural character of development that will not adversely impact natural features and agricultural uses.

There is presently vacant or under-utilized land within the growth boundary that can be served by public water and sewer. By focusing new development in these areas, the Township and the County can more efficiently provide the necessary infrastructure to support new growth.

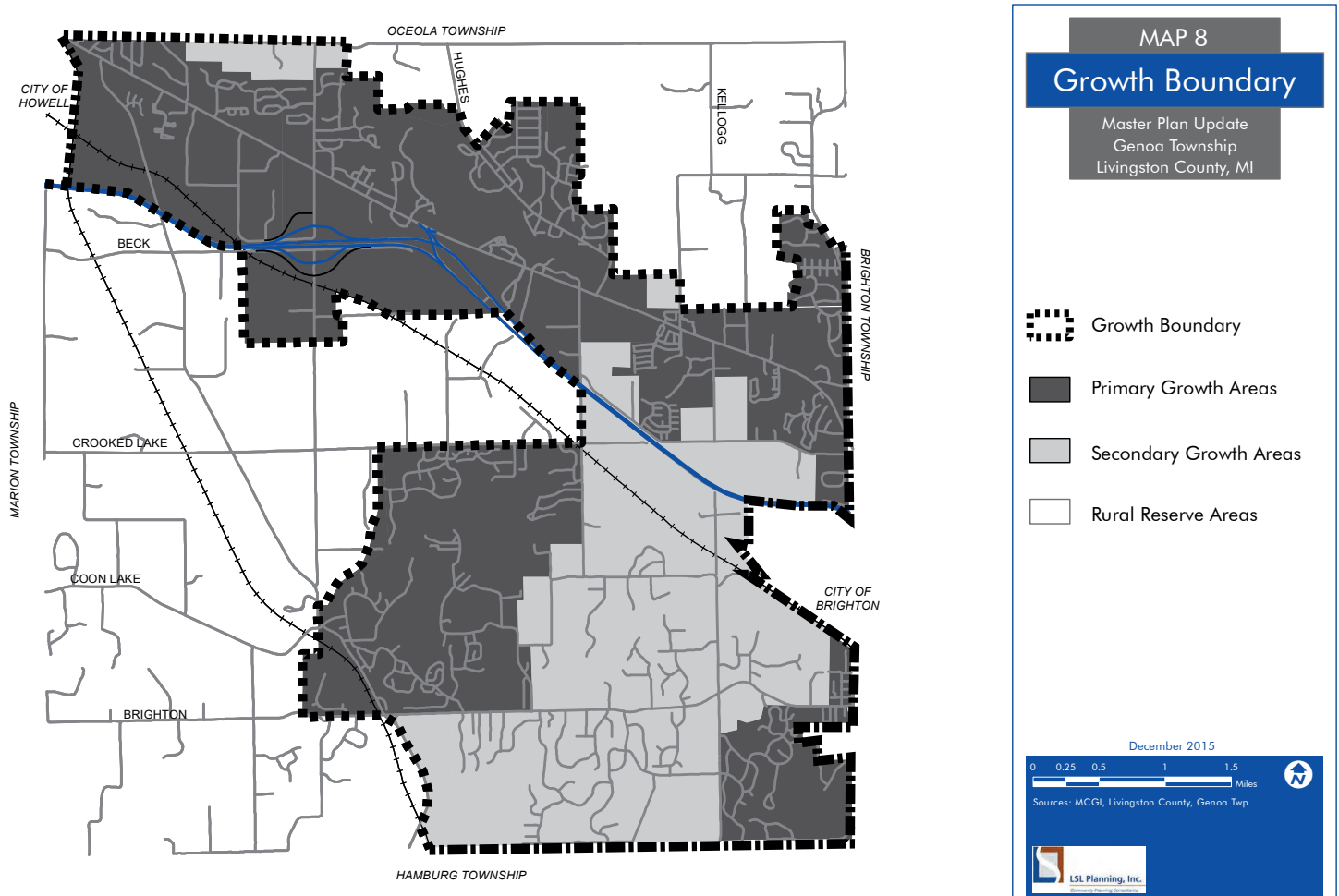
**Planned development.** This Master Plan Update plans for a mix of uses along Grand River, all of which is located inside the growth boundary and currently has the public utility and transportation infrastructure to support development. This higher density corridor will form compact, walkable areas for housing, shopping, employment, cultural and recreational activities.

An extension of utilities south of I-96 to the Latson subarea was a determining factor in the planned Land Uses for that area. After the interchange is completed, the area should be monitored annually for potential development and proposed expansion of the growth boundary south. This intent is supported by the associated zoning standards. These standards include evaluation factors to allow for expansion as the Township feels is appropriate.

## Criteria for updating growth boundary

- Amount and capacity of undeveloped or under-developed land currently within the growth boundary, which should be used to satisfy the demand for development prior to expanding the boundary.
- Projected population growth within the Township and demand for other land areas for commercial or industrial development.
- The ability to extend public water and sewer to serve new land areas outside of the growth boundary.
- The capacity and condition of the road system to support the new growth areas.
- The ability of the Township, County and other public agencies to provide necessary services to the new growth areas and the additional resulting population.
- The impact of higher density development from expanding the growth boundary will have on natural features, agricultural uses and rural character.
- Consistency with the goals and objectives of the Master Plan.

MAP 3.3. 2015 GROWTH BOUNDARY



# Housing Plan



# Housing Plan

The overall intent of the Housing Plan is to outline a strategy to ensure that the housing needs of Township's current and future residents will be met. The Housing Plan refines the residential Land Use designations identified in the Land Use Plan.





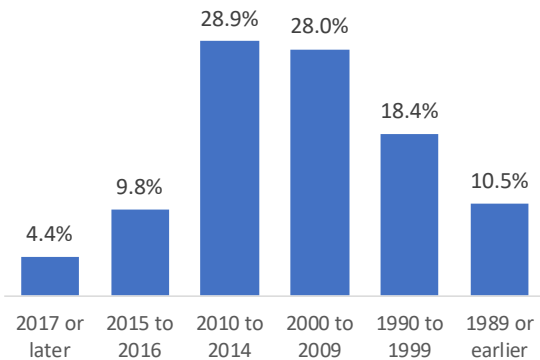
## Current Housing

Housing represents the strength of the local economy and overall community appeal. Older housing reflects the physical, historic and social context of a community. The age of housing influences local housing policies for rehabilitation and redevelopment. Older houses require additional maintenance and upkeep, and may also require upgrades to ensure energy efficiency, barrier free access and increased livability for aging adults. In 2018, of the Township’s 8,732 housing units, 78% were owner-occupied, 16% were occupied by renters and 6% remained vacant. This is consistent with the county rates (see table)

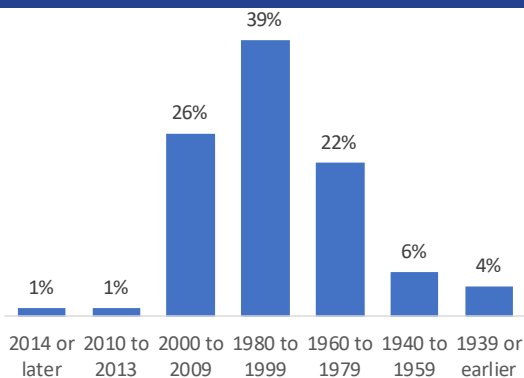
### Housing Age

Most householders moved into their homes between 2010 and 2014 (28.9%), followed by 2000 to 2009 (22.5%) (See Chart below). The inflow of new householders drastically dropped from 2016 to a low of 4.4% in 2017. This corresponds with the age of housing in Genoa. Most of the houses in the Township are older than 30-40 years older, a majority being built during the years 1980 to 1999. Housing construction almost stopped since 2010.

**FIG.3.1. YEAR HOUSEHOLDER MOVED: GENOA**



**FIG.3.2. YEAR HOUSING BUILT: GENOA**

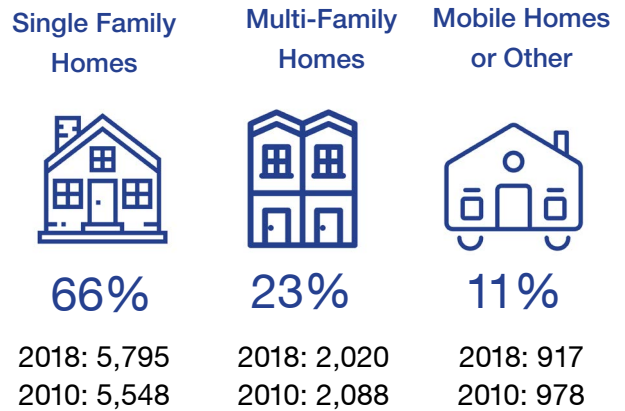


Source: SEMCOG Community Profiles

### Housing Types

Single-family detached housing is the predominant housing type in the Township, making up 66 % of all units. See the image below for more details. Since 2010, the number of single family homes increased while the other type of housing reduced. However, the change in both cases is insignificant.

**FIG.3.3. HOUSING TYPES: GENOA**

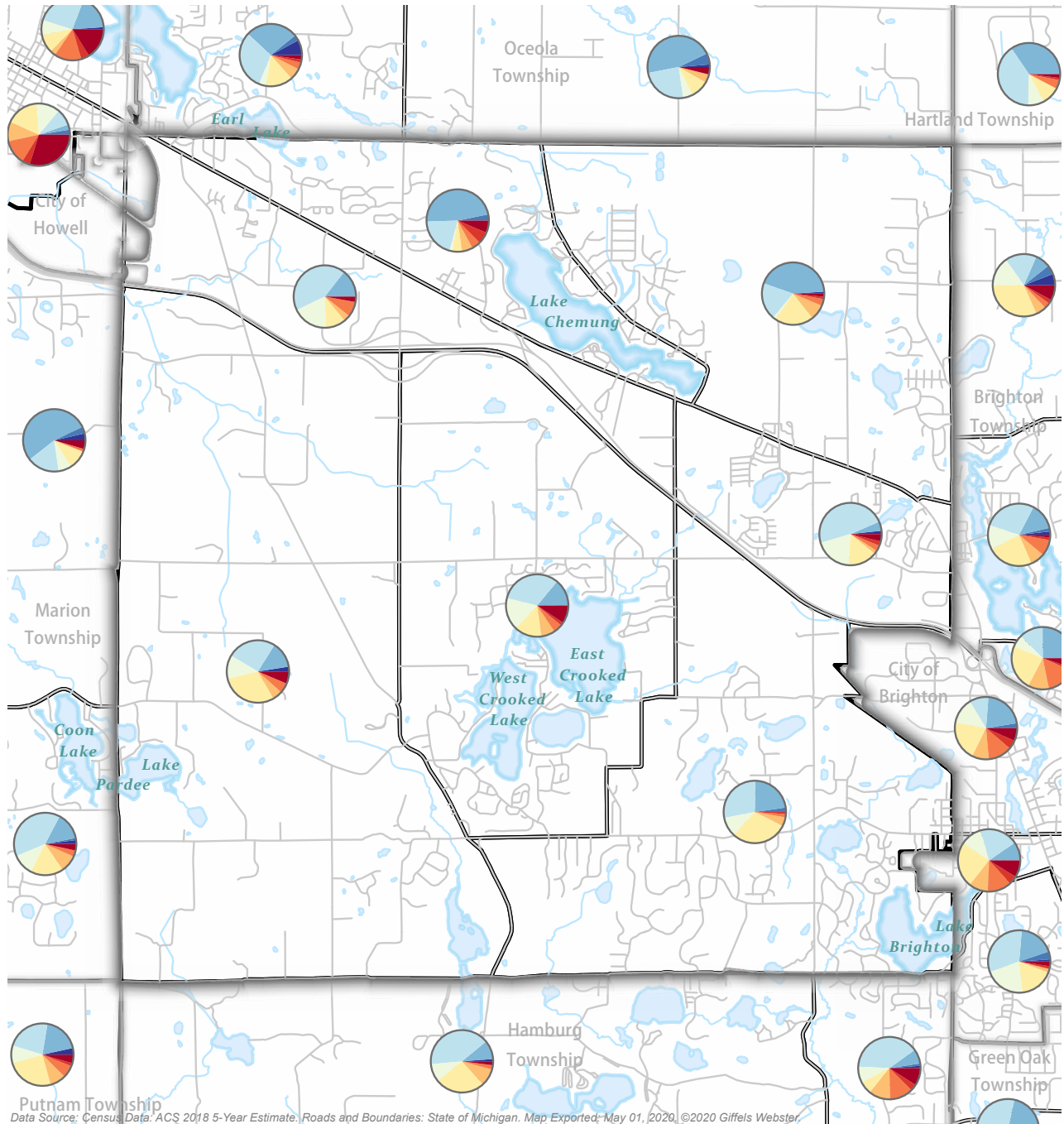


### Housing Value

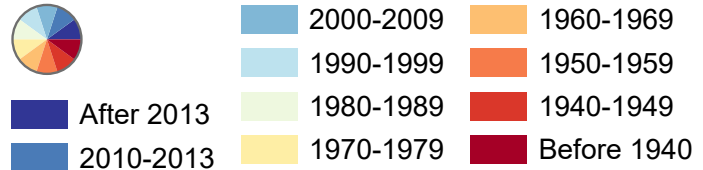
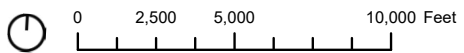
The median housing value in 2018 in Genoa Township was \$259,800 (see Table). The Township has seen a reduction of 3.6% in housing values since 2010. The Township housing and rental rates are comparable to surrounding communities. The median housing value is 78% higher than the state.

