



*Trenton Coast
Resiliency Master Plan*

To weather the future
together. ¹

Acknowledgments

This project is part of the Michigan Association of Planning's Master Planning for Sustainability and Resiliency grant program. Financial assistance for this project was provided, in part, by the Michigan Coastal Zone Management Program, Office of the Great Lakes, Department of Environmental Quality, under the National Coastal Zone Management Program, through a grant from the National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

The Michigan Association of Planning served as the contact and program developer, and funding was provided by the "Michigan Coastal Zone Management Program, Office of the Great Lakes, Department of Environmental Quality and the National Oceanic and Atmospheric Administration."

Mayor

Kyle F. Stack

City Council

William LeFevre

W. Dan Gillespie

Robert J. Howey

Nelson Perugi

Steven Rzeppa

Timber R. Baun-Crooks

Administration

James Wagner

Virgil Maiani

Leah Iglehart

Planning Commission

Scott Cabauatan

Chuck Earl

Mario Ferrante

Paul Frost

Jennifer Blackledge

Aaron Castle

Tim Boggs

Milo Gaynier

Lauren Jocks

Engineering

William Hogan



Captions

<i>Table : Trends in Age, Median Income, and Race</i>	23	<i>Map: MDOT Traffic Counts</i>	50
<i>Map: Households with Children</i>	25	<i>Figure: Non motorized Circulation</i>	51
<i>Map: People Without a High School Diploma</i>	27	<i>Table : City Departments with Generators</i>	55
<i>Table: Asthma Hospitalization Rates</i>	28	<i>Table : Human Health Impacts</i>	55
<i>Table: Disability Rates</i>	28	<i>Map: Sensitive Structures at Risk</i>	59
<i>Map: Population Aged 65 Years and Older</i>	29	<i>Case Study: Holland, Michigan</i>	62
<i>Table: Median Income Comparison by Community</i>	30	<i>Figure: Key Infrastructure Systems</i>	63
<i>Map: Percentage of Poverty</i>	32	<i>Figure: Integrated Metabolism</i>	63
<i>Map: Median Income</i>	32	<i>Measures of Preparedness:</i>	65
<i>Table: Civic Engagement and Volunteerism</i>	33	<i>Map: Tree Canopy</i>	69
<i>Map: Percentage of Minority Populations</i>	35	<i>Map: Bedrock Geology</i>	70
<i>Map: Sensitive Populations at Risk</i>	36	<i>Map: Soil Classifications</i>	71
<i>Map: People Without a High School Diploma</i>	37	<i>Map: Soil Runoff Rates</i>	71
<i>Map: Percentage of Minority Populations</i>	37	<i>Map: Farmland Productivity</i>	71
<i>Map: 1 Person Households, Living Alone</i>	37	<i>Map: Hydric Soils and Wetlands</i>	71
<i>Map: Percentage of Poverty</i>	37	<i>Map: Natural and Sensitive Features</i>	75
<i>Charrettes</i>	39	<i>Map: Watersheds</i>	76
<i>Map: ImperVIOUS Surfaces</i>	43	<i>Photo: Detroit River Clean up Effort</i>	79
<i>Table: Housing Vacancy, Value, and Tenure</i>	45	<i>Table: Where Trentonites Work and Live</i>	82
<i>Map: Homeownership Rates</i>	47	<i>Map: Sensitive Lands at Risk</i>	89
<i>Transportation</i>	48	<i>Case Study: Two Harbors, MN</i>	91
<i>Map: Median Home Value</i>	48	<i>Map: Total Vulnerability with Concerns</i>	95
<i>Map: Vulnerable Structure</i>	48	<i>Map: Future Land Use</i>	100
<i>Figure: Commute Shed</i>	49	<i>Map: Trenton Zoning Map</i>	105
<i>Map: Road Classification</i>	50		

Contents

Introduction	6
REGIONAL CONTEXT	6
HISTORY	8
PLANNING CONTEXT	10
RESILIENCY MASTER PLAN	10
COMMUNITY ENGAGEMENT	13
People	20
WHAT'S COMING IN SOCIAL CHANGE: 21ST CENTURY DEMOGRAPHICS	20
WHAT IS: EXISTING CONDITIONS AND SENSITIVITIES	22
WHERE IT WILL HIT: VULNERABILITY ASSESSMENT	37
WHAT WE VALUE	38
WHAT WE CAN DO	38
Structures and Systems	40
WHAT'S COMING IN PHYSICAL CHANGE: HOTTER AND WETTER	40
WHAT IS: EXISTING CONDITIONS AND SENSITIVITY	42
WHERE IT WILL HIT: VULNERABILITY ASSESSMENT	58
WHAT WE VALUE	60
WHAT WE CAN DO	60
Lands	66
WHAT'S COMING IN ECONOMIC CHANGE: POSTINDUSTRIALISM	66
WHAT IS: EXISTING CONDITIONS AND SENSITIVITY	68
WHERE IT WILL HIT: VULNERABILITY ASSESSMENT	88
WHAT WE VALUE	90
WHAT WE CAN DO	90
Community Resiliency	92
TOTAL VULNERABILITY	92
RECOMMENDATIONS FOR A RESILIENT TRENTON	94




Introduction

Regional Context

The City of Trenton is in the southeastern portion of Wayne County, which in turn is in the southeastern portion of Michigan's Lower Peninsula. The City has a land area of 7.5 square miles. It is located within the Detroit Metropolitan Statistical area and is situated approximately 15 miles southwest of downtown Detroit, 41 miles northeast of Toledo OH, and 38 miles east of Ann Arbor. Communities immediately adjacent to the City include the cities of Riverview to the north, Grosse Ile to the east (across the Detroit River), Gibraltar to the south, and Riverview, Woodhaven, and Brownstone Township to the west.

The Trenton coastline has global significance that is entirely separate from the cluster of human population that defines it as a City. The Detroit River and western Lake Erie represent the intersection of the Atlantic and Mississippi flyways for migratory birds, and have long been used by many species

An aerial photograph showing a suburban landscape with a grid of streets, numerous houses, and some green spaces. A river is visible at the bottom of the frame, with a bridge crossing it. The text is overlaid on a semi-transparent dark grey box in the lower-left quadrant of the image.

as a place to rest and eat during the trip. When the sole undeveloped mile of American Detroit River bank was preserved as a wildlife refuge in 2001, including Trenton's southernmost shore, a public connection was made to the natural and environmental context of Southeast Michigan that has long been overlooked in favor of (or worse, assumed to have been eradicated by) the industrial landscape. The relationship between surface water and industrial land use is of central importance to both the economic and the environmental resilience of Trenton...and the rest of the world. As a source of drinking water and hydroelectric power, water bodies and watercourses were nearly universally a necessary feature for settlement in early America. Once located, every one of those water bodies and watercourses was subjected to standard industrial and development practices of the 20th century, which were designed around a single organizing principle: to maximize wealth as defined by resource exploitation. A hundred years later, the scale of degradation of these resources is surpassed only by the depth of our dependence on them.

Industrial land use in general is a difficult topic of critical importance in Trenton. Along with nearly all of southeast Michigan, Trenton played a significant supporting role as “Detroit put the world on wheels.” The blight and liability of the present-day McLouth Steel site are the interest payments on the fabulous wealth generated by that land during the industrial boom of the 20th century. That wealth has now shown to be borrowed from the future, and the City, the State, and indeed the entire Rust Belt face the challenges of post-industrial productive land use.

History

Ancestral home to the Potawatomi, the land that is now Trenton changed hands along with Fort Detroit among the French, British, and Americans until 1796. The American victory in the War of 1812 cleared ownership claims by the British and the Native Americans. Trenton’s first European settler was a New York-born land surveyor and War of 1812 Major named Abram Caleb Truax.

Trenton was originally founded under the name Truaxton in 1834. Founder Truax acquired the highest ground along the Detroit River between Detroit and Toledo, a break in what was otherwise swamp. Giles Slocum built the first dock shortly thereafter, launching Trenton’s riverine economy, and eventually married Major Truax’s daughter Sophia. Trenton soon became a stop for steamboats attracting new settlers and business

ventures. In 1855, under the name of “Trenton”, which was also known as a type of stratum found in the bedrock of surrounding lands, the community incorporated again.

The river has played many important roles in Trenton’s history. Not only has the river been a major thoroughfare that generated a bustling lumber and shipping industry it now provides recreational space for its residents. Trenton attributes much of its economic prosperity to the river, and its position amongst railroads, interstates, and the Detroit Metropolitan Airport. Also, the oldest park in Wayne County, Elizabeth Park, lies along the riverfront. Major Truax’s descendants donated the land to the County.

Its current land mass is due to the annexation of a portion of the neighboring Monguagon Township. In 1957, Trenton officially became a City. Trenton’s steady economic growth continued from the middle of the 19th century until the middle of the 20th century. During this era, Trenton was at an important crossroads in a productive manufacturing region. In addition to building over \$1 million worth of vessels for waterborne activity, Trenton was home to advanced industry including mills, quarries, the DTE Trenton Channel Power plant, the Riverside Osteopathic hospital, Chrysler plants, and steel plants. It lay at the conjunction of rail lines that linked Toledo to Trenton to Detroit and Monroe. Notably, a Detroiter named

Solomon Sibley (and eventually Detroit’s first Mayor and the state’s first U.S. attorney) started a limestone quarry, near present day Fort Street and Sibley Road, which was eventually sold to Arm & Hammer to make baking soda.

Much like the rest of Michigan and the Midwest, the latter half of the 20th century has been less fruitful. Trenton’s population peaked in the 1970s and since then many companies, jobs, and people have left town. Trenton is no longer the industrial hub it once was, but has been shifting to a more diverse job base. Trenton still remains a strong, middle-class, family-oriented suburb of Detroit.

People have raised generations of families, sending their children throughout each stage of education to the Trenton Public Schools system; merchants have opened businesses within the downtown and along West and Fort Street, some operating for decades and still contributing to the Trenton Business Association; residents walk their dogs along the Frank and Poet Drain paved trail and bike in Elizabeth Park; active community members have volunteered, sponsored, and attended the many festive events through the years, such as the Christmas Parade or Jazz on the River. Trenton is a City, but it is much more than the sum of its parts; it is a community, an assemblage, and a home.

A more detailed timeline of important dates in Trenton’s history follows.

- 1800 Truax comes to Michigan; is a “prominent Detroit Businessman” by 1808
- 1827 Wayne County townships organized; first Monguagon Township meeting at AC Truax home
- 1828 Monguago post office opens with Truax as postmaster
- 1833 Giles Slocum arrives
- 1834 Truax lays out the village; Slocum constructs first dock
- 1837 Post office name changed to “Truago”
- 1838 Giles married Sophia Truax
- 1842-43 Thomas’ Protestant Episcopal Church and Methodist Episcopal church built
- 1846 Detroit and Cleveland Steamboat Company founded
- 1847 Post office name changed to “Trenton”
- 1848 Trenton Mills built
- 1850 Plat recorded as Trenton; incorporated in 1855; repealed in 1857
- 1855 LSMS rail constructed through Trenton from Monroe to Detroit
- 1866 First cemetery formed
- 1866-1874 \$1.5M worth of vessels built in Trenton
- 1873 MCRR line built next to LSMS line
- 1873 Financial panic ends boat building business
- 1875 Trenton is reincorporated
- 1879 Trenton mills move to west end of village near depots
- 1885 First telephone switchboard installed
- 1897 GTW rail line built north of Slocum’s Junction to Detroit
- 1898 Trenton Water Works extends service to the village limit
- Early 1900s: Trenton is the halfway stop between Detroit and Monroe
- 1900 Sibley Quarry explosion
- 1903 Fourth rail route through Trenton built from Toledo to Detroit
- 1905 Interurban link between Monroe and Detroit completed
- 1919 Elizabeth Park donated to Wayne County
- 1923: Slocum Truax school – new high school
- 1924 DTE Trenton Channel Power Plant completed (units 1-6)
- 1924 Bridges built over canals in Elizabeth Park
- 1929 Village of Sibley annexed
- 1920 Light rail runs along W Jefferson to Wyandotte
- 1934 Light rail service ends
- 1942 Light rail tracks removed for war effort
- 1944 Riverside Osteopathic Hospital opens
- 1946 Chrysler Brake and Paint Plant opens
- 1949 McLouth Steel opens
- 1950 DTE Trenton Channel Power Plant Units 7 and 8 open
- 1952 Chrysler North Engine Plant begins production
- 1957 Incorporation as a City
- 1959 City of Riverview incorporates
- 1961 City of Gibraltar incorporates
- 1965 City of Woodhaven incorporates
- 1968 DTE Trenton Channel Power Plant Unit 9 opens
- 1969 Chrysler North Engine Plant major expansion
- ~1975 DTE Trenton Channel Power Plant Units 1-6 decommissioned
- 1990 Chrysler Brake and Paint Plant closes
- 1996 McLouth Steel closes (NH)
- 1997 Solutia company founded
- 2001 Detroit River International Wildlife Refuge established
- 2002 Riverside Osteopathic Hospital closes
- 2002 Wayne County acquires Chrysler Brake and Paint Plant for DRIWR Refuge Gateway
- 2004 Detroit River International Wildlife Refuge acquires Humbug Marsh from Trenton and Gibraltar
- 2007 Chrysler South Engine Plant opens
- 2009 Monguagon Creek daylighted leading into Humbug Marsh
- 2009 Solutia cuts over 115 jobs
- 2011 Chrysler North Engine Plant closes
- 2011 Detroit River Shoreline Restoration project completed at the Refuge Gateway
- 2013 20% of Chrysler North Engine Plant repurposed
- 2013 Partial demolition of Riverside Osteopathic
- 2016 Trenton Channel Power Plant Units 7 and 8 close

Trenton Timeline

Planning Context

The planning history of the City of Trenton is intentional. Trenton's first Master Plan was a General Development Plan, written with the assistance of federal funds in 1957, the year Trenton was incorporated as a City. The City's next plan was completed in 1969 after two years of work, intended to guide future development and redevelopment in the City. It was never formally adopted by the Planning Commission as the City's official land use planning guideline. However, it was used as a starting point for the Planning Commission's decisions, and its recommendations were generally followed.

Thirty years later, the Planning Commission found itself struggling to implement a plan that had aged out of effectiveness. After a review of the City's planning needs, the Planning Commission concluded that a comprehensive study would repeat much of the information presented in previous plans. Instead, the Planning Commission developed a Master Plan for Future Land Use: An Amended Plan to Sustain a Qualitative Living Environment. Adopted in 2003, the plan took directional cues from President Clinton's Council on Sustainable Development report

"Sustainable America," which was heralded as creating a new consensus for sustaining prosperity, opportunity, and a healthy environment.

City officials have since endeavored to implement its land use recommendations, and have used the Plan to help guide their planning and zoning decisions throughout the City. The 2002 Plan has endured over the years because it was a well-conceived Plan. It has persevered as well because the City approached near physical development capacity many years ago; there is not a significant amount of land that remains in the community for new development.

In 2008, the Michigan Legislature adopted Public Act 33, the Municipal Planning Enabling Act. Section 33(1) in Act 33 states that a municipal Master Plan may project 20 years or more into the future. Section 45(2) states that at least every five years after adoption of its Master Plan, the municipality shall review the Plan and determine whether to commence the procedure to amend the Master Plan or adopt a new Master Plan. In 2009, the Planning Commission reviewed the existing plan. City Council at that time felt there wasn't a need to update or amend it. In 2014, the Planning Commission again reviewed the current plan and recommended an update or amendment.

Resiliency Master Plan

The challenge

A master plan is a document that describes the general conditions of a community, defines the community's goals and expectations, and provides recommendations in varying levels of detail for reaching those goals. The practice of master planning is over a century old in this country, and most communities have at least one master plan on the books. Though it is not a regulatory document itself—it has no "teeth" to enforce its recommendations—a community with a master plan must base its zoning decisions on the principles contained within that plan. This is how the zoning ordinance implements the master plan.

A Resiliency Plan, sometimes also called a Climate Action Plan, is a much newer concept originating in the 1990s. The goal of this type of plan is to examine City systems in the context of potential change, specifically climate change, to determine ways of avoiding, mitigating, and recovering from stresses and strains. A relatively small number of communities have them. Among that group are many high-profile cities across the globe from Athens and Paris to New York

CITY COUNCIL DRAFT 2017-03

Trenton Coast Resiliency Master Plan

City and New Orleans. One defining difference from a Master Plan is that a Resiliency Plan is not statutorily connected to any regulations. That means that without individual, continuous, successful efforts to implement it, this document may spend the rest of its days sitting on the shelf.

The good news is that these two types of plans are excellent candidates for collaboration. A heightened focus on impending change is perfectly appropriate for a long-range comprehensive plan, and including each of the required master planning elements ensures that resiliency efforts are sufficiently broad. This project is a part of a pilot project to evaluate the effectiveness of integrating resiliency planning into the existing master planning process in Michigan.

The City applied in 2015 to the Michigan Association of Planning (MAP), the Michigan Department of Environmental Quality (MDEQ), and the National Oceanic and Atmospheric Administration (NOAA) to participate in a statewide pilot project supporting Master Planning for Resiliency and Sustainability. It was among six coastal communities selected, and the Trenton Coast Resiliency Master Plan project launched in early 2016.

The approach

Undertaking a complete integration between master planning and resiliency planning required the development of an original framework for analysis. To address the unique needs embedded in each process, this project is organized around three comprehensive dimensions viewed through the lens of six characteristics of resiliency.

