



LAKE TO LAND REGIONAL INITIATIVE

# Crystal Lake Township People and Land

ADOPTED  
MAY 21, 2014





# Expectations

The visioning session in Crystal Lake Township enjoyed a turnout that was both sizable and vocal—tallied results show one to several answers from each of the 45 attendees for every exercise—but the final accounting from this diverse group was among the most cohesive of any. Just seven collective priorities emerged from the meeting, the top three of which earned 76% of all the votes cast.

What are these compelling priorities? The answer is sweet in its simplicity: where there is rural character to be preserved, do it effectively, and where there is development to be undertaken, do it thoughtfully. Build better leadership, cooperation, and communication to achieve both. The remaining four priorities represent no substantive departure from the top three, but could rather be considered extensions of them: water quality maintenance and the regulation of blight and pollution are essential components of rural character, while sustainable building design and locally-owned cottage industry are excellent examples of thoughtful development.

Planning and zoning played a starring role in the strategies offered to achieve these goals. It was wholly agreed that a good plan could only be produced in genuine collaboration between an informed, involved, educated citizenry and leadership that is communicative, transparent,

and accountable. Participants also broadened that circle to welcome input and assistance from the Grand Traverse Regional Land Conservancy, the farming community, Benzie County, the Michigan Department of Transportation, universities, and foundations. Citizens were equally clear about what they *didn't* want, suggesting a need for regulations pertaining to variances, junk, pesticides, fertilizer, fracking, water bottling, big box stores, home size, minimum acreage for building, commercial lighting, campfires, septic systems, and viewsheds.

The following pages present “Cornerstones,” or goals formulated by the Crystal Lake Township Planning Commission to guide future development. Each includes a set of “Building blocks,” specific strategies to be implemented to achieve those goals. At the bottom is the “Foundation” that supports each Cornerstone: its linkage to the citizens’ stated priorities and to the Benzie County Master Plan.



# Cornerstone 1

Improve the water quality of Crystal Lake and the Betsie River and its tributaries and streams, which feed the Betsie River and ultimately Lake Michigan.

A large component of our economy is water-related tourism. Crystal Lake and the Betsie River provide an abundance of recreational activities and ecological value to the community, county, and region. Approximately 2,884 acres of Crystal Lake are in the township, as well as 24 miles of streams and creeks. In the southern portion of the township is the Betsie River State Game Area, which is dependent on the water quality in the Betsie River and adjacent wetlands. According to the National Wetlands Inventory, there are approximately 869 acres of emergent, lowland, and aquatic wetland complexes in the township. The Crystal Lake Watershed is a small, self-contained watershed comprised of 17 smaller subwatersheds. Without good water quality, the attractiveness of Crystal Lake Township to both full-time and seasonal residents will greatly diminish.

## Building blocks

1. Support the development of the Betsie River/Crystal Lake Watershed Management Plan.
2. Consider continued use of the Crystal Lake Watershed Overlay District as a tool to protect the environmental quality of Crystal Lake, the shoreline, and the watershed.
3. Continue supporting monitoring the water quality of Crystal Lake and Betsie River.
4. Enact Low Impact Development (LID) stormwater strategies, such as rain gardens, filtration basins, and rain cisterns, into the zoning ordinance as required standards for site development.
5. Encourage higher density development in areas with public water and sanitary sewer facilities.
6. Ensure that water quality and storm water MDEQ best management practices for Michigan Watersheds are incorporated into land use planning and zoning processes.
7. Work with surrounding Crystal Lake communities to improve and standardize septic system and holding tank standards.
8. Any use of land shall not pollute or degrade the quality of surface water or groundwater.
9. Crystal Lake Township ordinance should be adopted or amended to provide protection for sensitive features, including wetlands, floodplains, sand dunes, high-risk erosion areas, and land bordering lakes and streams.



Photo: Sharron May

## Foundation

Benzie County master plan principles	Balanced growth	Environmental protection	Visual character of the landscape	Visual character of small towns
Crystal Lake collective priorities	Maintain rural character	Quality development through master plan and zoning	Maintain water quality; minimize light, air, noise, and water pollution	Build better leadership, cooperation, communication



# Cornerstone 2

## Encourage the continuation and growth of small agricultural operations.

Crystal Lake Township has a number of small, agriculturally-based cottage businesses and commercial farming operations: cherry and apple orchards, vineyards, nurseries, greenhouses, value-added herbal products, and livestock farms. These small agricultural operations are important elements in local and regional food systems. Small scale farming within a few miles of a city or village can perform an important task in the overall preservation of agriculture by providing a buffer between city residents and large-scale farms.

Ideally situated on the periphery of Frankfort and three villages, Crystal Lake Township's agriculturally-based businesses provides a variety of specialty products to those markets including fruits, vegetables, beef, lamb, pork, poultry, soaps, lotions, herbal remedies, nursery stock, plants, flowers, honey, eggs, alpaca fiber products, and gourmet mushrooms. These products weave their way into home kitchens, local farm markets, grocery stores, restaurants, and farm-to-school food programs.

The interest in farmer's markets, U-pick farms, and community-supported agriculture has been fueled by the flavor, freshness, and health benefits of locally produced foods and a sense of connection to the food and farmer. Families enjoy the multi-generational appeal of a visit to the farm.

Bolstered by beginning farmer programs, grants and incentives communities like Crystal Lake Township can anticipate an increase in small, specialized agricultural start-ups.

Local farmers serve as responsible stewards of the land, provide local jobs, and support other local business through their purchase of goods and services.

### Building blocks

1. Formulate and adopt zoning policies that preserve and prioritize agriculture as an important land use and economic activity in the community, such as state and local Purchase of Development Rights and other farmland protection programs.
2. Incorporate provisions that encourage local food and farming operations such as market gardens, road-side stands, cottage food businesses, and agri-tourism, and which discourage large industrial agricultural operations such as concentrated animal feed operations (CAFOs)
3. Ensure that agricultural operations are harmonious with the other Cornerstones, such as operating in accordance with best conservation practices as recommended in the Michigan Agriculture Environmental Assurance Program (MAEAP) and Right to Farm Act.
4. Seek expertise and input of local farmers on agriculture-related planning and zoning issues.
5. Economic development efforts should focus on supporting farmers' ability to diversify; develop, process, market, and transport value added products; and access new market channels.



4.1: The May Farm, Benzie County  
Photo: Sharron May

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# Cornerstone 3

Participate in a network of connected local and regional non-motorized trails.

Northwest Michigan is blessed with a variety of regional trails that provide recreational opportunities for biking, hiking, snowmobiling, cross-country skiing, and horseback riding. In Crystal Lake Township, a part of the nonmotorized Betsie Valley Trail meanders along portions of scenic Betsie River and Crystal Lake. In addition to their recreational and health benefits, trails provide economic benefit to local businesses which supply food, groceries, and lodging facilities. The Michigan Trails at the Crossroads report prepared by MDNR states, “the annual economic impact of cyclists...is estimated to be almost nine times greater than the one-time expenditure of public funds to construct the bicycle facilities.”

## Building blocks

- 1. Reserve adequate right-of-way for non-motorized trails along proposed routes and County roads.
- 2. Preserve the scenic and rural beauty of the trail system to ensure economic viability and attraction to the trails.
- 3. Incorporate bike parking requirements in the local zoning ordinance.
- 4. Coordinate efforts with the Benzie County Road Commission to provide paved shoulders when township roads are resurfaced and/or reconstructed.



4.2: Betsie Valley Trail  
Photo: AllTrails - National Geographic website

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# Cornerstone 4

## Preserve our rural character.

The rural character of Crystal Lake Township is defined by open spaces and forests, small farms, orchards, vineyards, trails, resort cottages, the Betsie River, Crystal Lake, and its varied topography and viewsheds. The consolidation of these private and publicly owned properties paints a picture of how the township is perceived by residents and visitors, and as a result preservation of rural character is an important priority for the community. Also, rural character includes values such as family, community, independence, responsibility, conservation, entrepreneurship, and a strong work ethic.

Rural character has value. Communities with open space (farms, orchards, woodlands, large park reserves, etc.) create economic benefit to local and state government. In addition, tax revenue/cost studies have shown that farms, orchards, and other privately-owned open space require fewer public services and therefore produce, rather than consume, local tax revenues.

A commitment to retain the rural character of Crystal Lake Township requires that it be preserved through careful development and zoning. Crystal Lake Township endorses larger residential lots, small farms and cottage industries, roadside stands, and other small businesses in keeping with a rural Michigan lakeshore "sense of place." Dense development, industrial parks, high rise buildings, big box stores, shopping malls, strip malls, and similar development are incompatible with Crystal Lake Township's visual harmony and environmental standards.

## Building blocks

1. Encourage development designed to preserve open and farmable land. Strive to achieve development that is aesthetically pleasing, unobtrusive to the natural settings, and environmentally sound.
2. Direct future development to areas with existing water and sewer services.
3. Review and revise Article 10: Rural Preservation of the Crystal Lake Township Zoning Ordinance to remove less rural land uses.
4. Plant trees and minimize the removal of trees along county roads.
5. Protect main transportation corridors (M-115, M-22, River Road) to ensure that development is harmonious with rural character and remains attractive to destination visitors.



Photo: Sandra Skees

## Foundation

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# Cornerstone 5

## Preserve our cottage industries and home occupations.

According to Infogroup, a proprietary data collection firm, Crystal Lake Township had 78 businesses with 613 employees in 2012. Many of the businesses have less than 10 employees; six businesses have three or fewer employees. Home occupations and cottage industries are already present in the township. A cottage industry with fewer than 10 employees can also be classified a microbusiness, and 95.5% of all businesses in the U.S. fall in that category.

A home occupation is a business, profession, or other economic activity conducted full- or part-time in the principal residence of the person conducting the business. Examples of home occupations are general office use, graphic designers, marketing, manufacturing representatives, software engineers, tutoring, sewing, fine arts activities, computer programming, cosmetologists, barbers, physicians, and other licensed health care professionals. Similar to a home occupation but more intensive is a cottage industry, in which the creation of products and services is home-based rather than factory-based. In rural areas, cottage industries are fostered by an entrepreneurial spirit. Whereas home occupations are conducted primarily in the residence, a cottage industry is operated on the property, possibly in pole barns and/or accessory buildings. For example, small specialized home builders/contractors or custom cabinet makers are considered cottage industries. In Crystal Lake Township, small agricultural operations focused on organic food products, herbs and spices, native plant materials, etc. can be viewed as cottage industries. Michigan's Cottage Food Law, PA 113 of 2010, exempts a "cottage food operation" from the licensing and inspection provisions of the Michigan Food Law of 2000, thus increasing the opportunities for addition local business. In addition, active sellers on eBay and other Internet "For Sale" sites can be considered cottage industries.

### Building blocks

1. Work with other agencies (public and private) to ensure there is access to broadband or high speed Internet.
2. Permit a greater variety of home occupations and cottage industries to accommodate business while respecting the health, safety, welfare, and enjoyment of adjacent property owners.
3. Cottage industries and home businesses shall abide by the same noise, air, light, water, and environmental standards as all residents and businesses of Crystal Lake Township.
4. Review and revise Article 10 of the Zoning Ordinance: Rural Preservation districts to remove less rural land uses.



Photo: Sandra Skees

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# Cornerstone 6

Preserve resort and seasonal cottages and rural residential character of the township.

Crystal Lake is ringed by a network of county roads, such as South Shore Drive (Co Hwy 702) and Molineaux Road, which, along with M-22, provide access to small lots with resort (seasonal) cottages and home sites for year-round residents. In addition, there are several groupings of housing between Crystal Lake and Lake Michigan. According to the 2010 US Census, 61% of the 1,240 housing units in the township are classified as seasonal and/or for recreational use. Further, based on the Benzie County Equalization Department records for 2012, 98% of all parcels in the township are classified as residential, accounting for \$141,347,706, or 99.6%, of the township's valuation. As a percentage of the total residential valuation, 67% is attributed to seasonal (non-primary resident) residential property.

Maintaining and encouraging resort cottages will result in preserving the character of the township and the historic land development pattern associated with the Crystal Lake area. Further, the continuance of resort cottages and the expenditures made by seasonal residents inject significant dollars into the local economy. Based on a retail market potential summary for the township, seasonal residents contribute upwards of \$3,800,000 to the local retail economy.



## Building blocks

1. Ensure that the zoning ordinance allows for cottage / resort-related residential housing and that the schedule of regulations promotes this form of development.
2. Utilize low impact development (LID) stormwater measures to minimize stormwater runoff directly into tributaries, Crystal Lake, and Lake Michigan.
3. Placement of new housing is encouraged to maximize views and preserve the natural setting.

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# Cornerstone 7

Promote intergovernmental cooperation and leadership, and improve communication between township government and constituents.

The root of good community building and development is leadership. Vibrant communities can trace their success back to three fundamental components: vision, collaboration, and leadership. Without leadership, collaboration will not happen; without leadership and collaboration, the vision articulated by the community will never materialize. So, leadership is a key ingredient in the process. Today, as fiscal and personnel resources are stretched, the willingness to cooperate with other agencies and groups is crucial. In the future, intergovernmental cooperation will be the rule rather than the exception.

## Building blocks

1. Work with other communities on regional strategies while maintaining our own Master Plan and Zoning Ordinance, adhering to the concept that planning and zoning is a local process that reflects the opinions and values of Crystal Lake Township's citizens.
2. Collaborate with other communities and promote the establishment of a leadership forum which provides leadership training and capacity-building to local elected officials and other community leaders.
3. Ensure that the annual Planning Commission budget has funding for continuing education and training.
4. Participate in the Michigan Township Association regional programs, which provide a good venue for networking.
5. Maintain a working relationship with the Lakes to Land Regional Initiative as the process moves into collaborative projects.
6. Utilize the various committees and commissions within the township as incubators for tomorrow's leadership.
7. Collaborate with other surrounding townships on the development of a regional communications and energy strategy.
8. Develop systems to improve communications between township government and constituents, such as newsletters, a functioning website, etc.



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# Cornerstone 8

Avoid blight and noise, air, light, and water pollution.

According to the 2010 U.S. Census, 61% of the 1,240 housing units in the township are classified as seasonal and/or for recreational use. Further, 98% of all parcels in the township are classified as residential, accounting for 99% of the township's valuation. This condition occurs because of the quality of place, the presence of clean air and water, and lack of night light disturbance. Crystal Lake Township's economy is dependent on its location and clean environment; avoiding pollution makes economic sense and helps sustain the tax base of the township. Strategies for maintaining and improving the physical and ecological conditions within the Township should be patterned after the New Designs for Growth Development Guidebook referenced in the Benzie County Comprehensive Master Plan 2020.

## Building blocks

1. Design new development to maximize preservation of open space and minimize visual impact from public rights-of-way.
2. Establish sign ordinances that respect our rural and scenic character while providing for business identification and communication of other essential messages.
3. Enforce blight, junk, and dumping ordinances and direct those in need of assistance to available resources.
4. Update dark sky provisions in the Zoning Ordinance to reflect Best Management Practices.
5. Establish a mining reclamation ordinance.
6. Adopt and enforce ordinances to protect the health, safety, and welfare of residents while avoiding zoning ordinances that needlessly overburden local citizens and inhibit the traditional rural values of independence and resourcefulness.

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# Cornerstone 9

Encourage the protection of our natural resource base.

Crystal Lake Township can be characterized by its unspoiled natural features. The primary land cover is “forest,” supplemented with wetlands which parallel the Betsie River. Much of the township is blessed with rolling topography which forms a band running east to west through the midsection of the township. Severe slopes commonly exist throughout the township. Along Lake Michigan, just north of the south boundary of the township (George Street), are critical dunes and pristine beach which stretch north toward Lake Township. Most, if not all, of these land forms require some form of protection and/or monitoring to ensure that they are not irreversibly altered and/or lost.

## Building blocks

- 1. Direct future development to areas with existing water and sewer services.
- 2. New development shall be designed and constructed to avoid sensitive natural features and comply with applicable federal, state, county, and local regulations.
- 3. New development shall not pollute or degrade the quality of surface water or groundwater.
- 4. Provide protection and restoration for sensitive features including wetlands, floodplains, sand dunes, high risk erosion areas, and land bordering lakes and streams.
- 5. Impervious overlay zones, setback and vegetative buffer requirements, soil erosion and sedimentation control ordinances, and stormwater management ordinances shall be adopted and enforced.
- 6. Best management practices shall be used to protect soil, surface water, and groundwater quality as land use change occurs.
- 7. Local zoning should prevent the fragmentation of farm and forest land unless there is no other reasonable alternative available to preserve the renewable resource.
- 8. Wildlife corridors and linkages between open spaces shall be a primary consideration in the development of new county-wide and local plans.
- 9. New lakefront public access sites shall be carefully sited to minimize environmental degradation and managed to prevent overcrowding of the lake surface and nuisance impacts on abutting properties.

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# Cornerstone 10

Encourage land development patterns which respect the natural, ecological, and topographic character of the township.

The rural character of Crystal Lake Township is defined by open spaces and forests, small farms, orchards, vineyards, trails, resort cottages, the Betsie River, Crystal Lake, and its varied topography and viewsheds. The physical and natural character of Crystal Lake Township offers the community the ability to guide development and growth through a process that recognizes the concept of *Designing with Nature*, *New Designs for Growth*, and similar studies that conclude that proper land use planning which respects the underlying physical, natural and infrastructure assets of the community is the best practice.