**TABLE 3.1. HOUSING DATA: SURROUNDING COMMUNITIES**

	Owner-Occupied housing unit rate, 2014-18	Median value of owner-Occupied Housing units, 2014-18	Median gross rent, 2014-18
United States	64%	\$204,900	\$1,023
Michigan	71%	\$146,200	\$850
Livingston County	85%	\$233,400	\$1,011
<b>Genoa Township</b>	<b>83%</b>	<b>\$259,800</b>	<b>\$1,101</b>
Oceola Township	90%	\$239,700	\$1,209
Brighton Township	96%	\$278,300	\$1,130
Brighton City	60%	\$194,600	\$1,005
Hamburg Township	93%	\$244,300	\$1,017
Marion Township	94%	\$244,300	\$1,017



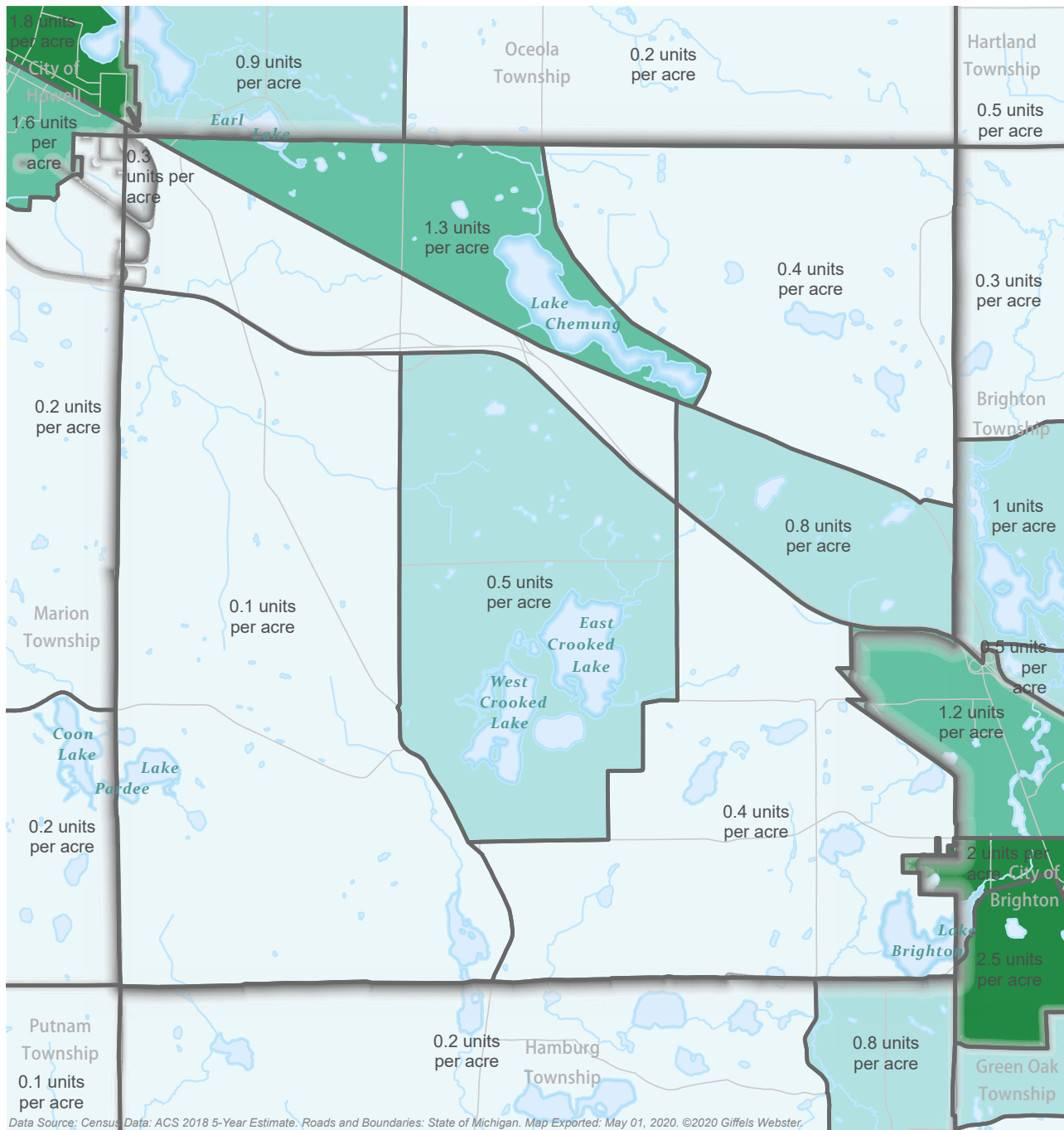
Data Source: Census Data: ACS 2018 5-Year Estimate, Roads and Boundaries: State of Michigan, Map Exported: May 01, 2020, ©2020 Giffels Webster



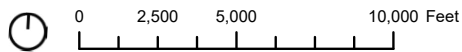
# Age of Housing

GENOA TOWNSHIP

MAP 3.5. HOUSING DENSITY



Data Source: Census Data: ACS 2018 5-Year Estimate. Roads and Boundaries: State of Michigan. Map Exported: May 01, 2020. ©2020 Giffels Webster.



- < .5 Units per acre
- .5 - 1 Units per acre
- 1.1 - 1.75 Units per acre
- 2.1 - 2.6 Units per acre

**Existing Housing Density**  
GENOA TOWNSHIP



## Housing Forecast

The Chesapeake Group conducted a market survey throughout 2020 and early 2021 to understand both current and future market conditions for residential and non-residential activity. Refer to 'Market Assessment Summary' on page for more details. The market assessment that followed the survey included some key housing data and future projections of housing demand.

As part of the current Master Plan update, an open house was conducted on November 10, 2021, at the Township Hall. Among other topics, the attendees were asked about their thoughts about future housing developments within the Township. There is a clear support for diverse housing in general within the Township such as cottage court style and attached townhomes.

The primary factors that contribute to housing demand are housing affordability and demographics shifts. Proximity to employment and better school districts also impact the housing demand. While the demand for single family homes is constant for families with kids, the demand for missing middle housing for aging population is growing, which is consistent with national trends.

According to the market survey, about thirty seven percent of total respondents, anticipate a possible move to a different house in the next five years, unlikely outside of Michigan. The primary reason for moving is either trying to downsize (those with primary income earners 55 years of age or older) or growing families or those who are ready to move out of their current home to create a separate household. The total population of older people aged between 64-85 is projected to increase by 104% by 2045 from 2015. This is a significant number that would be looking to downsize.

According to the assessment, approximately between 100 and 200 new non-single-family housing units could be added to the rooftops within the Township. The demand forecast is not a simple estimate of what is expected to be built in Genoa Township but are rather an estimate of what could be built in the market based on forecast demand; The new housing units would be geared toward independent living for seniors and young households, with the latter containing workspace. Included could be semi-detached, townhome, duplex, and other related units. The units' locations should contribute to walkability and serve existing residents who would move to a previously defined scaled smaller unit from within the Genoa area. Such new units would most likely free up existing units to attract younger households.



## Missing Middle Housing

“Missing Middle” housing” is a term coined by Daniel Parolek of Opticos Design, Inc. in 2010. Parolek defines this type of housing as follows:

“Well-designed, simple Missing Middle housing types achieve medium-density yields and provide high-quality, marketable options between the scales of single-family homes and mid-rise flats for walkable urban living. They are designed to meet the specific needs of shifting demographics and the new market demand and are a key component to a diverse neighborhood. They are classified as “missing” because very few of these housing types have been built since the early 1940s due to regulatory constraints, the shift to auto-dependent patterns of development, and the incentivization of single-family home ownership.”

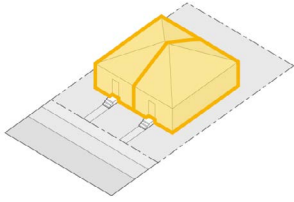
Missing Middle Housing is a range of multi-unit or clustered housing types compatible in scale with single-family homes that help meet the growing demand for walkable urban living. Characteristics of these housing types include:

- Walkable (homes are set in walkable context)
- Medium density but lower perceived density
- Smaller, well-designed units
- Smaller footprint and blended densities



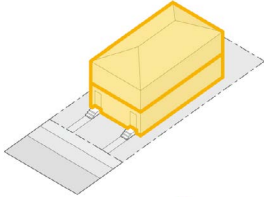


## Missing Middle Housing Types



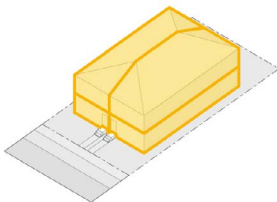
### Duplex Side-by-side

A small (1 to 2-story), detached structure that consists of two dwelling units arranged side-by-side, each with an entry from the street. This type may include a rear yard.



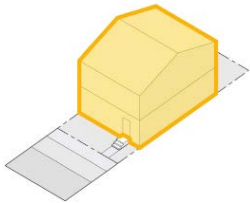
### Duplex Stacked

A small (2 to 2.5-story), detached structure that consists of two dwelling units arranged one above the other, each with an entry from the street



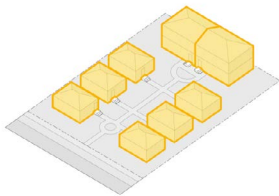
### Fourplex Stacked

A detached (2 to 2.5-story) structure with four dwelling units, two on the ground floor and two above, with shared or individual entries from the street. This type may include a rear yard



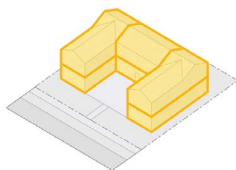
### Attached Townhouse

A small-to medium-sized attached structure that consists of 2 to 16 multi-story dwelling units placed side-by-side. Entries are on the narrow side of the unit and typically face a street or courtyard.



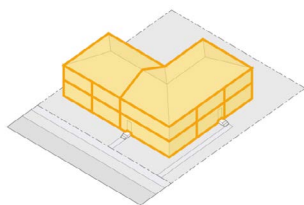
### Cottage Court

A group of small (1 to 1.5-story\*), detached structures arranged around a shared court visible from the street. The shared court is an important community-enhancing element and unit entrances should be from the shared court. It replaces the function of a rear yard.



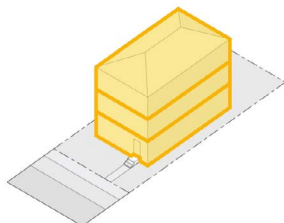
### Courtyard Multifamily

A medium-to-large sized (1 to 3.5-story\*) detached structure consisting of multiple side-by-side and/or stacked dwelling units oriented around a courtyard or series of courtyards. The courtyard replaces the function of a rear yard and is more open to the street in low intensity neighborhoods and less open to the street in more urban setting.



### Multiplex Medium.

A detached (2 to 2.5-story) structure that consists of 5 to 12 dwelling units arranged side-by-side and/or stacked, typically with a shared entry from the street.



### Triplex Stacked.

A small-to-medium (3 to 3.5-story) sized detached structure that consists of 3 dwelling units typically stacked on top of each other on consecutive floors, with one entry for the ground floor unit and a shared entry for the units above.

*Data & Image source: Opticos Design, Inc.*



### Current Development Patterns

Genoa Township has longstanding interest in preserving and maintaining natural features and open spaces. The zoning tools that are available to maintain rural character within low-density residential areas include ones that encourages cluster and open space developments with a modest reduction in lot sizes and larger green buffers between the lots and the roads rights-of-way. The Township also recognizes the need for allowing for diverse housing within the community. The current Zoning Ordinance encourages two-family duplex homes where appropriate. Medium-density and higher-density districts allow for townhomes and apartment buildings. The density varies for medium/high-density districts vary from 5 to 8 units per acre. The ordinance allows for flexibility in design standards with a residential planned unit development, but this does not necessarily allow for an increase in density. Well-planned and designed residential developments are not always defined by density alone and the Township may wish to explore refining the PUD standards for additional flexibility.

The market analysis results indicate an increasing demand for smaller units in walkable settings for current residents in order to downsize. The table below provides a summary of recommended housing styles in applicable future Land Use categories. Minimum density for developments should be guided by the building form, open space standards and other design features consistent with the underlying zoning. Such flexibility in housing styles would allow for residents to age in place. It is noted that these housing types may be inconsistent with lake lots as they are typically smaller in size.

**TABLE 3.2.MISSING MIDDLE HOUSING- USE RECOMMENDATIONS**

	Large Lot Rural Res	Low Density Res	Small Lot Single Family	Med Density Res	High Density Res	Grand River East	Grand River West
Duplex Side-by-side			Y	Y	Y	Y	Y
Duplex Stacked				Y	Y	Y	Y
Fourplex Stacked				Y	Y	Y	Y
Attached Townhouse				Y	Y	Y	Y
Cottage Court			Y	Y	Y	Y	Y
Courtyard Multi-family				Y	Y	Y	Y
Multiplex Medium				Y	Y	Y	Y
Triplex Stacked				Y	Y	Y	Y

### Applying Missing Middle Housing Strategies

The majority of existing land use in Genoa is rural residential (40.7%). Single-family housing occupies another 16 percent. Less than five percent is reserved for multiple family development along the Grand River corridor. The Township intends to preserve the agricultural/low-density areas south of Grand River Avenue. There is limited potential to meet the future needs of missing middle housing within existing residential districts. The Township may consider a permitting duplex and cottage court style housing within small lot single family districts to increase affordable housing stock, in appropriate locations, where additional density is supported by infrastructure and transportation facilities. More multi-family options in areas that are currently reserved for office development or underutilized for commercial development will help increase housing stock in the Township. The Future Land Use Plan recommends creating mixed-use districts along the Grand River corridor.