SIX CHARACTERISTICS

As the worldwide first responders to crises of all manner and scale for over 150 years, the International Federation of Red Cross and Red Crescent Societies (Red Cross) has vast experience with communities that display tremendous resilience... and with those that don't. To evaluate its own efforts toward goals of its Community Based Disaster Risk Reduction program, a 2011 research report commissioned by the Red Cross identified six "Characteristics of a Safe and Resilient Community," using evaluations of communities which had received relief efforts. The report concluded that a safe and resilient community

- o ...is knowledgeable and healthy. It has the ability to assess, manage and monitor its risks. It can learn new skills and build on past experiences.

- o ...is organized. It has the capacity to identify problems, establish priorities and act.
- o ...is connected. It has relationships with external actors who provide a wider supportive environment, and supply goods and services when needed.
- o ...has infrastructure and services. It has strong housing, transport, power, water and sanitation systems. It has the ability to maintain, repair and renovate them.
- o ...has economic opportunities. It has a diverse range of employment opportunities, income and financial services. It is flexible, resourceful and has the capacity to accept uncertainty and respond (proactively) to change.
- o ...can manage its natural assets. It recognises their value and has the ability to protect, enhance and maintain them.

Trenton's performance with respect to each of these indicators is evaluated in two ways. Trenton citizens gave their assessment of the City's strength with regard to each of the characteristics during community engagement workshops. This provides a general understanding of where attention should be directed, and it offers the City a snapshot of its citizen's perceptions.

Throughout this report, these characteristics guide the analysis, and indicators measuring the City's progress toward them have been identified. These indicators are then used to tailor the recommendations and action strategies, limiting the "to-do" list to those actions which will make an appreciable contribution to resiliency.

THREE DIMENSIONS

To ensure the inclusive scope required by master planning, this report examines three dimensions of the planning context individually: the social aspect, focusing on people; the economic aspect, focusing on land; and the physical aspect, focusing on structures and systems. A comprehensive, structured understanding of each dimension is the goal of the analysis, achieved by

answering the following questions:

- What is the state of change along these dimensions?
- What are the current conditions in Trenton?
- Who and what will experience changes most acutely?
- What are our values and goals in regards to resiliency?
- What choices are available to us?
- What do we hope to see?

This format preserves all of the features that are necessary to master planning, including data acquisition, forecasting, goal-setting, and recommendation. It also introduces two key concepts of resiliency in examining the specific people and places most likely to be impacted by impending change: sensitivity and vulnerability.

Sensitivity and Vulnerability

Resiliency planning takes as a basic principle that the effects of any given change are felt differently in different circumstances. Successful planners must therefore not only know the circumstances (existing conditions) and the change (projections), but must also have an understanding of the specific contact points at which the change will be realized in order to make any effective recommendation. This is broadly true in any planning endeavor, which must always accommodate some degree of change. However, it is a defining feature of resiliency planning, which itself is in turn defined by rapid and dramatic change.

These contact points are identified by the related concepts of sensitivity and vulnerability. Sensitivity refers to the degree to which one (organism, person, building, system, community, etc.) can withstand a given stressor. If we say an organism is more sensitive to a heat event than a building, we mean that the organism would be more severely impacted by the same event than the building would be. But the building may be more sensitive to flooding than the organism, who has advantages in flexibility and mobility, and some buildings may be more sensitive than others due to their age or construction materials. Sensitivity is defined by the relationship between



the stressor and the subject, and described by the degree of impact.

Vulnerability refers to a degree of impact that exceeds the subject's ability to cope with or recover from the stress. It is partly defined by the subject's sensitivity, but is also shaped by the subject's capacity to adapt, and by the character and magnitude of the stressor. If an organism is sensitive to a heat event in a beneficial way (a cold-blooded animal, for example), or has adaptive resources (such as air conditioning), it will not be vulnerable to the event even though it is sensitive to it. Similarly, although most buildings are sensitive to flooding (if there was a flood, they would definitely be affected), the only buildings which are vulnerable to it are those located in places where water can reach them (they will not be affected, because there will be no flood).

The purpose of this report is to address resiliency to climate change. The sensitivity and vulnerability assessments in this report are primarily concerned with stressors which express that particular set of environmental shifts and pressures. However, a holistic examination of each dimension necessarily recognizes other realms of change. Where appropriate, these have been included; where possible, they have been related to the task at hand.

Community Engagement

Resiliency is driven by people. Social systems have been documented in scholarly literature as serving an unparalleled role in resilience. Social actions and initiatives, particularly those that involve a bottom-up approach among communities and stakeholders, have been found to improve social relations while empowering resiliency. Through partnerships and the inclusion of stakeholders and residents, the community can better support resiliency initiative while offering valuable insight into the complex, interconnected systems that influence resilient planning. It was therefore essential to involve the residents and stakeholders within this planning process – not simply as a requirement, but rather, a means to strengthen community ties, emphasize local relationships, learn about obstacles to resiliency, and provide a connection for community buy-in and support. The community forum series was instrumental as one of the first steps within this planning process to form the essential linkage between the public and the City of Trenton.

Community Forum Series

Four community forum workshops

were held, including three with the general public and one with a large group of middle school students. A total of 45 people attended the general community workshops, and 73 middle school students participated in the student workshop.

Workshops were set up in the same fashion, with attendees arriving to find several tables set with exercise sheets and other materials. Tables were numbered to use as reference throughout the result summary process. A brief introductory presentation gave insight to groups, informed them of the planning process, and provided some preliminary research findings regarding Trenton. Each workshop had a set of exercise sheets and groups were given approximately 5-7 minutes to develop as many answers as possible per sheet, although the content of the sheets varied between the general community workshops and the student workshop. A voting process included dot stickers to indicate each participant's preferred answers, refining the input on several questions. Both workshops also employed the use of "Plickers" technology: participants were asked to give Trenton a letter grade of A-D for several qualities related to resiliency, and to hold up a card allowing the answers to be recorded electronically and instantly. The results were then

shared and discussed with the group. Lastly, each table in every workshop was required to present its findings to the entire group of participants. These findings were summarized into “Collective Priorities,” and general community workshop attendees were asked to vote once more on them at the conclusion of the event.

ASSESSMENT

Both workshops began with the Plickers questions, which were designed to give a quick assessment of the community’s “baseline” resilience. The questions in the general workshops were derived from a worldwide study conducted by the International Federation of Red Cross and Red Crescent Societies (Red Cross) on “Characteristics of a Safe and Resilient Community.”

Of the six characteristics the audience was asked about, they graded the City most favorably on “Trenton has infrastructure and services,” with most participants giving it an A, and “Trenton is connected” received a solid B. These results demonstrate strength in the City’s built environment. “Trenton is knowledgeable and healthy” and “Trenton is organized” also received Bs mixed with some Cs, representing successful efforts with some room for improvement in these areas. “Trenton can manage its natural assets” was given a C overall, and

“Trenton has economic opportunities” fared the worst, with a slim majority giving it a D and most of the rest giving it a C. If the management of natural assets can be converted into an economic opportunity, these results are far more encouraging taken together than individually.

Since students are less likely to have the perspective to answer similar questions, they were instead asked to grade the adults serving as their stewards. The group was most impressed with adults’ efforts at “running the City,” with most students giving a B and others supplementing it with the largest pool of As given to any question. This provides an intuitive, if indirect, confirmation of the data discussed later in this report suggesting that Trenton’s children are well cared for. The students felt adults are doing a decent job at “running the world,” again with most students assigning a B, though the second-largest block of votes was for a D. Ambivalence characterized their assessment of our performance at “running the environment,” giving adults a plurality of B votes followed closely by C and then D. **No such uncertainty was evident in their assessment of how we are doing at “planning for a changing world,” however: for that, adults earned an unequivocal D. At least in the view of several dozen children who stand**

to inherit the results of this plan, it is definitely a worthwhile effort.

COMMUNITY WORKSHOP RESULTS

The program for the general community workshops also drew from the methodology in the Red Cross report. Participants were asked to name previous stressors, and then to describe ways in which the community was able to prepare, cope, and recover from the event. Workshop attendees clearly identified business closures as the overwhelming community stressor. Riverside Hospital, McLouth Steel, and a fire at the Mulias Ellias department store led the list, which also included Monsanto, Owen & Taylor, and the Trenton Theater. These items made up half of all identified stressors and received 70% of the prioritization votes. The effects of these closures loomed large elsewhere on the list, as citizens noted a cascading effect of declining school enrollment, loss of City parks, and the community center closure. They also pointed out the compounded economic difficulty of recovering from the 2008 housing and financial crises while property tax revenue is artificially held down by the Headlee Amendment. Of the few non-economic items on the list, the one that appeared most frequently was flooding of the Frank and Poet Drain.

Resiliency Report Card

Citizens grade whether Trenton...

is Knowledgeable and Healthy	B
is Organized	B-
has Infrastructure and Services	A
is Connected	B
can Manage Its Natural Assets	C
has Economic Opportunities	D+

Students grade adults at...

running the City?	B
running the world?	B-
running the environment?	B
planning for a changing world?	D



AFT 2017-03

The prepare / cope / recover responses offered a surprisingly comprehensive look at the effect of each of these stressors throughout the community, as well as at the community's general actions in crisis. The "prepare" column broadly described two scenarios: one in which the community was taken by surprise and did not prepare (housing market crash, proposal A), and one in which considerable methodical action was taken (McLouth closing, schools closing). Unfortunately, since this is a list of self-identified stressors, there is little difference in the outcomes of the two scenarios, and the coping mechanisms were similar in each case: service reductions and personal expenditures where possible, straightforward suffering otherwise.

Trenton's workshop attendees really shone in the recover category. Though the devastating effect of losing industry was far and away the leading cause of stress in the community, not a single attendee recommended attempting to return to those glory days. Instead, there was a general consensus that the industrial sites must be cleaned up, whether by innovative phytoremediation or more conventional means, and returned to nonindustrial use. Preliminary visions of a recreational use to complement the existing facilities at Elizabeth Park, or a use related to the wildlife refuge

emerged through the comments.

The same format was then used to inquire about anticipated future stressors. Here, the results were a bit less uniform, but no less informative. The impending closure of the Detroit Edison Trenton Channel Power Plant was the highest priority, accompanied by other concerns about the industrial economy such as lingering responsibility for the McLouth site and a fear of more yet-unknown closures and downsizing. Consequently, economic concerns had the second greatest representation, with property tax increases and City debt topping a list that also included loss of federal and state revenue, continuing loss of services, and dramatic measures such as the installment of a state-appointed emergency manager and full consolidation of communities. In three subject areas, one or two potential future stressors stood out among the rest. Trentonites had a variety of concerns about the demographic shift that the community is likely to undergo in the near future; the one of greatest significance to them was age, rather than race, income, or homeownership status. They were concerned both about the lack of young people within the community and about the increasing median age of its current residents. Infrastructure concerns were also noted, but aging

homes, sewers, and roads were clearly prioritized. Finally, what could probably best be described as a concern for Trenton's "standing" emerged in two items: worries about loss of business and political engagement, and image loss. Both of these received the highest number of prioritization votes of any single item.

Overall, these items offer a picture of a community acutely conscious of its past strength, and also of the changed conditions that no longer support that strength. The prepare / cope / recover responses suggest that residents do not have concrete strategies in mind to meet this challenge. They are, however, fairly consistent in their recommended approach. Preparing for anticipated stressors should involve conserving wherever possible, developing an aggressive, cohesive plan, and creating partnerships. Coping consists of a combination of doing the work, and doing without. Recovery will involve more work, retaining local dollars within the community, and likely some Federal funding to assist with the industrial sites. The most evident common theme throughout the responses was the idea that business as usual would not suffice. Phrases like "out of the box perspective," "risk appetite increase," "more open and inclusive," and "open minded and creative" appeared



at every stage; there were four separate mentions of new business recruitment.

The workshops concluded with a three-part planning exercise designed to elicit both priorities and action items from participants. Asked to describe their vision of a successful Trenton ten years in the future, over three-quarters (77%) of attendees included a thriving, walkable downtown teeming with a diverse array of businesses—the highest priority by a significant margin. A majority of participants envisioned industrial sites redeveloped with commercial, entertainment, and residential uses (59%); an economy powered by stable, diversified businesses and ownership and environmentally sensitive industry (55%); and a more cohesive, involved

community of citizens (52%). Just under one-third of participants prioritized schools (32%). Waterfront development and housing received the lowest number of prioritization votes (14% and 13% respectively), though these items could easily be folded into the first three categories.

STUDENT WORKSHOP

The Trenton Resiliency Master Plan team was offered an exceptional opportunity to conduct a workshop with two combined classes of sixth, seventh, and eighth grade students at Boyd Arthurs Middle School. It is worthwhile to note that these students will be beginning their professional careers and making residency decisions by the end of this plans' time horizon. After a brief introduction to the planning

process, students were asked about the challenges that face the Earth, the City, and their neighborhoods. They were then asked to offer suggestions to address them. For the students, this process was designed to get them thinking about the “big picture,” then channeling that thought process through decreasing scales. For the project, the exercise was designed to get a read on the concerns of the community’s youth, both broad and specific, and to invite solutions relatively unhampered by analysis or history.

Two categories of concern were evident only at the global scale: problematic leadership, and illness of both planet and people. Barack Obama, Hillary Clinton, and Donald Trump were all named as threats, and the terrorist organization ISIS received

as many votes as all three combined. Students displayed an impressive understanding of threats to the Earth's ecosystems in their concerns about global warming, acid rain, deforestation, desertification, erosion, forest fires, and ozone depletion; AIDS and cancer dominated their fears about human illness. Though the workshop methodology did not allow a definite connection to be made between poor leadership and poor outcomes, the results could be read to suggest one.

Infrastructure concerns were generally concentrated closer to home, with one big exception: the Flint water crisis was named by several groups independently as a global threat. Fortunately, this did not translate to worry about the local water supply. Flooding was the most frequently cited infrastructure concern on the community and neighborhood scales, while roads and potholes received the most votes. Issues related to animals, both domestic and wild, turned out to be the item of greatest neighborhood concern. Coyotes preying on pets, deer in the streets, cats hunting other baby animals, and squirrels and rabbits committing unspecified offenses were all cited; by and large, recommendations consisted of various methods of population control.

Tallied results show that two categories of concern span all three scales. The first category is waste disposal, most commonly classified as littering and pollution but also including landfills and pet waste. On a global scale, students recommended less driving, and more solar, wind, and water energy. They advocated for recycling on all three scales, going so far as to propose mandatory recycling and a change in manufacturing culture to "stop making so much stuff that you can't recycle or reuse." They also demonstrated an understanding of a barrier to recycling by noting that it should be curbside and free of immediate service charges. Commonsense advice to increase the availability of trash cans, and to speak directly to neighbors who litter or don't pick up pet waste, appeared regularly.

The second category of widespread concern to the students was human suffering, particularly when caused by poor human choices. Here, worries about drugs and drinking were the most prevalent, but the list was otherwise depressingly diverse: human trafficking, illegal immigration, and starvation at the global scale; robbery, racism, and graffiti at the community scale, and aggressive dogs, speeding, and mean neighbors in the neighborhoods. Proposed

solutions here were more dogmatic than innovative, mimicking standard parenting tactics for encouraging good behavior such as exhortation to make better choices, and increased enforcement of consequences.

Overall, the items in these two categories represented a majority (51%) of the concerns expressed across all eight categories and all three scales. Reducing the statements to their essential sentiments, Trenton's middle schoolers presented a clear and consistent message: take care of your own mess. Respect yourself and your neighbors.

Stakeholder Interviews

Stakeholder interviews represented elected and appointed government bodies, businesses, non-profits, and the educational system. Some were conducted as one-to-one conversations during the third quarter of 2016. This aspect of the community engagement process leverages local expertise in identifying issues, concerns, and desired agendas that may not come to light through other venues. The personalized format allows for openness and specificity, and interviewees contribute their unique vantages on City processes and operations.

A series of eight questions was posed to 28 stakeholders via phone, email, and face-to-face contact. Fourteen responses were received, for a 50% response rate.

Question 1: What do you feel are the most important issues facing Trenton?

Out of the 14 responses, there were three main issues of concern: the tax base, downtown, and development including redevelopment, brownfields, and closed properties. There were also a couple comments on the City's aging population. The responses that focus on development are not surprising considering Trenton's waterfront is typical of older communities, former industrial sites that the community wants to transition to other uses, while its older downtown has been replaced by newer retail located closer to the interstate outside of the City. Additionally, the recently announced closing of the DTE power plant brought to the forefront the continued loss of tax base.

Question 2: What does resiliency mean to you?

There were 12 responses to this question. Almost half used the word "recover," while six responses contained some combination of the following phrases: "comeback," "overcome," "get back," or "ability to withstand."

Question 3: What is your vision of Trenton's waterfront in the future?

There were also 12 responses to this question. Many thought the waterfront would not be improved beyond what it is today. Others spoke of what they would "love to see," "like to see," or what it "needs to do," suggesting that some responses were more appropriate to Question 4 than this one.

Question 4: What is your preferred vision of Trenton's waterfront in the future?

The responses to this question were almost all positive, as would be expected. Two responses mentioned Wyndotte's waterfront as an example, while others said "retail," "residential," "clean-up," and "access for the community."

Question 5: What are Trenton's greatest strengths, opportunities, weaknesses, threats?

As expected, the responses were varied and wide ranging. Overall the waterfront, downtown, and schools were common answers. Strengths included City services, parks, schools, residents, history, and community. Opportunities included repurposing property, waterfront and downtown development, and blighted sites. Weaknesses included an aging population, shrinking tax base, the DDA, and lack of riverfront

businesses, while threats included the loss of tax base, development in surrounding communities, and lack of legislative propriety in Lansing.

Question 6: What are the community's assets and vulnerabilities?