Photo: Sandra Skees

## Building blocks

1. Revise zoning and related regulations to curtail sprawl and strip development along M-115.
2. Support actions that enhance the long-term economic development of the agriculture, forestry, recreation, and tourism industries.
3. Support zoning that encourages the continuation of the township's resort cottage development pattern and the continuation of low density, rural residential development that is sensitive to the natural features of the property.
4. New development in the township shall be encouraged provided it is: a) in locations with public services adequate to meet its needs, b) environmentally friendly, and c) consistent with the density, character, and development in the area.
5. Ensure that new development pays its own way in terms of public services and does not unreasonably create future public service obligations that are not met by the new development or are unfairly charged to existing residents, except where the township explicitly decides to subsidize it.
6. Improvements to pedestrian circulation, bike paths, bus service, and airport services should be consistent with adopted regional and state plans for long-range improvements of these transportation services, such the Northwest Michigan Non-Motorized Strategy and the Frankfort Dow Memorial Field Airport Layout Plan (ALP).
7. Prepare corridor plans and establish standards for development along River Road, M-22, and M-115 to protect their rural character and viewsheds, including but not limited to use of overlay zoning, buffering screening, and conservation easements.

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Photo: Monica Schultz

# People and Places

How many people? How long did they go to school? What do they do? What activities can be supported by the land itself? And where can we go shopping around here, anyway?

## Population

Population is both an indicator and a driver of economic growth. An increase in people creates a larger economic and customer base on which the business environment can draw, and an area of bustling economic activity attracts people looking to share in its benefits.

In 2000, Crystal Lake Township had just completed a decade of growth from 899 citizens to 960. Michigan's millennium-opening population slide brushed the township, taking three citizens with it, but a projection from Esri estimates a return to steady population growth of about 0.37% between now and 2016—about 20 new residents, bringing the total to just under 1,000.

## Housing

Home is where the heart is, and where all your stuff is, and probably where the people you call family are too. On a community level, it's much the same: housing data may talk

about buildings, but it tells us much about the actual people we call neighbors.

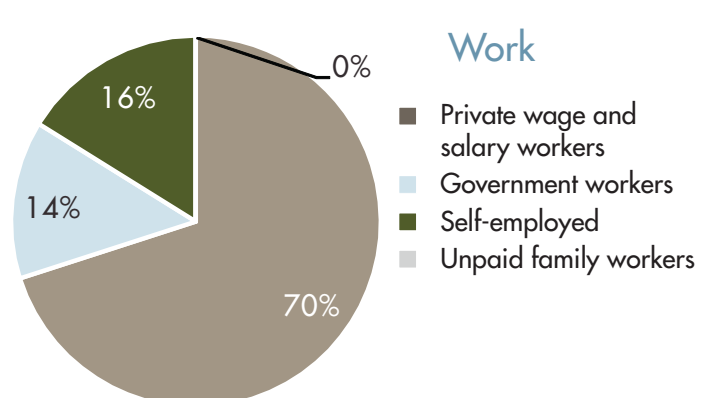
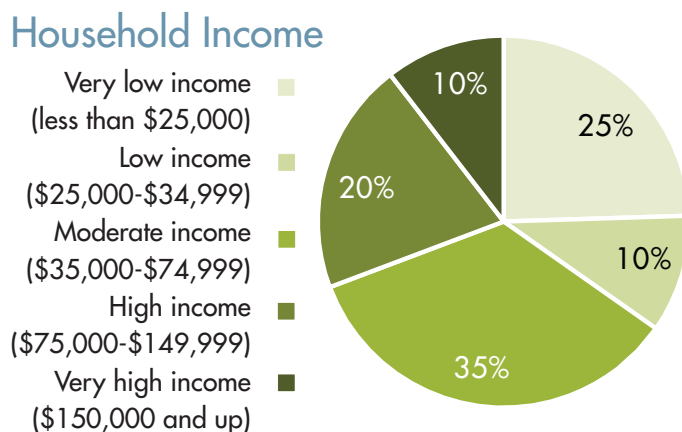
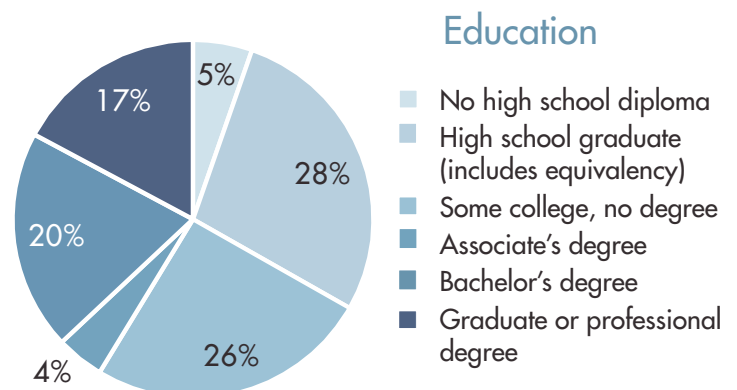
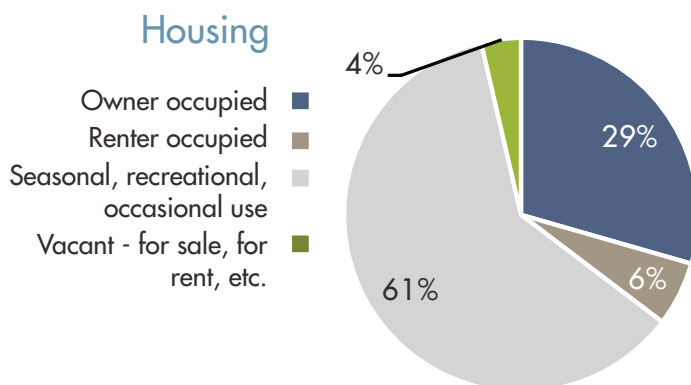
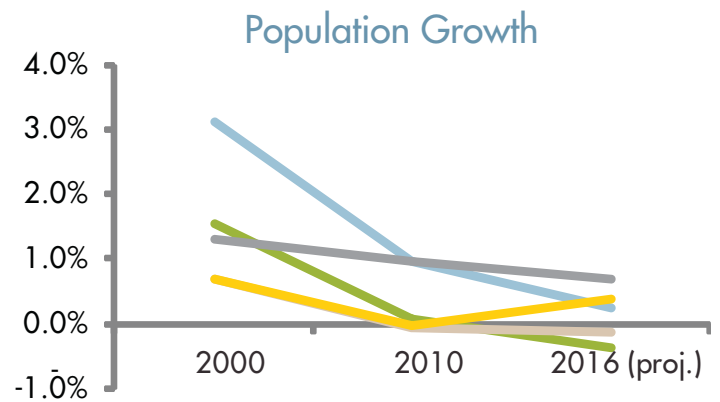
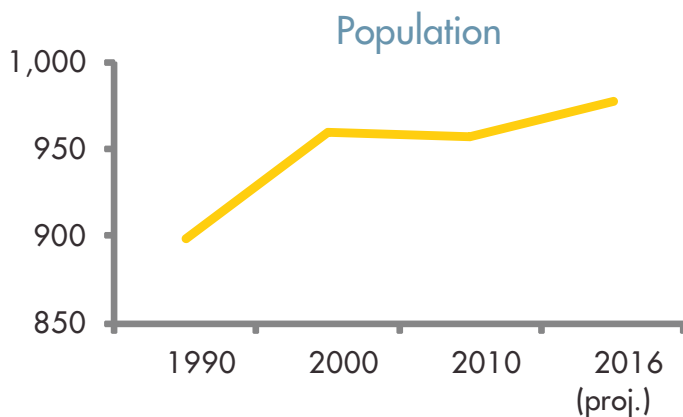
Crystal Lake's 1,240 housing units provide the shelter for its 449 households. Astute observers may note that that represents about 2.8 houses per household, and that is correct: Crystal Lake is one of two Lakes to Land communities in which the majority of housing units (61%) do not have a household attached to them but are instead for "seasonal or recreational use" (a detailed discussion follows under "Seasonal Fluctuations"). The median home value of \$258,000 is the second highest in the region, but that hasn't stopped buyers: the vacancy rate is the lowest among all L2L communities at 3.6%.

The largest share of homes were built either before 1939 (18%) or during the 1980s (22%). Almost 9% of homes were constructed during a mini-boom in the 1950s, notable because that decade was a sleepy one in many of the other communities in the region. Construction continued robustly up until the housing crash, increasing the housing stock from

# Demographic Dashboard

Key for population and prosperity index graphs:

Crystal Lake   Benzie County   Manistee County   Michigan   United States

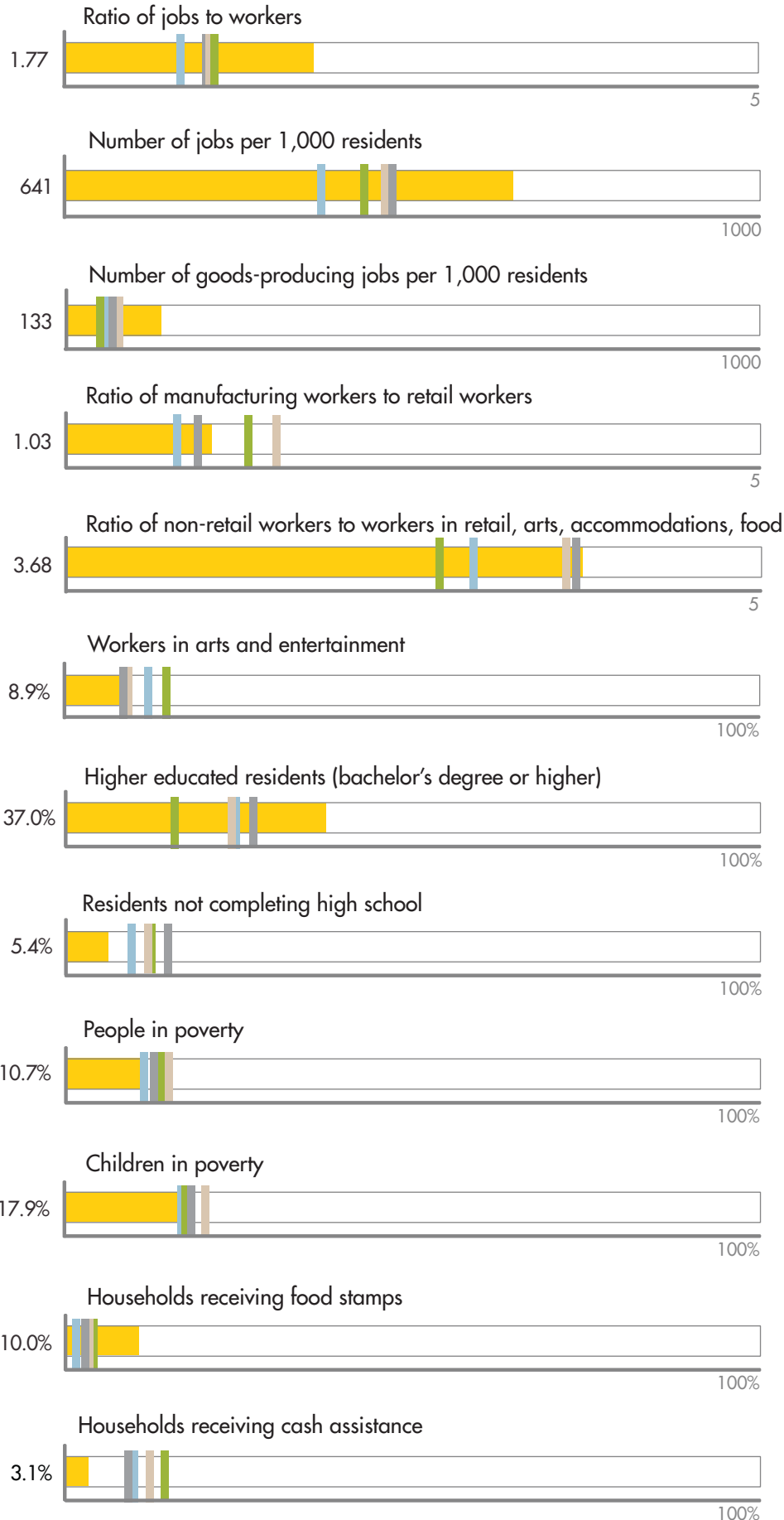


Classifications modified from HUD guidelines, using the state median income of \$48,432.

Sources: American Community Survey 2006-2010, Esri Business Analyst



## Prosperity Index



## Households

2.07  
person average household size  
\$258,000  
owner-occupied median home value  
\$658  
median gross rent

## Education

14%  
population enrolled in school  
95%  
high school graduate or higher  
37%  
bachelor's degree or higher

## Commuting

89%  
workers who commute  
77%  
commuters who drive alone  
14  
minute average commute

## Employment

613  
jobs  
347  
workers  
15.4%  
unemployment rate  
11%  
civilian veterans

## Income

\$45,625  
median household income  
\$21,750  
median earnings for workers  
\$48,281  
male full-time, year-round earnings  
\$25,893  
female full-time, year-round earnings  
10.7%  
population in poverty  
17.9%  
children in poverty

## Top Industrial Sectors

17%  
manufacturing  
16%  
health care and social assistance  
15%  
retail trade

823 units to 1,129 between 1990 and 2005; just 25 new homes have been recorded since.

The majority of the homes (46%) are heated by bottled, tank, or liquid petroleum (propane) gas, and another 31% use utility gas. The remaining households fend off the northern Michigan winter with electricity (10%), fuel oil or kerosene (7%), or wood (6%).

## Education

The citizens of Crystal Lake Township are a well-educated bunch. Ninety-five percent have graduated high school, the second highest proportion in the region after Lake Township and a full ten percentage points higher than the national average. And they didn't stop there: 37% of residents went on to achieve a bachelor's degree, also the second highest proportion in the region. Almost half of those (46% of college graduates) continued to a graduate or professional degree.

About 14% of the township's residents are currently enrolled in school. This figure is in the lower half among L2L communities and well below county, state, and national benchmarks, a consequence of Crystal Lake's relatively high median age of 57 (third highest in the region).

## Income

The median household income in Crystal Lake Township is \$45,625, and median earnings for workers are \$21,750. Both are in the upper half among Lakes to Land communities.

Median earnings for year-round, full-time male workers are the second

highest in the region at \$48,281. This figure is also higher than the national median and that in Benzie and Manistee Counties, but slightly lower than for the state of Michigan. Crystal Lake Township earnings broke the six-figure mark in two North American Industrial Classification System (NAICS) categories: Transportation / Warehousing / Utilities (\$152,813) and Finance / Insurance / Real Estate (\$105,625).

Median earnings for year-round, full-time female workers were 54% of males' earnings (\$25,893 vs. \$48,281), representing the third greatest disparity in the region between males' and females' earnings. Of the two highest-paying professions in the township, there were no females at all in Transportation / warehousing / utilities, and two-thirds of those employed in finance / insurance / real estate were male. Median earnings for female workers in the latter category were \$45,625—about 43% of that for male workers. In no category did the pay of full-

time, year-round female workers meet or exceed that of their male counterparts.

Crystal Lake Township's poverty rates of 10.7% for all persons and 17.9% for persons under 18 are commensurate with or just below regional, county, state, and national benchmarks. Ten percent of the population receives food stamps, a number that aligns with the poverty rate with uncommon precision. Cash assistance is received by 3% of the local population, which is about one-third to one-fourth of the rate in the aggregated populations.

A quick estimate of a community's "net worth" can be obtained by dividing its major assets (checking and savings accounts, stocks, bonds, mutual funds) by its major liabilities (home and car loans). The higher the resulting ratio, the better insulated the community will be from quick changes in the economy. As shown in Table 4.4, the ratio in Crystal Lake Township is 3.11, the third highest among L2L communities (range: 2.93-3.23).

4.4: Net worth

Assets		
Checking Accounts		\$2,043,872
Savings Accounts		\$4,774,676
U.S. Savings Bonds		\$140,840
Stocks, Bonds & Mutual Funds		\$14,499,912
Total		\$21,459,300
Liabilities		
Original Mortgage Amount		\$6,028,630
Vehicle Loan Amount		\$861,792
Total		\$6,890,422
Net Worth		
Assets / Liabilities		3.11

Source: Esri Business Analyst

## 4.5: Non-retail to retail earnings

Industry	Workers	Median earnings	Weighed median earnings
<b>Non-retail</b>			
Educational services, and health care and social assistance	89	\$26,131	\$2,325,659
Construction	46	\$33,500	\$1,541,000
Manufacturing	38	\$41,500	\$1,577,000
Other services, except public administration	29	\$30,313	\$879,077
Finance and insurance, and real estate and rental and leasing	27	\$45,469	\$1,227,663
Transportation and warehousing, and utilities	12	\$60,833	\$729,996
Professional, scientific, management, administrative, waste management services	11	\$14,792	\$162,712
Public administration	9	\$56,250	\$506,250
Agriculture, forestry, fishing and hunting, and mining	8	\$16,250	\$130,000
Total	269		\$9,079,357
Average of weighted median earnings		\$33,752	
<b>Retail, art, accommodation, food service</b>			
Retail trade	37	\$18,958	\$701,446
Arts, entertainment, and recreation, and accommodation and food services	31	\$32,583	\$1,010,073
Total	68		\$1,711,519
Average of weighted median earnings		\$25,169	
<small>"Wholesale trade" had too few sample observations to calculate an estimate; "Information" median fell in the lowest interval of an open-ended distribution. Source: American Community Survey 2006-2010</small>			

## Occupations

This section talks about the occupations and professions in which the residents of Crystal Lake Township work, whether or not their places of employment are within the township limits.

Of Crystal Lake Township's 347 civilian workers, 89 (26%) listed their occupation as "educational services, health care, and social assistance." The second greatest proportion of workers (13%) were in construction. In third place, the manufacturing and retail fields tied for 11% of the CLT workforce apiece.