### Accessory Dwelling Units Recommendations

In neighborhoods with designs reflective of later suburban development styles, where attached garages are more typical, accessory dwelling units may be more appropriately permitted as additions to the principal home. In either case, owner occupancy of one of the units should be required. The Township may also consider phasing these units in by permitting only a small number per year to observe implementation and fine-tune its regulations accordingly.



## Traditional Neighborhood Development

Planning in the late 20th Century tended to emphasize the total separation of residential and non-residential uses. This led to a sprawling, auto-dependent development style that requires the use of a personal vehicle to accomplish even small daily errands. Modern planning often envisions **Traditional Neighborhood Development (TND)** as a method for developing new neighborhoods and communities in the style of a traditional village, with amenities in easy walking distance from most homes.

However, the same principles that guide TND in a new development context can also be used to guide infill development and redevelopment. In establishing its vision for complete neighborhoods, the plan recognizes that the non-residential uses that are desirable in neighborhoods are those that most directly serve the local residents of the neighborhood. Many of these same uses, such as corner shops, may also provide employment for people who live nearby. High intensity residential developments can support neighborhood commercial businesses as well.

FIG.3.4. TRADITIONAL NEIGHBORHOOD UNIT CONCEPT



Above figure illustrates in a generalized way how uses may mix in a traditional neighborhood, with a park and public or quasi-public use establishing a center with small-scale convenience uses. Thoroughfares at the edge of the neighborhood serve as boundaries, with more intensive non-residential uses along these roads. The neighborhood is roughly half a mile across, which provides for a ten-minute walk from end to the other. This is a general guideline and will not apply neatly to all neighborhoods.

## Attainable Housing

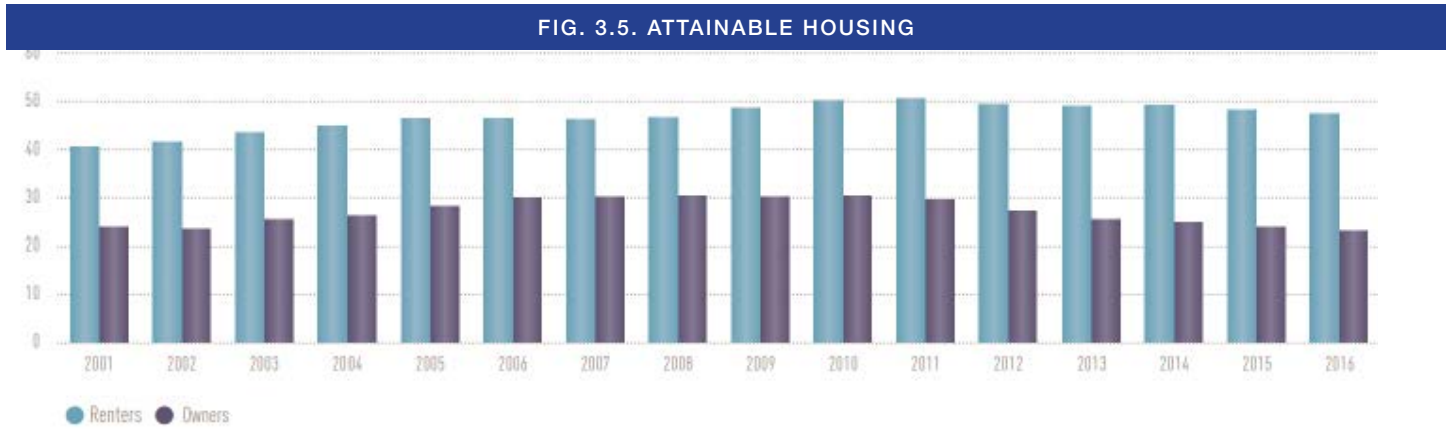
When communities have a wide spectrum of housing options to support residents, they can accomplish many goals. The availability of “attainable” housing helps accommodate everyone from young adults who are just beginning to live on their own, to families looking to grow, to older residents looking to downsize while staying in the community. It also provides for workforce housing. While there is no universal definition of “attainable housing,” the term was recently defined by the Urban Land Institute as “nonsubsidized, for-sale housing that is affordable to households with incomes between 80 and 120 percent of the area median income (AMI).”

## Overview

In many communities, young adults and the elderly have limited housing options due to a combination of their lower income levels along with the pricing and availability of housing. This kind of financial challenge can impact people of all ages.

The general rule of thumb based on guidance from the U.S. Department of Housing and Urban Development is to spend a maximum of 30% of a household’s income on housing costs, yet many people find themselves spending more on housing, leaving less of their income available for other household expenses. Finding attainable housing can be challenge and it can stress family finances.

The figure below demonstrates that nearly half of all renter households and about a quarter of owner households are cost burdened. Cost burdened is defined as households spending more that 30 percent of income on housing. In 2001, only slightly more that 40 percent of renters were cost burdened.



Source: Joint Center for Housing Studies at Harvard University, *The State of the Nation's Housing 2018*

## Housing Costs and Supply

Housing costs are on the rise. According to the National Association of Home Builders, the median price of a new-construction home was \$375,000 in April 2020, up from \$325,100 in October 2018. The median price for existing homes was \$280,600, up from \$257,500 in 2018. The cost of new construction is driving the overall cost of housing higher.

The supply of multifamily for-sale housing is decreasing. Multifamily for-sale housing has historically represented about 20 to 25 percent of total multifamily permits. This type of housing is often more attainable because of its lower cost. In the past 8 years, multifamily for-sale housing has represented 6 to 7 percent of total permits, reflecting a significant post-Great Recession decline.

New construction has delivered larger homes with more bedrooms even though household size was dropping. “Although one- or two-person households make up more than 60 percent of total households, nearly 50 percent of the homes delivered are four bedrooms or more. Less than 10 percent of the homes offer fewer bedroom options like one and two bedrooms,” as noted by ULI.

The same ULI report notes that small housing, under 1,400 square feet, has historically represented about 16 percent of new construction, but in the last cycle, it has averaged closer to 7 percent. When combined with the next size category, 1,400 to 1,800 square feet, the overall distribution of “small homes” has declined from just under 40 percent to 22 percent. Homes over 2,400 square feet have increased from 32 percent to 50 percent of new construction since 1999, according to the ULI .

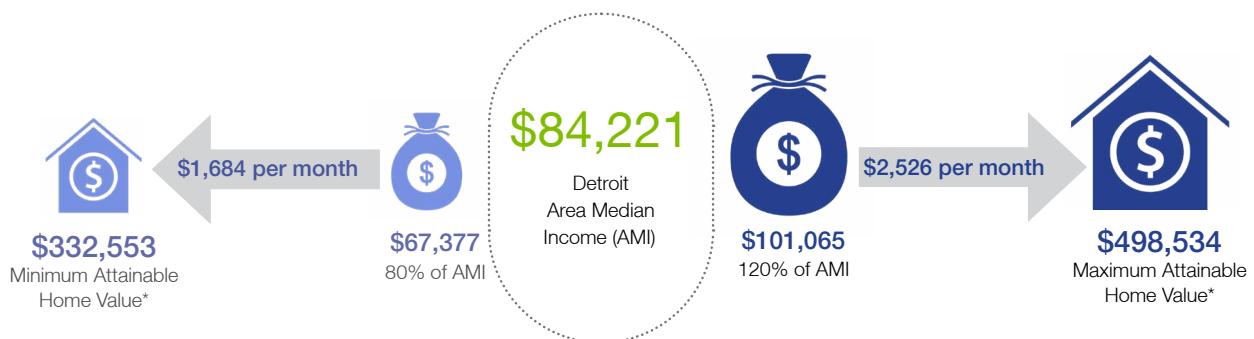
Urban Land Institute (ULI) is a leading provider of research and analysis on issues that affect housing .<https://bit.ly/AttainableHousing-ULI>

### What does this mean for Genoa Township?

As noted above, attainable housing has been defined as nonsubsidized, for-sale housing that is affordable to households with incomes between 80 and 120 percent of the area median income (AMI).” The Livingston County 2019 median household income was \$84,221 The numbers below and in Figure 18 are based on providing attainable housing in the Livingston County regional market:

- **MINIMUM VALUE.** 80% of the median family income = \$67,377. With 30% of income spent on housing, \$1,684 per month is available. A home loan valued about \$332,553 (based on 4.5% interest and 30 year mortgage) is attainable at this income level.
- **MAXIMUM VALUE.** 120% of the median income = \$101,065. With 30% of income spent on housing, \$2,526 per month is available. A home valued about \$498,534 (based on 4.5% interest and 30 year mortgage) is attainable at this income level.

FIG. 3.6. ESTIMATED ATTAINABLE HOME VALUE FOR GENOA TOWNSHIP



While housing alone is traditionally deemed affordable when consuming no more than 30% of income, the Center for Neighborhood Technology's Housing and Transportation Index (H+T Index) incorporates transportation costs—usually a household's second-largest expense—to show that location-efficient places can be more livable and affordable. It is suggested that transportation expenses total less than 15% of household income. The H +T Index calculates a variety of costs associated with transportation and includes car ownership and car use. Based on the expected miles driven per year for the area (25,000), an average of \$3.50 per gallon and a annual auto ownership cost of \$12,236 per vehicle, the H+T index estimates approximately \$16,300 per vehicle. Using the county's median income noted on the previous page, this transportation cost is approximately 20%.

The Master Plan addresses attainable housing by targeting a wide variety of housing options that go beyond single-family detached housing. Examples include multi-family dwellings, manufactured housing, and missing middle housing types, which are house-scale building with multiple units (duplexes, quadplexes and cottage court bungalows). This variety of housing types will expand the number of homes available across many price points.

Additionally, reducing the minimum square footage of requirement for new homes will provide builders and buyers with more variety, including small footprint homes that cost less to acquire and maintain.

Finally, providing opportunities for job creation and workplaces near residents may allow some residents to reduce their miles driven per year, making living in Genoa Township more affordable.

# Commercial Corridor Redevelopment

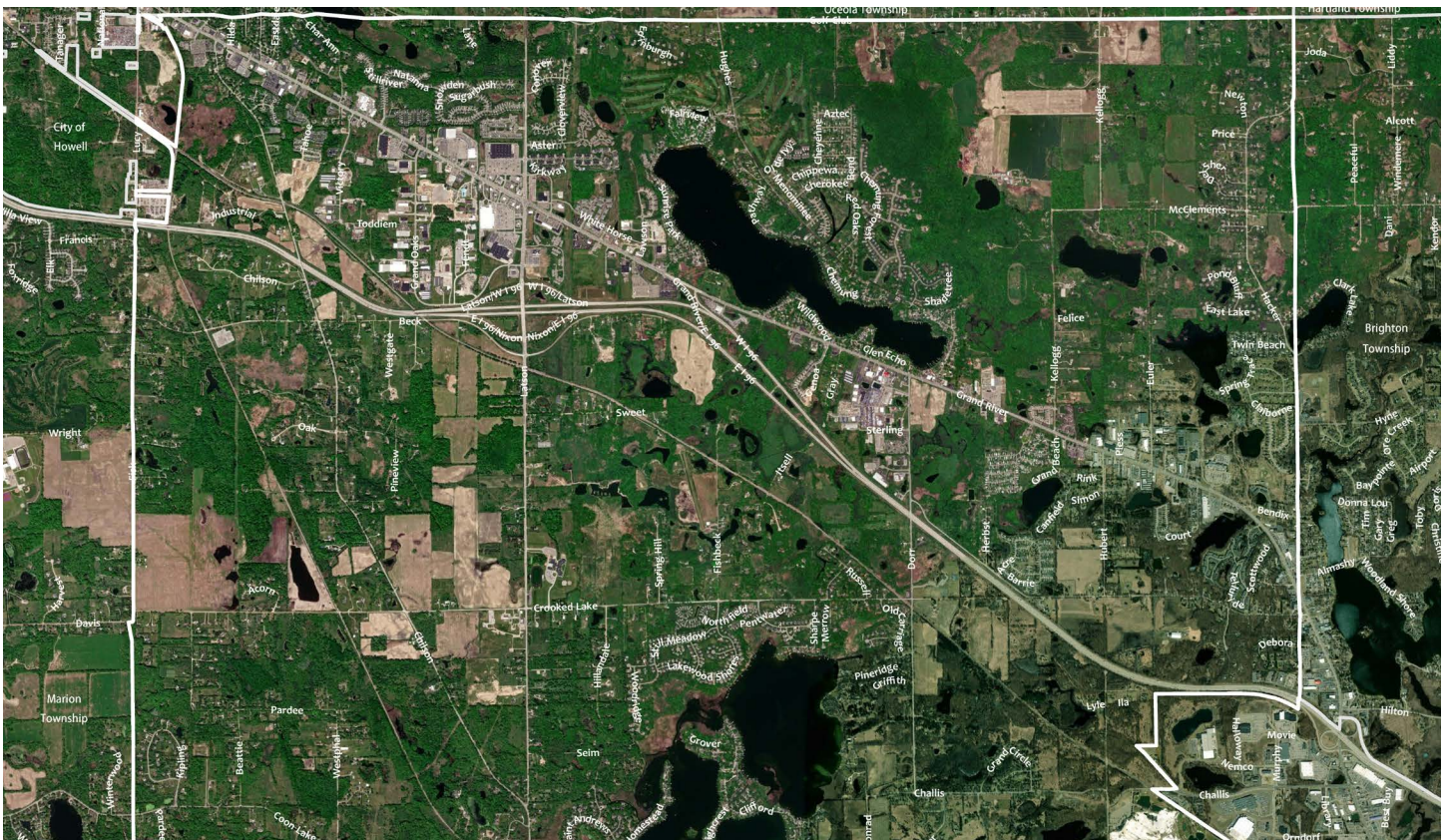


# Commercial Corridor Development

Economic development goals and policies are often found in community Master Plans. They provide general guidance, and some may include detailed action strategies to target specific geographic areas or programs. In Genoa Township, there is a history of focusing development and economic activity in and around the Grand River Corridor. This remains desirable – to make best use of existing infrastructure, build upon the successes of existing development and to provide opportunities for development where it is desired, alleviating development pressure in other parts of the Township.