Every respondent answered this question. Assets included the river, the City's residents, and its neighborhoods. Vulnerabilities included the tax base, aging housing, and older industrial sites.

Question 7: Do you have an emergency preparedness plan for your workers?

All responders said they have an emergency preparedness plan for their workers.

Question 8: Do you know what to do in case of an emergency?

Out of the eleven (11) responses, all said they knew what to do in case of an emergency.

Analysis - Overall

The interviews/surveys show the respondents see the City as one of great assets, good services, with well run schools and parks, but also one that faces many challenges. These include the struggles to revitalize the downtown and waterfront, while combating the continued shrinking tax base.



People



What's Coming in Social Change: 21st Century Demographics

21st century America is the most racially diverse it has ever been. Millennials, generally children to Baby Boomers and born between 1980-2000, are only about 56% white. Amongst Baby Boomers the largest minority was African-Americans, whereas today 30% of Millennials are “new minorities,” Hispanics, Asians, and those who identify as two or more races. In ten states, primarily in the southwest and southeast, minorities comprise more than half of Millennials. In Michigan, 20%-40% of Millennials are minorities. This trend will continue through the subsequent generations as the number of white children born decreases. With white fertility lower than it has been historically, the white population aging, and a rise in interracial marriage, there will be inevitable gains in minority populations nation-wide. Moreover this confluence of factors also helps to explain why America is an aging country.



IN 1834

WELCOME TO
TON

America, along with most of the rest of the world, is urbanizing. The U.S. Census released a report announcing that between 2000-2010, the nation's urban population increased faster than the overall nation's growth rate, 12.1% and 9.7% respectively. Based on 2010 census data, 38 new urbanized areas emerged, and the 483 urbanized areas grew by 14.3%.

The new economy demands that a large portion of the labor force has a college education. Today, people are heading to universities in droves. Between 2000-2014, total undergraduate enrollment increased by 31%, up to 17.3 million students. Even more significantly, women make up 56% of undergraduates. It is projected to increase by another 14% by 2025. Generally speaking, higher levels of education equate with higher levels of income. Despite Millennials being the most broadly diverse generation, whites are still attending college at four times the rate of any other race.

Another emerging trend since the year 2000 is that wages, for all levels of education, have declined. The median wage for young adults with a bachelor's degrees declined by 9% (\$54,900 to \$49,900).

With the exception of those who did not graduate high school (possibly because their wages cannot drop any lower), wages dropped for all young adults, with the highest drop being in the group of earners with only a high school diploma. This reflects the new economy's preference for a highly educated work force and the lack of security those without secondary education.

What is: Existing Conditions and Sensitivities

The figures in this section have been taken from the following sources in this preferred order:

- 2010 US Census. This is the gold standard for demographic data. It measures 100% of the population and offers comparable data points at regular intervals throughout most of the United States' developed history. However, available data is limited to population and housing information, and the ten-year interval between data points means it is rarely "fresh."
- 2010-2014 American Community Survey. The ACS program replaced the "long form" Census questions beginning in 2000, asking the same types of detailed questions about social, economic,

and housing conditions on a rolling basis instead of once per decade. Statistical validity of the ACS depends on sampling. In larger communities (those with populations of 65,000 or more), it is possible to gain a valid sample within twelve months, which the ACS calls a "one-year estimate." For mid-size communities (population 20,000-65,000), it takes 36 months of data collection to achieve a valid sample size, and for communities smaller than 20,000, it takes 60 months. This system exposes the statistical tradeoff between the reliability gained by increasing sample size and the accuracy that is sacrificed in the time it takes to do so.

- Esri Business Analyst. This proprietary software presents privately-generated market research data. In addition, it estimates Census and ACS data for geographic configurations other than Census-defined tracts, blocks, and places.

To gain a solid picture of Trenton's conditions as well as its context, several geographies were analyzed. For most subjects, data points were collected for the City of Trenton, Wayne County, the State of Michigan, and the United States. An analysis of varying conditions within the City was performed on the basis of its

Census block groups where available, and Census tracts otherwise. Some comparisons were drawn across the downriver communities of Allen Park, Ecorse, Lincoln Park, Melvindale, River Rouge, Riverview, Southgate, and Wyandotte.

Trends in the Trenton Community

According to ESRI Business Analyst, Trenton had a population of 18,853 in 2010, and has shrunk slightly to 18,445 in 2016. This is likely due to a decrease in the number of families living in Trenton from 5,159 to 5,047. The population projection for 2021 predicts another small decline of about -0.49% to 17,995 people spread over 7,756 households. This means that the average household size will also drop slightly from 2.3 to 2.29. Trenton's population is declining as the state of Michigan's population is projected to increase by about 0.2% between 2016-2021.

By and large, the citizens of Trenton are mature, independent, financially secure, settled, and white. The median age of 45 is higher than the median age of Wayne County, Michigan, or the United States, and rose 3.5 years between the 2000 and 2010 Censuses. Almost exactly one-third of households are comprised of just

Table : Trends in Age, Median Income, and Race

	2000	2009-2010	2014
Median age	42	45	46
% of 1-person households	29	29.5, 32.3	34
Median income as % of national	85%	114%	100%
% Lived in same house a year ago	N/A 66.3 lived in same house 5 years ago	90	92
% white	97	96	95

one person, representing an increase of five percentage points since 2000. Residents' median income is comparable to the national median income and has even overtaken it at times during the past 15 years, while Michigan and Wayne County have fallen behind. Almost 80% of housing structures are owner occupied, as compared with 64% nationally; 40% of those homes are owned outright without a mortgage and 92% of residents live in the same house they did a year ago (85% in the aggregated geographies). Less than five percent of the population reports any race other than White Alone.

Over time, some of these characteristics look like trends while others are less predictable. The rising median age and the shrinking household size are related, for example, and are local expressions of a national population that is aging. This would be expected to continue unless a change in circumstance resulted in an influx of younger persons into

the community. The decrease in the proportion of the population that identifies as White Alone is also a change that is occurring nationally, but the pace of change in Trenton is glacial in comparison and would not be expected to accelerate without a precipitating factor.

Median income data over time were much more volatile. In 2000, Trenton's median income measured just above Michigan's and just below Wayne County's, all of which were significantly lower than the national median income. By 2009, Michigan's median income had increased by nearly \$8,000 and Trenton's had doubled to \$16,000, while the national median income remained flat and Wayne County's began to slide lower. According to the 2010-2014 ACS, change has slowed across all populations in the years since. Trenton ends the data series with a \$5,000 per year drop in median household income to \$53,257. This is higher than Wayne County or Michigan (\$41,421

and \$49,087 respectively) and nearly identical to the national median. The Great Recession and its keen impact on the automotive industry have certainly been key factors in these swings, and economic uncertainty lingers at all these scales.

It may be Trenton's housing data that holds the greatest surprises. Though the numbers appear extremely steady now, over 1/4 of the City's entire housing stock is owned by a householder who is aged 65 or older. It would be in the City's interest to gain an understanding of what is likely to happen to these homes as its inhabitants move on. Moreover, the housing stock is not particularly well-matched to the population's current demographics: most houses are detached with two and, more commonly, three bedrooms, which is a lot for one person to maintain yet not big enough for conversion to even a duplex.



TRENTON IS KNOWLEDGEABLE AND HEALTHY

Education

INDICATORS

Trenton citizens have graduated high school at a rate (90%) that is a hair better than Michigan's overall graduation rate (89%), and several percentage points better than the rates in Wayne County (84%) and the United States (86%). 26% percent of Trenton residents have a bachelor's degree; this figure is 22% in Wayne County and 26% nationally.

SYSTEMS

The Trenton Public School (TPS) system serves approximately 2,650 students from kindergarten to grade 12, operating 4 schools, and TPS has attracted and retained 389 over the last 5- years. The school district makes an effort to incorporate a variety of curricula at all educational levels. At the high school level, Blue Pride is a program that gives students from each grade level a chance to speak with a district employee about school culture. At the elementary school level, the schools instituted a new curriculum shift towards Everyday Mathematics to enhance student's ability to find patterns in numbers and problem-solving.

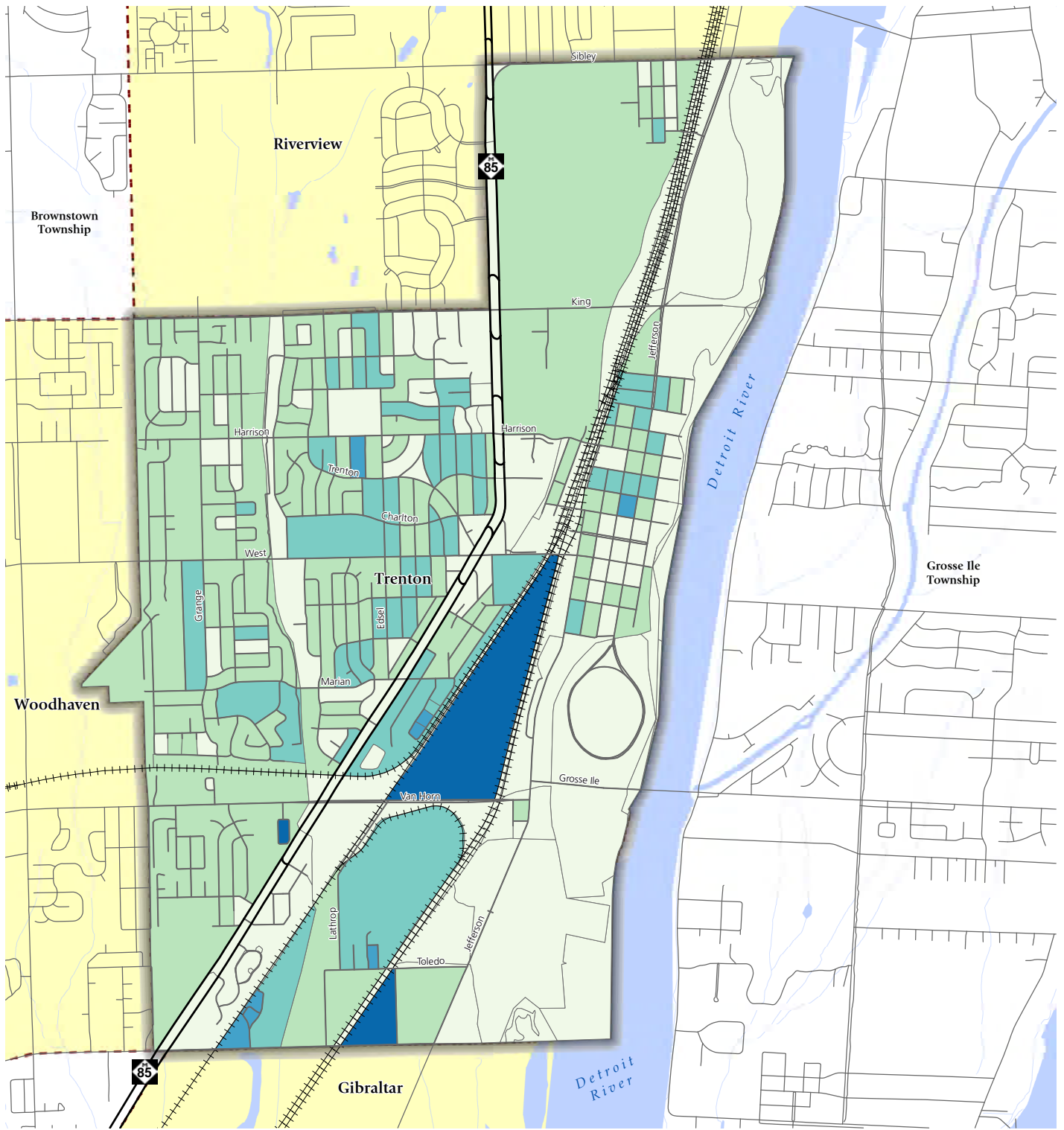
SENSITIVITY

Kids

The percentage of Trenton's population that is younger than 18 is smaller than in the County, State, or US, which is expected in light of a median age that skews older than prime childrearing years. However, fertility is actually higher in Trenton than in the other populations because it is calculated based on the number of women between the ages of 15 and 50. Fertility is higher across the age spectrum. Teen births are slightly higher than other populations (27 births per 1000 women ages 15-19, as opposed to 32, 19, and 21 in Wayne County, Michigan, and the US respectively), while prime childbearing age births are at the top of a rather tight range (Trenton 105 per 1000; others are 104, 99, and 95). The bulk of the difference is in women over 35, with Trenton's 38 births per 1000 women well surpassing the other geographies at 25, 22, and 25.

This is one of a cluster of statistics indicating that Trenton's children are quite well-cared for. Overall, its adult citizens are "the marrying kind," with 72% of males and 78% of females having been married at some time. In contrast, the larger populations marry at rates that are about 7 to 15 percentage points lower. Though these marriages are

not necessarily more durable than others—the "now married" rate for both men and women in Trenton is comparable to elsewhere—they appear to be lasting through the family formation phase: 71% of Trenton births occur within marriages, as opposed to 60% in Michigan and 64% in the United States. Since the presence of children under 5 years of age is strongly correlated with the incidence of poverty within the past 12 months, any mitigating factor at all would be welcome, and marriage is precisely that: of the nearly 300 family households with children younger than 18 which fell below the poverty line, just 16% were married-couple households. Another factor is the distribution of the labor force. In Trenton, fewer households with children younger than age 6 have all parents in the labor force than in aggregate populations, and more households with children ages 6-17 have all parents in the labor force. This is a distinction that makes sense given that there is no universal public childcare assistance for children younger than school-age, but it is not demonstrated in the statistics elsewhere. Finally, the proportion of grandparents taking care of children in Trenton is about half of the proportion elsewhere (3% vs. 5-7%), and in virtually all cases, it is for a temporary span of time (2% of



CITY OF TRENTON Households with Children

Data Sources: State of Michigan Geographic Data Library, City of Trenton, U.S. Census Bureau

- City of Trenton Boundary
- State Roads
- All Roads
- Railroads
- Municipalities
- Cities

Percentage with Children under 18 (by Blocks)

- 0% - 20%
- 20% - 40%
- 40% - 60%
- 60% - 80%
- 80% - 100%



COUNCIL DRAFT 201 B R I Beckett&Raeder

cases in which grandparents were responsible for children for 3 years or longer, as opposed to 20% in each of the other aggregated populations). Taken together, these statistics suggest that Trenton's children are being raised in relatively stable environments with low incidence of risk factors for delinquency.

Undereducated

The primary resource in a 21st century economy is talent. Without a secondary education, most jobs are simply inaccessible, and this is increasingly true without a postsecondary education as well. Thus, although a lower education level does not by itself constitute a sensitivity, it corresponds directly to a number of other conditions which do. These include lower median income, which is linked to residence in homes of lower value, which in turn may be constructed of less durable materials and/or sited in areas that are environmentally unstable.

Health

INDICATORS

Wayne County is nearly the least healthy place in the state. It ranks 82nd of the 83 counties in Michigan on health outcomes, including both length and quality of life. Health behaviors, including smoking, obesity, food environment, and sexually

transmitted infections, also ranked 82nd, while clinical care ranked 81st. Socioeconomic factors and the physical environment each took their place at the bottom of all Michigan counties. The same report shows state-level indicators for Michigan lagging "top U.S. performers" in all categories.

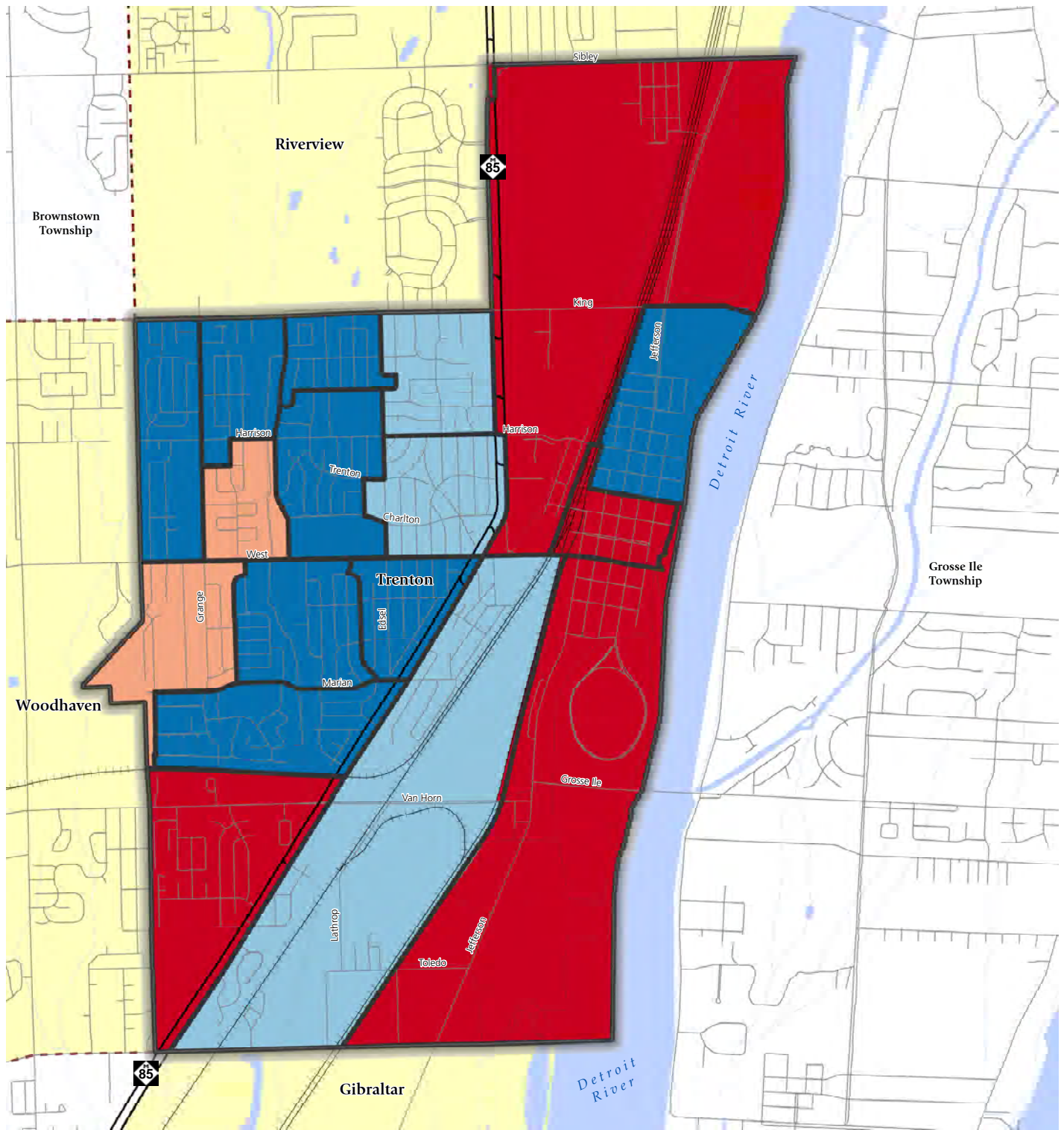
Health data is generally reported at the County level, reducing the specificity of their findings but providing context. However, the US Environmental Protection Agency uses geospatial technology to measure environmental indicators at user-defined locations, such as the City boundary. This tool reveals that Trenton ranks in the 80-90th percentile in the USA on the National-Scale Air Toxics Assessment (NATA) diesel particulate matter and above the 90th percentile on the NATA respiratory hazard index, superfund proximity, proximity to sites with Risk Management Plans, and proximity to water dischargers.