The breakdown of occupations in Crystal Lake suggest conditions favorable to both prosperity and stability. The ratio of manufacturing workers to retail workers is almost exactly 1:1, providing a buffer against dramatic changes in either sector. The township also has the third highest ratio in the region of workers in non-retail occupations to those in retail, arts, accommodation, and food services (3.68). Nationally, the median earnings of workers in non-retail occupations are double the median earnings of workers in retail occupations. Although it is not a direct comparison, we can get a sense of this disparity in wages

between non-retail jobs and those in retail, arts, accommodations, and food service by multiplying the median earnings in each industry by the number of workers in that industry, then dividing the resulting aggregate income for each category (non-retail and retail, arts, etc.) by the number of workers in it. This average of weighted median earnings, shown in Table 4.5, estimates that non-retail workers in Crystal Lake Township earn about 1.34 times as much as workers in retail, arts, accommodation and food service. The wage advantage is not quite as dramatic as it is at the national level, but with over three-quarters of the working population earning the

## 4.6: Retail marketplace summary

Industry	NAICS Class.	Demand (Retail Potential)	Supply (Retail Sales)	Retail Gap	Leakage / Surplus Factor	Businesses
Motor Vehicle & Parts Dealers	441	\$2,087,318	\$515,459	\$1,571,859	60.4	1
Automobile Dealers	4411	\$1,772,328	\$107,857	\$1,664,470	88.5	0
Other Motor Vehicle Dealers	4412	\$216,535	\$407,602	-\$191,067	-30.6	1
Auto Parts, Accessories & Tire Stores	4413	\$98,456	\$0	\$98,456	100.0	0
Furniture & Home Furnishings Stores	442	\$210,634	\$43,390	\$167,244	65.8	0
Furniture Stores	4421	\$114,188	\$0	\$114,188	100.0	0
Home Furnishings Stores	4422	\$96,446	\$43,390	\$53,056	37.9	0
Electronics & Appliance Stores	4431	\$255,171	\$16,386	\$238,785	87.9	0
Bldg Materials, Garden Equip. & Supply Stores	444	\$364,877	\$205,753	\$159,124	27.9	1
Bldg Material & Supplies Dealers	4441	\$322,003	\$100,518	\$221,485	52.4	1
Lawn & Garden Equip & Supply Stores	4442	\$42,874	\$105,235	-\$62,361	-42.1	0
Food & Beverage Stores	445	\$1,396,531	\$989,057	\$407,474	17.1	0
Grocery Stores	4451	\$1,253,980	\$989,057	\$264,923	11.8	0
Specialty Food Stores	4452	\$106,486	\$0	\$106,486	100.0	0
Beer, Wine & Liquor Stores	4453	\$36,065	\$0	\$36,065	100.0	0
Health & Personal Care Stores	4,464,461	\$298,038	\$167,958	\$130,079	27.9	0
Gasoline Stations	4,474,471	\$1,564,480	\$920,695	\$643,784	25.9	0
Clothing & Clothing Accessories Stores	448	\$286,628	\$209,900	\$76,729	15.5	1
Clothing Stores	4481	\$242,880	\$201,166	\$41,713	9.4	1
Shoe Stores	4482	\$21,738	\$7,024	\$14,714	51.2	0
Jewelry, Luggage & Leather Goods Stores	4483	\$22,010	\$1,709	\$20,301	85.6	0
Sporting Goods, Hobby, Book & Music Stores	451	\$68,031	\$116,337	-\$48,306	-26.2	1
Sporting Goods/Hobby/Musical Instr Stores	4511	\$46,921	\$46,730	\$191	0.2	1
Book, Periodical & Music Stores	4512	\$21,110	\$69,607	-\$48,497	-53.5	0
General Merchandise Stores	452	\$2,262,055	\$1,313,167	\$948,888	26.5	0
Department Stores Excluding Leased Depts.	4521	\$441,158	\$39,135	\$402,023	83.7	0
Other General Merchandise Stores	4529	\$1,820,897	\$1,274,032	\$546,865	17.7	0
Miscellaneous Store Retailers	453	\$130,896	\$166,713	-\$35,817	-12.0	2
Florists	4531	\$7,249	\$1,949	\$5,300	57.6	0
Office Supplies, Stationery & Gift Stores	4532	\$77,417	\$117,094	-\$39,678	-20.4	1
Used Merchandise Stores	4533	\$17,752	\$8,467	\$9,286	35.4	0
Other Miscellaneous Store Retailers	4539	\$28,477	\$39,203	-\$10,726	-15.8	0
Nonstore Retailers	454	\$34,255	\$0	\$34,255	100.0	0
Electronic Shopping & Mail-Order Houses	4541	\$563	\$0	\$563	100.0	0
Vending Machine Operators	4542	\$17,112	\$0	\$17,112	100.0	0
Direct Selling Establishments	4543	\$16,579	\$0	\$16,579	100.0	0
Food Services & Drinking Places	722	\$1,364,296	\$630,122	\$734,174	36.8	2
Full-Service Restaurants	7221	\$858,040	\$433,290	\$424,750	32.9	1
Limited-Service Eating Places	7222	\$221,872	\$80,613	\$141,258	46.7	0
Special Food Services	7223	\$231,063	\$33,605	\$197,458	74.6	0
Drinking Places - Alcoholic Beverages	7224	\$53,321	\$82,613	-\$29,292	-21.5	0

Source: Esri Business Analyst



higher wage, it nonetheless points to a higher aggregated income than would otherwise be available.

## Retail and Business Summary

This section talks about the businesses and jobs within Crystal Lake Township, whether or not the proprietors and employees are residents of the township itself.

The business summary generated by Esri counts 78 businesses which employ 613 people within the township's borders. When compared with the residential population of CLT, this equates to 641 jobs per 1,000 residents—the second highest proportion in the region. It is somewhat surprising, then, that the township also had the second highest unemployment rate in the region at 15.4%. This seeming incongruity results from measuring different populations: in this case, the jobs ratio refers to people who *work* within the township, while the unemployment rate measures a quality of the people who *live* in the township. We can, then, conclude that jobs within Crystal Lake Township are being filled by persons who live outside the township.

The largest concentration of businesses were in retail trade, with 15 establishments comprising just under 20% of the total. That category was followed by “other services (except public administration,” which made up 13% of the business community. Construction and accommodation / food services tied for third with 7 businesses (9%) apiece.

The greatest number of employees work in the four businesses devoted

to manufacturing (105 persons, 17% of all employees); in addition to the township's overall relative abundance of jobs, it also has the second highest proportion of goods-producing jobs in the region at 133 per 1000 residents. Retail trade and health care / social assistance rounded out the top tier with 98 and 93 employees respectively (about 15%).

Table 4.6 is designed by Esri to provide a snapshot of retail opportunity by presenting the fullest picture possible of both supply and demand. Supply is calculated by combining the Census of Retail Trade, a portfolio of demographic and business databases, and the Census Bureau's Nonemployer Statistics data to estimate total sales to households by businesses within the study area. To estimate demand, Esri combines annual consumer expenditure surveys from the Bureau of Labor and Statistics with its own proprietary Tapestry Segmentation system (Tab 2), yielding a fairly tailored picture of the purchases likely to be made by the inhabitants of the study area

We can then arrive at the Retail Gap by subtracting the supply from the demand. A negative number, shown in red on the chart, signifies an oversupply or surplus, while the positive numbers shown in green indicate leakage of sales which are presumably being conducted outside the community.

## Commuting

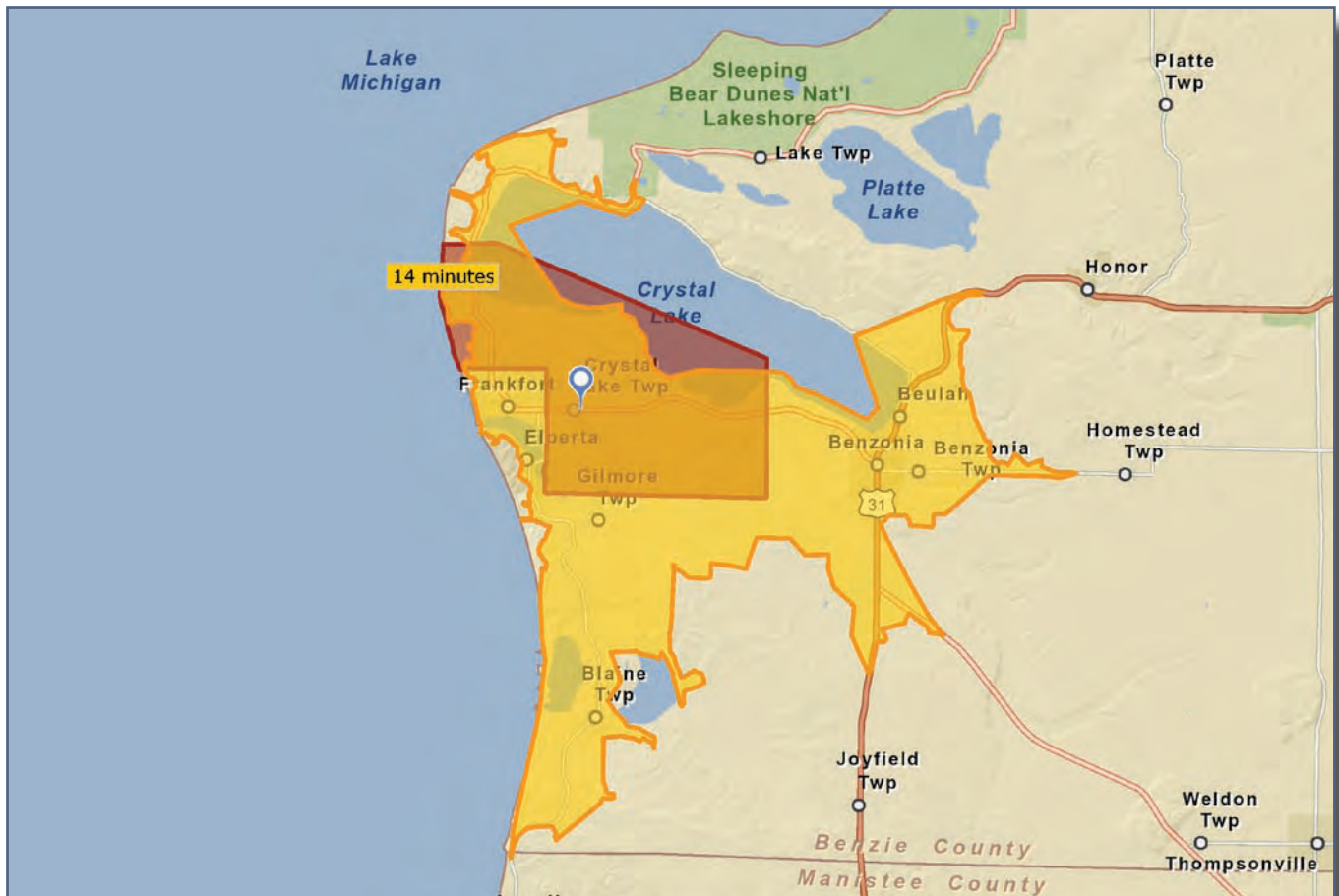
It's a real estate truism that the three most important factors considered by buyers are location, location, and location, yet the traditional measure of housing affordability—surely

another consideration hovering near the top of the list—makes no allowance at all for location. The Center for Neighborhood Technology set out to redefine “affordability” to more accurately reflect the proportion of a household's income that is committed to housing costs, including those incurred while getting to and from that aforementioned location. CNT describes its Housing and Transportation Affordability Index this way:

*“The traditional measure of affordability recommends that housing cost no more than 30 percent of income. Under this view, three out of four (76 percent) US neighborhoods are considered “affordable” to the typical household. However, that benchmark ignores transportation costs, which are typically a household's second largest expenditure. The H+T Index offers an expanded view of affordability, one that combines housing and transportation costs and sets the benchmark at no more than 45 percent of household income. Under this view, the number of affordable neighborhoods drops to 28 percent, resulting in a net loss of 86,000 neighborhoods that Americans can truly afford.”*

Crystal Lake Township's neighborhoods are among those that disappear from the affordability map: while the H+T Index shows the average housing cost to be less than 30% of household income for the entirety of Benzie County, the addition of transportation costs to the equation puts the share of household income spent on those two combined items over 45% for the whole county.

## 4.7: Crystal Lake “workshed”



The 14-minute average commute enjoyed by CLT residents is the shortest in the region, pointing to hope that its residents are avoiding some of the most detrimental effects of commuting that are being highlighted by a growing body of recent literature: uncompensated monetary costs, poorer health due to time shorn from exercise and meal preparation, and an actual decrease in general happiness. Figure 7.4 is a drive-time map showing the “workshed” within a 14-minute commute, stretching up on both sides of Crystal Lake and south to almost the county line.

The percentage of CLT residents who commute at all (89%) is lower than county, state, and national rates, and it is lower than 11 of the 15 Lakes to Land communities. This is really a measurement of the portion of the population who works at home, since they are the only ones who would have no commute at all. It is an area in which the township appears to be excelling and, as evidenced by the Cornerstones, wishes to continue to advance and support.

While the length of commute may have the greatest effect on the commuter,

it's the method of commuting that has the greatest effect on the environment. Across the board, driving alone is overwhelmingly the most common method of commuting, and it is the one which maximizes the output of vehicle emissions per commuter. Just 76% of Crystal Lake's commuters drive alone, which is lower than the aggregated benchmarks (range: 80%-85%) and in the bottom half among L2L communities (range: 68%-90%). There are more walkers (5%) and carpoolers (15%) than in the aggregated populations (2.3%-3.3% and 10.2%-11.7%, respectively).

## Agricultural Influence

Of the 7,808 acres of land that comprise Crystal Lake Township, 766 (9.8%) have an existing land use designation of "Agriculture." This land represents 23 of the 1,780 parcels (1.2%) in the Township. Another 26 acres spread across two parcels (0.1%) are "Natural Resource Related." Overall, then, about 10.1% of the land and 1.3% of the parcels in the township are devoted to "value added" land practices.

Esri business analyst lists no businesses coded by NAICS as "agriculture, forestry, fishing, hunting." Eight workers who live in the township used that classification to describe their occupations.

## Seasonal Fluctuations

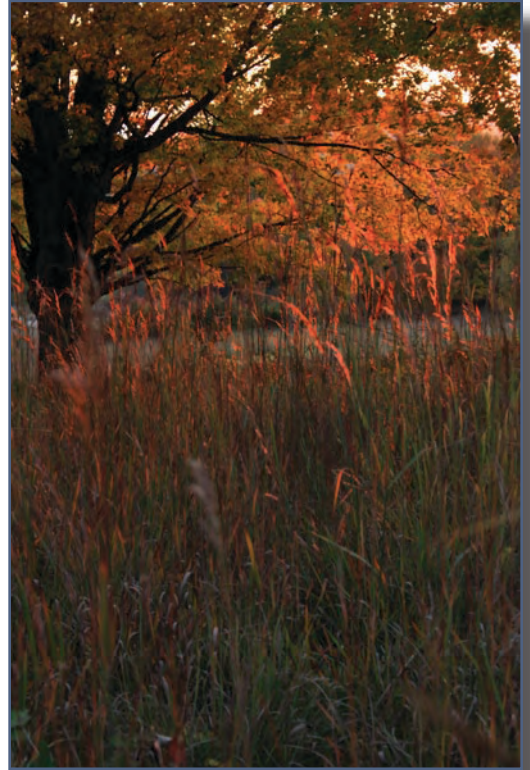
The entire Lakes to Land region is affected to varying degrees by a seasonal economy. An abundance of parks and recreation activities combines with the temperate summer weather to create a magnetic pull felt by most inhabitants of the state from spring to fall, and then formidable weather joins a lack of critical mass in economic activity to produce an edge of desolation through the winter months. The result is a cyclical ebb and flow of people through the region, some to stay for a few hours and some for a few months, all driven by Michigan's intensely seasonal climate.

Traffic counts can provide one measure of seasonal increases in activity. M-22 passes between Lake Michigan and Crystal Lake along the western edge of the township, and M-115 carries vehicles between Frankfort and Benzonia. Counts taken by the Michigan Department of Transportation



Photos: Sharron May





*Photos: Sandra Skees*



between 2001 and 2007 along those routes (the latest available data for the township) are limited to the summer and fall seasons, but even on this basis clearly display a marked decrease between the two (Figure 4.8): M-115 declines from about 7,000 vehicles per day in August to about 4,000 in November, and M-22 declines from just over 3,000 vehicles in August to about 1,500 by the end of October.

While traffic counts can measure an increase in activity in the community, they do not offer any information about the relationship between the community and the people who comprise the traffic that travels through it. For this, seasonal housing provides a better gauge. In many communities, the basic goal of every housing unit is to be occupied. The optimum condition is one in which the number of housing units is only slightly larger than the number of households, with a small percentage of homes empty at any given time to provide choice and mobility to households wishing to change housing units. This percentage is the traditional vacancy rate.

Seasonal changes in population, such as seen in the Lakes to Land communities, create an entirely new category of housing units: those for “seasonal or recreational use.” Technically considered “vacant” by the US Census because its rules dictate that a household can only attach itself to one primary housing unit, these homes provide a measure of investment by those seasonal populations that cannot be replicated elsewhere. A high percentage of seasonal/recreational use homes provides concrete evidence of the value of the area for those purposes. It also provides a measure of a portion of the community which will have a somewhat nontraditional relationship with the community at

large: seasonal residents may not have kids in the school system or have the ability to attend most government meetings, but they do pay taxes and take a vital interest in goings-on. In some ways, knowing the percentage of seasonal/recreational housing in a community is the most reliable measure of the accommodations the community must make to include its “part-time” population in its decision-making framework.