This chapter is divided into three sections: Market Opportunities, Grand River Corridor Redevelopment and Redevelopment Sites. The Market Opportunities section will present opportunities for Genoa Township and begin to identify action strategies to capitalize on those opportunities. The Grand River Corridor Redevelopment section will present an overall vision for the redevelopment of the corridor. These first two sections provide the foundation for the final section that takes three sites and offers strategies for development that is consistent the overall goals of this Master Plan.

FIG. 3.7. GRAND RIVER AVENUE CORRIDOR - AERIAL IMAGE



## Market Opportunities

The Market Assessment chapter summarizes existing conditions and provides an economic forecast. The forecasting methods used here, which model a potential range of marketable opportunities in commercial, office, and residential space, rely on property trends, historical, local and regional data, and a survey of area residents conducted during the summer of 2020. While this survey took place in the early months of the COVID-19 health pandemic, respondents were prompted to consider activity pre-COVID. The assessment also considers the overall Genoa market and its potential growth to determine how much of the potential economic activity that could occur inside the Township may be occurring outside of the Township.

It's important to note that economic conditions continue to change; in most cases, generally speeding economic trends already impacting the economy before COVID-19. Purchasing online was growing rapidly prior to COVID-19, resulting in the exportation of dollars; the online purchasing rate sped up since the pandemic. Large proportions of office and workspace were being built in or simply moved to homes, and more people were working from remote locations before COVID-19; as with spending habits, the speed of change has accelerated. This is important context for understanding all forecasting numbers in this plan. The demand forecasts are not a simple estimate of what is expected to be built in Genoa Township but are rather an estimate of what could be built in the market based on forecast demand; The Township will capture some fraction of this. No community will capture all marketable activity and space.

FIG. 3.8. MARKET OPPORTUNITIES

### Housing



**Between 100 and 200 new non-single-family housing units could be added to the rooftops within the Township.** The new housing units would be geared toward independent living for seniors and young households, with the latter containing workspace. Included could be semi-detached, townhome, duplex, and other related units. The units' locations should contribute to walkability and serve existing residents who would move to a previously defined scaled smaller unit from within the Genoa area. Such new units would most likely free up existing units to attract younger households.



### Retail goods and services

The survey indicates an opportunity to diminish the exportation of dollars from Genoa Township residents, particularly in food, food services, and linked entertainment activity. **Genoa Township residents are expected to support between an additional 300,000 and 326,000 square feet of retail goods and related services space by 2030.** Most commercial opportunities are appropriate for land/parcels/structures associated in and around Grand River Avenue and I-96.



### Multi-tenant office space

**New office space demand is sufficient to generate between 20,000 and 30,000 square feet of space, accommodated in vacant space, new development, and homes.** The opportunity does not include those in the health care arena, such as outpatient infusion or surgery centers, or inclusion of higher educational institution space in Genoa Charter Township.



## Grand River Corridor Redevelopment

### Housing

To hold the existing residents and provide them with the opportunities they seek for living conditions; Genoa Township needs to ensure that development regulations afford the opportunity and foster in strategic locations housing for smaller units in a walkable environment.

Providing for densities supportive of townhomes, duplexes, and related physical forms and condominium or other non-traditional ownership positions allows for mitigation of the physical need and cost or burden on the individual household. Should an active adult community be acceptable to Genoa, the development would likely be between 700 and 1,500 housing units. The product would be primarily independent living but could support aging in place within the same development. This development would potentially pump millions of new dollars into the local economy, creating an increased demand for retail activity, including restaurants, and professional services. This increased demand would expand the opportunity for entrepreneurship and grow the labor force, attracting younger households. The East Grand River Area could be marketed as a “health hub,” serving older residents and businesses that support healthy living for all Genoa Township residents.

### Commercial

While the pandemic and ongoing labor market shortages are impacting restaurants, the preservation of existing restaurant kitchens is key to reinvigorating the market as soon as COVID-19’s impact wanes and the industry rebounds. The Township should work with property owners and restaurateurs to maintain kitchens, facilitating reopening or sales when the market returns. Outreach to hospitality and culinary programs and affiliated schools could facilitate a transition and assist with re-marketing the facilities and properties.

Genoa Township can differentiate itself from Brighton and Howell and generate excitement and activity through furthering pop-up space and incubator development. Off-street parking can be used to create temporary pop-up spaces that can spur outside visitation and entrepreneurship.

Temporary pop-up storefronts in stand-alone or strip commercial can also play a role in filling vacancies as they happen. Cargo trailers, sheds, and tents have all been used to create temporary spaces – and can be done in ways that look intentional, rather than ramshackle. In addition, big box and large-scale commercial buildings could be repurposed and divided myriad ways to support a variety of small businesses, from retailers to other business support services.

### Local Capacity investment

One of the biggest challenges for any start-up or growing business is access to capital. While banks, credit unions and other financial institutions can provide a traditional source of capital, new opportunities to raise funds exist through crowdfunding. This means building investment funds from a “crowd” of people and is especially important for women, people of color, startup businesses and those with little or a less than perfect credit history.

Most people are now aware of donation-based crowdfunding like Go-Fund-Me, in which people make a donation to support an individual, group or activity with no expectations of a return on that donation. Reward-based crowdfunding platforms like Kickstarter encourage donations in exchange for “perks” or other products. In contrast, an investment-based crowdfunding opportunity allows investors to invest in privately-owned businesses who offer a security through the Securities and Exchange Commission (SEC). There are federal regulations that support this type of investment. In Michigan, the Michigan Invests Locally Exemption (MILE), allows small businesses to raise capital by reaching out to Michigan residents to invest in their companies.

Another option employed by more than a handful of communities in Michigan is to form a local investment group that can purchase, invest, and inject dollars into projects where the investors can become partners or make loans to entities to facilitate investment. This is better managed on a smaller scale and may be more attractive than MILE due to lower reporting and SEC requirements.



## Redevelopment Sites



### Background

#### Location

The site is located on Grand River Avenue, on the southeast side of the intersection at Bendix Avenue, near the east end of the Township. The 4.24-acre site is currently vacant and is zoned OS - Office Service. Parcels south of this site are developed with office uses, with an automobile dealership and other auto-related uses further south, leading to the Grand River/I-96 interchange. There is an apartment complex to the north, across Bendix, and an attached single-family development south across Grand River Avenue.

#### Future Land Use

In the previous Master Plan, this area was designated Office and envisioned various forms of office uses, including professional, medical and financial. However, with this Master Plan Update, this area is designated as mixed use, given the adjacency of the general commercial to the south and multifamily to the north.

### Redevelopment Concept

This site presents an opportunity to integrate a mix of uses on site within the context of a larger district. The medical/office campus to the north along Grand River, multifamily directly north, single family to the east and office/commercial to the south make this site an ideal area for a mixed-use transitional development. The market study indicated demand within the Township could support development between 700 and 1,500 assisted living housing units. The market study also suggested that new office space demand in Genoa Township is sufficient to generate between 20,000 and 30,000 square feet of space, accommodated in vacant space, new development, or within homes (work from home). Given the proximity to the medical and residential uses just north/west along Grand River, this site presents an opportunity to support new office or commercial space in a compact, walkable development anchored by larger users like the St. Joseph Mercy Brighton Health Center. A mix of uses that includes senior-focused housing could be combined with other uses to serve those residents.

### Building Form

Mixed use developments can take many different forms, including vertical mixed use that “stacks” uses among multiple stories in a building or buildings (left), as well as horizontal mixed use, which organizes uses in multiple building on a single site. Both development types should include project specific regulations designed to properly balance uses on site, provide pedestrian and vehicular connections, include shared open space or public spaces and recognize the importance of flexible parking requirements. Intentional site design to maximize the mobility of older residents should include safe, convenient and comfortable sidewalks and pathways, adequate lighting, barrier-free access to site furnishings such as benches, and bicycle parking.



### Transportation

All parts of the site should be served by a shared use pathway that connects to adjacent sidewalks/pathways, roadways and sites. It is anticipated that vehicular access will tap into the existing street network on both Grand River and Bendix.

### Sustainability

Development on this site should be based on a framework of sustainable building and site design practices that offers a model for development and redevelopment elsewhere in the Township. The use of low-impact design, pervious paving materials, and native landscape materials should be prioritized.

### Development of the District

Zoning for the parcel is currently OS: Office Service district and allows professional and medical office uses; retail and residential uses are not permitted. A new mixed use zoning district should be considered to allow for the flexibility of uses while ensuring that standards are in place to promote quality





## Background

### Location

This site is located on the south side of Grand River Avenue west of Parkway Drive and originally the site of the Grand River Golf Range & Putt Putt, now revamped as Tap-In's. The area around this site is developed with strip-type commercial and auto-oriented uses including fast-food restaurants with drive-throughs and auto-service uses. Some general/regional commercial uses, including Kohl's and Tractor Supply, are also located nearby.

### Future Land Use

The previous Master Plan designated general commercial on this site, which envisioned clustered, rather than a commercial strip, pattern of development, to create a buffer from nearby residential areas. Suggested uses included larger grocery stores, restaurants and retail shopping centers. This Master Plan Update designates this area as mixed use and anticipates a vertical and/or horizontal mixing of commercial and residential uses. On this site, with its limited visibility to Grand River Avenue, it is expected that this site would best accommodate residential uses.

### Redevelopment Concept

Throughout the planning process, Genoa Township residents and officials cited the need to provide opportunities for investment and reinvestment along the Grand River Corridor. In addition, there is a need and desire for smaller housing units in a walkable environment. Given the Township's interest in supporting current and future residents of all ages and abilities, development of this site may provide an opportunity for smaller housing units in a compact, yet natural setting. There are many existing businesses in this corridor that could serve residents' daily needs at a development in this location. Grocery stores, drug stores, and restaurants are within easy reach. Smaller-scale commercial uses that serve the local community could be added as infill development to the east across Parkway Drive in a way that buffers new residential development. Commercial redevelopment of the driving range facility and parking lot could provide goods and services for local residents.

### Building Form

Here, a range of housing types is possible, including attached dwellings such as townhomes, row housing as well as stacked dwellings. Residential buildings could be 3-4 stories in height are consistent with the adjacent apartments to the west. New development should be made of high-quality building materials on all sides and provide green space for residents. Commercial development along Grand River should also be comprised of quality materials; while parking may be provided in the front of buildings, pedestrian-scaled buildings and features should be included.



### Transportation

The site is proximate to the I-96/Latson Road interchange and affords easy regional access. All parts of the site should be served by a shared use pathway that connects to adjacent sidewalks/pathways, roadways and sites. It is anticipated that vehicular access will maintain access to Grand River and Parkway Drive. Pedestrian connections between existing development and new housing would offer residents the opportunity to walk or bike to many businesses in the corridor. The ability to incorporate physical activity into their daily lives helps residents stay healthy; providing alternatives to driving offers older residents a sense of independence as well.

### Sustainability

Development on this site should be based on a framework of sustainable building and site design practices that offers a model for development and redevelopment elsewhere in the Township. The use of low-impact design, pervious paving materials, and native landscape materials should be prioritized.

### Development of the District

This type of development is currently zoned PRF, which only allows clustered residential development on the same site as a recreational use. This parcel could be rezoned to a new mixed use zoning district, which would allow for the flexibility of uses while ensuring that standards are in place to promote quality materials, walkability and protection of open spaces. The mixed use designation does not necessarily mean that every site should contain a mix of uses, but adjacent parcels should contain compatible uses aimed at promoting walkability for both local residents and regional visitors.



**SITE 3: GRAND RIVER @ CHILSON**



**Background**

**Location**

This 4.19-acre parcel is located on the south side of Grand River, east of Chilson Road. The ~43,000 sq.-ft commercial space is currently vacant and was previously used as the Great Escape Family Fun Center. The parcel is zoned General Commercial (GC) and has approximately 100 parking spaces on site. Surrounding uses include strip commercial and stand-alone commercial uses, including an automobile dealership to the east. Single family neighborhoods are found to the north of commercial uses on Grand River Avenue and between Chilson and commercial uses on the south side of Grand River Avenue.