SYSTEMS

The City of Trenton has made numerous strides regarding community health initiatives. Recent collaborations between the City, Trenton Public Schools, and the Beaumont Hospital system have created the Trenton Healthy Initiative with the overall mission of promoting community health and wellness

and forming vital connections that develop healthy lifestyles. The Trenton Healthy Coalition meets monthly at Trenton City Hall, assists with healthy events, hosts free cooking classes and workshops, coordinates active and fitness programs alongside the Trenton Parks & Recreation Department, supports active club initiatives such as walking clubs within the City, and above all, connects interested City residents with vital resources to support their healthy lifestyles. In terms of health, a community is resilient if its residents have access to healthcare and are informed enough to know how to care for themselves and when it is time to seek medical professionals. These initiatives help to form a more resilient City, and therefore are an essential mechanism to improve the quality of life and help sensitive populations become more prepared for extreme conditions. Opportunities for future collaboration with this Coalition will be useful in improving community preparedness.

Generally speaking, a needs assessment undoubtedly has positive effects because it collects finer-grain data that could reveal community-based health problems such as substance abuse. With this information, hospital systems can tailor services to address these problems.



CITY OF TRENTON

People Without High School Diploma

Data Sources: State of Michigan Geographic Data Library, City of Trenton, U.S. Census Bureau

- City of Trenton Boundary
- State Roads
- All Roads
- Railroads
- Municipalities
- Cities

Block Group Boundaries

Percentage without High School Diploma (by Block Groups)

- 0.1% - 5.9%
- 5.9% - 7.9%
- 7.9% - 12.5%
- 12.5% - 21.3%

**The northern and southeastern block groups have the lowest population density due to the presence of industrial and large-scale land uses



B R T
Beckett&Raeder

Table: Asthma Hospitalization Rates

Group	Yearly Average Number of Hospitalizations	Asthma Hospitalization Rate	Asthma Hospitalization Rate
Sex			
Male	1,684	19.4	10
Female	3,029	31	15.5
Race			
White	1,394	13	8.7
Black	44	44.5	36.7
Age			
0-17	907	21.2	13
18+	3,806	25.6	12.9
All ages	4,713	25.6	12.9

Beaumont Hospital (formerly Oakwood)

The Beaumont hospital system is highly ranked in the Metro Detroit area. The hospital was recently renovated and now includes the only Level 2 Trauma Center that serves the Downriver community meaning that necessary procedures can be conducted locally and are available 24-hours a day.

Beaumont is required by the Affordable Health Care Act to produce a Community Health Needs Assessment, an Implementation Strategy to address health needs found through the community assessment, and a community benefits report describing its contributions to community health. Their assessment has been converted into initiatives

that aim to increase healthcare access to the uninsured, decrease the rate of diabetes cases, and to decrease obesity rates through partnerships with schools, clinics, non profits, and faith-based organizations. To achieve these goals, the medical community must partner with other civic institutions in order to effectively reach those in need of medical care.

This legislation has brought to light the connection between health and community. Beaumont’s 2014 Community Benefits reports list over a billion unremunerated dollars spent across southeast Michigan between 2010 and 2014. The bulk of the funds were used for medical care, but over \$200 million funded sponsorships, donations, and programs as diverse as science career exposure for high

Table: Disability Rates

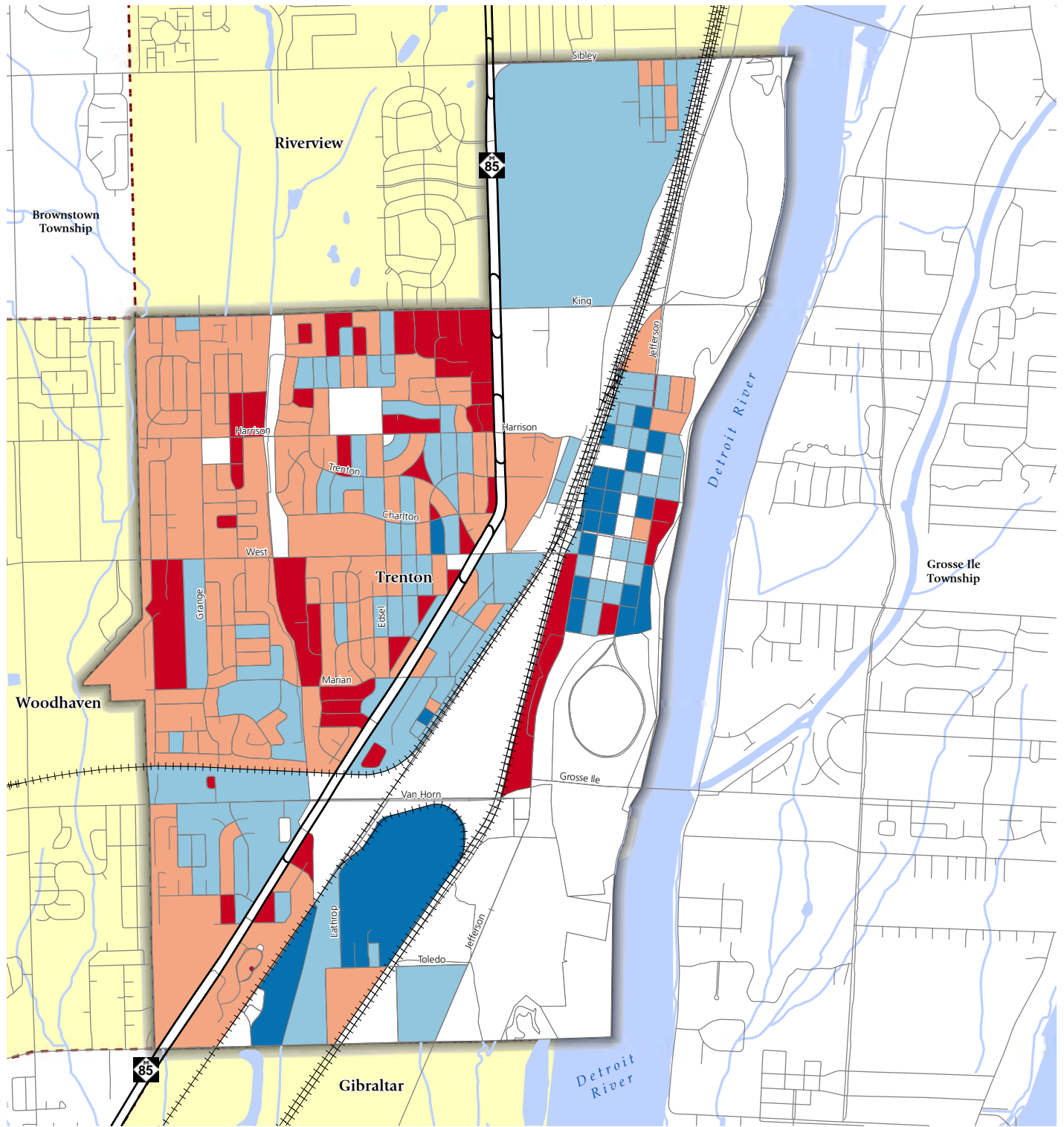
	Trenton	Wayne County
Hearing difficulty	3%	4%
Vision difficulty	3%	5%
Cognitive	4%	5%
Ambulatory	4%	5%
Self-care	4%	5%

school women and dragon boat races. As research continues to definitively correlate health with the built environment (i.e. recreational space, bike lanes, sprawl), entities wishing to have an impact on health will turn their attention there. Conversely, as communities with plans to improve their built environment continue to experience funding challenges, they will do well to collaborate with anchor institutions striving for the same goals. With collaboration, hospitals can now become a key institution in not only serving citizens in the aftermath of a disaster, but by building a healthier and more educated Trenton who will be able to recover (and possibly even prevent the need to recover) faster as a result.

SENSITIVITY

Seniors

Twenty percent of Trenton households (2,645 households) have a person who is aged 65 or older,



CITY OF TRENTON Population 65 Years and Older

Data Sources: State of Michigan Geographic Data Library, City of Trenton, U.S. Census Bureau

- City of Trenton Boundary
- State Roads
- All Roads
- Railroads
- Municipalities
- Cities

Percentage of Population (by Blocks)

- 0%
- 4.34% - 9.52%
- 9.52% - 26.09%
- 26.09% - 43.48%
- 43.48% - 100%



CITY COUNCIL DRAFT 2018
Beckett & Raeder

as compared with about 13% in the aggregated populations. Well over a thousand households (1,227) are comprised of a senior citizen living alone.

Health and Mobility Challenges

Fewer persons aged 18-64 have a disability in Trenton (9.5%) than in Wayne County or Michigan (15%, 12%), though the figure is in line with the national percentage (10.2%). Disability among seniors is fairly consistent at 36% in Trenton, Michigan, and the US and 41% in Wayne County. The 2010-2014 ACS data breaks down the type of disability for both Wayne county and the City of Trenton; Trenton has fewer residents with disabilities in comparison to the county as a whole.

This table shows the annual numbers and rates per 10,000 people that are hospitalized in Wayne County and Michigan between 2012-2014. Table 2 demonstrates higher rates of hospitalization for asthma when compared to the state in every single category. Asthma is one of the leading causes for hospitalization, and will only likely increase over time.

Mentally ill

While the number of mentally ill is uncertain, the 2000 census shows that they are zero homes for the mentally ill within Trenton, and that they are 9 homes for the mentally retarded (ACS). The Detroit Wayne Mental Health Authority provides mental health services for over 80,000 Wayne County residents for those with intellectual and developmental disabilities, and substance abuse disorders.

TRENTON IS ORGANIZED

Income

INDICATORS

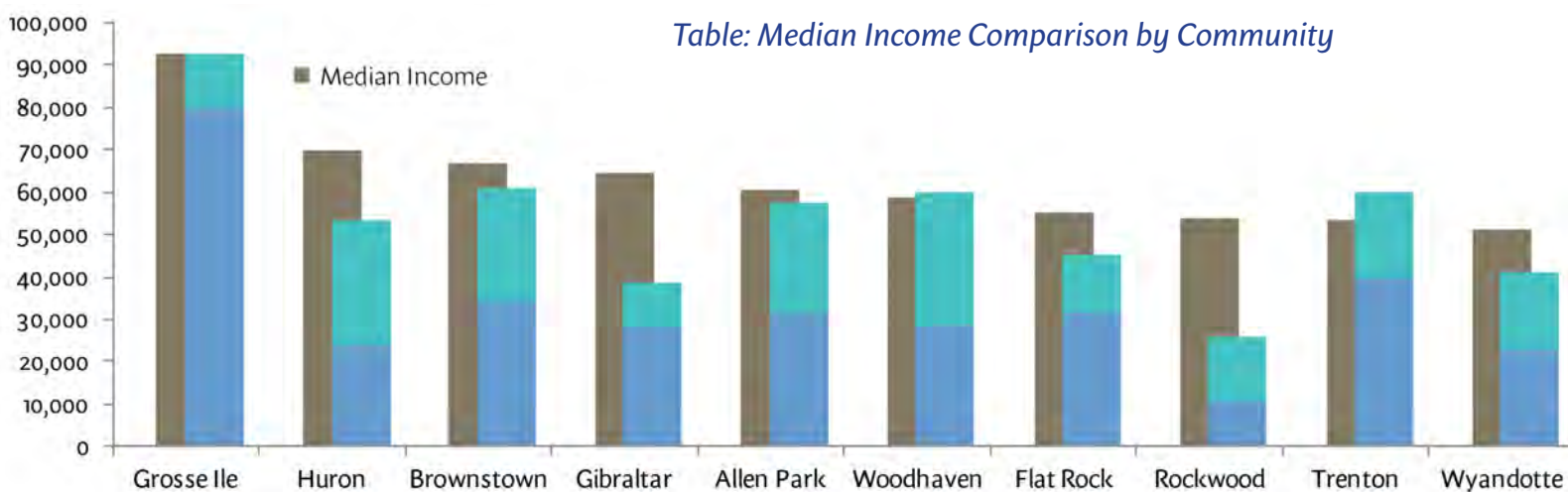
As discussed above, the median income in Trenton holds its own against the national median, which is not the case in Wayne County or the rest of Michigan. The wage gap by gender is 18% among full-time, year-round workers in Trenton as opposed to 21% nationally (meaning that across all such workers in Trenton, women's compensation is 82 cents per dollar

of compensation for men); for all workers, the gap is 36% in Trenton and 29% nationally.

It is generally true that income correlates strongly with education in a given population, and this broadly holds true among the downriver communities. However, an examination of the exceptions among the Downriver communities illuminates some of the particulars of this economy.

Rockwood, Gibraltar, and Huron rank considerably higher in median income than in education. A common theme among them is a significant manufacturing presence consisting of at least 20% of the workforce (downriver average: 18.5%). Another common theme is that these communities have a relatively low percentage of persons working in retail, art, and accommodations, topping out at about 15% of the workforce as opposed to the downriver average of 20.3%.

Trenton is among the communities which rank considerably higher for education than for income, along with Riverview, Dearborn, and Dearborn



Heights. Here, the proportion of manufacturing workers is among the lowest, while the proportion of persons working in retail, art, and accommodations are higher. Each of these communities has a higher-than-average proportion of workers in educational services and health care, jobs that frequently require a college degree, indicating that the workforce's education is being put to use.

On average, these four sectors (ed and med, manufacturing, art and accommodations, and retail) make up between 57% and 63% of each community's workforce, which is a pretty small range. The diversity in outcomes demonstrates the impressive effect that a business mix can have.

SYSTEMS

Trenton is well positioned amongst internationally prominent organizations that assist those in need. Salvation Army, Kiwanis, the Rotary Club, Red Cross, the National Exchange Club and the Lion's Club provide either emergency assistance, essential goods at bargain prices, and/or scholarships to help impoverished

families in a time of crisis. The Rotary Club in Trenton has been there since 1937 supporting the community in several ways. With three employees, the Trenton Lion's club holds annual fundraisers to donate money to a wide-ranging set of charities and organizations and has an average revenue of \$75,000-\$100,000. As an International Organization with 1.5 million members, the Lions Club has been the first on the scene of disasters before. All of these organizations share a large network and can help provide relief to lower-income groups. Forming a partnership and coordinating with well-established institutions could prove to be an invaluable partnership in preparing for a resilient future.