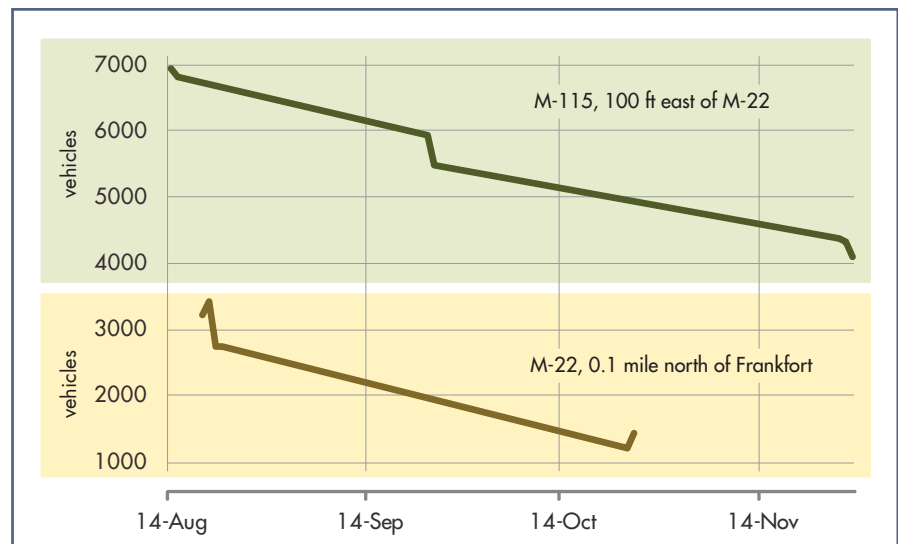
Crystal Lake Township is one of two L2L communities in which seasonal housing actually comprises a full majority (61%) of the housing stock. This figure approaches double the aggregated rates in Benzie and Manistee counties (33.1% and 24.9%), and it is vastly removed from the state and national benchmarks of 5.8% and 3.5%.

Such an anomalous piece of data is the sort of thing that signals a defining

feature of a community, and Crystal Lake’s Cornerstones reflect its citizens’ and planners’ understanding of that. Resort cottages, with an economic impact that exceeds even their physical footprint, are expressly cited as resources to be protected.

Crystal Lake Township’s stewards’ understanding of their seasonal housing stock goes well beyond the structures themselves to a clear image of those houses as the intersection of citizens and land. Protection of natural resources, development patterns which take their cues from the land, and the preservation of clean water, pristine landscapes, dark skies, and country quiet are all expressed, both individually and under the broader umbrella of preserving rural character. It should be no surprise that a community named after a lake should be intensely focused on water quality, as Cornerstones addressing both surface and groundwater demonstrate.

4.8: Traffic counts on M-115 and M-22



Source: Michigan Department of Transportation





4.9: Building M-22. Photo: Arcadia Area Historical Society

# Infrastructure

For planning purposes, infrastructure is comprised of “the physical components of interrelated systems providing commodities and services essential to enable, sustain, or enhance societal living conditions.”

These components, which come together to form the underlying framework that supports our buildings, movements, and activities, usually include our power supply, water supply, sewerage, transportation avenues, and telecommunications. Successful infrastructure is often “experientially invisible,” drawing as little attention in its optimum condition as a smooth road or a running faucet—until it’s not, and then it likely has the potential to halt life as we know it until the toilet flushes again or the lights come back on.

It seems we all know the feeling. The American Society of Civil Engineers’ 2013 “Report Card for America’s Infrastructure” gave us a D+ (takeaway headline: “Slightly better roads and railways, but don’t live near a dam”). The

Michigan chapter of the ASCE surveyed our state’s aviation, dams, drinking water, energy, navigation, roads, bridges, stormwater, public transit, and wastewater and collection systems in 2009 and gave us a D. Clearly, there is room for improvement all over.

But it’s expensive. The ASCE report came with a national price tag of \$3.6 trillion in investment before 2020. If this were evenly distributed among the 50 states, it would mean about \$72 billion per state—almost half again as much as Michigan’s entire annual budget. The combination of the essential nature of infrastructure with its steep price tag highlights a need for creative problem-solving in this area—precisely the aim of the Lakes to Land Regional Initiative.

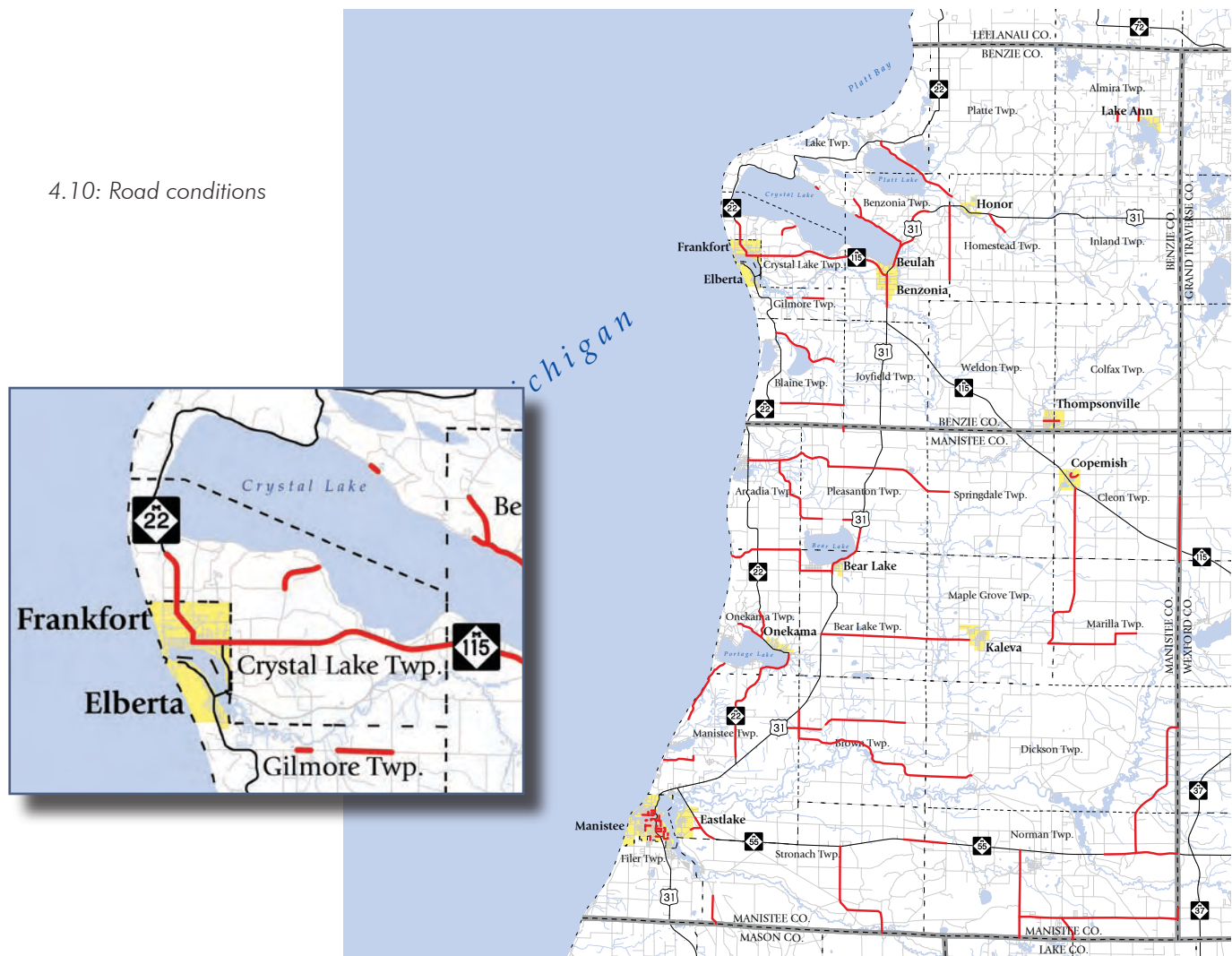
## Roads

The State of Michigan's Public Act 51, which governs distribution of fuel taxes, requires each local road agency and the Michigan Department of Transportation to report on the condition, mileage, and disbursements for the road and bridge system under its jurisdiction. The Pavement Surface Evaluation and Rating (PASER) system used to report on the condition is a visual survey conducted by transportation professionals that rates the road surface from

1 to 10; roads rated 5 and above are considered to be at least "Fair."

Figure 4.10 depicts all of the roads with PASER ratings of "poor" (1-4) in Benzie and Manistee Counties. The close-up in the inset reveals poor conditions along the entire length of M-115 from Beulah to Frankfort and continuing north on M-22 about halfway to the township's northern border. The stretch of Lobb Road between S. Shore Drive and Graves Road is also in need of attention.

4.10: Road conditions



LAKES TO LAND

### Pavement Surface Evaluation and Ratings

Data Sources: State of Michigan Geographic Data Library, NWMCOG 2012 Asset Management Report

- City or Village
- County Boundary
- Township Boundary

- Poor PASER Rating (1 - 4)
- Major Road
- Minor Road

0 2 4 8 Miles



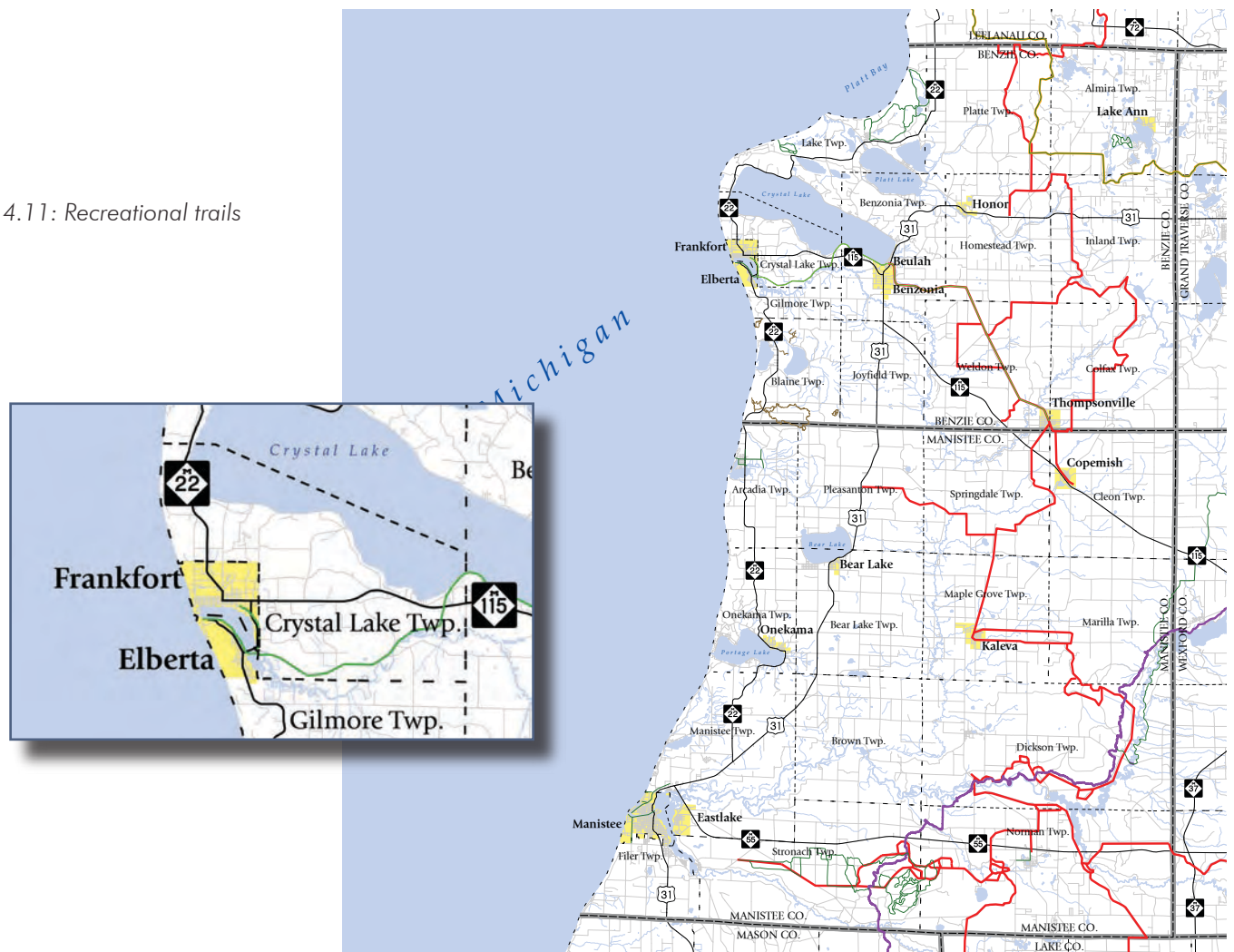


## Trails and regional connections

As can be seen in Figure 4.11, Crystal Lake Township is home to a considerable stretch of the Betsie Valley Trail, a 22-mile long regional multimodal trail that follows the bed of the old Ann Arbor Railroad. It is nonmotorized between Frankfort and Beulah, although snowmobiles are permitted between Beulah and Thompsonville. The six miles immediately west of Frankfort are paved with asphalt, making the trail barrier-free and suitable for rollerblading.

At the visioning session, four groups expressed a desire for trails, walkability, and connectivity. The Cornerstone which reflects this calls for obtaining adequate right-of-way along proposed routes, paving road shoulders during improvement projects, and ensuring adequate parking for bicycles. Additionally, preservation of the scenic beauty surrounding current and proposed trails is required to maintain their attraction and consequent economic value.

4.11: Recreational trails



LAKES TO LAND

### Regional Recreational Trails

Data Sources: State of Michigan Geographic Data Library, MDOE, NWMCOG, GTRLC

- City or Village
- County Boundary
- Township Boundary
- Major Road
- Minor Road

- GTRLC Trail
- Equestrian Trail
- Betsie Valley Trail

- Snowmobile Trail
- North Country Trail
- Non-Motorized Multi Use Trail

Updated: 09-24-13

## Power supply

Electricity for Crystal Lake Township homes and businesses is available from Consumers Energy Company (Jackson), and natural gas service is available from Michigan Consolidated Gas Company (Detroit). Service from “alternative energy suppliers” is also available through Michigan’s Electric Customer Choice and Natural Gas Customer Choice programs.

Public Act 295 of 2008 requires Michigan electric providers’ retail supply portfolio to include at least 10% renewable energy by 2015. The Michigan Public Service Commission’s 2012 report estimates renewables to make up 4.7% of the energy supply that year. Figure 4.12 shows the US

Environmental Protection Agency’s analysis of renewable energy potential in the Lakes to Land region.