**Future Land Use**

In the previous Master Plan, this site was designated for general commercial uses, which include businesses that serve the requirements of the community at large including Genoa Township, Howell, Brighton, and pass-by traffic along Grand River. The current Master Plan designates this area as mixed use and intends to provide flexibility for reuse of existing commercial structures and sites along with a mix of residential and commercial uses.

**Redevelopment Concept**

It is envisioned that future redevelopment will seek to reuse the existing structure and parking area. Residential uses are not anticipated, but instead commercial activities that can provide needed goods and services are envisioned. This site could present an opportunity for startup uses, such as through a food truck lot or pop-up retail spaces that have the potential to move into other spaces along the corridor.

### **Building Form**

It is expected that the existing structure on the site will remain, at least in the near term.

### **Transportation**

Improvements to promote walkability, such as connections to the shared use path along Grand River and improved pedestrian connections between adjacent uses, are expected.

### **Sustainability**

The site could be improved by removing some of the asphalt parking area and adding more trees and enlarging landscape areas. Any new development on this site should be based on a framework of sustainable building and site design practices that offers a model for development and redevelopment elsewhere in the Township. The use of low-impact design, pervious paving materials, and native landscape materials should be prioritized.

### **Development of the District**

As noted previously, a new mixed use district should be created to promote the flexibility and mixing of uses intended. In this case, allowing for temporary pop-up uses, food trucks and other business incubation models, should be included.



## Pop Up, Temporary and Mobile Uses

**“The reinvention of retail is still in its early phases, but what is happening with the pop-up trend is a near-perfect microcosm of where retail is going in the Age of Experience.”**

*- 2019 report by real estate consulting firm Cushman Wakefield*

Recent economic and cultural trends show an explosion in the popularity of food trucks, mobile vendors, pop-up shops and other short-term commercial uses over the past several years. These uses may take up space in a vacant storefront, outdoor space or mobile unit. Holiday and seasonal shopping are frequently drivers of temporary or short-term retailing but increasingly, retailers and restaurateurs are using temporary spaces and mobile units to try out new ideas and business models. These may include new or even existing businesses trying experiential retailing, where the experience of shopping and dining are as important as the food, beverage and goods being sold.



Walloon Lake

Retail marketplaces—a concentrated area of multiple temporary vendors – can really generate interest in communities. One highly successful example is the Showfields in Manhattan (its flagship location – other Showfields locations include LA and Miami); this 15,000 square foot space where pop-up partners are curated and pay a monthly fee (rather than rent) to test out their businesses. Other examples include individual seasonal pop-up shops like those found in Detroit, Walloon Lake Village and Hyannis, MA.



Town center food truck event

Beyond traditional retail and restaurant uses, media companies are getting in on the action and experimenting with media/entertainment pop-ups. Netflix and other media companies are creating interactive, immersive events around popular TV shows, films and music that combine food, beverage and goods with pop culture sensations.

While the recent health pandemic accelerated trends in retailing that have been building in recent years, the pandemic itself hit the restaurant industry hard. Businesses and workers alike are trying to reinvent themselves and looking for new opportunities.

### Benefits of Temporary Retailing

Temporary retailing may offer low-cost way to wade into the pool of business ownership or grow existing businesses. Temporary retailing:

- Provides an opportunity to increase jobs and businesses without committing to buying or leasing space.
- Increases activity in struggling business districts by creating a dynamic environment where people gather around the availability of new and fresh food and other goods.
- Spreads the word about new activity through the use of social media by temporary vendors.
- Signals to other potential businesses that the community is adapting to the evolving economy and supporting entrepreneurship; communities that anticipate the demand from businesses and consumers may also find that this flexibility signals receptivity to new business models.
- They are a way for restaurateurs to test the local market for future bricks-and-mortar facilities. Mobile food trucks offer opportunities to interact with a potential market, to test recipes, pricing, and see if the restaurant is a fit with the community.
- Locating within or outside of existing businesses allow emerging businesses to benefit from greater exposure and foot traffic while existing retailers get the upside of increased foot traffic from curious shoppers interested in new offerings.

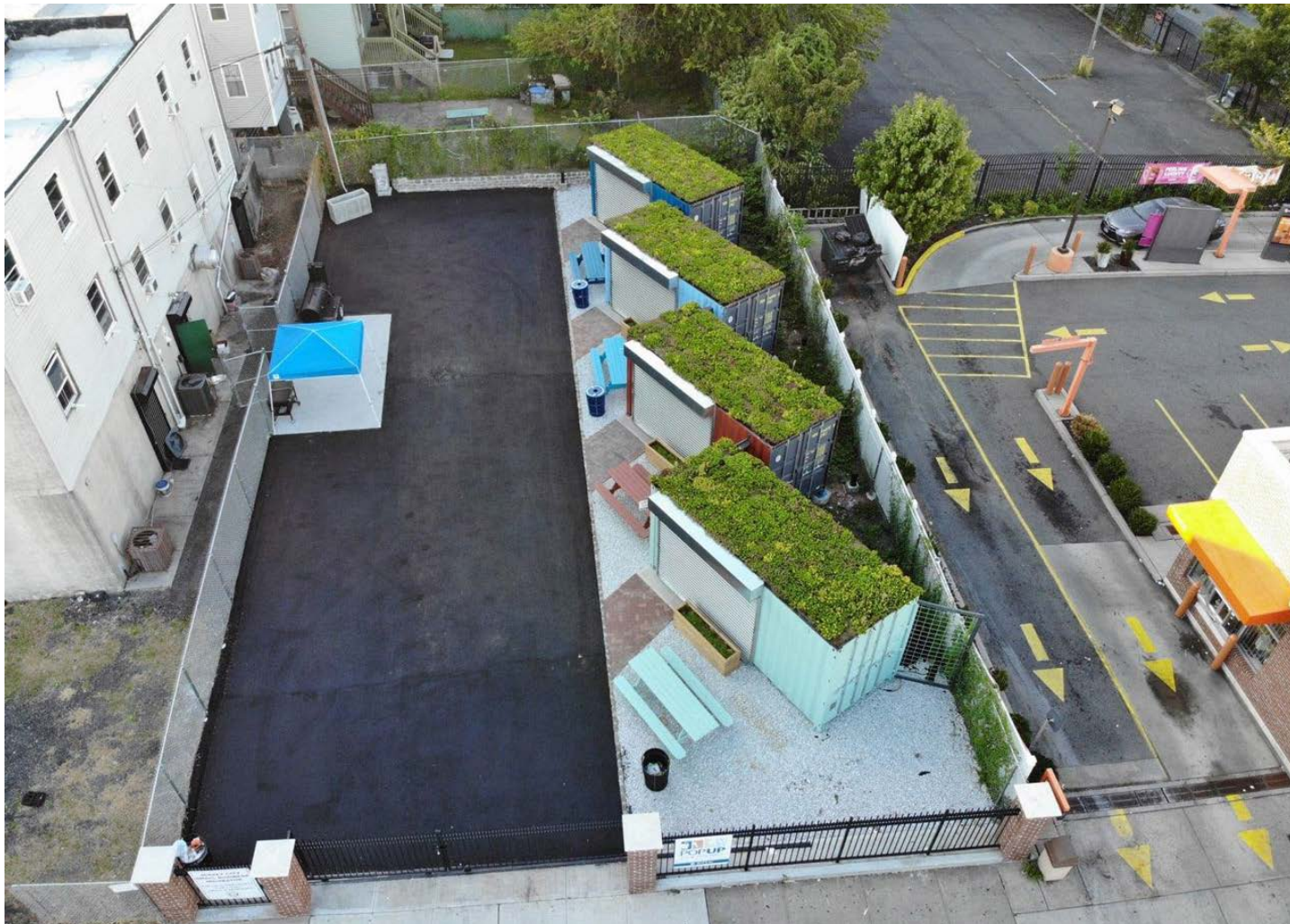


Showfields manhattan untapped, Newyork



Campus Martius Park, Detroit





Container Village 342 MLK Drive Bergen Lafayette Jersey City NJ. Source: Jersey City



Food truck event, Royal Oak





## Arts and culture

The earliest human experiences include expressions of art and the creation of cultures that define a group of people. There is no one definition of art; expressions of art include the visual, such as painting, drawing, photography or sculpture, as well as the performed, such as music, theater, dance and film. Art includes the spectrum from the written word and storytelling to animation and textiles. It includes industrial design, architecture and graphic design industries. The definition of “culture” is “all that is fabricated, endowed, designed, articulated, conceived or directed by human beings, as opposed to what is given in nature. Culture includes both material elements (buildings, artifacts, etc.) and immaterial ones (ideology, value systems, languages).”

According to the American Planning Association (APA), planners in the past have used art and culture as a “community revitalization tool,” but today, there is recognition that arts and cultural opportunities have tremendous potential to contribute to broader social, economic, and environmental aspects of community life. The APA states that arts and culture provide a medium to:

- Preserve, celebrate, challenge, and invent community identity;
- Engage participation in civic life;
- Inform, educate, and learn from diverse audiences; and
- Communicate across demographic and socioeconomic lines.

Arts & cultural activities – vast and innumerable – support individual health and wellbeing, promote community identity through placemaking and catalyze economic development.

The City of Fort Wayne’s Art Master Plan, Art for All, notes that “public art provides the intersection between our past, present, and future, and also has the power to transform a city because neighborhoods gain social, economic, and cultural value through public art.” The plan identifies the value art brings to a community:

**Economic Value:** Enhancing the identity and character of (the community) through public art directly supports cultural tourism and economic development strategies, which can attract and retain residents.

**Social Value:** When people see themselves reflected in their civic spaces, they have a sense of attachment that allows them to feel ownership and respect.

**Cultural Value:** Public art has the power to create uniqueness through the reflection of the local history and culture, which gives communities a sense of place and identity. Public art provides a visual mechanism for understanding other cultures and perspectives, creating social cohesion and encouraging civic engagement. Through the reinforcement of culture, public art acts as a catalyst for unity and social engagement.

## Health and Wellbeing

Over the past several years, studies throughout the world have shown the value of arts and culture on individual and community health. In a 2018 report, the United States Department of Art and Culture (USDAC), a non-governmental grassroots action organization, cites several of these studies that include wide-ranging data to support the power of art on health and wellness.

The report concludes, “we understand human connection, meaning-making, creativity, and purpose as key contributions to individual and collective well-being and therefore as powerful modes of prevention.” The report concludes with the following findings:

- The arts can help keep us well, aid our recovery and support longer lives better lived.
- The arts can help meet major challenges facing health and social care: aging, long-term conditions, loneliness and mental health.
- The arts can help save money in the health service and social care.



## Economic impact of arts and culture

The nonprofit organization Americans for the Art provides research data on the impact of arts and culture in communities. Their 2018 report on the economic impact of the arts (supported by the US Bureau of Economic Analysis) found that nonprofit arts and culture industries generated \$166.3 billion in total economic activity and supported 4.6 million jobs in 2015. The report notes that findings show that the arts are an “industry that supports jobs, generates government revenue and is a cornerstone of tourism.” The economic impacts are substantial in Michigan. In 2017, the arts and culture industries added 2.8% or \$13.9 billion to the state’s economy and employed 121,330 workers (about 3% of Michigan’s employment). These workers earned wages and benefits totaling over \$7.6 billion.

## Strategies for Communities

To support community health and wellness, placemaking efforts and the local economy, communities should look for ways to support local arts and cultural activities. Some strategies may include:

- **Understand the community’s arts and cultural assets:** identify arts-related organizations and for-profit businesses as well as cultural organizations.
- **Promote community arts and cultural assets:** Leverage assets to attract and retain residents and businesses.
- **Support arts-related businesses:** Tap into the skill sets and synergies of local arts-related businesses; facilitate discussions with businesses to identify opportunities for support.
- **Information Hub:** Encourage the development of an umbrella organization to serve as the “hub” of information on activities and events, as well as learning and volunteer opportunities.
- **Promote interaction in public space:** design, manage and program public space with people in mind. Include citizen participation in these elements to ensure buy-in and ongoing support.
- **Encourage civic celebrations:** Partner with community organizations to host annual or seasonal events such as festivals or farmers markets; tap into the social, ethnic, and economic diversity found in the community.
- **Encourage youth in the community:** Provide opportunities for young people to create and participate in arts and cultural events and activities. Keep in mind that engaging the youth of the community also often engages adults.
- **Resources:** Provide human and financial resources to support local arts and culture organizations.
- **Public art:** Support temporary and permanent public art projects; explore creating a public art fund tied to new development.
- **Incubator Spaces:** Create incubator space for arts-related organizations and for-profit businesses as well as cultural organizations.

## Community Character

Community character guides the way we regulate the development and redevelopment of land. For example, rules on building placement, like setbacks, have an impact on the spaces between buildings whether those spaces are private or public open space. In addition, community character can guide appearance and landscape standards and these can vary throughout the Township.

### Why is Civic Identity important?

Creating and nurturing civic identity is critical for effective and efficient local governance. A civic identity can instill pride in residents that encourages them to vote in local elections as well as participate as Township board/ commission members. A solid, recognizable civic identity works with community character to support economic development both for business attraction and retention. It can also support local institutions who may rely on people from outside the community to understand where they operate.