SENSITIVITY

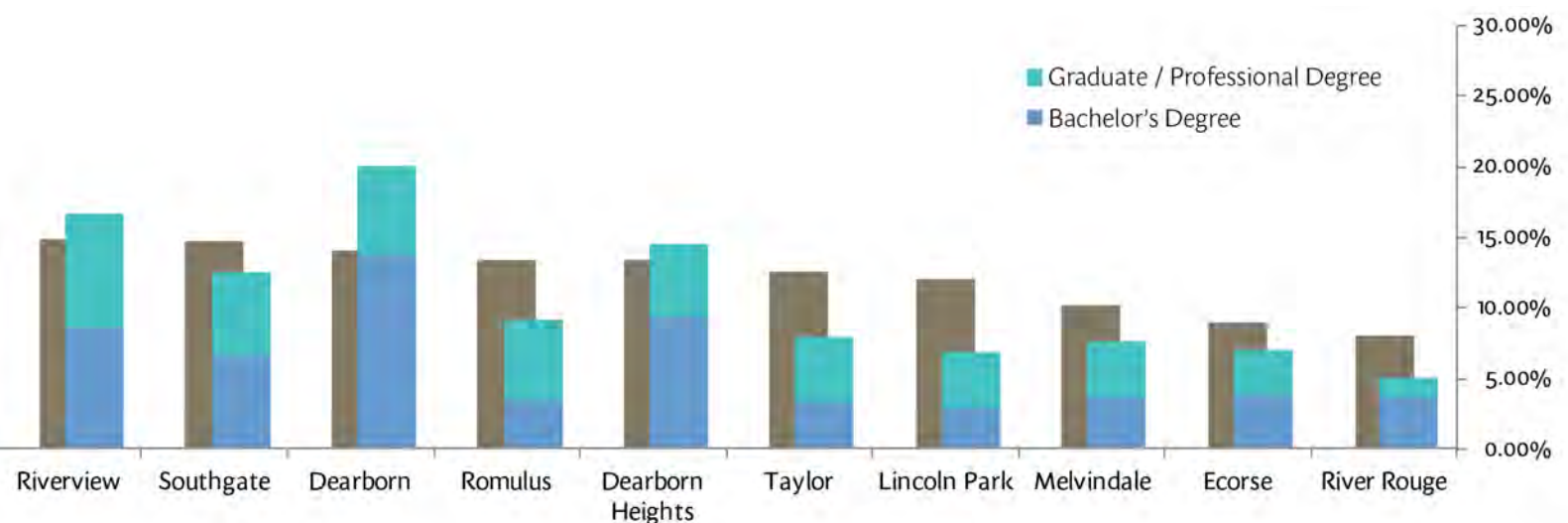
Poverty and Assistance

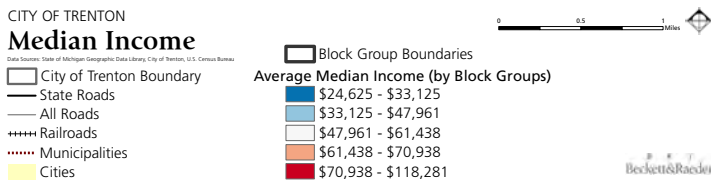
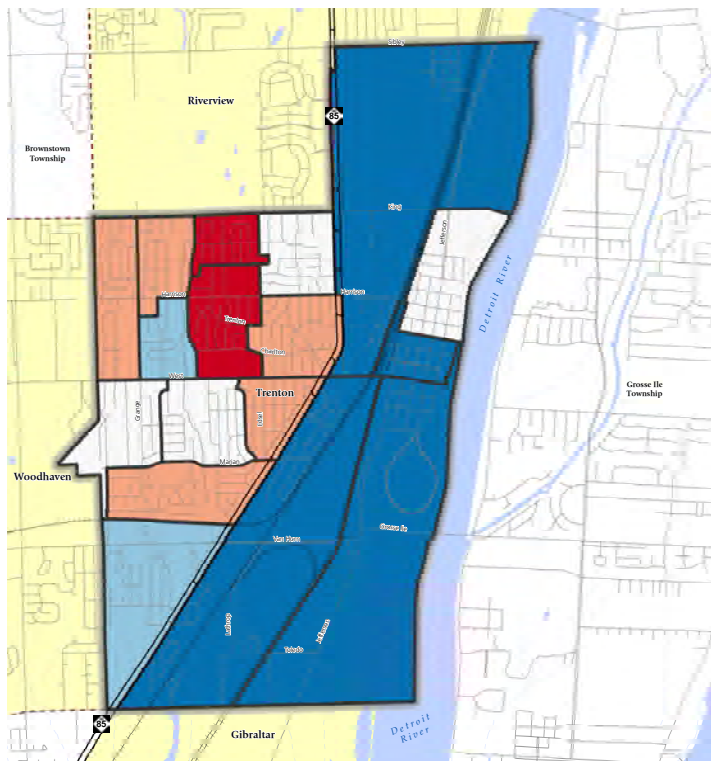
The poverty rate in Trenton is 9.3% among all people. Fifteen percent of children are poor, while the poverty rate among seniors is below 5%. The number of women in poverty is double the number of men. Though persons of color in Trenton make up less than

5% of the overall population, their ranks are disproportionately poor: the poverty rate among American Indian / Alaskan Natives and Hispanics is just over 20%, and it is 55% in Trenton's African-American community. It is difficult to draw a direct comparison between need and assistance due to the presentation of poverty data by person/family and the presentation of assistance data by household. The percentage of households receiving food stamps or SNAP benefits tracks closely with the percentage of all people in poverty. The percentage of households receiving cash public assistance is about one-fifth of the percentage of people in poverty. It is worth noting that even in a City as financially secure overall as Trenton, with a lower poverty rate than in any of the aggregated population, public help is still needed to feed one in ten households.

Homelessness

The Detroit Metro area has the highest homeless population in the state of Michigan at 34,642 which includes 5,536 children in families and 192 unaccompanied minors.





The 2015 Wayne County Action Plan states that one of its priorities is to provide public services for the homeless and those at risk of becoming homeless. Wayne County partners with Lutheran Social Services to serve the homeless population at Out-Wayne County at the Wayne County Family Shelter. Together, under the Emergency Solutions Grant, the goal is to create decent housing county-wide for 125 homeless individuals for about \$408,000 dollars. Even with additional funding there remains a large gap among the homeless and the number of beds provided. Other partners that aim to collaborate with Trenton to reduce homelessness include CDBG, HOME, ESG, Continuum of Care (CoC), VA, Health and Human Services.

Social Capital

INDICATORS

“Social capital” refers to interpersonal networks of relationships among people who live and work together. These relationships are in many ways both the glue that holds a society together and the engine that keeps it running, yet even the mention of a social capital analysis in a municipal planning document is relatively unprecedented and certainly not standard.

Moreover, the analysis itself is severely limited by data availability. The American Time Use Survey produced by the Bureau of Labor Statistics (BLS) is a long-running dataset that asks excellent questions about caring for persons within and outside the household, recreational and civic activities, socializing

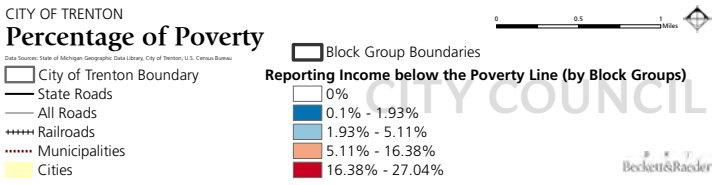
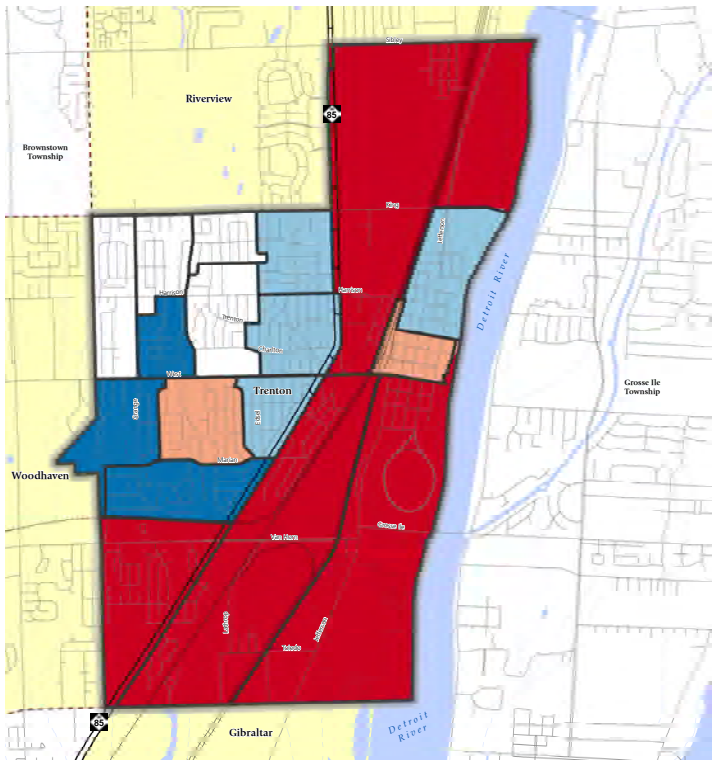


Table: Civic Engagement and Volunteerism

	Detroit MSA	MI	National
Volunteering			
Percent of residents who volunteering	27	27	25
Number of volunteers	833,600	1.94M	62.8M
Volunteer hours per capita	22	25	32
Hours of service	108.3M	199.6M	7.9B
Dollar value of service	\$1.7B	\$4.6B	\$184B
Percent of residents who donate more than \$25 or more to charity	50	50	51
Civic Engagement			
Percent who frequently talk to their neighbors	84	86	86
Percent who participate in groups and/or organizations	34	36	36

within and outside of events, and communications, but its results are easily accessible only on a national scale. As a result of a concerted effort to understand the prevalence and type of civic engagement in America since about 2009, a partnership among the US Census Bureau, the National Conference on Citizenship (NCoC), and the Corporation for National and Community Service has been producing more geographically specific datasets on “volunteering and civic life in America.” Trenton is part of the six-county Detroit Metropolitan Statistical Area; as can be seen below, rates of engagement are similar at the national, State, and MSA levels.

About a quarter of Detroit MSA residents volunteer their time—an average of 21.5 hours per person per year— and half donate \$25 or more to charity. Although most people (83.8%) say they frequently talk with their neighbors, that rate is still smaller than those in the wider Michigan

and national communities (86.1% and 85.7% respectively). Informal volunteering, such as helping out neighbors, occurs at nearly twice the frequency of participation in groups or organizations (63.5% vs 34.4%).

From this data, two research findings have emerged which have applications to planning and resiliency. First, a 2012 issue brief titled “Civic Health and Unemployment II: The Case Builds,” co-authored by the NCoC, provided a concrete connection between the presence of nonprofit organizations in the community and the community’s economic resilience, as measured by unemployment both at the community and individual scales. Specifically, a county with one extra nonprofit per 1,000 people in 2005 would have a 0.5% less unemployment by 2009. Similarly, a person with a job in 2008 who lived in a community with many nonprofits was half as likely to become unemployed as a person who lived in a similar community

with few nonprofits. These findings were further dependent on the type of nonprofits. Client-serving organizations with activities were far more predictive than interest-based organizations without opportunities for physical connection. It is the contact that matters.

A second finding emphasizes the role of planning in fostering social capital. The 2015 Michigan Civic Health Index produced by the Michigan Nonprofit Association dives more deeply into the NCoC data to understand the local civic context and to make targeted recommendations for improvement. Its first recommendation is to build Michigan’s neighborhoods as the cornerstones of civic life. Outreach programs that leverage existing activism and social media should be coupled with walkability and other opportunistic elements of urban design to promote this basic unit of social cohesion.

SYSTEMS

Adult Social Clubs

Trenton's Park and Recreation Department has abundant programs for senior citizens ranging from fitness classes to traveling groups to arts and crafts. There are also three adult social clubs that host luncheons and bingo nights through membership dues. Services also include a newsletter and a senior program office. As one of the more vulnerable groups, these meeting times can also be used to inform seniors on how they can prepare themselves and how the City will assist them in case of a disaster.

Service Clubs

The same service clubs that offer assistance to individuals and families struggling with income also offer a real benefit to those who provide that assistance. In addition to the positive feelings, increased trust in others, and increased social and political connection that have long been associated with volunteerism, a 2007 study found that longevity, mental and physical health—especially depression—and life satisfaction were all positively impacted in volunteers.

These combined findings on the benefits of service to the recipients, the providers, and the community at large illuminate a large gap in our understanding of effective community

building. Trenton, with its robust existing network and its many facets of impending change, possesses an excellent opportunity to explore it.

SENSITIVITY

Foreign-Born

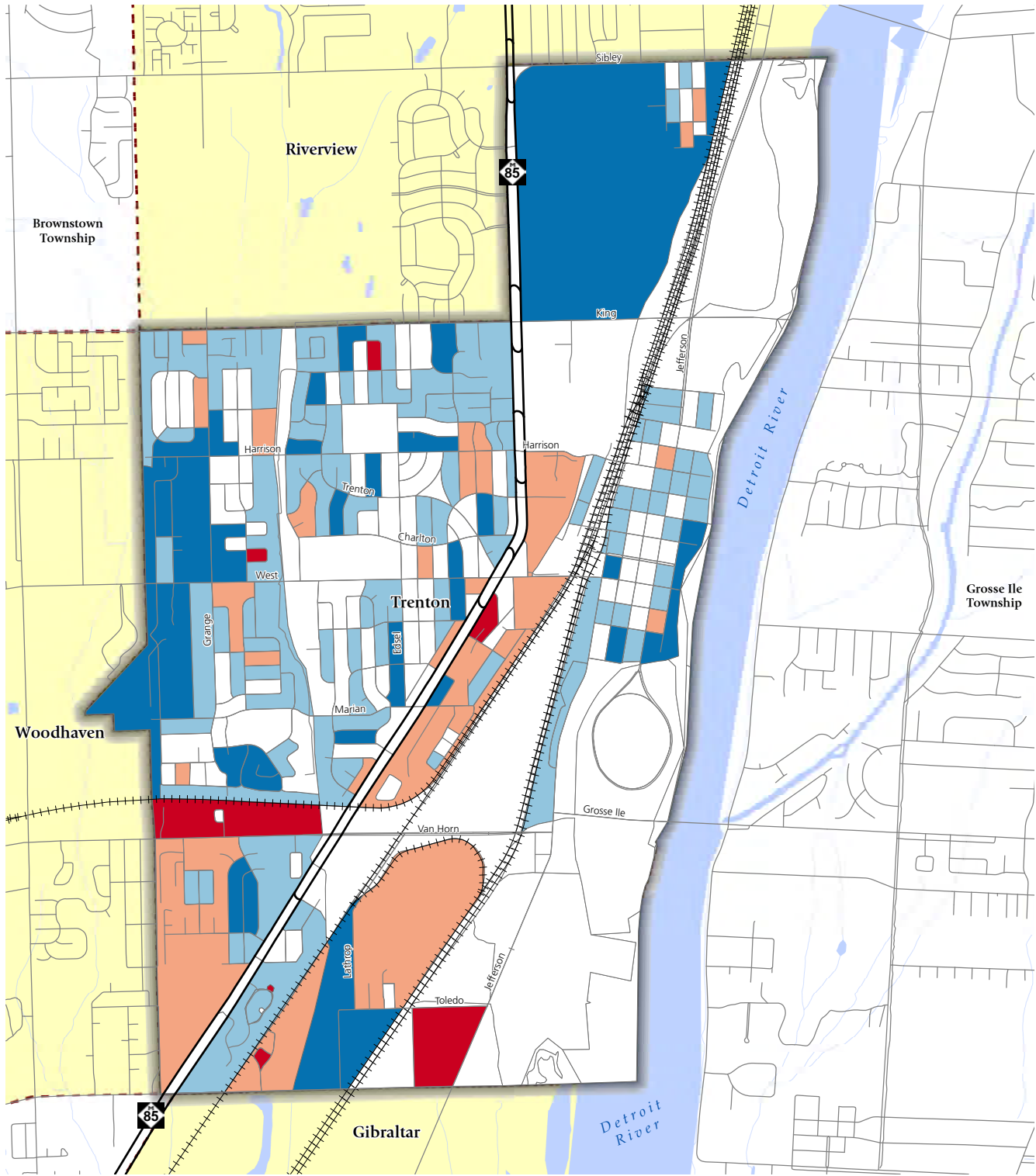
Four percent of Trenton's population, or about 700 residents, are foreign-born. This is in contrast to 8% in Wayne County, which has made a concerted effort to welcome "new Americans," in part in recognition of the economic benefits of doing so. Of Trenton's immigrants, 95% have been in the United States for longer than six years. Nearly half (47%) came from Europe; a quarter (26%) are from Latin America; 18% arrived from Asia; and the remaining 8% hail from other parts of North America. Just over 300 people speak English less than "very well," mostly split between Spanish (105 people) and other Indo-European languages (155 people).

Rates of business formation and business ownership are higher among immigrant communities than among native born communities, according to a 2012 study commissioned by the Small Business Association. However, the success of these economic endeavors will depend on the success of the immigrant's overall adjustment into the community. The integrative efforts that can yield economic

benefits are the same ones that can reduce negative impacts on these communities: communications, an understanding and accommodation of language barriers, and outreach to connect people with services.

Racial Change

Because Trenton's racial demographics do not match those of Wayne County, Michigan, or the United States, and instead reflect a historic pattern of near-universal whiteness that has been steadily disappearing over time, it is reasonable to consider a significant imminent demographic change. Insofar as this demographic change simply reflects a large quantity of people moving, the instability and period of adjustment following a move constitutes some sensitivity by itself. Cultural differences between the new arrivals and the established neighbors can exacerbate that sensitivity. In the worst-case scenario, economic insecurity can become the force that transforms "difference" into "conflict" and prevents adjustment at all. Trenton must understand its own demographics, and would be well-served to grasp its propensity to change with respect for both the long history of race relations in Metro Detroit and for the possibility of a future unmarked by such divisiveness on the basis of skin color.