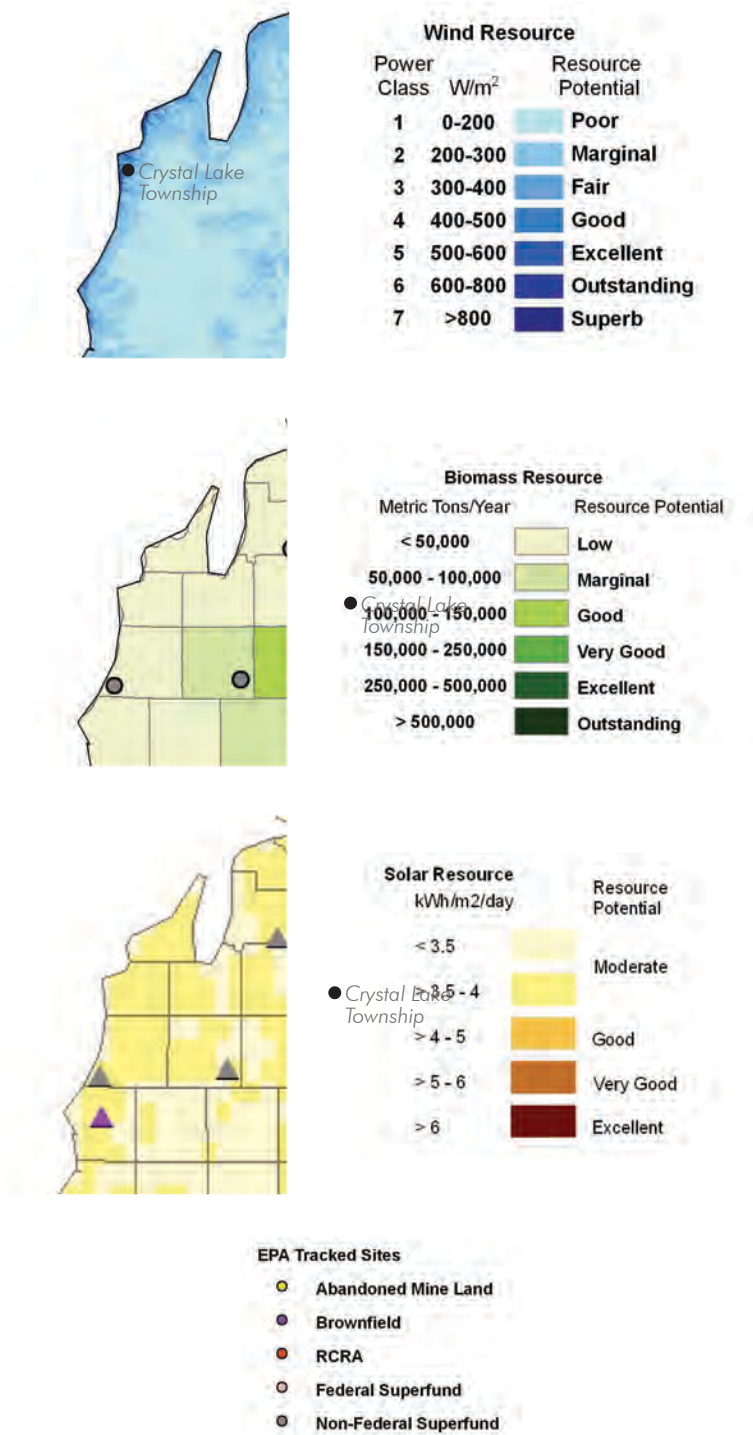
## Water and sewer

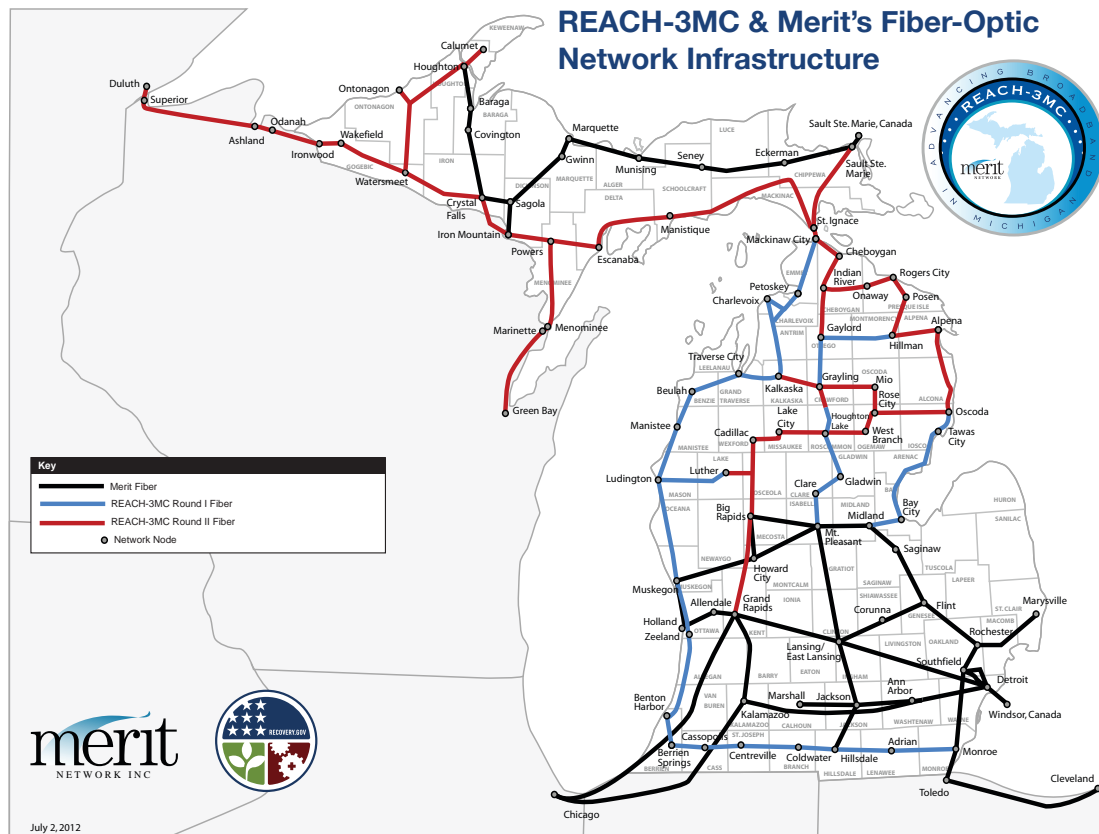
Crystal Lake Township does not have a public water or sewer system. Residents rely on septic and well systems. The township is not known to have difficulty in installing wells and septic systems, but there are still a number of factors relevant to community development to consider. In order to avoid problems such as inadequate water yield, gas in water, salty water, bacteria contamination, or organic chemical contamination, the community must consider the probable causes and seek out the remedies through policy and regulatory mechanisms. Some of the

probable causes occur at a community-wide level, such as road salting, septic effluent from systems in older developed areas, drainage from slopes into improperly sited residential areas, and failure to protect groundwater recharge areas through a lack of buffer zones and development limitations. Density and intensity of development need to be considered as they relate to septic and well systems, as increased development pressures lead to increasing need for understanding and oversight in well and septic system integrity. Health department standards provide regulatory oversight at the individual level, but wise land use policy at the community level is also a partner in the effort to protect the clean water supply and dispose of waste properly.



4.12: Renewable energy potential





## Telecommunications

Connect Michigan, our arm of the national agency dedicated to bringing broadband access to every citizen, calculates that such success has already been achieved in 97% of households in Benzie and Manistee Counties. Figure 4.13 further shows that the remaining unserved areas are mostly in the counties' inland areas rather than in the Lakes to Land communities.

Still, improved broadband access came up in several of the visioning

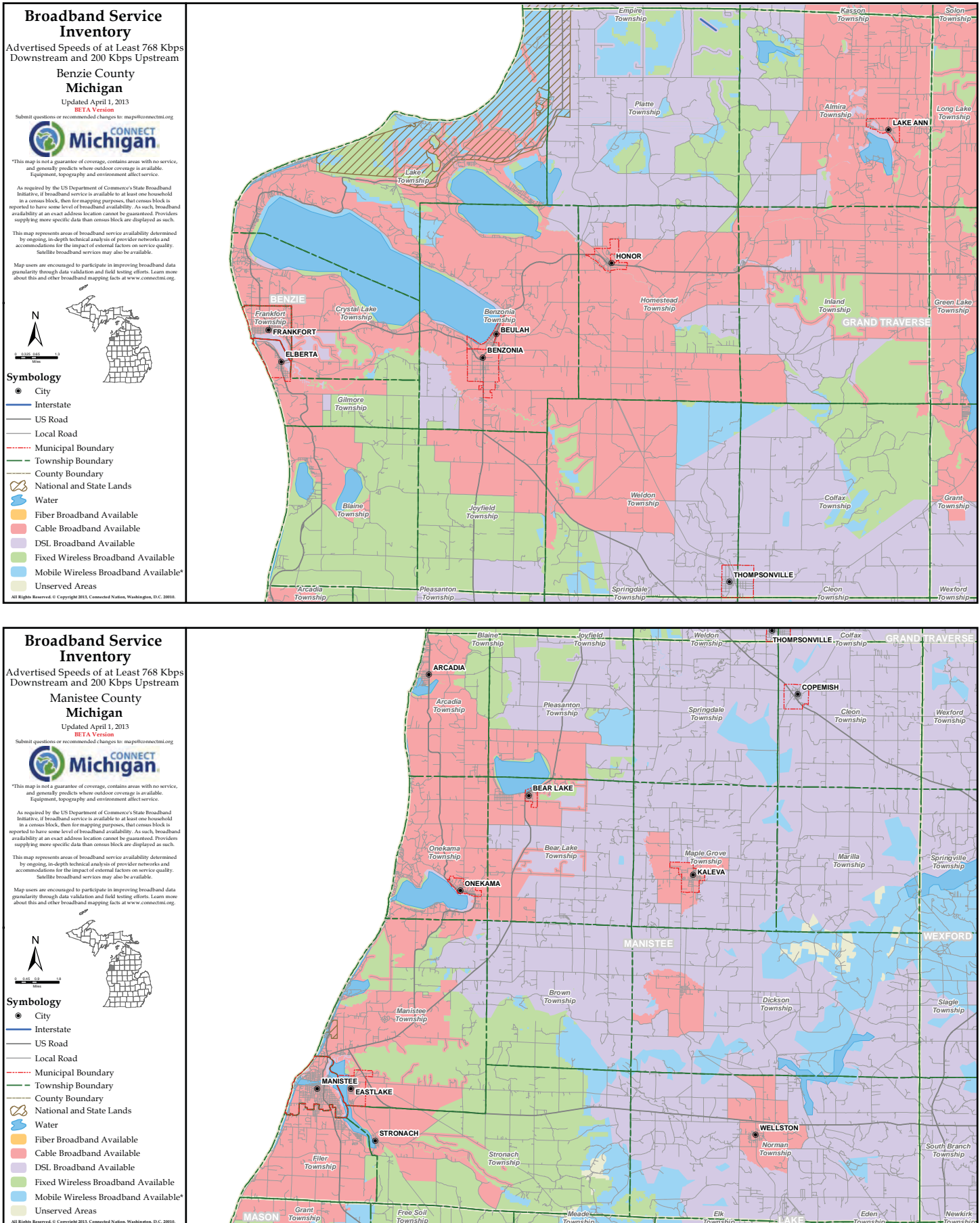
sessions, including Arcadia's. There is certainly room for improvement, particularly in terms of increased speed, provider choice, and types of platforms available. In January 2010, Merit Network was awarded American Recovery and Reinvestment Act funds to launch REACH-3MC (Rural, Education, Anchor, Community, and Healthcare—Michigan Middle Mile Collaborative), a statewide fiber-optic network for "community anchor institutions" such as schools and libraries. The completion of the line between Manistee and Beulah,

serving the Lakes to Land region, was announced on December 28, 2012.

What does this mean? Besides extending leading-edge direct service to organizations that serve the public, the REACH-3MC network uses an open access model that welcomes existing and new internet service providers to join. By constructing the "middle mile" between providers and users, the REACH-3MC cable removes a significant barrier to rural broadband by absorbing up to 80% of an internet service provider's startup costs.



#### 4.13: Broadband service inventory in Benzie and Manistee Counties







# Land

“In 1873, an ambitious but ill-advised project was put through in an effort to connect Crystal Lake and Lake Michigan with a navigable channel.”

So say three monuments erected by the citizens of Benzie County to mark “The Tragedy of Crystal Lake,” in which a group of enterprising pioneers called the Betsie River Improvement Company pooled their resources to cut a navigable channel from the Betsie River to Crystal Lake. Engineering imprecision led swiftly to unintended consequences as the lake burst through the breach onto the soft, swampy soil of the outlet, 75 billion gallons of rushing water taking extreme liberties with the modest channel prepared for its journey to the Betsie. The level of the lake promptly dropped the four and a half feet that had been predicted—and then another 15 feet after that.

Within days, however, the lemonade-making had begun. With 50 to 100 feet of brand-new beach exposed by the receding water, the Benzie county Journal reported that a Joint Stock Company had been organized “to build a hotel at the head of Crystal Lake for the purpose of accommodating those who come to this delightful retreat for a summer resort, and to encourage others to share the luxury.” Thus the Crystal Lake resort community was born.

Formed as the advancing Lake Michigan glacier’s outward expansion bulldozed fingerlike depressions into the surrounding terrain, which were then sealed off from the larger lake by wind- and water-borne earth, it is uncertain how accessible Crystal Lake would have been to modern township residents if not for the “Tragedy.” Steep slopes rise sharply along the southern coast, yielding awesome vistas but little contact. Today, many of Crystal Lake Township’s 691 parcels designated “residential cottage / resort”—more than any other community in the collaborative—are tucked in the strip between slope and shore. A concrete dam built in 1911 keeps them safe from fluctuating lake levels.

The township meets Lake Michigan even more abruptly, in sheer cliffs of plunging dune labeled “critical” by the state of Michigan. Agricultural operations have staked out some of the high ground, while the lower elevations leading to and surrounding the Betsie River are forested wetlands.

# Land Dashboard

Percentages indicate proportion of total land area except where noted

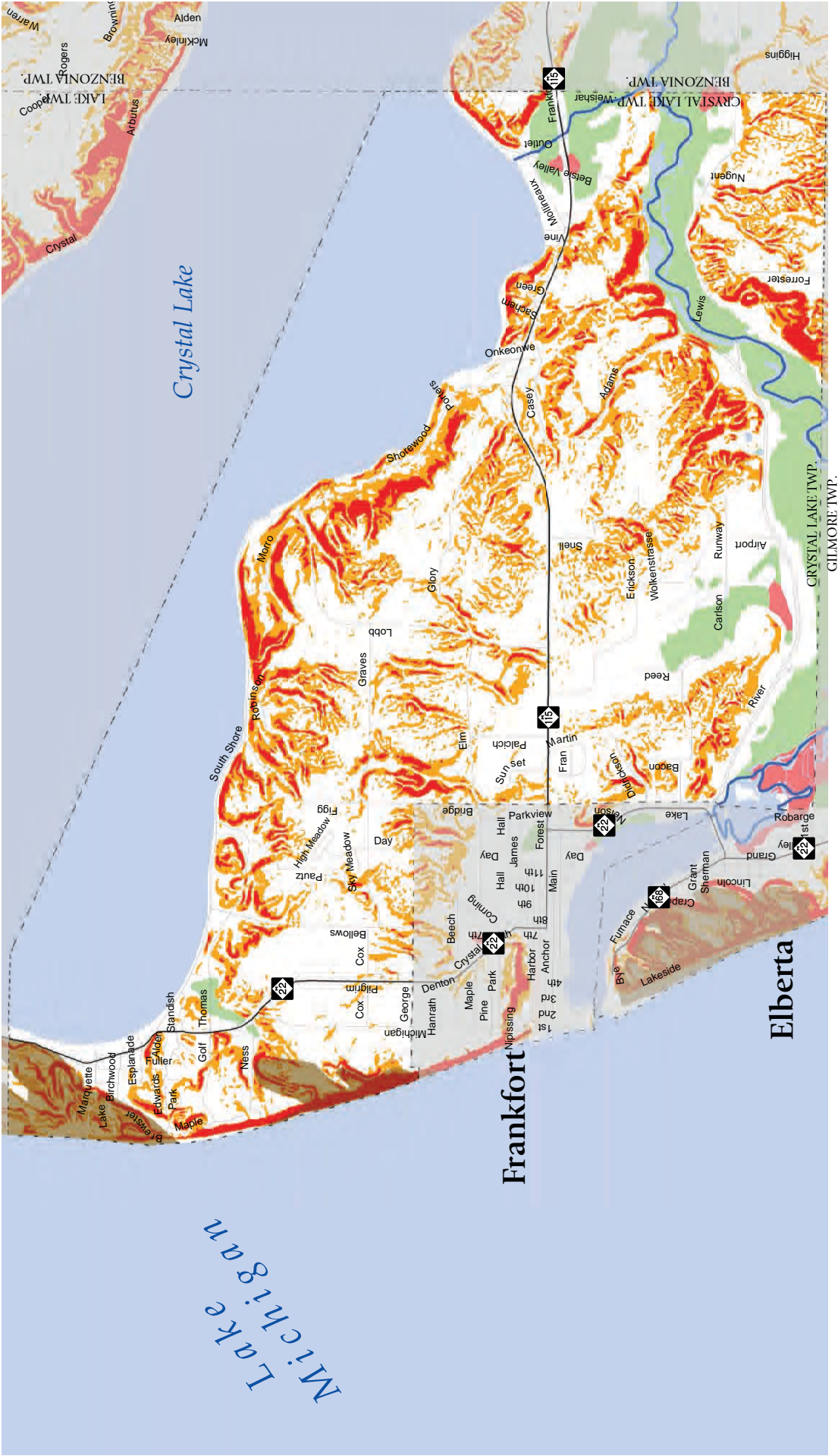
TOPOGRAPHY			
Elevation	Slopes		Critical dunes
Low: 575 feet above sea level	0-1 degrees: 816 acres	10%	281 acres 4%
High: 985 feet above sea level	1.1-5 degrees: 2,716 acres	35%	
Range: 410 feet	5.1-9 degrees: 1,920 acres	25%	
	9.1-16 degrees: 1,777 acres	23%	
	16.1-80 degrees: 634 acres	8%	

WATER		
Lakes	Rivers	Wetlands
2,884 acres 37%	24 miles 0.3%	Emergent (characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens): 87 acres 1.1%
	Trout Streams: 5.4 miles 23% of river length	Lowlands, Shrub, Wooded (characterized by low elevation and woody vegetation): 782 acres 10%

PUBLIC LAND USE				
Roads	Regional Trails	Conserved Land	State Land	Federal Land
57 miles 0.7%	5.3 miles 0.1%	GTRLC: 128 acres 2%	State Wildlife/Game Areas: 300 acres 4%	0 acres
			Other DNR Land: 890 acres 11%	



4.15: Natural Features map



LAKE TO LAND

## Crystal Lake Township Natural Features

Data Sources: State of Michigan Geographic Data Library, Benzie County Equalization

----- Township Boundary

— Major Roads

— Minor Roads

**Wetland Type:**

Lowland, Shrub, or Wooded

Emergent

**Slope Degree:**

9.1 - 16

16.1 - 50

Critical Dunes

Trout Stream



Land use

The land use section of this master plan provides an analysis of existing land use conditions and a proposed future land use development scenario. It contains two distinct maps: the existing land use map and future land use map.

The existing land use map depicts how the property within the jurisdiction is currently developed. It shows how the land is actually used, regardless of the current zoning, lack of zoning, or future land use map designation—it is what you see happening on the property.

The future land use map of a master plan is a visual representation of a community’s decisions about the type and intensity of development for every area of the municipality. These decisions, represented by the

community’s land use categories, are based on a variety of factors and are guided by the goals developed earlier in the master planning process—the Cornerstones and Building Blocks presented earlier in this plan. Although the future land use map is a policy document rather than a regulatory document, meaning that it is not legally binding once adopted, it is used to guide the creation of the zoning ordinance and the zoning map, and it supports land use decisions about variances, new development, and sub-area planning. That makes it perhaps the most important part of your master plan, as it defines how community land uses should be organized into the future.