## Gateways

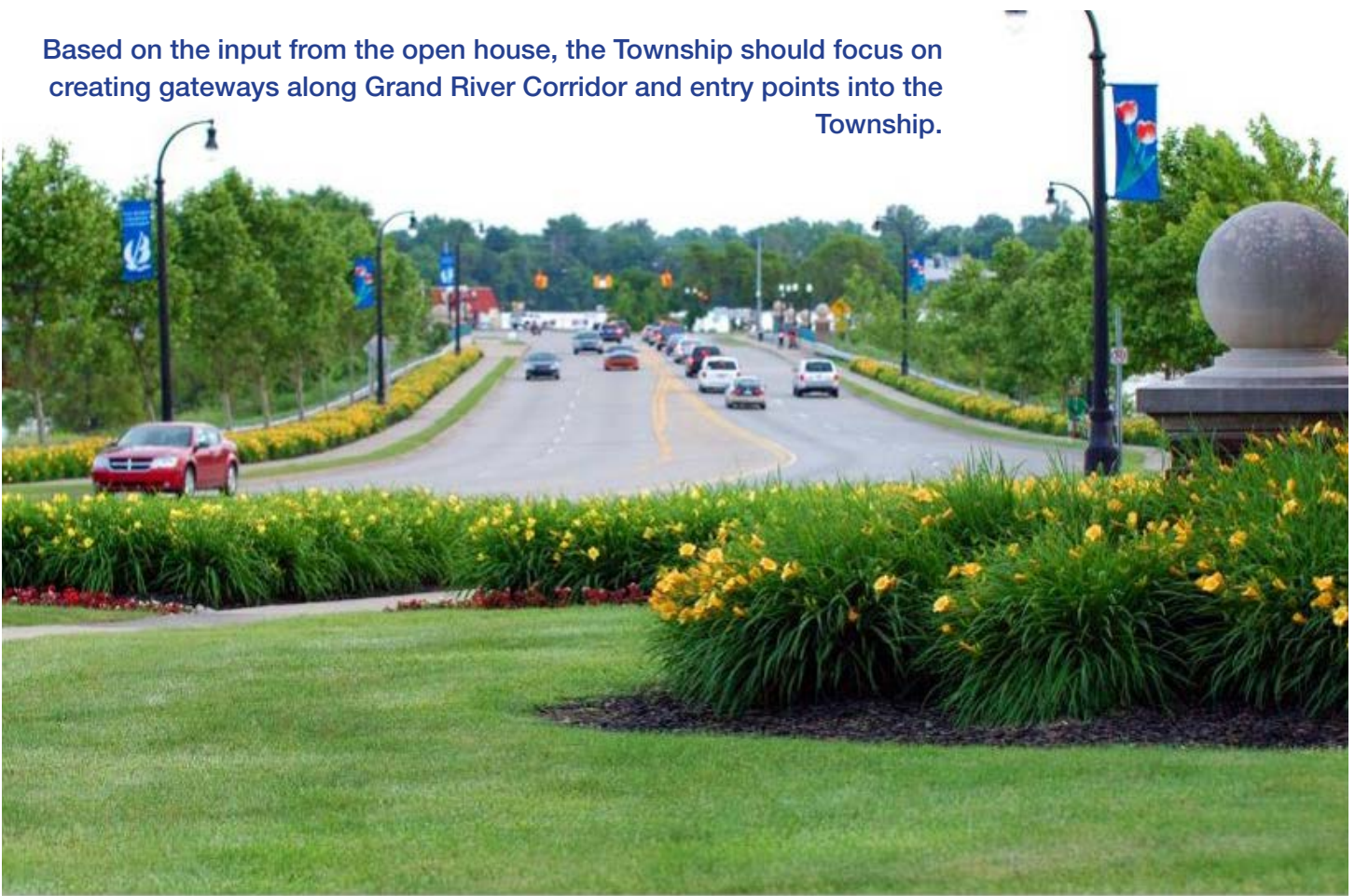
### What are Gateways?

- Announce a point of arrival
- They can be located on a public or private property (or combination)
- They could be for people arriving by vehicle or on foot/ bicycle

### Why are Gateways important?

- Reinforce community identity
- Creates anticipation for what is ahead
- Provide a sense of place Why is Community Character important?

**Based on the input from the open house, the Township should focus on creating gateways along Grand River Corridor and entry points into the Township.**



## Placemaking

Placemaking means intentionally creating quality places that people seek out to live, work and play. It is a process of creating and nurturing quality places that have a strong sense of place. As it becomes increasingly easier to live and work anywhere, people will choose quality places that are:

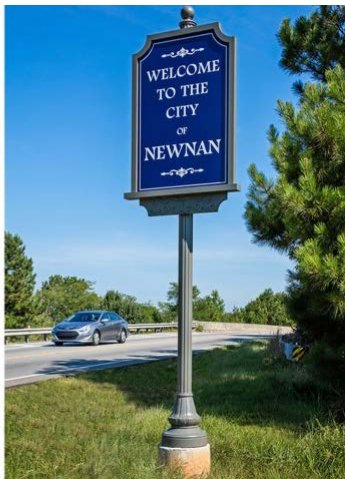
- Safe
- Connected
- Welcoming
- Conducive to authentic experiences
- Accessible; people can easily circulate within and to and from these locations
- Comfortable; they address cleanliness, character, and charm
- Sociable; they have a physical fabric that encourages people to connect with one another
- Able to promote and facilitate civic engagement.

Because authenticity is a critical component of placemaking, arts and culture unique to a community are key ingredients in creating quality places. The Kresge Foundation is a strong advocate for placemaking in communities and focuses on the role that art and culture play. They establish the following guiding premises :

- Creativity, aesthetic expression and the impulse to create meaning are evidence of our humanity and serve as community assets from which to build.
- Participation in arts and culture takes many forms and occurs in a wide range of venues—parks, community centers, churches and public spaces. People attend art events and buy art. But they also make, teach, learn and support arts and culture in myriad ways, from the amateur to professional realms.
- Our societal tendency is to focus on art products, but it is also imperative to recognize and appreciate the creative process. Process can be as important as, or in some cases, more important than art product.
- Artists have many kinds of relationships with communities, often helping people find their voice and expression or lending a different perspective when framing or devising solutions to community issues.
- Arts-and-culture activity is intrinsically important and contributes to a wide range of community dynamics, conditions and issues.









# Complete Streets

# Complete Streets

Complete Streets is a term used to describe a transportation network that includes facilities for vehicles, pedestrians, cyclists, and other legal users of all ages and abilities. In 2010, Michigan passed Complete Streets legislation to encourage and justify the development of Complete Streets in communities. At that time, Michigan's Planning Enabling Act was also amended to require comprehensive plans to address Complete Streets.

Over the past several years, Genoa Township has been working on completing its sidewalk/shared use path network. The Township recently completed the network on Grand River Avenue, allowing for pedestrian and bicycle travel along this important corridor. The Livingston County Planning Department has also prepared a greenway manual for the Livingston County Greenways Initiative. The manual outlines goals, and objectives of greenways and standards for greenway development within the county. This chapter provides a summary of relevant information the Township can refer to plan for the overall system of streets and roads in a community that provides for the movement of people and goods from places both inside and outside the community.

This chapter summarizes general recommendations and emphasizes the importance of communities adopting Complete Streets Policy. The 2013 Township Master Plan includes recommendations about motorized and non-motorized improvements within the Township. The Township should consider evaluating those recommendations and updating them as required. The Township should consider other planning and outreach efforts to prepare a comprehensive complete streets policy for the Township.

## Communities that adopt Complete Streets policies recognize that

- Complete Streets provide transportation choices, allowing people to move about their communities safely and easily.
- Complete Streets policies acknowledge the problems with current transportation facilities.
- Implementing Complete Streets strategies will make communities better places to live and work.

## Relevant Plan References

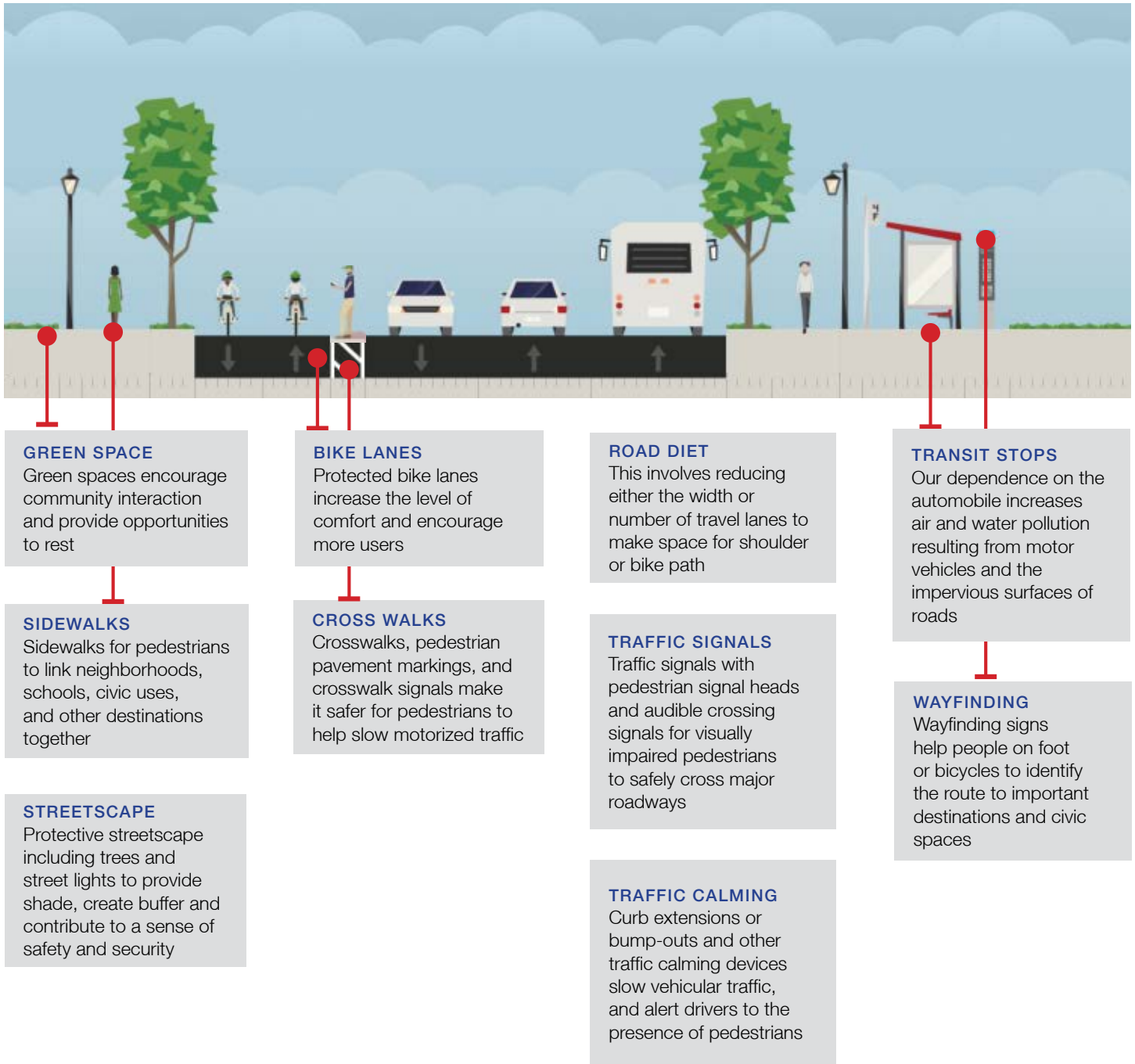
- Crosstown Trail- Howell Area Non-motorized Trail Study, 2003
- Southeast Livingston Greenways, 2000
- Grand River Avenue Access Management Study
- Bicycle and Pedestrian Travel Plan for Southeast Michigan: A Plan for SEMCOG and MDOT's Southeast Michigan Regions, 2014

Refer to page 1.5 for more details about the plan and related recommendations. The implementation strategies chapter summarizes corresponding complete street strategies.



**FIG 3.9. COMPOSITE CONSERVATIVELY ESTIMATED OPPORTUNITIES**

The graphic below illustrates elements of complete streets - but not every street needs to contain every element. In Genoa Township, many of these elements are not appropriate, but provided here for future reference and education. Throughout a community’s transportation network, there may be opportunities to provide facilities for pedestrians, bicyclists and users of transit (where applicable).



*Image Source: Street Mix; Exhibit prepared by: Giffels Webster*

FIG. 3.10. BENEFITS OF COMPLETE STREETS

## Safety



1. Reduce pedestrian accidents by increasing the safety factor.
2. Improve perceptions of the safety of non-motorized travel, which strongly influences decisions about alternative modes of travel for many.
3. Reduce either the width or number of travel lanes to make space for shoulder or bike paths will improve safety (road diet).



On an average, a pedestrian was killed in the US every **88 minutes** in traffic crashes in 2017

## Health



1. Promote walking or biking to school to lower child obesity rates.
2. Encourage activities to counteract a sedentary lifestyles, which have been shown to be associated with a host of long-term health problems.
3. Add sidewalks, bike paths and access to transit to increase levels of physical activity.