CITY OF TRENTON

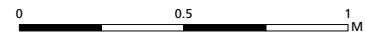
Percentage of Minority Populations

Data Sources: State of Michigan Geographic Data Library, City of Trenton, U.S. Census Bureau

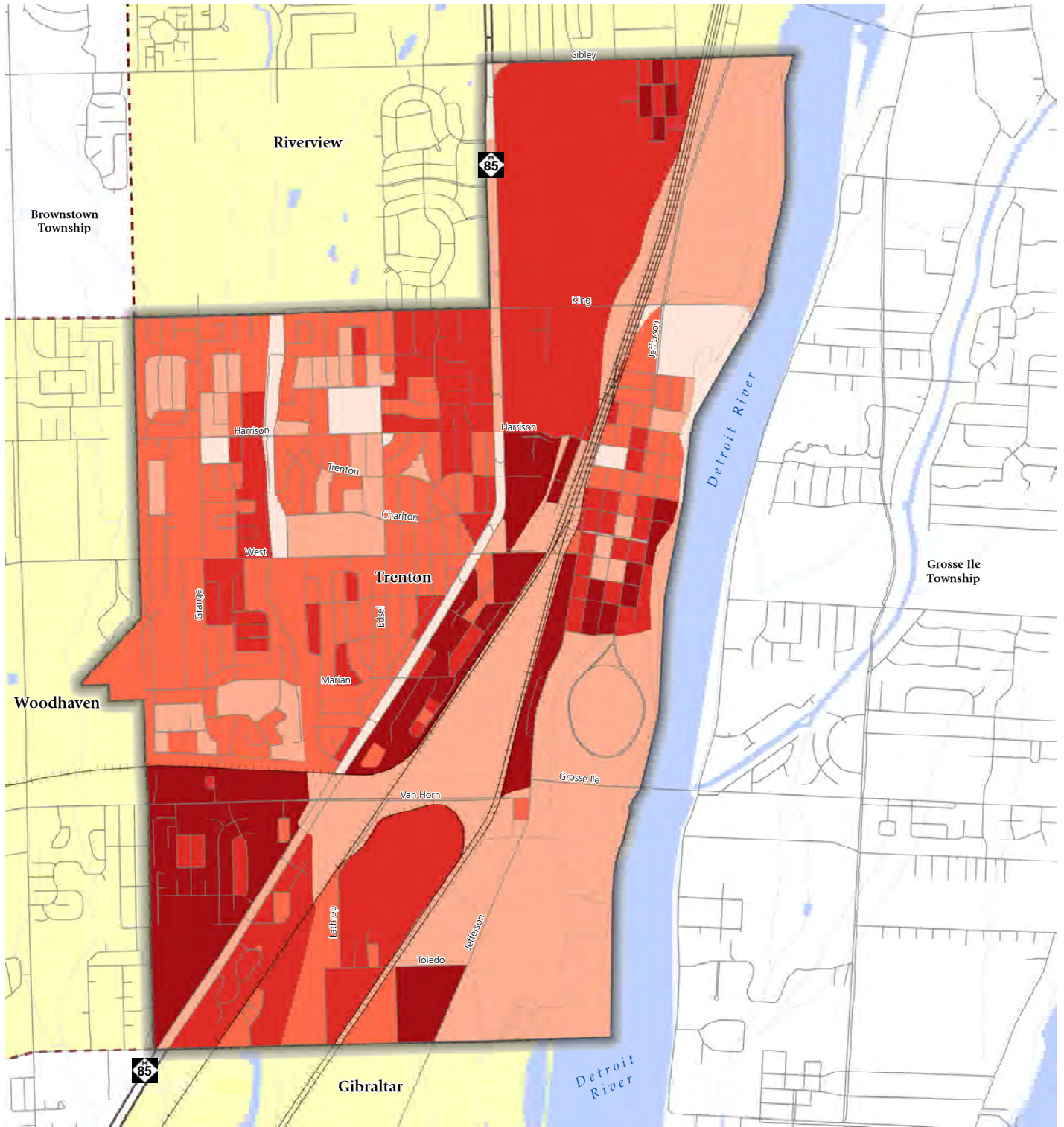
- City of Trenton Boundary
- State Roads
- All Roads
- Railroads
- Municipalities
- Cities

Percentage of Minorities (by Blocks)

- 0%
- 0.6% - 2.4%
- 2.4% - 8.1%
- 8.1% - 18.2%
- 18.2% - 50.0%



CITY COUNCIL DRAFT 2017
Beckett & R



CITY OF TRENTON

Sensitive Populations at Risk

Data Sources: State of Michigan Geographic Data Library, City of Trenton, U.S. Census Bureau

- City of Trenton Boundary
- State Roads
- All Roads
- Railroads
- Municipalities
- Cities

Vulnerable Population Point Totals

- 0 - 4 Points
- 5 - 9 Points
- 10 - 13 Points
- 14 - 16 Points
- 17 - 21 Points



CITY COUNCIL DRAFT 2017-03

B R R Beckett & Raeder

Where it will hit: Vulnerability Assessment

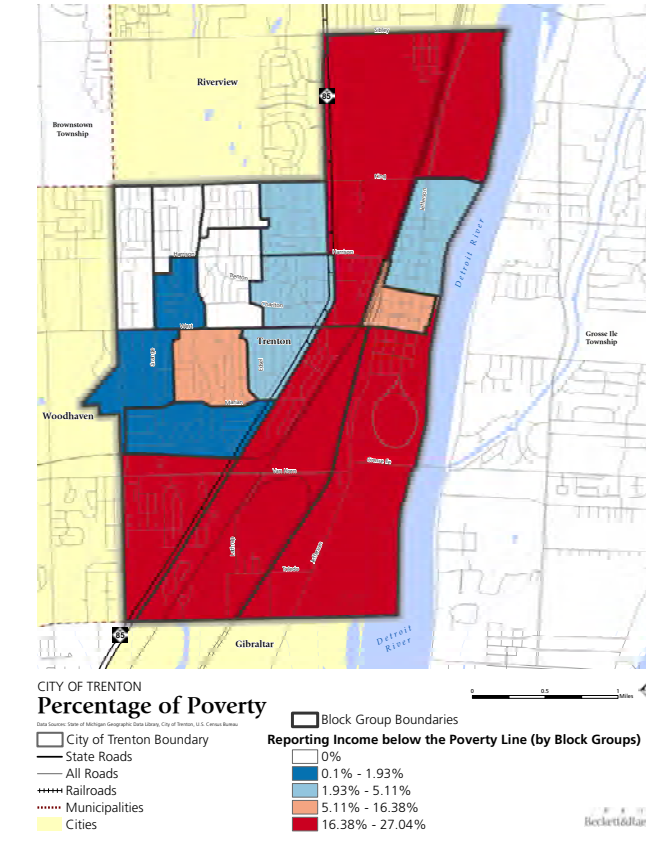
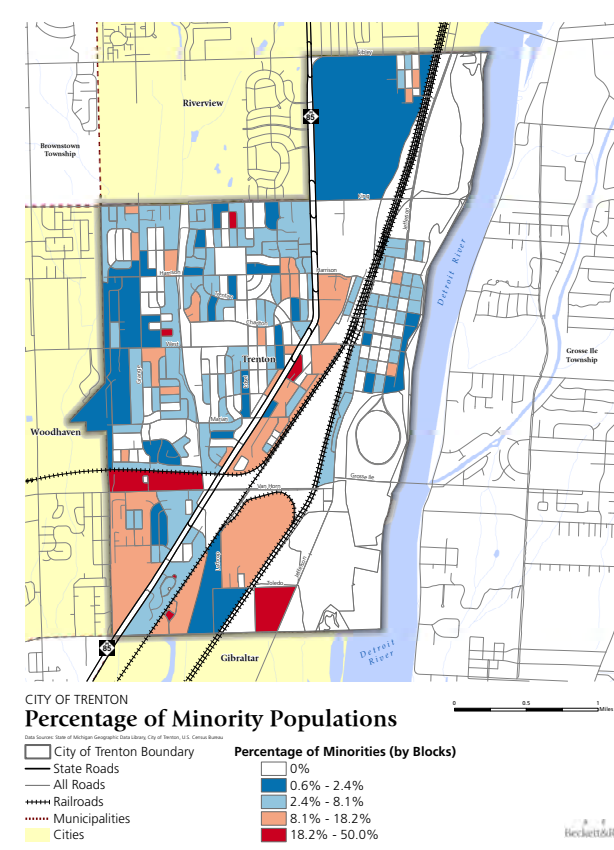
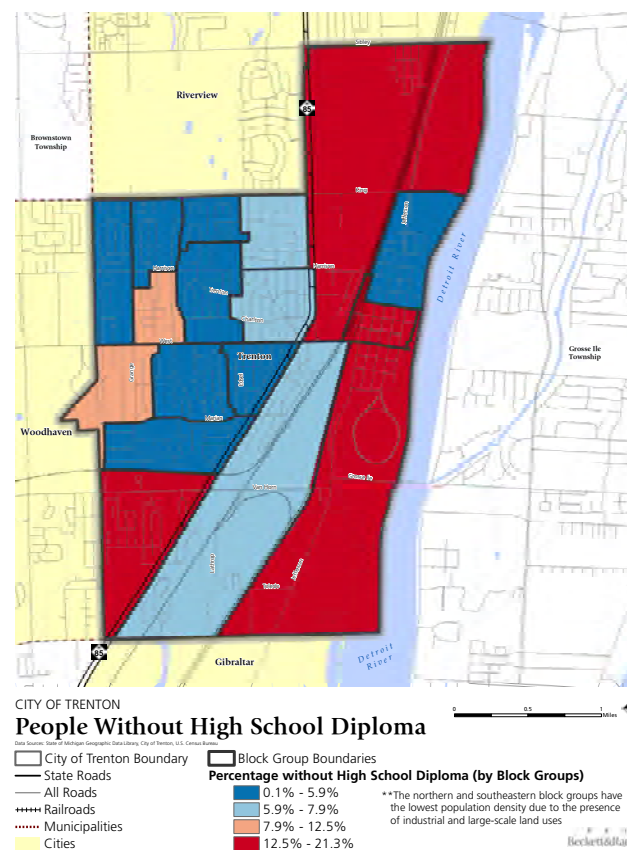
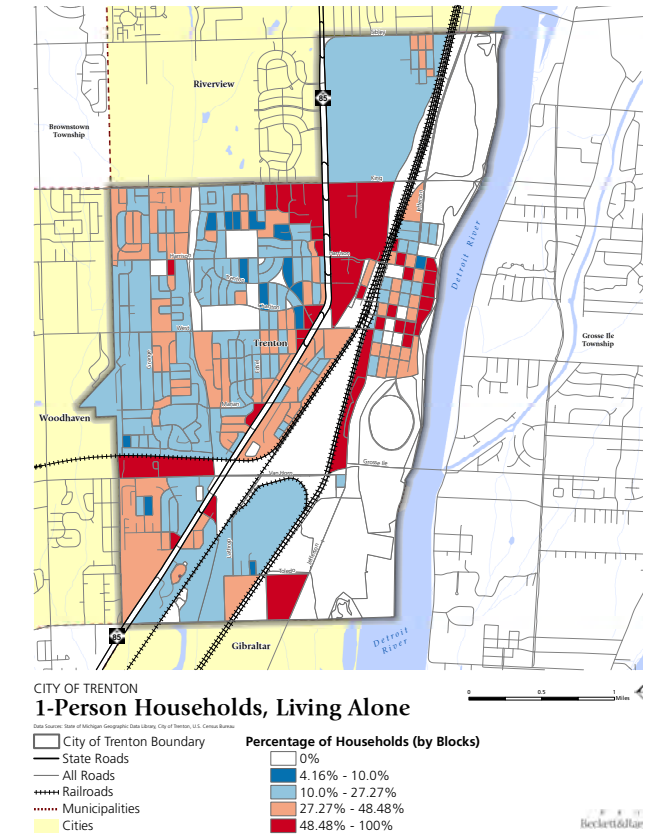
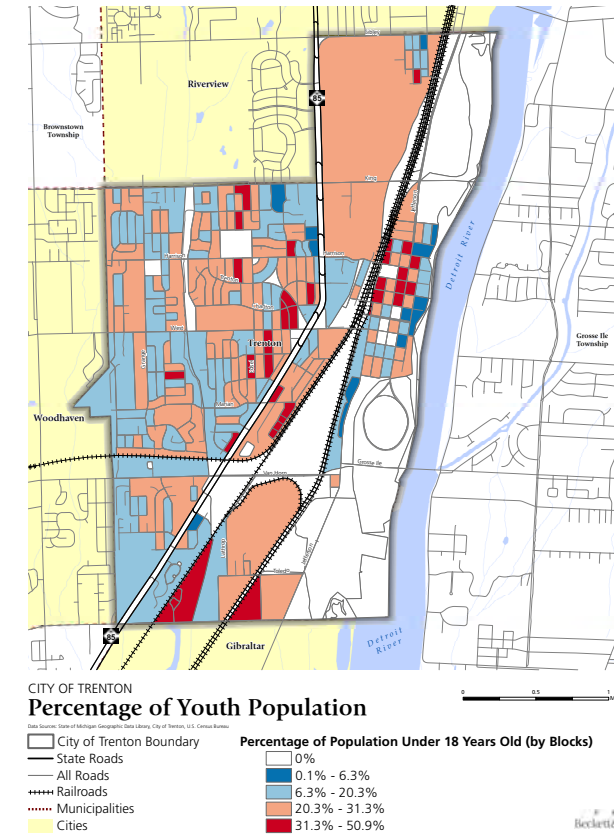
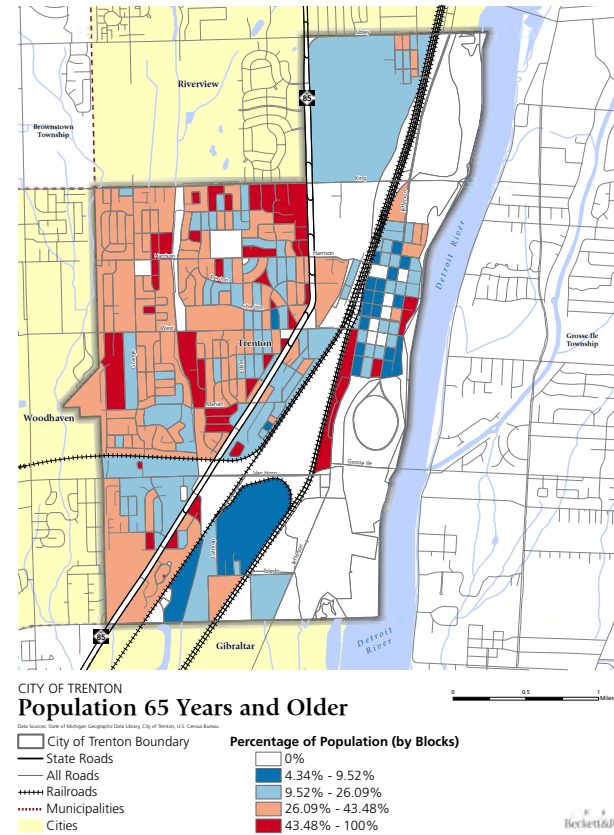
Several population and demographic groups were the focus of the sensitive people analysis. These populations were based upon the Foundations for Community Climate Action: Defining Climate Change Vulnerability in Detroit Report, developed by the University of Michigan Taubman College of Architecture & Urban Planning. This report identified populations that would be sensitive to extreme heat and precipitation events, of which both are predicted to increase to the greater Detroit area. Recent studies have indicated that certain groups are more sensitive to extreme weather events than others, and the variables of educational attainment, poverty, proportion of minorities, age, and health were found to be significant indicators. Therefore, several demographic and socio-economic variables were selected to provide insight regarding these particular groups:

- o Individuals over 65 years old
- o 1-person households
- o Minority populations
- o Individuals living in poverty
- o Children under 18 years old
- o Individuals without a high school diploma

These groups were all used as indicators to determine pockets of high concentrations of sensitive populations. Using demographic information from the U.S. Census Bureau, data for these groups were recorded at the block level, although the poverty and educational

attainment datasets were recorded at the block group level. Numerical variations were grouped using the Natural Breaks algorithm in GIS software, a statistical optimization algorithm that groups data into classes based on the distribution of values and clusters of values. These groupings have determined the ranges by which points were assigned to sensitive populations. Blocks were ranked regarding their proportion of a particular demographic group, and those with higher concentrations of one group received more points than those with lower concentrations of that group. Points ranged from zero (blocks did not include any moderate or high proportion of any sensitive group) to six (each sensitive group was found to be in moderate or high proportions within the block). When all were compared with one another, interesting patterns emerged.

Given this set of criteria, several sections of the City were identified as containing a proportionately significant sensitive population. Several blocks in the southern downtown area have older populations that live alone, lack a high school diploma and have a higher rate of poverty. The Parkview Estates residential community, which runs parallel to the Norfolk Southern rail line and western edge of Elizabeth Park, has both the highest rate of lower educational attainment (individuals without high school diplomas) and the second-highest rate of poverty in the City. Similarly, just west of the CN North America line, several blocks have been identified as having higher proportions of poverty, children under 18, individuals who live



alone, and minority populations.

Other areas of concern within the City include the southwest corner (west of Fort Street and south of the CN North America rail line) and northeast corner (between King and Sibley Roads). The southwest corner of the City has high proportions of minority groups, lower educational attainment, and poverty. The northeast corner of the City, where poverty and lower educational attainment are represented, also includes a higher amount of children under 18 and minority groups.

Stronger blocks that contained lower figures of sensitive populations included several areas in the northwest portion of the City and the northern chunk of the downtown area. South of King Road, west of Fort Street, and north of the CN North America rail line there are more stable populations. However, these blocks still have some groupings of older families, individuals over the age of 65, and individuals living alone, which should come as no surprise given the aging demographics of the City. They are seen bordering the west side of the Frank and Poet Drain, the west edge of Fort Street, and south of King Road. The northern portion of the downtown area is considerably less

sensitive than the southern portion, although two outliers can be found in the blocks west of West Jefferson Avenue, north of Cherry Street, and south of Harrison Avenue; one-person households and those with young families are found in this area.

What we value

Social Goal 1: To create an environment that attracts younger people/families to Trenton

- o To maintain the current housing stock and recruit higher density, upscale housing such as lofts/condos
- o Maintain thriving schools that prepare students to be creative and critical thinkers

Social Goal 2: Promote community building activities that motivate residents to become actively involved and proud of Trenton

- o Ensure that events in Trenton are community-inclusive and accessible to all
- o Encourage partnerships between community organizations and the City
- o Engage in placemaking initiatives and events to foster community pride

What we can do

The social objective is to anticipate the effects of natural and/or manmade disasters in order to save as many lives as possible.