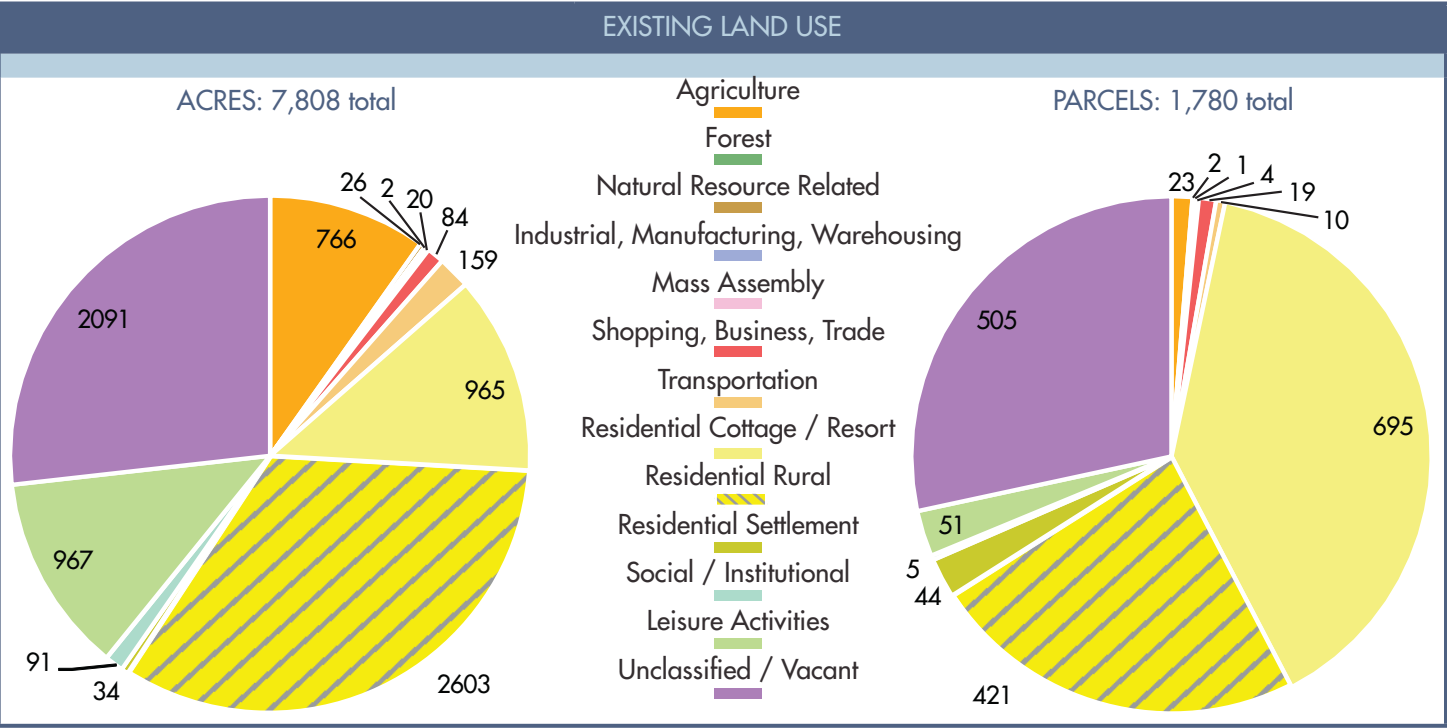
A part of the development of the future land use map is a discussion of the major land use related issues facing the community, how they interrelate with

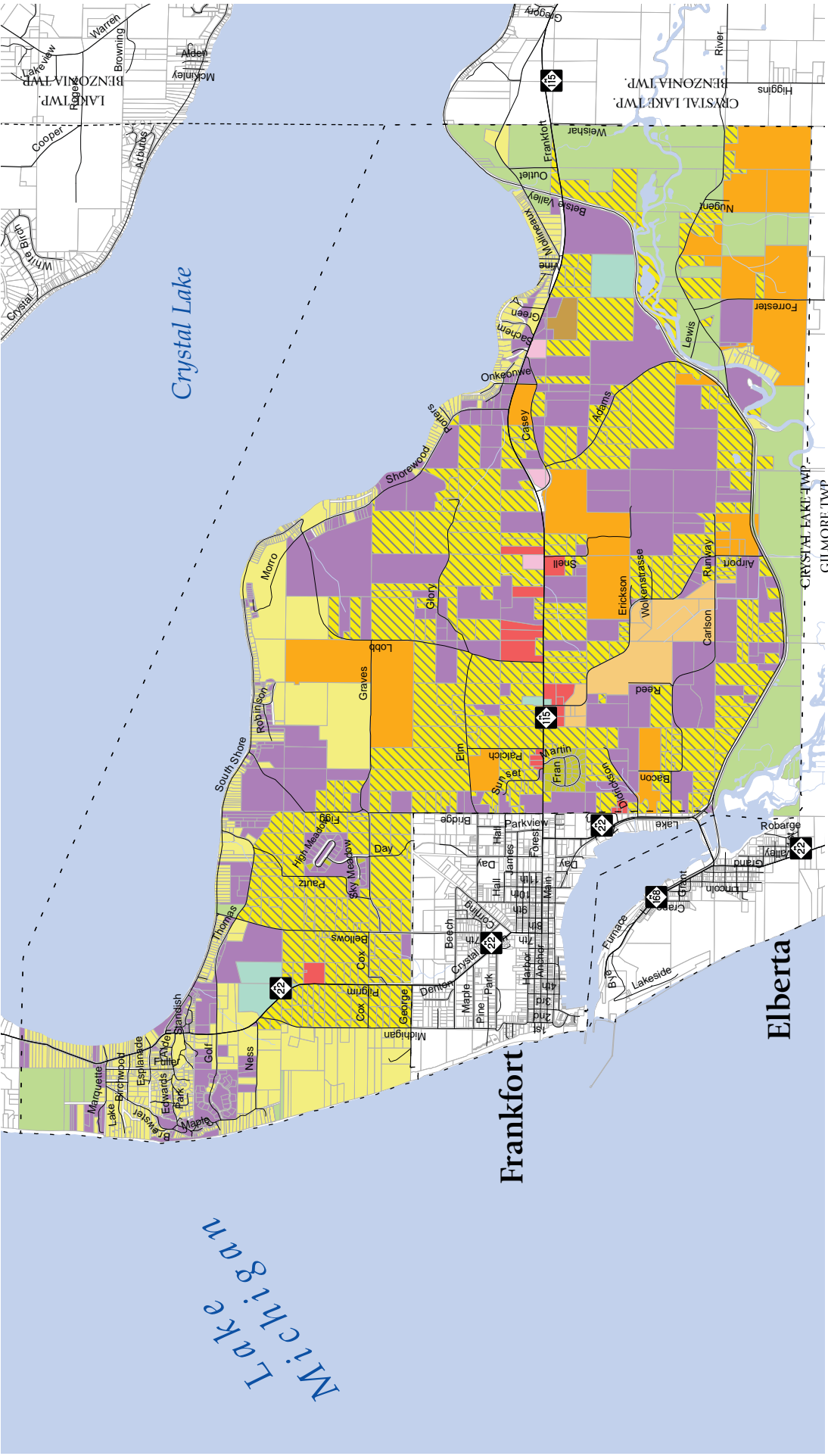
the Cornerstones and Building Blocks, and strategies that may be undertaken to achieve the desired future land use. But at the heart of planning for future land use is a picture of how the physical development of the community will take shape. Simply put, this section describes how, physically, the community will look in 15 to 20 years.

Factors considered when preparing the future land use map include:

- 1. Community Character. How will the land uses promote that character?
- 2. Adaptability of the Land. What physical characteristics (wetlands, ridges, lakes, etc.) need to be considered when planning for future development? How do the land uses for those areas reflect the uniqueness of the land?
- 3. Community Needs. What housing, economic development, infrastruc-

4.16: Existing Land Use chart and map





LAKES TO LAND

# Crystal Lake Township Existing Land Use

Data Sources: State of Michigan Geographic Data Library, Benzie County Equalization, Windshield Survey by Township Citizens

- Agriculture
- Leisure Activities
- Mass Assembly
- Natural Resources
- Residential, Cottage / Resort
- Residential, Rural
- Residential Settlement
- Shopping, Business, or Trade

- Social / Institutional
- Transportation / Utilities
- Unclassified / Vacant

- Parcel Boundary
- Township Boundary
- Road





ture, or other needs should the community consider planning for?

4. Services. How are we ensuring that existing infrastructure is used efficiently, and that new infrastructure is planned for areas where new development is anticipated?
5. Existing and New Development. How will new development in the community relate to existing development?

Existing and future land use maps are both different from a zoning map, which is the regulatory document depicting the legal constraints and requirements placed on each parcel of land. The parcels are classified into zoning districts, which are based on the future land use map. When owners want to develop or use their property in ways that do not conform to the zoning map, the planning commission uses the future land use map and the master plan to consider whether the proposed development conforms to existing regulations and policy.

The rural character of Crystal Lake Township is defined by open spaces and forests, small farms, orchards, vineyards, trails, resort cottages, the Betsie River, Crystal Lake, and its varied topography and viewsheds. The physical and natural character of Crystal Lake Township offers the community the ability to guide development and growth through a process of planning which embraces the geographic and natural assets of place while encouraging an economic return on investment in the land.

The topographic character of the township is the most prominent element that has influenced land use in the township. The early glacial history of Manistee and Benzie counties resulted in large depressions that now form Platte Lake, Crystal Lake, Lower and Upper Herring Lakes, and the Arcadia Lake and watershed. In a 1946 State of Michigan, Department of Conservation publication, author James Lewis Calvert states, "from the City of Manistee northward to Sleeping Bear Point, a number of depressions are located on the inner margin of the Manistee Moraine. These depressions are surrounded by moraine except on their western, or Lake Michigan sides. Platte and Crystal Lakes lie within two of these depressions, which are separated by a double morainic ridge."

The map entitled "Local Topography" in Tab 2 shows the Crystal Lake depression surrounded by a ring of ridgelines. The map entitled "Crystal Lake Township Natural Features" in this section graphically illustrates the severity of the ridge slopes, some of which extend several hundred feet. As a result of this geologic activity, land immediately abutting Crystal Lake is flat and over time has developed as smaller-lot residential property with lake access and views. Properties on High Meadow, Graves, Lobb, and Glory Roads are located along the top of the ridges; some with exceptional views of Crystal Lake and Lake Michigan are occupied as farmland, forests, and rural residential homes.

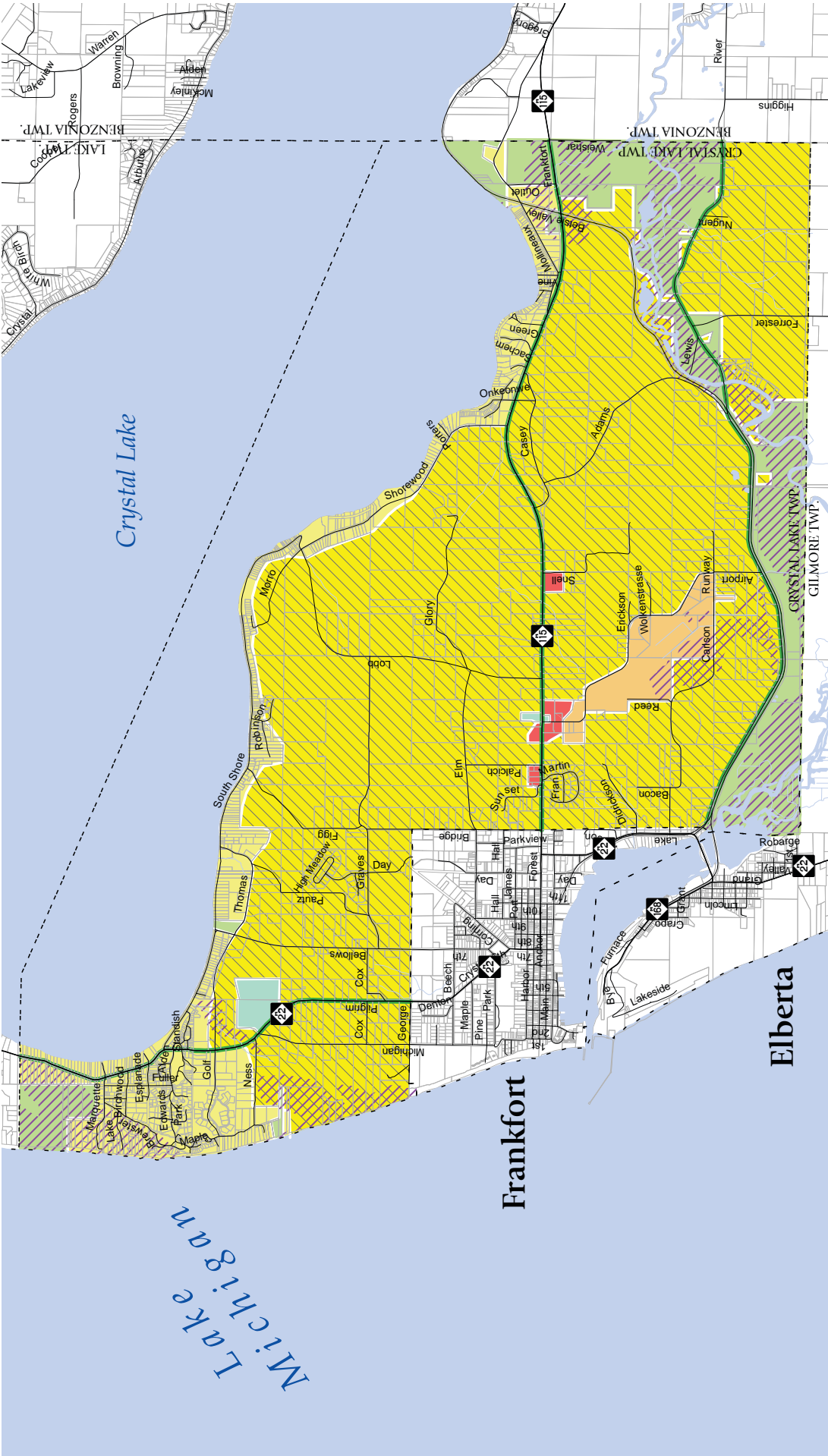
Likewise, M-115 meanders through the ridges and valleys which provide a scenic panorama of Crystal Lake Township. One such viewshed is created at the hilltop on M-115, marked by the gateway structure to Frankfort. There are relatively few areas within the township with low topographic relief. Two notable areas are the valley which traverses northwest to southeast, used for the Frankfort Dow Field Airport, and the floodplain associated with the Betsie River along the southern portion of the township.

So, how will land be used in the future? The Cornerstones provide the key. Simply articulated, the Cornerstones look to preserve and protect the natural features and rural character of Crystal Lake Township. Collectively, they state:

- Improve the water quality of Crystal Lake and the Betsie River and its tributaries and streams, which feed the Betsie River and ultimately Lake Michigan
- Encourage the continuation and growth of small agricultural operations
- Preserve our rural character
- Preserve resort and seasonal cottages and the rural residential character of the township
- Encourage land development patterns which respect the natural, ecological, and topographic character of the township
- Encourage the protection of our natural resource base



4.17: Future Land Use map



LAKES TO LAND

# Crystal Lake Township Future Land Use

Data Sources: State of Michigan Geographic Data Library, Benzie County Equalization, Windshield Survey by Township Citizens

- Parcel Boundary
- Township Boundary
- Road

- Institutional
- Preserve
- Residential, Cottage / Resort
- Residential, Rural

- Shopping, Business, or Trade
- Transportation / Utilities
- Sensitive Area

- Scenic Highway



## Future land use categories

Future land use for Crystal Lake Township is segmented into six categories, including:

### *Residential – Rural*

Residential rural property is located in a rural area but is not associated with a farm operation, usually on lots in excess of an acre and in many cases on larger parcels consisting of five or more acres. These inland properties are predominant in the interior portion of the township, and it is the predominant land use category overall.

Agriculture is also a primary use in this category. Farming operations in Crystal Lake Township tend to be smaller than their counterparts in surrounding townships and focus on a variety of farm-to-school and farm-to-table products. Ideally situated on the periphery of Frankfort and three villages, Crystal Lake Township's agriculture-based businesses provide a variety of specialty foods and products to those markets: fruits, vegetables, beef, lamb, pork, poultry, soaps, lotions, herbal remedies, nursery stock, plants, flowers, honey, eggs, alpaca fiber products, and gourmet mushrooms. These items weave their way into home kitchens, local farm markets, grocery stores, restaurants, and farm-to-school food programs. Economic development efforts should focus on supporting farmers' ability to diversify, develop, process, market, and transport value-added products and access new market channels.

Agricultural properties comprise approximately 10% of the township's land area, contributing to both the

economy and the quality of life. Development potential and market value can often displace agricultural value, which can result in prime farmland being fragmented, sold, and removed from agricultural use. The township should work with farmers to formulate and adopt zoning policies that preserve and prioritize agriculture as an important land use and evaluate the feasibility of state and local Purchase of Development Rights (PDR) and other farmland protection programs. Protection of agricultural areas is consistent with the assessment and recommendations of the Benzie County Open Space and Natural Resources Protection Plan.

### *Residential – Coastal / Resort*

This residential land use is designated along Lake Michigan, Crystal Lake, and the Betsie River, characterized by small, sometimes narrow lots created to maximize access and/or views to the adjacent water body. This category will contain a combination of seasonal and year-round homes. Classification of this type of residential use is important because these properties often located within sensitive natural landscapes or adjacent to riparian areas. Their placement on the property is crucial to maintaining and the protecting resources such as critical dunes, wetlands, and water bodies.

### *Corridor / Dependent Commercial*

Crystal Lake Township's future land use plan recognizes Frankfort as "our town," and the charm of the city is a large part of the quality of life enjoyed by township residents. As one community, Frankfort and the Village of Elberta provide the bulk of the services

and amenities that are utilized by residents and visitors to the township. Frankfort provides needed employment, affordable housing, and commercial and industrial sectors that are not available in the township. This plan envisions a mostly residential future for the corridor in order to maintain the rural and scenic character of the highway. Careful consideration of commercial activities, including a review of emerging patterns of commercial use along the highway, will be undertaken as a part of the zoning plan.

### *Transportation / Utilities*

This form of land development includes the Frankfort Dow Memorial Field (Benzie County Airport Authority) located south of M-115 along Airport Road. Depending on the final master layout plan for the Airport, there may be some form of warehousing and/or light industrial use located and associated with airport operations.