Between 1989 and 2018, **child obesity rates** rose dramatically, while the percentage of walking or biking to school dropped



**54%** of older American living in inhospitable neighborhoods say they would walk and ride more often if things improved



Carbon-dioxide emissions can be reduced by **20 pounds per day** or more than **4,800 pounds** in a year per each commuter by using transit instead of driving

## Access



1. Address equity concerns by designing facilities that are safe, accessible, and welcoming for all users, particularly for the elderly, the disabled, and children.

## Environment



1. Reduce dependence on the automobile to lower air and water pollution resulting from motor vehicles and the impervious surfaces of roads.
2. Promote a shift away from automobile travel. Studies have shown that 5 to 10 percent of urban automobile trips can reasonably be shifted to non-motorized transport.

## Economy



1. Design residential and local business districts with traffic calming measures to provide safe pedestrian access and increase consumer activity.
2. Implement Complete Streets policies as placemaking strategies for economic development and community revitalization.



Nearly **40 percent** of merchants reported increase in sales, and **60 percent** more area residents shopping locally due to reduced travel time and convenience

Prepared by *Giffels Webster*, data compiled from multiple sources.



## Design Considerations

The usage rate of any non-motorized facility by diverse groups of users depends on the level of comfort the path provides. Level of comfort typically depends on various stress factors such as vehicular traffic speed, volume and the time of the day. Safely designed pedestrian/bicycle lanes lead to more users and less accidents.

### Level of Traffic Stress

The Mineta Transportation Institute developed a rating system to rate the “stress levels” users experience. The ‘Level of Traffic Stress’ (LTS) ratings range from 1 (lowest stress) to 4 (highest stress and discomfort) and are based on factors such as the speed and volume of vehicle traffic, the number of travel lanes, the size and complexity of intersections, and the types of bicycle facilities provided.










### Type of Ridership

A study completed by Roger Geller for the Portland Office of Transportation identified Four type(s) of users which correlates with the LTS ratings. The type of riders are categorized by their level of comfort riding on different types of facilities.

### All Ages and Abilities

National Association of City Transportation Officials (NACTO) developed an ‘All Ages & Abilities’ criteria for selecting and implementing bike facilities. All Ages and Abilities facilities are defined by three primary factors: safety, comfortability and equitability. This guide helps communities design facilities with appropriate traffic calming measures based on contextual factors such as vehicular speeds and volumes, user type and level of comfort to reduce accidents and increase ridership. Another good resource for determining the right type of facility for a particular route is the ‘Bikeway Selection Guide’ created by US Department of Transportation Federal Highway Administration.

FIG. 3.11. ALL AGES AND ABILITIES

TYPE OF USERS	BARRIERS TO CONSIDER
 <b>Children</b>	Smaller and less visible from driver's seat
 <b>Seniors</b>	Lower visual acuity and slower riding speeds
 <b>Women</b>	Concerns about personal safety and traffic stress. Prefer buffers or barriers from vehicular traffic lanes
 <b>People Riding</b> <b>Bike Share</b>	Bike to transit or make one-way trips. Rely on comfortable and easily understandable bike structure
 <b>People of Color</b>	Fear of exposure to theft, assault or being a target for enforcement
 <b>Low-Income</b> <b>Riders</b>	Rely extensively on bicycles to ride to work. Access to continuous and safe facilities
 <b>People with Disabilities</b>	Use adaptive bicycles that require wider envelope and operate at lower speeds
 <b>People Moving Goods or Cargo</b>	Cannot be accommodated by facilities designed to minimal standards
 <b>Confident Cyclists</b>	Constitute a smaller percentage of total users, most often male. In the U.S., 76% of bike trips are made by men and 87% of competitive cyclists are male.

Source Text: National Association of City Transportation Officials (NACTO)

FIG. 3.12. LEVEL OF TRAFFIC STRESS AND TYPE OF RIDERSHIP

### LTS-1



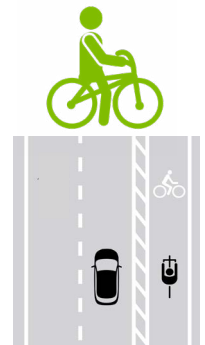
1. Shared use paths are used by pedestrians as well as bicycle users
2. 8 feet min. width with 5-10 feet planted buffer
3. Ideal traffic speeds less than 25 miles per hour
4. Wider Right-of-way widths
5. Pavement surfaces should be based on anticipated usage volumes
6. **Comfortable for all ages and abilities**



### LTS-2



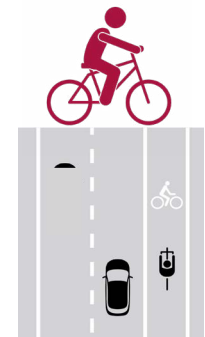
1. Bike lanes separated by buffers defined by pavement markings and parallel parking
2. 8 feet min. two-ways or 5 feet min. one-way with 5 feet painted buffer
3. Ideal traffic speeds from 20-25 miles per hour
4. Limited Right-of-way widths
5. Add vertical delineation such as candlestick bollards for increased level of perceived protection
6. **Comfortable for most adults**



### LTS-3



1. Dedicated bike lanes that are adjacent to traffic lanes
2. 8 feet min. two-ways or 5 feet min. one-way with 5 feet
3. Ideal traffic speeds more than 25 miles per hour
4. Dedicated bike lanes that are adjacent to traffic lanes
5. Limited Right-of-way widths
6. Reduce curbside and intersection conflicts through access management
7. **Comfortable for confident bicyclists, who prefer not to share with the vehicles**



### LTS-4



1. Identifying a specific route as a 'Bike Route' is the simple alternative when immediate infrastructure improvements to roadway network are not feasible
2. Wayfinding signage such as 'share the road' or directional signage can be installed to guide the users to destinations or other connections
3. Traffic calming measures are required to manage speeds
4. **Uncomfortable for most users**



Prepared by Giffels Webster

Data Source: Mineta Transportation Institute & Roger Geller for the Portland Office of Transportation

## Ten Principles of Complete Streets Policy

VISION	<b>Vision and intent</b>	Includes an equitable vision for how and why the community wants to complete its streets. Specifies need to create complete, connected, network and specifies at least four modes, two of which must be biking or walking.
DESIGN	<b>Diverse users</b>	Benefits all users equitably, particularly vulnerable users and the most under-invested and underserved communities.
	<b>Design</b>	Directs the use of the latest and best design criteria and guidelines and sets a time frame for their implementation.
	<b>Land Use and context sensitivity</b>	Considers the surrounding community's current and expected Land Use and transportation needs.
IMPLEMENTATION	<b>Performance measures</b>	Establishes performance standards that are specific, equitable, and available to the public.
	<b>Commitment in all projects and phases</b>	Applies to new, retro-fit/reconstruction, maintenance, and ongoing projects.
	<b>Clear, accountable expectations</b>	Makes any exceptions specific and sets a clear procedure that requires high-level approval and public notice prior to exceptions being granted.
	<b>Jurisdiction</b>	Requires inter agency coordination between government departments and partner agencies on Complete Streets.
	<b>Project selection criteria</b>	Provides specific criteria to encourage funding prioritization for Complete Streets implementation.
	<b>Implementation steps</b>	Includes specific next steps for implementation of the policy.

Data Source: National Complete Streets Coalition (NCSC)



## Complete Streets Objectives for Genoa Township

The basic objectives of a “complete street” system in Genoa Township from 2013 Master Plan for Land Use are listed below. These objectives are consistent with other recommendations summarized in the preceding pages.

### Provide a Variety of Travel Routes.

Those walking or biking are more likely to do so when they feel safe and comfortable. Therefore, a variety of routes should be provided so non-motorized facilities are planned along roads with travel conditions that would naturally attract such activity. This involves providing connections from neighborhoods to schools, the Township Hall campus, and recreation in and near the Township. See page 3.41 for more details.

### Provide for Safe Travel Along the Street.

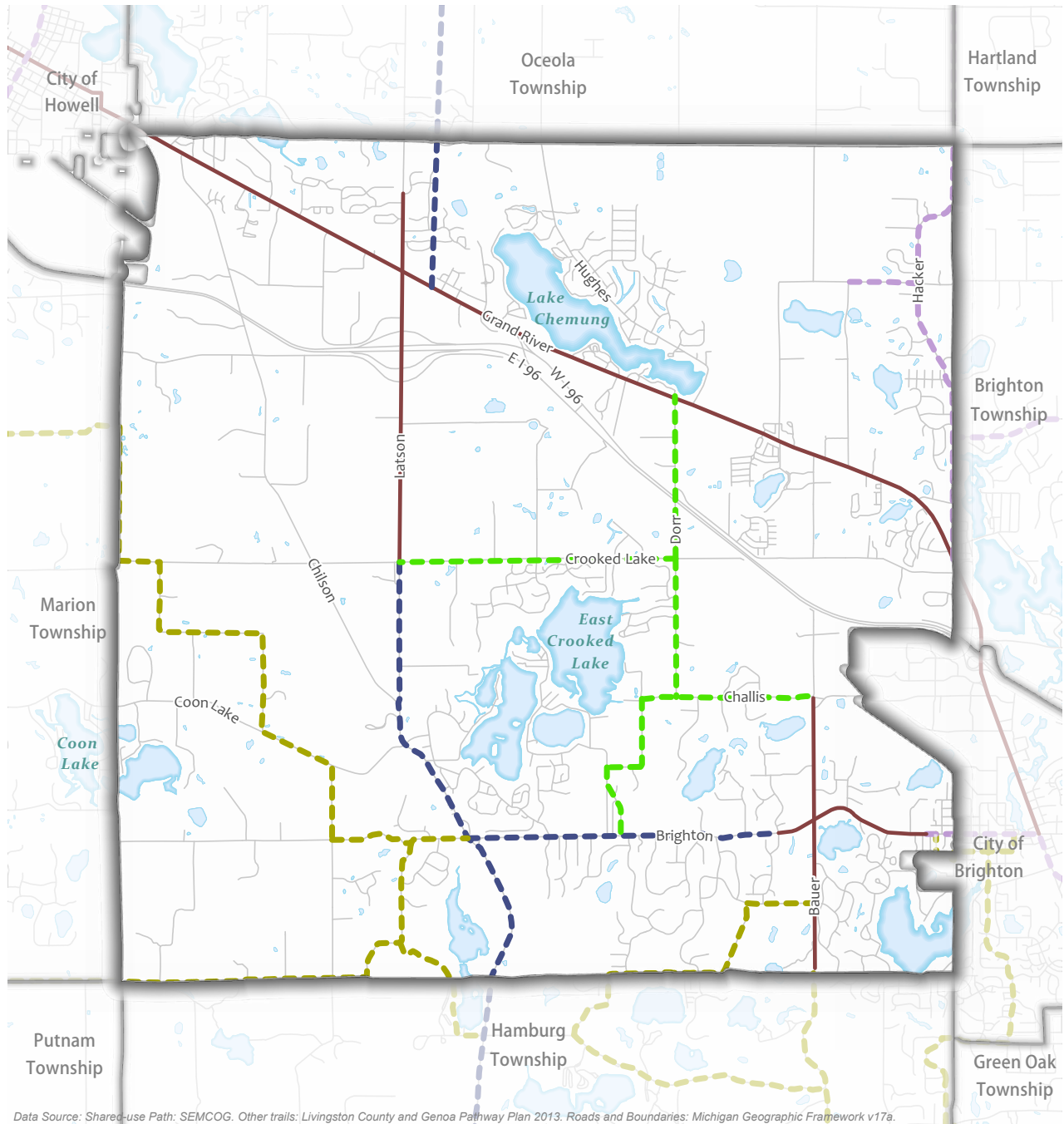
A variety of options may be considered to facilitate non-motorized and/or transit travel, in addition to moving vehicular traffic. Depending on the context, bike lanes, cycle tracks, sidewalks and pathways can all assist in moving pedestrian and bicycle traffic. See page 3.38 for more details.

### Provide for Safe Travel Across the Street.

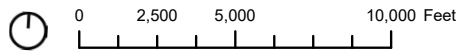
Where travel along the road is often considered in non-motorized planning, it is often the travel across the street that can deter non-motorized activity, such as busy arterials like Grand River. The goal is to provide some convenient places to cross where the pedestrian is very obvious to the driver. See page 3.39 for more details.

### Different Types for Different Folks.

While experienced bicyclists prefer riding in the travel lane or along its right edge, less experienced riders prefer a bit more protection. Since one goal is to encourage people to bicycle more frequently, a system that meets the needs of those potential users is important. Therefore, bike lanes, buffered bike lanes, and separated pathways should be part of an overall bikeway system. See page 3.40 for more details.



Data Source: Shared-use Path: SEMCOG. Other trails: Livingston County and Genoa Pathway Plan 2013. Roads and Boundaries: Michigan Geographic Framework v17a.  
 Map Exported: October 20, 2021. ©2020 Giffels Webster.



- Proposed Genoa Path
- - - Proposed County Priority Routes
- - - Proposed County Near Term Network
- - - Proposed County Long Term Network
- Existing Shared-Use Path

# Sustainability & Resiliency



# Sustainability & Resiliency

It is becoming critical to include concepts of resiliency and sustainability into Land Use plans. Though they are related, resiliency and sustainability are not the same.