SCENARIO PLANNING

Climate change predictions are often reported as a range, for example, temperatures will likely rise by 1-5 degrees F by 2050. Without specific figures to rely on, it can be difficult to plan accordingly. Scenario planning takes into account an array of scenarios, and plans for each of them, as opposed to only planning for the most likely scenario, as even the “likely” scenario is relatively unknown. According to the Regional Plan Association’s (RPA) report on using scenario planning when faced with uncertainty, municipalities must consider its goals, pre-determined elements, the problem at hand, and unknowns. Upon assessing those components first, the RPAs report then lists four scenarios :

1. Scenario 1: Business As Usual

What will happen if we continue as we have and a disaster hits?

2. Scenario 2: Laissez-Faire

What will happen if homeowners and business owners are purely responsible for protecting themselves only?

3. Scenario 3: Subsidize

What will happen if the state and federal government invests in strategies to adapt to climate change?

4. Scenario 4: Retreat

If storms continue to damage our City, can we relocate?

Once a community has evaluated the level of service needed to recover from a disaster, it can also plan for multiple different scenarios. This is inherently a social endeavor because it is the most effective when many stakeholders are at the table. To understand the different types of scenarios, it is essential to understand how different groups experience the City they live in. Charrettes and participatory mapping are frequently used methods to incorporate citizen insight into scenario planning.

COMMUNITY EDUCATION AND MOBILIZATION

Plans for resiliency and recovery are more valuable if the residents are aware of them. Efforts to make these plans apart of school curricula are a quick way to disseminate information

Charrettes

A charrette is a forum that seeks to bring together an array of stakeholders. It differs from a traditional public meeting in that it is usually an all-day or multi-day event centered on interactive activities that draw on the residents expertise and opinions of planning matters.

Participatory mapping, which could be an activity included in a charrette, aims to add a spatial dimension to stakeholders lived experiences in a place. For example, without strong graphical skills, residents can still indicate on a map their daily route and where they feel unsafe, areas where they notice excessive litter, or features that enhance their journey. This exercise can add collective, cultural experiences that are not usually represented on a map.

through the majority of households in Trenton. Additional educational materials and training on how to evacuate can be distributed through already established channels—social media, the community center, public institutions, block groups, etc.

New Orleans has integrated public art and disaster management by installing 14-foot steel sculptures that also double as meeting and pick up points during an evacuation. Another great example of communicating the

importance of preparing for climate change to the public is when the Redevelopment Authority and the Sewage & Water Board built a series of demonstration projects that show how under-used spaces can become helpful green infrastructure projects. Due to recent and devastating tsunamis, Thailand has also placed evacuation plans and routes onto large-scale maps throughout the coastal cities.




Structures and Systems

What's Coming in Physical Change: Hotter and Wetter

FLOODING

Midwestern communities are already exposed to changing and intensifying weather patterns, and predictions indicate that temperature and weather events will only become more extreme over time. Specifically, heavy rains occur twice as frequently as a century ago and rainfall is projected to increase by 20% by the end of the century. As a result there is an increased risk of flooding and subsequent property and infrastructure damage. In 2014, the Detroit Metropolitan area received about 4.5 inches of rain within 24 hours causing about \$1.8 billion of damage to roads, bridges and about 75,000 homes and businesses. With the increased likelihood of flooding comes heavier run-off which can contaminate

A photograph of a residential street. In the foreground, a paved road curves to the right. On the left, a large, mature weeping tree with dense green foliage stands prominently. Behind it, a smaller tree with dark purple leaves is visible. In the middle ground, a two-story house with white horizontal siding and a dark grey roof is the central focus. It has a brick chimney and a white garage door. To the right of this house, another similar house is partially visible. A white pickup truck is parked on the street to the right of the main house. The sky is overcast and grey. A semi-transparent dark grey box containing text is overlaid on the lower half of the image.

water and increase exposure to water-borne illness as well as infections and hepatitis.

Additionally, if a basement were to flood and not receive quick and thorough repair, its damp conditions develop mold, reducing air quality in the home.

With two 100-year floodplains, and the highest proportion of residents below the poverty line living adjacent to the Detroit River, Trenton must consider how to protect itself from future storms.

HEAT

As precipitation comes in heavier bursts in the fall, winter and spring, summers are expected to become hotter and drier. Higher temperatures have several negative health and environmental consequences. Heat is the deadliest form of weather in the U.S., killing more people than hurricanes, tornadoes, floods, and lightning combined. Between 1999-2010, exposure to extreme heat caused 7,415 deaths in

the U.S or on average 618 preventable deaths annually. Exposure to excessive heat induced about 31% of the 2,000 weather-related deaths between 2006-2010; 63% of those deaths were from exposure to excessive coldness. The health costs related to death and sickness caused by extreme heat and cold exceeded \$1 billion in 2005. In the 1995 Chicago heat-wave hospitalizations increased by 11% during the peak week, and some predictions estimate that by the end of this century the Detroit area could experience a heat wave that severe twice every summer!

According to the National Center for Disease Control, higher temperatures due to climate change and exacerbated by the heat island effect can also increase air pollutants and particulate matter. This is particularly harmful to the Detroit-Ann Arbor region as this area already exceeds the EPA's health-based ozone standard. High concentrations of ground-level ozone levels have been associated with higher hospitalization rates for asthma, higher rates of premature death for people with heart and lung disease, and more severe allergic reactions.

Drier summers will also have an impact on Michigan's second-largest industry: agriculture. 1988 provides evidence on what a drastic loss a heat wave can have on crop production.

In Michigan, corn prices dropped to their 1978-1979 prices levels. Summer temperatures are expected to exceed the heat wave of 1988. This comes at a huge cost for Michigan as the state will have to re-think irrigation, how to protect animals from extreme heat, and how to prevent the spread of crop-destroying pests.

Increased temperatures, especially quickly changing temperatures, will have a profound impact on species and their ecosystems. The Environmental Protection Agency (EPA) notes that longer periods of hot weather will stress trees, making them more vulnerable to wildfires, disease, and insect damage and outbreaks. For example, in the West wildfire season has increased by 78 days in the last 30 years. This may not remain a phenomenon only in the West as EPA Region 5 which includes Michigan has one of the highest percentages of connected forested land coverage. Also as a result, iconic trees such as the paper birch, quaking aspens, balsam fir, and black spruce are expected to decline and wildfires may spread quickly.

Changing temperatures and weather patterns affect biodiversity as only some species will be able to adapt and survive. Even the extinction of a microscopic species can damage the entire food chain. Higher temperatures have already been

recorded in the Great Lakes which contribute to the production of toxic algae that negatively affect water quality, fish and their ecosystem; it also reduces the aesthetic appeal of one of the Midwest's most treasured natural asset. While the exact changes and ecosystem adaptation cannot be predicted, it is safe to say that climate change has an all encompassing effect on all species by throwing off a once harmoniously functioning system.

What is: Existing Conditions and Sensitivity

TRENTON HAS INFRASTRUCTURE AND SERVICES

Water circulation

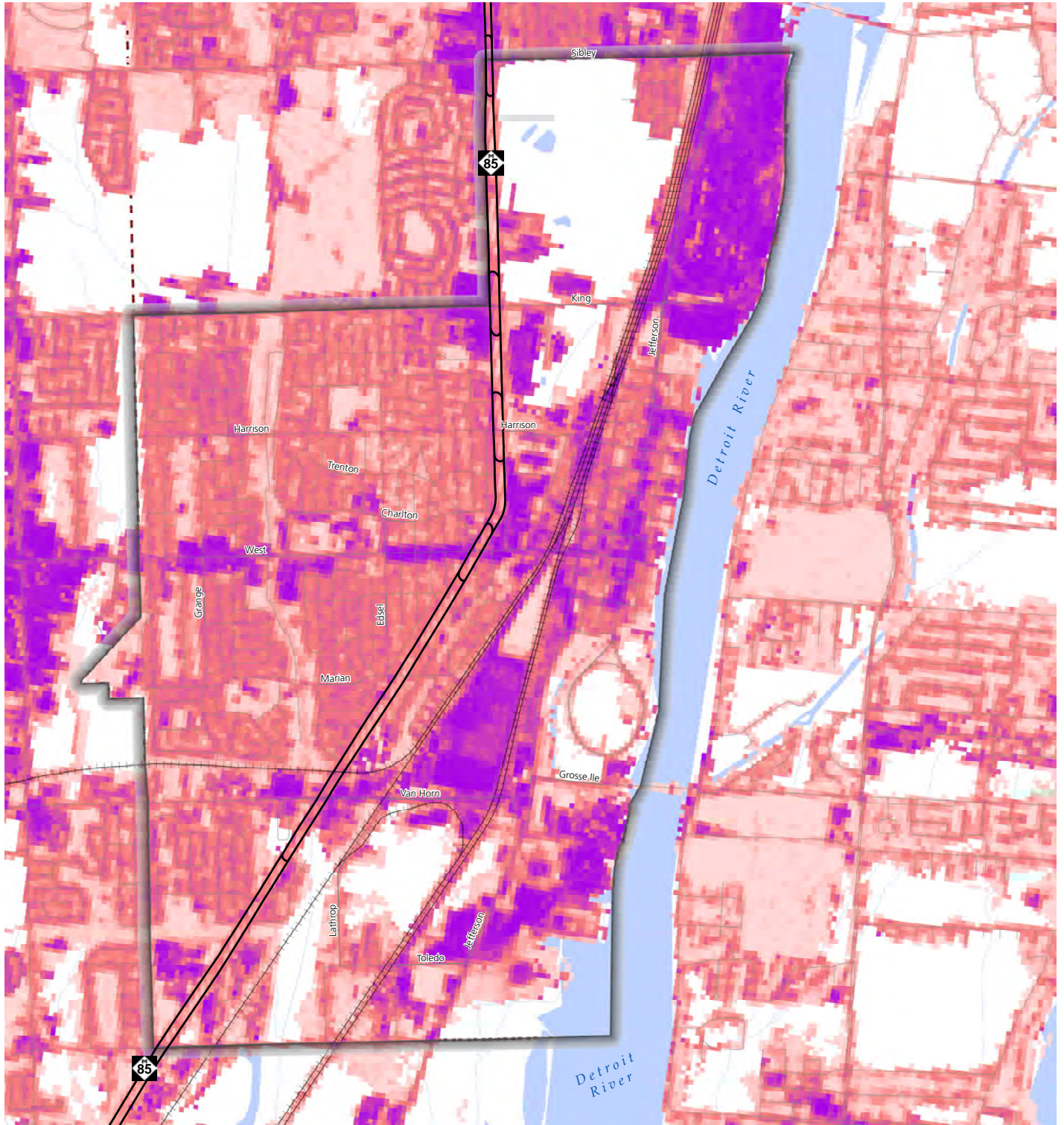
INDICATORS

Impervious surface coverage

Overall, 46.2% of the City of Trenton is covered in impervious surface, meaning that water cannot penetrate the ground. Some vast stretches of land are totally impervious, such as the southernmost and northernmost parts of the City along the waterfront. The other large area of impervious surface is the triangular areas

CITY COUNCIL DRAFT 2017-03

Trenton Coast Resiliency Master Plan



CITY OF TRENTON Impervious Surfaces

Data Sources: State of Michigan Geographic Data Library, City of Trenton, National Land Cover Dataset 2011

- City of Trenton Boundary
- State Roads
- All Roads
- Railroads
- Municipalities

Percent Impervious:





between the railroad lines, north of Van Horn Avenue, which is zoned as an industrial use for the Chrysler Trenton Engine Plant. The plant is surrounded on the west and on the south by neighborhoods with some of the highest concentrations of minorities (between 8-18%), poverty rates (16-27%), and percentage of those who live alone (10-48%). These areas are also zoned multiple family residential, indicating that they are likely renters. Another corridor almost entirely covered with impervious surface is West Avenue and along Jefferson Avenue. These two roads run through the DDA boundaries and are home to more than 120 businesses.

The high concentration of impervious surface puts businesses at greater risk of flooding, even in a moderate storm. Note that the areas with close to 0% impervious pavement are parkland.

Flooding events

According to the Wayne County Hazard Mitigation Plan from 2013, there are three properties in Trenton that are considered “repetitive loss properties” meaning that the property owner has made four or more claims to the National Flood Insurance Program over \$5,000 each, and at least two separate claim payments combined exceed the market value of the building. Amongst the 2

single-family homes, and the 1 other residence, they have experienced 7 flooding events.

As of 2012 the new Flood Insurance Rate Map (FIRM) were released by FEMA the size of the floodplain was substantially larger. Prior to the 2012 FIRMs, there were about 180 homes in the floodplain, and now there are approximately 825, most of which are close to the Frank and Poet drain. Mortgage companies required households that fell within the new boundary to purchase flood insurance. If homeowners failed to do so with the mortgage company, then the City would purchase it on their behalf, and charge a higher price. However,

homeowners without mortgages may remain in the dark and therefore sensitive to flooding because they were not contacted personally about the increased need for flood insurance.

SYSTEMS

Water Supply

The City of Trenton’s water supply is purchased from the Great Lakes Water Authority (GLWA). GLWA draws water from Lake Huron and the Detroit River and serves 126 communities in Metro Detroit.

Wastewater Treatment

The City of Trenton has run a Wastewater Treatment Plant since 1964 that can treat 4 million gallons per day on average, with the capacity of treating 6.5 million gallons per day from both industry and private homes. Trenton moved to a separated system, where the pipes used to treat sanitary sewage have been separated from the pipes that drain rainwater into the river. In addition, Trenton has two retention basins that store excess water from storms; the western basin can hold up to 10.6 MG, and the eastern basin can hold 9.5 MG for a total of about 20 MG (million gallons).

SENSITIVITY

Trenton structures are sensitive to flooding. In the August 2014 flooding Federal Disaster DR-4195-MI, 14 homes flooded from a storm of about

Table: Housing Vacancy, Value, and Tenure

		2000	2009	2010	2014
Vacancy (%)	Trenton	3	8	7	5
	Wayne County	7	15	15	18
	Michigan	11	15	15	16
	United States	9	12	11	13
Homeownership (%)	Trenton	81	84	79	79
	Wayne County	67	68	65	64
	Michigan	74	75	74	72
	United States	66	67	65	64
Median Value	Trenton	\$137,800	\$163,100	(2012 ACS) \$127,200	\$115,200
	Wayne County	\$99,400	\$125,300	\$97,100	\$83,200
	Michigan	\$115,600	\$147,500	\$128,300	\$120,200
	United States	\$119,600	\$185,400	\$181,400	\$175,700

4 to 6 inches over a couple days. Because most Trenton residents had insurance there are no estimates on property damage. Throughout Wayne County, the average cost for those who experienced property damage and did not have insurance was \$5,000. This price varies considerably depending on whether the home had a finished basement and whether essential equipment like a furnace was stored there. In the most recent, but less severe storm September 2016, about 2.5 inches of precipitation, and only person filed a complaint about flooding.

Based on this analysis, businesses stand a lot to lose given that they are located along impervious surface

corridors.

Housing

INDICATORS

The desirability of Trenton’s housing stock is evident in its vacancy and ownership data. These are two variables which measure the extent of the American housing crisis, and they clearly illustrate that Trenton weathered it fairly well although it certainly was not spared. The vacancy rate of 5.2% is double what it was in 2000, but still approximately one-third to a half of the rates in all other geographies. Likewise, although the homeownership rate has dropped two percentage points over that time



period, it is still a full 15 percentage points above the national rate. Median home value, however, has still not returned to pre-recession levels in Trenton despite having done so in Michigan generally, and also enjoying a 47% increase nationally since 2000. It may be somewhat surprising to note that seven years after the official end of the Great Recession in June 2009, vacancy is still rising, and home values and ownership are still dropping, across the board.

Trenton has a relatively small average household size that is due in part to a significant proportion of single-person households. Its housing stock is primarily single-family detached units (70%) with three and, less frequently, two bedrooms. Other types of housing available include structures with 5-9 units (10%) and single-family attached units (6%).

Most of the homes in Trenton (68%) were built between 1950 and 1980, with less than a thousand of the 8,319 housing units in the City built before 1940. Half of all households have been in their homes for 15 years or longer, and 40% of owner-occupied homes are paid off. Eighteen percent of housing units are occupied by households that are cost-burdened; they are paying more than 35% of their household income toward housing. Of those 1,485 units, 45% are owner-occupied units with a mortgage; 38% are rentals; and 17%

are housing units without a mortgage.

SYSTEMS

Housing Inspection Program

Trenton's housing sale inspection program is the benchmark for downriver communities and has been an important tool in maintaining a well kept housing stock. Located in Division 3 of the City's Codified Ordinances, the "Inspection Upon Transfer" program states that it is unlawful for any person to transfer a dwelling or for any person to act as a broker for the transfer of a dwelling which has not been issued a current certificate of review for such dwelling. The City's Engineering and Building Department shall issue a certificate of review for each dwelling only after they have conducted a preliminary inspection of the dwelling and found that the dwelling meets the minimum requirements necessary to permit

the transfer of the property. If not, improvements shall be met. The department performs the inspections solely for the purpose of permitting the City to continually assess the condition of the housing stock, to monitor compliance with the building code, and to encourage owners to improve their properties. The success of the program can be visually noted by a simple drive through the City's neighborhoods.