### *Institutional*

Property owned by local government or not-for-profit entities, used for such purposes as churches, cemeteries, offices, parks, and open space.

## Special management areas

There are two special management areas identified on the Future Land Use map: Scenic Highway and Sensitive Areas. These management areas overlay the land use categories to denote areas of special concern.

### *Scenic Highway*

This designation applies to the M-115 and River Road corridors due to



4.18: Residential land use

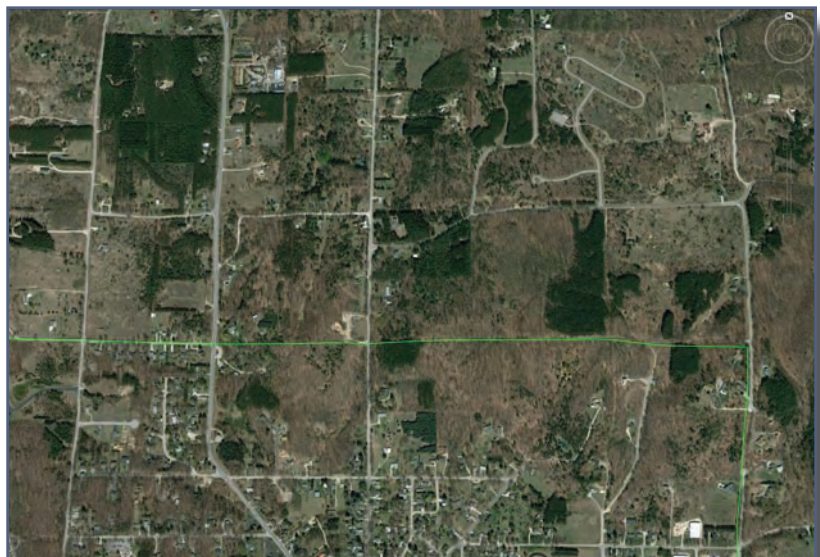
*Residential – Rural*



*Residential – Cottage & Resort,  
adjacent to Crystal Lake*



*Residential – Settlement  
(Frankfort city limit is in green)*



*Images: Google Earth*

their scenic qualities. As mentioned previously, the M-115 corridor meanders through varied topography buffered in many stretches by dense woods and large sweeping vistas. Many uses along the M-115 corridor are setback from the edge of the road by 80 to 140 feet while retaining much of the vegetation which promotes the rural character of the Township. This responsible and preferred form of site design; retaining existing vegetation along the front setback, should be encouraged and integrated into site design regulations in the Zoning Ordinance. Similarly, River Road interfaces with the Betsie River corridor. River Road, east of Adams Road, runs south of the Betsie River and then runs north of the Betsie River and Betsie Valley Trail west of Adams Road. The latter segment is very park-like and scenic due to the presence of the Trail and the open spaces of the Betsie River floodplain.

The gateway to Frankfort, including the historic Gateway Arch on M-115 at the city limits, is an area that is highly valued. Whether one is a township resident, a city resident, or a visitor, passing through the Gateway Arch provides a special quality to the end of a journey. This plan envisions maintaining the scenic quality of the immediate gateway area by limiting commercial development and carefully planning for likely future residential development in the area of the township/city border.

#### *Sensitive Areas*

These areas include the floodplains and wetlands along

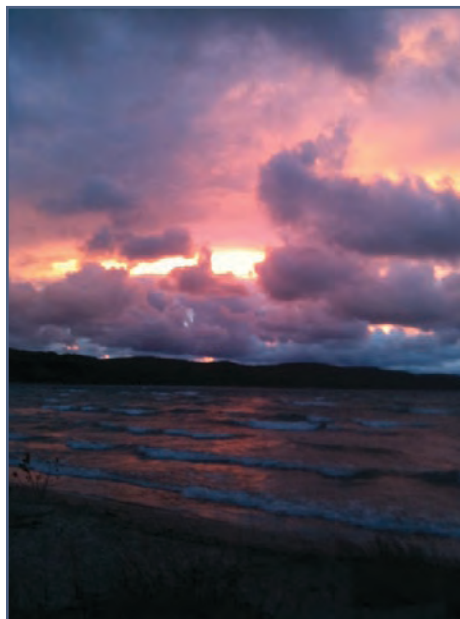
the Betsie River and the critical dunes identified by the Michigan Department of Environmental Quality along the Lake Michigan coastline. Both of these sensitive areas require added precautions and review when developing properties in or adjacent to these features.

The continued use of the Crystal Lake Watershed Overlay District also serves as a tool for protecting the quality of Crystal Lake, the shoreline and the watershed.

### Zoning plan

The Michigan Planning Enabling Act of 2008 requires the inclusion of a zoning plan in the master plan. The zoning plan calls attention to changes that need to be made to the current zoning ordinance in order to align the zoning ordinance with the new master plan. Specifically, the zoning plan looks to show the relationship between the future land use map and the zoning map, and to suggest ordinance revisions to strengthen that relationship. The changes suggested are necessary in order to help implement specific aspects of the master plan.

The table outlines the recommended modifications to the Crystal Lake Township Zoning Ordinance which focuses on deletions of some districts and consolidation of several others. Revisions are suggested in the alignment of the zoning districts with the master plan Future Land Use classifications.



*Photo: Sharron May*



4.19: Zoning Table

EXISTING ZONING CLASSIFICATIONS	WIDTH AND AREA	FUTURE LAND USE CATEGORY	RECOMMENDED MODIFICATIONS
R-1 Lakeshore Residential	100' 12,000 sq. ft.	RESIDENTIAL COTTAGE and RESORT	<ul style="list-style-type: none"> <li>• Remove reference to Livestock as a Conditional Use</li> <li>• Revise zoning map to accurately depict R-1</li> </ul>
R-2 Single Family Residential	100' 15,000 sq. ft.		
C-1 Commercial	150' 43,560 sq. ft.	SHOPPING, BUSINESS or TRADE	
C/R Commercial Resort	150' 43,560 sq. ft.		Delete district.
General Zoning Provisions			<ul style="list-style-type: none"> <li>• Consider and analyze existing lot sizes within RP 2.5 district to determine if they are compatible with RP5 or RP10.</li> <li>• Create a Corridor Preservation Overlay for the M-22, M-115, and River Road corridors. This overlay would be focused on maintaining setbacks and mitigating the removal of vegetation along the primary road and access management, including non-motorized trails, improving walkability, signage, and preservation of view sheds.</li> <li>• Add Low Impact Development stormwater management requirements.</li> <li>• The Zoning Enabling Act does not recognize "Conditional Uses." Suggest modifying the language to conform with the intent of the statute.</li> <li>• Formulate and adopt zoning policies that preserve and prioritize agriculture as an important land use and economic activity in the community, such as state and local Purchase of Development Rights and other farmland protection programs.</li> <li>• Incorporate bike parking requirements in the local zoning ordinance.</li> <li>• Review and revise Article 10: Rural Preservation of the Crystal Lake Township Zoning Ordinance to remove less rural land uses.</li> <li>• Permit a greater variety of home occupations and cottage industries to accommodate business while respecting the health, safety, welfare, and enjoyment of adjacent property owners.</li> <li>• Update dark sky provisions in the Zoning Ordinance to reflect Best Management Practices.</li> <li>• Establish a mining reclamation ordinance.</li> <li>• Revise zoning and related regulations to curtail sprawl and strip development along M-115.</li> </ul>



# Action Plan

The overall success of the Crystal Lake Township Master Plan will be determined by how many of the recommendations have been implemented.

This linkage between master plan acceptance and its eventual implementation is often the weakest link in the planning and community building process. All too often we hear that familiar phrase, “The plan was adopted and then sat on the shelf.” The plan is cited as the failure, but the real culprit was the failure to execute or implement the plan.

Specifically, the Action Plan is focused on modifications to the Zoning Ordinance to consolidate districts and refine the ordinance to include low impact development stormwater techniques and a new provision to preserve the scenic corridors along M-115 and River Road. In addition, several new township Planning Commissions have been formed since the dissolution of the Benzie County Planning Commission, making formal training of Planning Commissions an imperative.

## 4.20: Action Plan

RECOMMENDED IMPLEMENTATION STRATEGY 2013 – 2018		
Action Item	Description	Responsible Party
Planning Commission Training	The Lakes to Land Regional Initiative is coordinating Planning Commission training through Michigan State University for planning commissions within the region. This is an opportune time to have Planning Commission members go through the MSU-Extension Citizen Planner program.	Crystal Lake Township Board of Trustees and Planning Commission  <i>(note: The township should check with its municipal insurance carrier for PC member scholarships)</i>
Zoning Ordinance	Revise the current Township Zoning Ordinance using the Zoning Plan as a guide.	Planning Commission and Board of Trustees
Scenic Highway Provision	Prepare a new provision in the Zoning Ordinance focused on maintaining the visual appearance of the M-22, M-115, and River Road Corridors.	Planning Commission
Intergovernmental Exchange	Meet on with the City of Frankfort Planning Commission and other jurisdictions as needed to review developments, zoning, and related Planning Commission initiatives affecting the joint jurisdictional boundaries.	Planning Commission
Communication and Leadership Training	Improve communication between the township and its residents (functioning website, etc.). Collaborate with other L2L communities on a regional training program similar to the Planning Commission training.	Planning Commission





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## Data

US Census Bureau, American Community Survey 2006-2010, Selected Social Characteristics (DP02), Selected Economic Characteristics (DP03), and Selected Housing Characteristics (DP04)

	Estimate	Percent
<b>POPULATION</b>		
1990	899	NA
2000	960	0.68%
2010	957	-0.03%
2016 (proj.)	978	0.37%
<b>HOUSING OCCUPANCY</b>		
Total Housing Units	1,240	1240
Owner-occupied	365	29.4%
Renter-occupied	73	5.9%
Seasonal/Recreational/Occasional use	757	61.0%
Vacant - For Sale, For Rent, etc.	45	3.6%
<b>EDUCATIONAL ATTAINMENT</b>		
Population 25 years and over	768	768
Less than high school	41	5.40%
High school graduate and equivalency	214	27.90%
Some college, no degree	196	25.50%
Associate's degree	33	4.30%
Bachelor's degree	152	19.80%
Graduate or professional degree	132	17.20%
Percent high school graduate or higher	(X)	94.70%
Percent bachelor's degree or higher	(X)	37.00%
<b>SCHOOL ENROLLMENT</b>		
Population enrolled in school	130	13.58%
<b>CLASS OF WORKER</b>		
Civilian employed population 16 years +	347	347
Private wage and salary workers	243	70.00%
Government workers	48	13.80%
Self-employed	56	16.10%
Unpaid family workers	0	0.00%
Private sector jobs	86.2%	
<b>INCOME AND BENEFITS (IN 2010 INFLATION-ADJUSTED \$)</b>		
Total households	449	449
Less than \$10,000	24	5.30%
\$10,000 to \$14,999	44	9.80%
\$15,000 to \$24,999	42	9.40%
\$25,000 to \$34,999	46	10.20%
\$35,000 to \$49,999	82	18.30%
\$50,000 to \$74,999	73	16.30%
\$75,000 to \$99,999	55	12.20%
\$100,000 to \$149,999	36	8.00%
\$150,000 to \$199,999	16	3.60%
\$200,000 or more	31	6.90%
Median household income (dollars)	45,625	(X)
Very low income	110	24.5%
Low income	46	10.2%
Moderate income	155	34.5%
High income	91	20.3%
Very high income	47	10.5%
Per capita income	43,033	(X)
Median earnings for workers (dollars)	21,750	(X)
Median earnings: male FT, year-round	48,281	(X)
Median earnings: female FT, year-round	25,893	(X)

<b>POVERTY</b>		
All families	(X)	6.20%
All people	(X)	10.70%
Under 18 years	(X)	17.90%
Receiving food stamps	45	10.00%
Receiving cash assistance	14	3.10%
<b>INDUSTRY</b>		
Civilian employed population 16 years and over	347	347
Agriculture, forestry, fishing and hunting, and mining	8	2%
Construction	46	13%
Manufacturing	38	11%
Wholesale trade	6	2%
Retail trade	37	11%
Transportation and warehousing, and utilities	12	4%
Information	4	1%
Finance and insurance, and real estate and rental and leasing	27	8%
Professional, scientific, and management, and administrative and waste management services	11	3%
Educational services, and health care and social assistance	89	26%
Arts, entertainment, and recreation, and accommodation and food services	31	9%
Other services, except public administration	29	8%
Public administration	9	3%
Manufacturing to retail jobs	1.03	
Non-retail	250	
Retail, arts, accommodations, food	68	
Non-retail to retail, arts, acc., food	3.68	
<b>EMPLOYMENT STATUS</b>		
Population 16 years and over	846	846
In labor force	410	48.50%
Civilian labor force	410	48.50%
Employed	347	41.00%
Unemployed	63	7.40%
Armed Forces	0	0.00%
Not in labor force	436	51.50%
Civilian labor force	410	410
Percent Unemployed	(X)	15.40%
Jobs per 1,000 residents	363	
Non-service jobs per 1,000 residents	281	

COMMUTING TO WORK		
Workers 16 years and over	331	331
Drove alone	225	68.00%
Carpooled	49	14.80%
Public transit (except taxi)	0	0.00%
Walked	17	5.10%
Other means	3	0.90%
Worked at home	37	11.20%
Workers who commute	294	88.82%
Commuters who drive alone		76.53%
Mean travel time to work (minutes)	14	(X)
HOUSEHOLDS BY TYPE		
Total households	449	449
Average household size	2.07	(X)
Average family size	2.48	(X)
VETERAN STATUS		
Civilian population 18 years and over	818	818
Civilian veterans	90	11.00%
ANCESTRY		
Total population	928	928
American	6	0.60%
Arab	0	0.00%
Czech	12	1.30%
Danish	11	1.20%
Dutch	48	5.20%
English	226	24.40%
French (except Basque)	59	6.40%
French Canadian	8	0.90%
German	293	31.60%
Greek	0	0.00%
Hungarian	12	1.30%
Irish	127	13.70%
Italian	42	4.50%
Lithuanian	10	1.10%
Norwegian	72	7.80%
Polish	31	3.30%
Portuguese	0	0.00%
Russian	14	1.50%
Scotch-Irish	15	1.60%
Scottish	61	6.60%
Slovak	0	0.00%
Subsaharan African	15	1.60%
Swedish	39	4.20%
Swiss	11	1.20%
Ukrainian	0	0.00%
Welsh	8	0.90%
West Indian (excluding Hispanic origin groups)	0	0.00%
OCCUPATION		
Management, business, science, and arts occupations	95	27.40%
Service occupations	78	22.50%
Sales and office occupations	87	25.10%
Natural resources, construction, and maintenance occupations	63	18.20%
Production, transportation, and material moving occupations	24	6.90%

VALUE		
Owner-occupied units	382	382
Median home value (dollars)	258,800	(X)
MORTGAGE STATUS		
Owner-occupied units	382	382
Housing units with a mortgage	159	41.60%
Housing units without a mortgage	223	58.40%
GROSS RENT		
Occupied units paying rent	44	44
Median rent (dollars)	658	(X)
HOUSE HEATING FUEL		
Occupied housing units	449	449
Utility gas	141	31.40%
Bottled, tank, or LP gas	205	45.70%
Electricity	43	9.60%
Fuel oil, kerosene, etc.	31	6.90%
Coal or coke	0	0.00%
Wood	29	6.50%
Solar energy	0	0.00%
Other fuel	0	0.00%
No fuel used	0	0.00%
YEAR STRUCTURE BUILT		
Total housing units	1,184	1,184
Built 2005 or later	25	2.10%
Built 2000 to 2004	147	12.40%
Built 1990 to 1999	189	16.00%
Built 1980 to 1989	257	21.70%
Built 1970 to 1979	83	7.00%
Built 1960 to 1969	89	7.50%
Built 1950 to 1959	104	8.80%
Built 1940 to 1949	74	6.30%
Built 1939 or earlier	216	18.20%

US Census Bureau, American Community Survey 2006-2010, Selected Economic Characteristics (DP03)

HOUSEHOLDS BY TYPE				
Total households	449	+/-58	449	(X)
Family households (families)	289	+/-44	64.40%	+/-7.0
With own children under 18 years	68	+/-22	15.10%	+/-5.1
Married-couple family	232	+/-41	51.70%	+/-7.4
With own children under 18 years	40	+/-17	8.90%	+/-4.0
Male householder, no wife present, family	27	+/-16	6.00%	+/-3.3
With own children under 18 years	27	+/-16	6.00%	+/-3.3
Female householder, no husband present, family	30	+/-16	6.70%	+/-3.3
With own children under 18 years	1	+/-3	0.20%	+/-0.6
Nonfamily households	160	+/-41	35.60%	+/-7.0
Householder living alone	133	+/-40	29.60%	+/-7.4
65 years and over	73	+/-29	16.30%	+/-5.9
Households with one or more people under 18 years	72	+/-23	16.00%	+/-5.2
Households with one or more people 65 years and over	228	+/-47	50.80%	+/-7.2
Average household size	2.07	+/-0.17	(X)	(X)
Average family size	2.48	+/-0.20	(X)	(X)

PERCENTAGE OF FAMILIES AND PEOPLE WHOSE INCOME IN THE PAST 12 MONTHS IS BELOW THE POVERTY LEVEL		
All families	6.20%	+/-4.4
With related children under 18 years	20.80%	+/-14.0
With related children under 5 years only	0.00%	+/-66.2
Married couple families	5.20%	+/-4.9
With related children under 18 years	22.50%	+/-19.9
With related children under 5 years only	-	**
Families with female householder, no husband present	0.00%	+/-49.8
With related children under 18 years	0.00%	+/-100.0
With related children under 5 years only	0.00%	+/-100.0
All people	10.70%	+/-4.7
Under 18 years	17.90%	+/-12.0
Related children under 18 years	17.90%	+/-12.0
Related children under 5 years	0.00%	+/-64.3
Related children 5 to 17 years	21.60%	+/-14.5
18 years and over	9.80%	+/-4.3
18 to 64 years	13.10%	+/-6.4
65 years and over	5.20%	+/-3.5
People in families	8.50%	+/-5.7
Unrelated individuals 15 years and over	18.40%	+/-8.7



*Notes for US Census Bureau, American Community Survey 2006-2010, Tables S2403 and S2404 (following pages)*

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see Accuracy of the Data). The effect of nonsampling error is not represented in these tables.