**Sustainability** is the well-established concept that focuses on decreasing or eliminating the detrimental future impacts of our current activity.



**Resiliency** recognizes that our built environment will be subject to stresses and is the practice of designing that environment in a way that can endure those stresses. Some threats are ongoing, persistent stresses, while others are sudden shocks or single events that disrupt the day-to-day functioning of the community.

As we plan for the future, many of the challenges we will face are related either directly or indirectly to our place in larger systems, both natural and man-made. We often have little direct local control over these systems, but adapting to change and discovering our role in contributing to the health of these systems is nonetheless essential to planning for a community that can survive and thrive even in the face of the most severe challenges. Resilient communities are not only preparing for weather and climate-related shocks, but are also preparing for economic and health shocks as well. In 2020, we saw the impacts of a global pandemic on local community health, education, recreation, commerce, technology and social connectivity. These impacts touched everyone's lives in big and small ways and may have lasting impacts in our communities.

## Effects of Climate Change

A changing climate has far-reaching implications for Michigan's agricultural and tourism economies, waterfront development, and communities with older stormwater management infrastructure. Locally, within the last decade, Oakland County has experienced multiple heavy rain events that have led to property damage and decreased mobility and must anticipate that more flooding will occur in the future, damaging property, impairing access to parts of the Township, and creating financial distress for local residents and businesses.

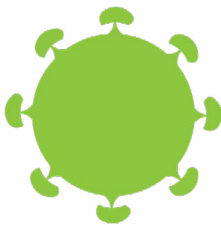
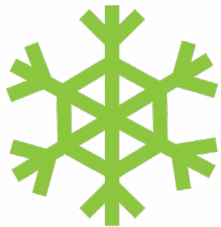
As the frequency and intensity of severe weather events continues to increase, communities will experience economic disruption. For instance, while the frost-free season has nominally increased, farmers in many of Michigan's agricultural communities have not benefited in recent years due to abnormally late frosts (such as those in mid-May, 2020) or heavy rain events, which have damaged early crops or delayed planting of late crops. Rising temperatures and more very hot days may affect the timing of summer festivals and tourism.

Communities must be prepared to anticipate the local effects of regional climate trends. According to the United States Environmental Protection Agency, climate change is already impacting many sectors of our communities. At a minimum, increases in air temperature and precipitation, combined with other factors, have caused impacts in the Great Lakes region including:

- Increased risk of heat-stress to equipment, infrastructure, and people, especially those who work outdoors or are otherwise vulnerable.
- Increased flooding and coastal erosion.
- Reduction in water quality due to increased occurrences of toxic algae blooms.
- Changes to the usability of water infrastructure like docks and piers.
- Economic impact to industries like forestry, fishing, crop production, tourism, manufacturing, energy production, and recreation.
- Expanded commercial navigation season as ice coverage continues to decline on the Great Lakes



This Master Plan recognizes the importance of additional planning efforts needed to ensure the Township is resilient and sustainable. Future planning should include a public outreach process in two basic parts: education and input. Education includes making community members aware of potential threats and the process of planning for them, with an emphasis on outreach to the most vulnerable members of the community. The input process should offer the opportunity for residents and other stakeholders such as municipal staff and business owners to engage in detailed, focused conversations regarding resiliency planning issues. It is important for the community to engage in vigorous outreach through multiple channels to get people involved.



**Extreme heat**

Average temperatures in the Great Lakes region rose 2.3 degrees Fahrenheit from 1951 through 2017. Extreme heat is dangerous for vulnerable populations and can also tax electrical infrastructure, leading to power outages, which in turn can increase the risk for the people most prone to succumbing to heat. Designating specific locations with backup power sources (such as municipal halls, libraries, and schools) as cooling stations can provide vulnerable residents with an essential escape from the heat. There may be a need to provide transportation to cooling stations for those with limited mobility options.

**Severe winter storms**

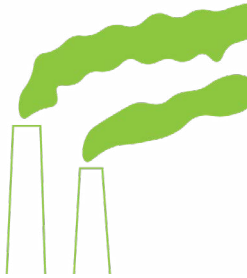
As temperatures rise, winter precipitation levels are anticipated to rise as well, and mixed precipitation events with more heavy ice may become more common. Severe winter storms can result in power outages, impeded mobility, damage to structures and trees, and lost economic productivity. Municipal costs for snow removal should be included in budget planning. While storms are the primary focus of future concern, communities also benefit from planning for extreme cold—locations designated as cooling stations in the summer can become warming stations in the winter.

**Heavy rain and flooding**

Heavy rain events are already more common in Michigan than they were in the mid-to-late 20th Century, having increased by 35 percent from 1951 to 2017, as total annual precipitation increased by 14 percent. They are anticipated to become even more common in the future.

**Public health emergencies**

The 2020 COVID-19 pandemic brought with it unprecedented economic disruption, forced short-term changes in social habits, destroyed numerous small businesses, and led to a very large increase in unemployment in a very short time period. Planning for public health emergencies needs to consider the many dimensions of the social fabric that are heavily impacted, including the availability of medical services, government’s ability to continue functioning under quarantines or stay-at-home orders, and the locations and numbers of vulnerable populations. Local police, fire, and ambulance services may be particularly taxed in a future public health emergency.



### Damage to natural systems

Human activity is rarely in balance with the natural systems it occurs within. While resource extraction and pollution offer two very obvious examples of human activity, nearly all modern human development activity has some impact on natural systems, including loss of habitat, interruption of habitat, and increased emissions due to greater travel distances as development moves outward into wild places. A combination of rising temperatures and agricultural runoff that changes the nutrient balance in major water bodies has led to much higher frequency of toxic cyanobacteria and algae blooms, particularly in Lake Erie. These blooms can impair drinking water quality and limit recreational opportunities, including fishing and watersports.



### Unanticipated events

No community can plan for every possible future event or scenario. This is why developing resiliency, improving sustainability, understanding vulnerabilities, and identifying emergency resources is so important.



### Drought

We most frequently think of drought as a prolonged period without precipitation. While this kind of drought is certainly possible in the future in Michigan, the more likely effects of the changes the state is experiencing will be changes in seasonal distribution of storms with precipitation. Winter rainfall will become more common, snowpack overall may decrease, and stream levels will peak earlier in the year, affecting water availability and the timing of groundwater recharge. Drought is exacerbated by higher temperatures, which lead to increased evaporation rates; even with higher average rainfall, land may become drier, and as rain becomes less frequent in the hottest summer months, mid-summer drought could become a regular challenge. Dry conditions bring with them the possibility of wildfires, which are not uncommon in rural Michigan but could grow in scale and intensity in coming years. It is important to understand the community's water sources and how extended periods of drought might affect water availability.

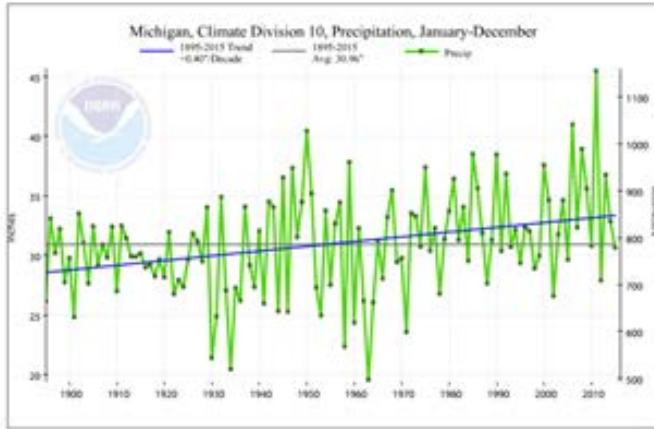


### Food systems

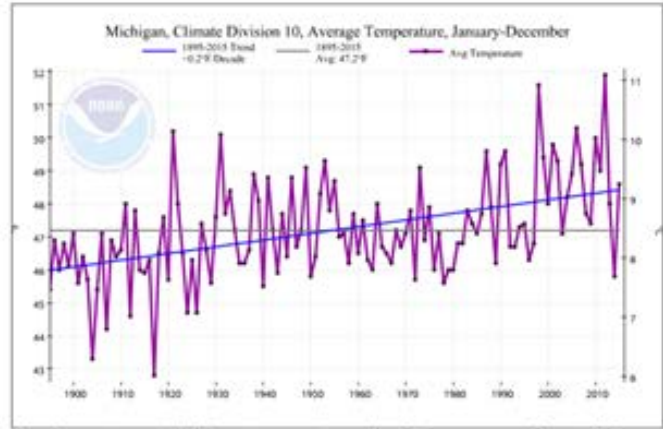
As the climate changes and weather patterns shift accordingly, planting and harvesting conditions become less predictable, and the potential for crop losses increases. In 2019, unusually heavy rains across much of Michigan made planting during the typical time difficult for many farmers. While the number of frost-free days has increased by an average of 16 days across the Great Lakes region from 1951 to 2017, the timing of those extra days has not uniformly added to the growing season. In recent years, unexpected late freezes after earlier-than-usual warm weather lead to the loss of large portions of fruit crops such as apples and cherries.



Regional climate trends indicate that southeast lower Michigan is poised to see stronger and more frequent storms, in addition to higher temperatures. The figure below shows how these two measures have been trending steadily over the last 100 years. With increasing precipitation, more frequent extreme heat days and an overall rise in average temperature, communities should be planning for what this mean locally and how their most venerable populations are situated to survive.



Southeast Lower Michigan Annual Precipitation (In Inches) from 1895 to 2016. Source: NOAA Climate Divisions.



Southwest Lower Michigan Average Annual Air Temperatures from 1895 to 2016. Source: NOAA Climate Divisions.

## Addressing Resiliency: Identifying Vulnerable Populations

Resilient communities anticipate likely shocks, understand trends in stressors, and prepare for potential worst-case scenarios. Understanding where a community is physically most vulnerable to specific events and understanding which members of the community are likely to be most vulnerable in each case is key to effective planning. Vulnerability assessments have been used across Michigan to identify vulnerabilities within a community and to develop tools communities can use to foster resiliency in their policy decisions. A vulnerability assessment looks at exposure to risk and sensitivity to risk.

**Exposure** demonstrates the land, property, and neighborhoods that are most likely to be impacted by flooding, heat, or other severe weather. Low lying land, land near bodies of water, areas with large swaths of pavement, neighborhoods with few trees, and sections with older homes all suffer from high levels of exposure.

**Evaluating exposure to risk asks:** where is the environmental risk the greatest?

**Sensitivity** demonstrates the members of the population that are most likely to be impacted by severe weather. The most sensitive populations are the elderly, young children, people with medical conditions, those living in poverty (especially the homeless) and people who work outdoors. People who live alone, regardless of their economic status, are also at higher risk

**Evaluating sensitivity to risk asks:** who in my community is most likely to experience the adverse effects from that risk?

## Sustainable Development Strategies

### Mitigating Risks

Next to placing land into various zoning districts, site plan review is the most powerful planning and natural resource protection tool. Easily enforced, site plan review is a way for communities to ensure what is approved on a site plan is what will be built. When large projects are proposed or when small projects are proposed in or adjacent to sensitive natural resources, some communities require applicants to submit an environmental assessment, which details the impact of the proposed development on natural resources. Communities that have plans and zoning regulations based on a solid environmental inventory are able to set the threshold for future environmental assessments at a defensible level. Without such a basis, an environmental assessment may be considered arbitrary, as there is little context for the requirement. An environmental assessment can be a valuable source of information, and in some cases an important tool for ensuring that new development is designed in such a way that unavoidable environmental impacts are properly mitigated. Environmental assessment can also be viewed as an affirmative tool for helping a local government meet its responsibility for preventing pollution, impairment or destruction of the environment.

### Stormwater Management

The Township's existing water features play an important role in managing storm water. Several creeks and streams, which connect the Townships natural water system, meander through the Township, connecting lakes and wetlands with each other, and then conveying storm water run-off.

### Impervious Surfaces

Because development replaces pervious ground with impervious pavement and buildings, water runs off the surface rather than permeating naturally through the ground. As stormwater drains across pavement, it picks up pollutants such as automobile fluids, fertilizers, and sediment and conveys them into a storm drain. If a storm drain is directly connected to a creek, the creek receives polluted water which, in turn, can degrade water quality and wildlife habitat. This, in turn, degrades streams and water quality unless managed in an ecologically-sound manner. Ordinance standards that limit impervious surface coverage, or regulate materials used to construct impervious surfaces, can address this at a site plan individual site level.

Portions of southeast Michigan receive their drinking water from surface water sources. Because stormwater heats up the longer it sits on hot, impervious surfaces, it can also impact aquatic organisms that depend on cool or cold-water habitats. Lastly, water volume is greater for surface stormwater; therefore, it reaches the stream much faster. The increased volume and speed erode stream banks and impairs the stream's ability to support aquatic vegetation and wildlife.

### Natural Shoreline Dynamics

Runoff is one of the primary concerns regarding the shoreline dynamics and water quality of inland lakes. Runoff can carry fertilizer and other undesirable substances into the water, some of which can cause an overgrowth of aquatic plants and alter the natural ecosystems in these lakes. It is crucial to protect natural ecosystems by managing development on the shoreline and in the watersheds of inland lakes. Communities can create best practices to protect inland lakes from erosion and runoff damage by encouraging the use of permeable pavement and growing native plants along the shoreline and in the watershed.