The methodology for calculating median income and median earnings changed between 2008 and 2009. Medians over \$75,000 were most likely affected. The underlying income and earning distribution now uses \$2,500 increments up to \$250,000 for households, non-family households, families, and individuals and employs a linear interpolation method for median calculations. Before 2009 the highest income category was \$200,000 for households, families and non-family households (\$100,000 for individuals) and portions of the income and earnings distribution contained intervals wider than \$2,500. Those cases used a Pareto Interpolation Method.

Industry codes are 4-digit codes and are based on the North American Industry Classification System 2007. The Industry categories adhere to the guidelines issued in Clarification Memorandum No. 2, "NAICS Alternate Aggregation Structure for Use By U.S. Statistical Agencies," issued by the Office of Management and Budget.

While the 2006-2010 American Community Survey (ACS) data generally reflect the December 2009 Office of Management and Budget (OMB) definitions of metropolitan and micropolitan statistical areas; in certain instances the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB definitions due to differences in the effective dates of the geographic entities.

Estimates of urban and rural population, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2000 data. Boundaries for urban areas have not been updated since Census 2000. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

#### Explanation of Symbols:

1. An '\*\*\*' entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.
2. An '-' entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution.
3. An '-' following a median estimate means the median falls in the lowest interval of an open-ended distribution.
4. An '+' following a median estimate means the median falls in the upper interval of an open-ended distribution.
5. An '\*\*\*\*' entry in the margin of error column indicates that the median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.
6. An '\*\*\*\*\*' entry in the margin of error column indicates that the estimate is controlled. A statistical test for sampling variability is not appropriate.
7. An 'N' entry in the estimate and margin of error columns indicates that data for this geographic area cannot be displayed because the number of sample cases is too small.
8. An '(X)' means that the estimate is not applicable or not available.

S2403: INDUSTRY BY SEX AND MEDIAN EARNINGS IN THE PAST 12 MONTHS (IN 2010 INFLATION-ADJUSTED DOLLARS) FOR THE CIVILIAN EMPLOYED POPULATION 16 YEARS AND OVER

2006-2010 American Community Survey 5-Year Estimates

Crystal Lake township, Benzie County, Michigan												
Subject	Total		Male		Female		Median earnings (dollars)		Median earnings (dollars) for male		Median earnings (dollars) for female	
	Estimate	Error	Estimate	Error	Estimate	Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error
Civilian employed population 16 years and over	347	+/-60	55.3%	+/-6.3	44.7%	+/-6.3	25,708	+/-2,854	33,875	+/-10,193	21,635	+/-3,850
Agriculture, forestry, fishing and hunting, and mining:	8	+/-8	100.0%	+/-96.4	0.0%	+/-96.4	16,250	+/-24,430	16,250	+/-24,451	-	**
Agriculture, forestry, fishing and hunting	8	+/-8	100.0%	+/-96.4	0.0%	+/-96.4	16,250	+/-24,430	16,250	+/-24,453	-	**
Mining, quarrying, and oil and gas extraction	0	+/-109	-	**	-	**	-	**	-	**	-	**
Construction	46	+/-17	84.8%	+/-14.0	15.2%	+/-14.0	33,500	+/-13,830	35,417	+/-17,205	27,813	+/-11,749
Manufacturing	38	+/-22	68.4%	+/-24.0	31.6%	+/-24.0	41,500	+/-34,133	52,917	+/-21,610	21,500	+/-37,544
Wholesale trade	6	+/-9	100.0%	+/-100.0	0.0%	+/-100.0	2,500-	***	2,500-	***	-	**
Retail trade	37	+/-19	24.3%	+/-19.0	75.7%	+/-19.0	18,958	+/-9,847	18,125	+/-25,716	21,000	+/-13,351
Transportation and warehousing, and utilities:	12	+/-10	100.0%	+/-78.7	0.0%	+/-78.7	60,833	+/-105,710	60,833	+/-105,710	-	**
Transportation and warehousing	12	+/-10	100.0%	+/-78.7	0.0%	+/-78.7	60,833	+/-105,710	60,833	+/-105,710	-	**
Utilities	0	+/-109	-	**	-	**	-	**	-	**	-	**
Information	4	+/-5	0.0%	+/-100.0	100.0%	+/-100.0	-	**	-	**	-	**
Finance and insurance, and real estate and rental and leasing:	27	+/-16	59.3%	+/-22.7	40.7%	+/-22.7	45,469	+/-19,258	46,875	+/-104,776	18,125	+/-28,863
Finance and insurance	23	+/-15	52.2%	+/-25.3	47.8%	+/-25.3	43,750	+/-46,870	105,625	+/-109,718	18,125	+/-28,863
Real estate and rental and leasing	4	+/-6	100.0%	+/-100.0	0.0%	+/-100.0	-	**	-	**	-	**
Professional, scientific, and management, and administrative and waste management services:	11	+/-12	100.0%	+/-82.2	0.0%	+/-82.3	14,792	+/-62,332	14,792	+/-62,332	-	**
Professional, scientific, and technical services	5	+/-8	100.0%	+/-100.0	0.0%	+/-100.0	-	**	-	**	-	**
Management of companies and enterprises	0	+/-109	-	**	-	**	-	**	-	**	-	**
Administrative and support and waste management services	6	+/-8	100.0%	+/-100.0	0.0%	+/-100.0	-	**	-	**	-	**
Educational services, and health care and social assistance:	89	+/-41	31.5%	+/-14.4	68.5%	+/-14.4	26,131	+/-4,555	48,125	+/-149,598	23,875	+/-6,814
Educational services	15	+/-11	0.0%	+/-70.4	100.0%	+/-70.4	50,313	+/-71,774	-	**	50,313	+/-71,774
Health care and social assistance	74	+/-41	37.8%	+/-15.9	62.2%	+/-15.9	26,071	+/-3,516	48,125	+/-150,191	23,750	+/-7,974
Arts, entertainment, and recreation, and accommodation and food services:	31	+/-27	61.3%	+/-38.9	38.7%	+/-38.9	32,583	+/-35,697	33,417	+/-15,701	15,938	+/-2,017
Arts, entertainment, and recreation	22	+/-25	86.4%	+/-25.6	13.6%	+/-25.6	33,167	+/-30,007	33,417	+/-15,701	-	**
Accommodation and food services	9	+/-9	0.0%	+/-90.9	100.0%	+/-90.9	16,406	+/-13,410	-	**	16,406	+/-13,410
Other services, except public administration	29	+/-16	41.4%	+/-21.8	58.6%	+/-21.8	30,313	+/-30,859	11,667	+/-59,391	30,938	+/-31,485
Public administration	9	+/-6	66.7%	+/-41.3	33.3%	+/-41.3	56,250	+/-99,230	2,500-	***	-	**

S2404: INDUSTRY BY SEX AND MEDIAN EARNINGS IN THE PAST 12 MONTHS (IN 2010 INFLATION-ADJUSTED DOLLARS) FOR THE FULL-TIME, YEAR-ROUND CIVILIAN EMPLOYED POPULATION 16 YEARS AND OVER  
2006-2010 American Community Survey 5-Year Estimates

Crystal Lake township, Benzie County, Michigan												
Subject	Total		Male		Female		Median earnings (dollars)		Median earnings (dollars)		Median earnings (dollars)	
	#	Margin of error	Estimate	Margin of error	Estimate	Margin of error	Estimate	Margin of error	Estimate	Margin of error	Estimate	Margin of error
Full-time, year-round civilian employed population 16 years and over	184	+/-44	58.2%	+/-9.2	41.8%	+/-9.2	36,389	+/-12,689	48,281	+/-6,848	25,893	+/-5,118
Agriculture, forestry, fishing and hunting, and mining:	3	+/-4	100.0%	+/-100.0	0.0%	+/-100.0	-	**	-	**	-	**
Agriculture, forestry, fishing and hunting	3	+/-4	100.0%	+/-100.0	0.0%	+/-100.0	-	**	-	**	-	**
Mining, quarrying, and oil and gas extraction	0	+/-109	-	**	-	**	-	**	-	**	-	**
Construction	36	+/-16	91.7%	+/-11.6	8.3%	+/-11.6	36,667	+/-18,997	42,750	+/-16,862	-	**
Manufacturing	33	+/-22	63.6%	+/-26.7	36.4%	+/-26.7	52,708	+/-65,166	53,958	+/-23,875	21,500	+/-37,544
Wholesale trade	0	+/-109	-	**	-	**	-	**	-	**	-	**
Retail trade	9	+/-9	0.0%	+/-90.9	100.0%	+/-90.9	11,875	+/-20,849	-	**	11,875	+/-20,849
Transportation and warehousing, and utilities:	7	+/-7	100.0%	+/-100.0	0.0%	+/-100.0	152,813	+/-190,723	152,813	+/-190,723	-	**
Transportation and warehousing	7	+/-7	100.0%	+/-100.0	0.0%	+/-100.0	152,813	+/-190,723	152,813	+/-190,723	-	**
Utilities	0	+/-109	-	**	-	**	-	**	-	**	-	**
Information	0	+/-109	-	**	-	**	-	**	-	**	-	**
Finance and insurance, and real estate and rental and leasing:	18	+/-13	66.7%	+/-30.6	33.3%	+/-30.6	46,875	+/-60,950	105,625	+/-139,041	45,625	+/-44,156
Finance and insurance	14	+/-12	57.1%	+/-35.9	42.9%	+/-35.9	76,250	+/-92,491	106,875	+/-178,836	45,625	+/-44,156
Real estate and rental and leasing	4	+/-6	100.0%	+/-100.0	0.0%	+/-100.0	-	**	-	**	-	**
Professional, scientific, and management, and administrative and waste management services:	0	+/-109	-	**	-	**	-	**	-	**	-	**
Professional, scientific, and technical services	0	+/-109	-	**	-	**	-	**	-	**	-	**
Management of companies and enterprises	0	+/-109	-	**	-	**	-	**	-	**	-	**
Administrative and support and waste management services	0	+/-109	-	**	-	**	-	**	-	**	-	**
Educational services, and health care and social assistance:	53	+/-28	43.4%	+/-28.1	56.6%	+/-28.1	26,736	+/-14,278	27,396	+/-42,913	25,417	+/-9,260
Educational services	9	+/-8	0.0%	+/-90.9	100.0%	+/-90.9	51,250	+/-69,473	-	**	51,250	+/-69,473
Health care and social assistance	44	+/-27	52.3%	+/-31.7	47.7%	+/-31.7	26,667	+/-13,355	27,396	+/-42,913	25,208	+/-3,226
Arts, entertainment, and recreation, and accommodation and food services:	4	+/-5	0.0%	+/-100.0	100.0%	+/-100.0	16,667	+/-52,133	-	**	16,667	+/-52,133
Arts, entertainment, and recreation	0	+/-109	-	**	-	**	-	**	-	**	-	**
Accommodation and food services	4	+/-5	0.0%	+/-100.0	100.0%	+/-100.0	16,667	+/-52,133	-	**	16,667	+/-52,133
Other services, except public administration	15	+/-11	33.3%	+/-41.2	66.7%	+/-41.2	36,458	+/-3,006	39,583	+/-61,388	35,417	+/-4,890
Public administration	6	+/-6	50.0%	+/-50.0	50.0%	+/-50.0	57,500	+/-1,994	-	**	-	**

*Esri Business Analyst*

Financial Expenditures				
Crystal Lake Township				
Area: 17.08 Square Miles				
	Spending Potential Index		Average Amount Spent	Total
<b>Assets</b>				
<b>Market Value</b>				
Checking Accounts	82		\$4,647.38	\$2,043,872
Savings Accounts	85		\$10,856.70	\$4,774,676
U.S. Savings Bonds	80		\$320.24	\$140,840
Stocks, Bonds & Mutual Funds	87		\$32,970.03	\$14,499,912
<b>Annual Changes</b>				
Checking Accounts	72		\$181.36	\$79,760
Savings Accounts	47		\$176.57	\$77,653
U.S. Savings Bonds	-148		-\$3.41	-\$1,501
<b>Earnings</b>				
Dividends, Royalties, Estates, Trusts	94		\$897.60	\$394,756
Interest from Savings Accounts or Bonds	94		\$831.09	\$365,508
Retirement Plan Contributions	70		\$936.42	\$411,828
<b>Liabilities</b>				
Original Mortgage Amount	66		\$13,707.95	\$6,028,630
Vehicle Loan Amount 1	74		\$1,959.55	\$861,792
<b>Amount Paid: Interest</b>				
Home Mortgage	69		\$3,086.93	\$1,357,604
Lump Sum Home Equity Loan	70		\$88.78	\$39,044
New Car/Truck/Van Loan	74		\$149.70	\$65,836
Used Car/Truck/Van Loan	72		\$112.95	\$49,675
<b>Amount Paid: Principal</b>				
Home Mortgage	71		\$1,369.87	\$602,456
Lump Sum Home Equity Loan	72		\$116.66	\$51,308
New Car/Truck/Van Loan	74		\$803.17	\$353,226
Used Car/Truck/Van Loan	72		\$530.42	\$233,275
Checking Account and Banking Service Charges	68		\$18.20	\$8,004
Finance Charges, excluding Mortgage/Vehicle	68		\$161.93	\$71,214



Business Summary				
Crystal Lake Township				
Area: 17.08 Square Miles				
<b>Data for all businesses in area</b>				
Total Businesses:	78			
Total Employees:	613			
Total Residential Population:	960			
Employee/Residential Population Ratio:	0.64			
	Businesses		Employees	
by NAICS Codes	Number	Percent	Number	Percent
Agriculture, Forestry, Fishing & Hunting	0	0.0%	0	0.0%
Mining	0	0.0%	0	0.0%
Utilities	0	0.6%	2	0.3%
Construction	7	8.4%	22	3.6%
Manufacturing	4	5.0%	105	17.1%
Wholesale Trade	2	3.1%	11	1.8%
Retail Trade	15	19.3%	93	15.2%
Motor Vehicle & Parts Dealers	1	1.6%	9	1.4%
Furniture & Home Furnishings Stores	0	0.4%	1	0.1%
Electronics & Appliance Stores	1	1.2%	3	0.5%
Bldg Material & Garden Equipment & Supplies Dealers	2	2.5%	12	1.9%
Food & Beverage Stores	2	2.4%	36	5.9%
Health & Personal Care Stores	0	0.5%	3	0.5%
Gasoline Stations	1	0.6%	5	0.8%
Clothing & Clothing Accessories Stores	2	2.1%	6	1.0%
Sport Goods, Hobby, Book, & Music Stores	2	2.2%	5	0.8%
General Merchandise Stores	1	0.9%	4	0.7%
Miscellaneous Store Retailers	4	4.9%	10	1.6%
Nonstore Retailers	0	0.0%	0	0.0%
Transportation & Warehousing	2	1.9%	6	0.9%
Information	1	1.4%	5	0.8%
Finance & Insurance	2	3.1%	19	3.1%
Central Bank/Credit Intermediation & Related Activities	1	1.9%	16	2.6%
Securities, Commodity Contracts & Other Financial Investments & Other Related Activities	0	0.4%	1	0.1%
Insurance Carriers & Related Activities; Funds, Trusts & Other Financial Vehicles	1	0.8%	2	0.3%
Real Estate, Rental & Leasing	4	5.5%	25	4.1%
Professional, Scientific & Tech Services	4	4.6%	14	2.3%
Legal Services	1	0.9%	2	0.4%
Management of Companies & Enterprises	1	1.1%	9	1.5%
Administrative & Support & Waste Management & Remediation Services	3	3.6%	7	1.2%
Educational Services	2	2.3%	57	9.2%
Health Care & Social Assistance	6	8.0%	98	15.9%
Arts, Entertainment & Recreation	1	1.4%	2	0.3%
Accommodation & Food Services	7	9.6%	55	9.0%
Accommodation	3	3.6%	11	1.7%
Food Services & Drinking Places	5	6.0%	45	7.3%
Other Services (except Public Administration)	10	12.6%	38	6.2%
Automotive Repair & Maintenance	1	1.0%	7	1.1%
Public Administration	5	5.8%	41	6.7%
Unclassified Establishments	2	2.6%	6	1.0%
Total	78	100%	613	100%
<b>Source:</b> Business data provided by Infogroup, Omaha NE Copyright 2012, all rights reserved. Esri forecasts for 2011.				



# Appendix B

## Northwest Michigan Regional Non-Motorized Strategy

Please visit <http://www.nwm.org/userfiles/filemanager/465/>





# Appendix C

## Documentation

A complete packet has been assembled that includes

- “Intent to plan” notices
- Draft distribution notices
- Public hearing notices
- All received comments

- Meeting minutes related to consideration of comments
- Public hearing meeting minutes

A copy of this packet is on file at Crystal Lake Township Hall. The documents are also available at [www.lakestoland.org/crystal-lake/master-plan/](http://www.lakestoland.org/crystal-lake/master-plan/)

As required by Michigan Public Act 33 of 2008, the Michigan Planning Enabling Act, the signed resolution adopting this master plan is on the inside cover.