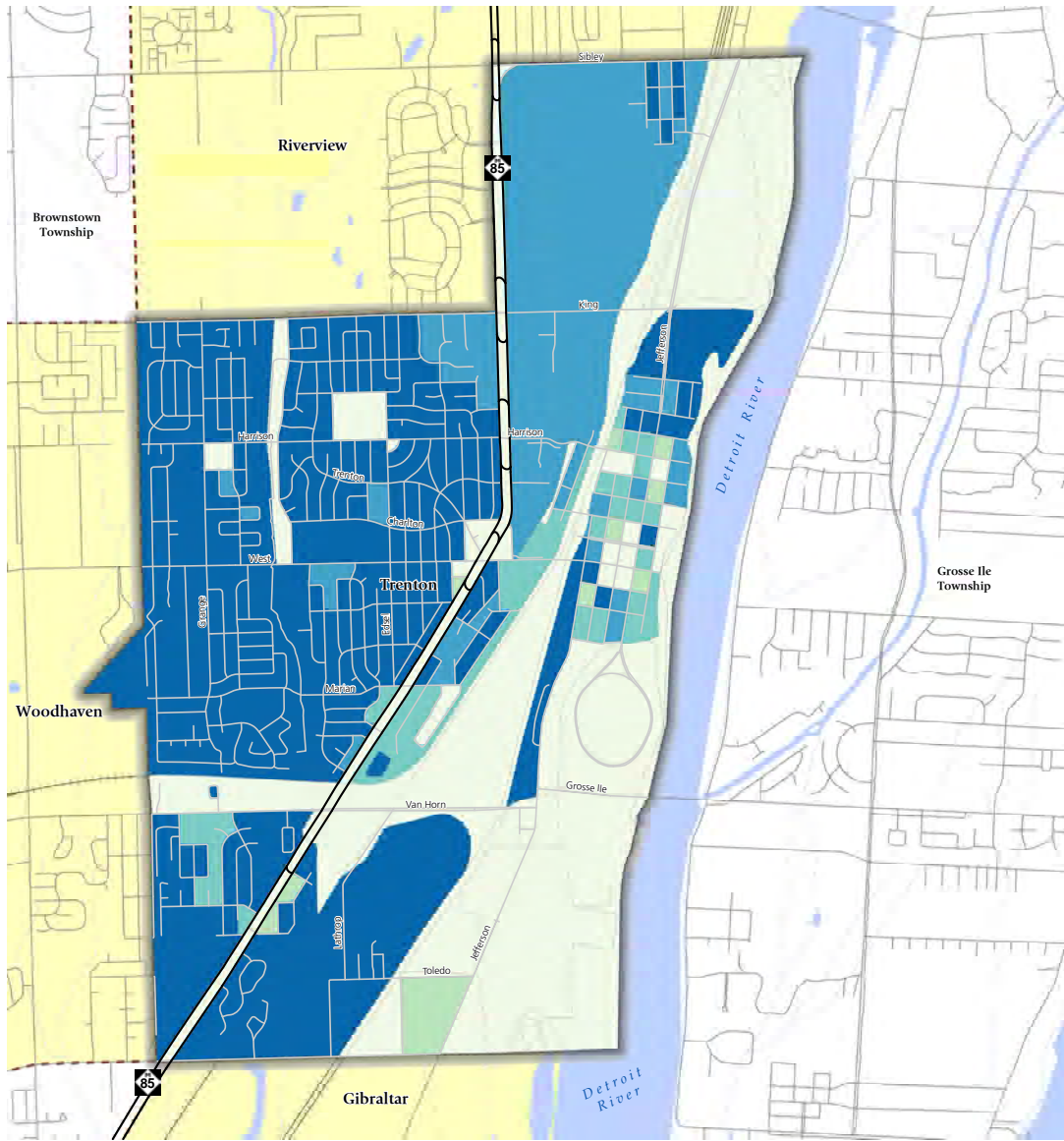
Trenton's Rental Inspection Program is part of the Housing Sale Inspection Program. The City offers a Certificate of compliance which is issued by the Engineering and Building Department which certifies compliance with the provisions of the codes and ordinances of Trenton for all rental dwellings and rental units. A current certificate of compliance is good for three years.

Affordable Housing



CITY COUNCIL DRAFT 2017-03

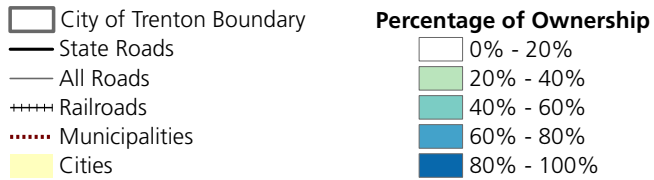
Trenton Coast Resiliency Master Plan



CITY OF TRENTON

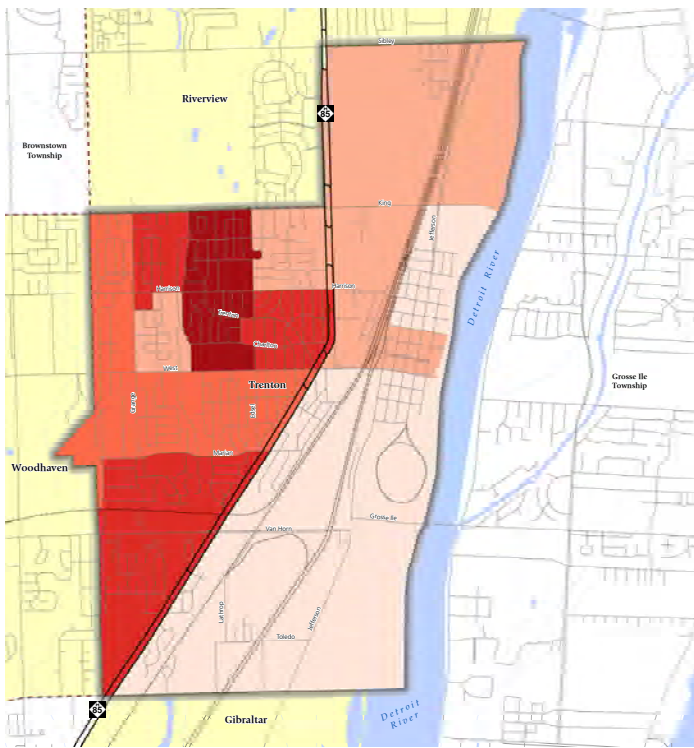
Homeownership Rates

Data Sources: State of Michigan Geographic Data Library, City of Trenton, U.S. Census Bureau

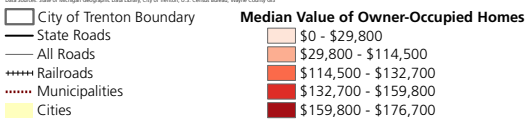


Beckett&Raeder

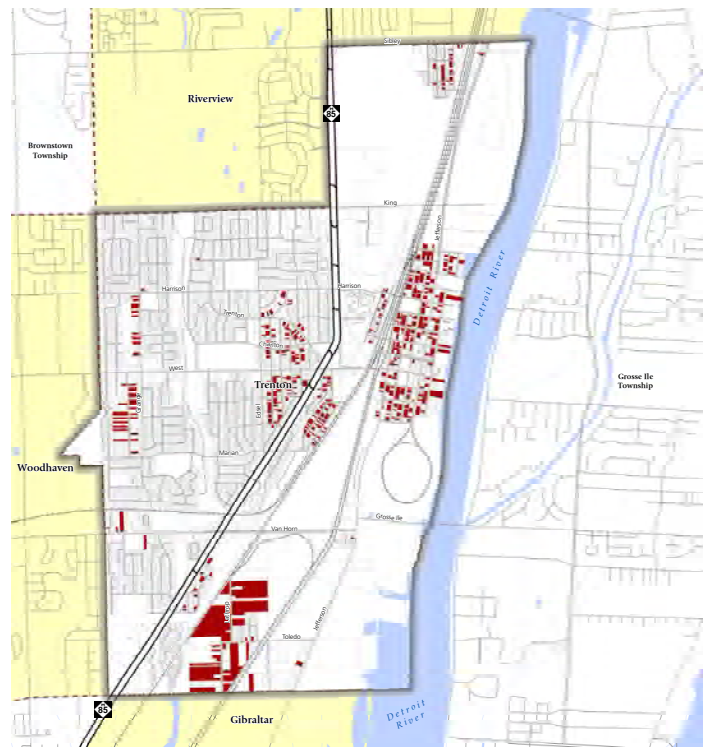




CITY OF TRENTON
Median Value of Homes



Beckett&Raeder



CITY OF TRENTON
Vulnerable Structures



Beckett&Raeder

A housing system is established for those who cannot afford a conventional mortgage. A search on HUD.gov shows that there are four affordable apartment developments in Trenton that cater to low-income groups, 3 of which are designed for families, and 1 for the elderly

- o Concord Townhouse Cooperative (several phases throughout the 1970s)
- o South Glen apartments (~1977)
- o Southwicke Square Cooperative (1970)
- o Trenton Towers Cooperative (1973)

In an attempt to deconcentrate poverty, HUD has drawn maps with boundaries around areas of high poverty and high minority populations and encourages the use

of housing choice vouchers outside of these areas. Trenton does not have any restrictions for accepting more affordable housing units, meaning that it could receive more in the future. The state agency Michigan State Housing Development Authority (MSHDA) runs the Housing Choice Voucher Program for those whose total gross income is under 30% AMI. They also manage the Emergency Solutions Grant for short term rental and utility assistance.

SENSITIVITY

Older structures may be at greater risk of damage from a variety of conditions. Structures in flood-prone areas and adjacent to waterlines are at higher risk of flooding. Due to the date of construction, the affordable

housing units are not considered sensitive structures. However, maintenance plays a big role in protecting structures from severe weather events.

When structures were built prior to 1940 in Michigan, a more porous concrete was used in construction that allows a greater amount of water to quickly flow into these foundations. These sensitive structures, when combined with lower median home values, represent structures that are unlikely to invest in flood protection measures and likely to have the original materials that would make them prone to flooding damages.

Transportation

The transportation network defines the pattern and shape of land uses in

cities, but can also play a significant role in community resilience. The transportation networks that communities rely on for day-to-day movement of goods and people become increasingly influential when dramatic events are on the horizon. It is essential to understand these aspects of the built system in assessing resiliency and community responsiveness.

INDICATORS

Access to a vehicle

Three percent of Trenton households do not have access to a personal vehicle. This is a situation that is three times more common nationally (9%) and four times more common in Wayne County (14%). Perhaps unsurprisingly, then, Trenton's Walkscore is just 35, classifying it as a "car-dependent" City. Trenton is excelling at car culture; the challenge is to ensure that the success of this travel mode does not come at the expense of choice.

Drive alone to work

Ninety percent of Trenton's workers drive alone to work, while most of the remainder carpooled (6.1%) or worked from home (2.6%). The average commute of 23.7 minutes is slightly lower than the national average of 25.7 minutes. There are 1.66 vehicles per household in the City, which is in line with State and US figures (1.68) but above Wayne County



Figure: Commute Shed

(1.45). Nevertheless, 251 households do not have access to a car, which would equate to over 500 people on average, who likely belong to the most vulnerable segments of the population.

Road maintenance assessment

The Michigan Transportation Asset Management Council uses a road maintenance system called Pavement Surface Evaluation and Rating system (PASER). This information is updated annually and the most recent results are from March 2016. According to this ranking system, 34% of Trenton's lane miles rank "good," 34% rank "fair," and 36% rank "poor." Roads in poor condition mean that routine maintenance will not fix the road; they must be completely replaced. Correspondingly, sections of the most

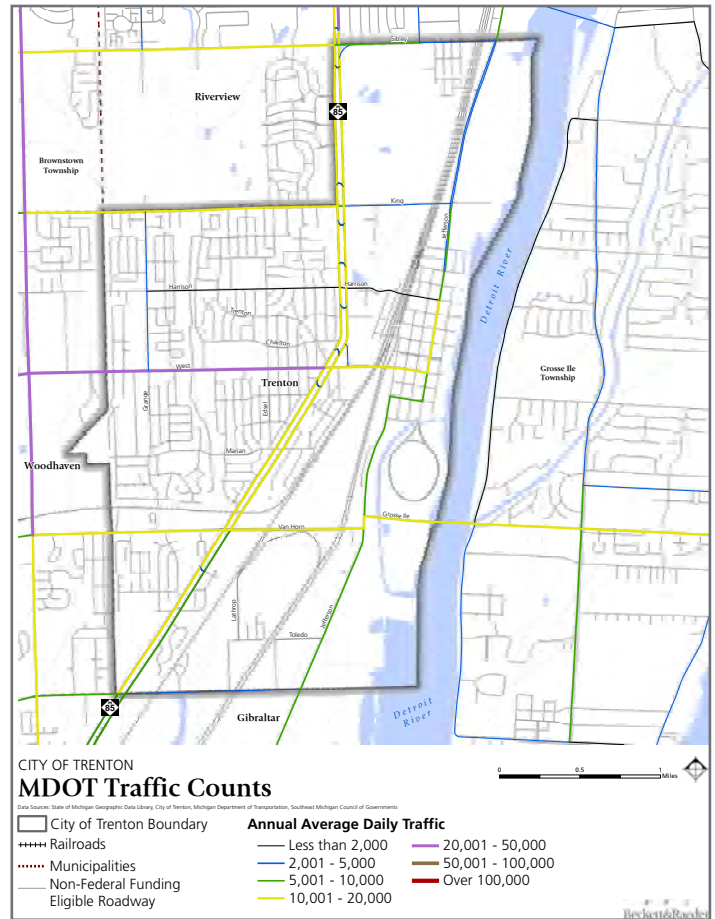
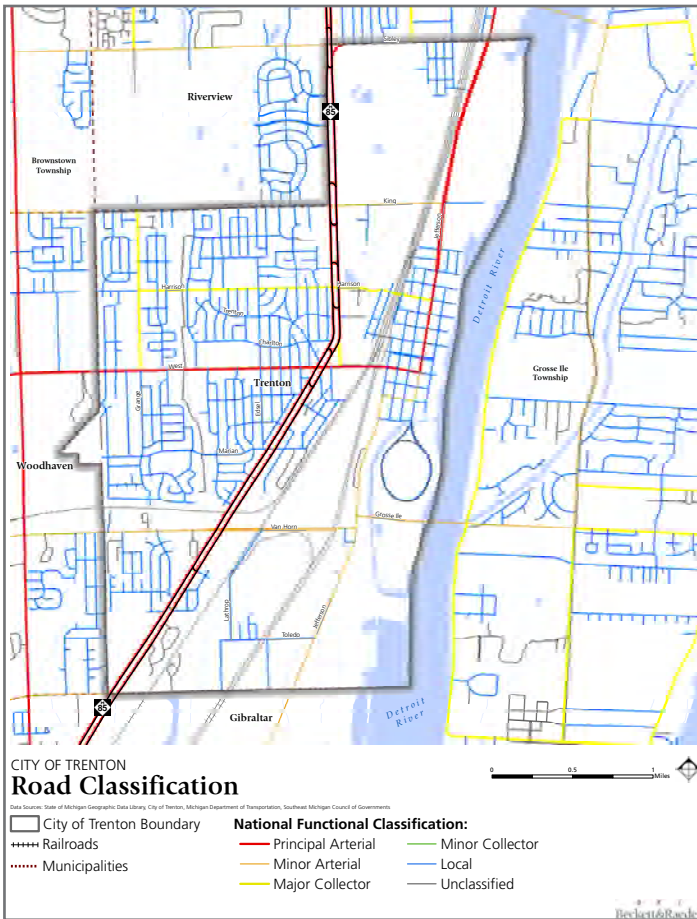
heavily transited thoroughfares are ranked poorly:

- West Road (west of highway 85)
- Jefferson Ave (sections adjacent to Elizabeth Park and to the McLouth Steel plant)
- King Road (west of North McLouth Park to Allen Road)
- Van Horn Road (west of M 85)
- Gross Ile Parkway
- Vreeland Road (east of M 85)

Trenton also has 9 bridges; 2 are in good condition, 6 are fair, and 1 is in poor condition. 2.56% of the bridges deck area (in square feet) is structurally deficient.

Street closures due to flooding

Flooding has generally not been an



issue except at King Road as a result of the Frank and Poet drain.

Street network redundancy

When a street network is not on a grid, it becomes increasingly difficult to get somewhere if access points are flooded. Cul de sacs and long curvilinear streets exacerbate access problems because they do not provide a short, direct path to safety. The City of Trenton can help those with blocked road access by strategically selecting sites less prone to flood as pick up or distribution points.

SYSTEMS

Street Network

There are no interstates in the City to serve as major access routes.

The nearest interstate is I-75, approximately three miles west of City Hall. M-85, also known as Fort Street, is a state trunkline highway that runs north and south through Trenton and serves several Downriver suburbs of Detroit as well as neighborhoods in the City itself. West Road is one of the City's major east-west roads. Others include Vreeland, Van Horn, King, and Sibley.

The heaviest traffic within the City travels along West Road for the segments west of M-85. On average, between 20,001 and 50,000 vehicles travel along this road every day. Other frequently-traveled roads include the stretch of Van Horn through the City and leading into Grosse Ile, the section of Jefferson in the downtown stretching from West Road to

Harrison Road, and almost all of the sections of M-85 (Fort Street). These three roads average between 10,001 and 20,000 cars per day. Interestingly, the one segment of M-85 heading north into Trenton from Vreeland to Van Horn only sees half the amount of the vehicles (between 5,001 and 10,000) that every other segment of M-85 witnesses on an average day, perhaps implying that more people leave the City or use M-85 as a commuter route than those who drive into the City for goods, services, employment, or otherwise.

Examining the National Functional Classification (NFC) ratings for roadways as defined by United States Department of Transportation, provides insight into local road variations and funding eligibility. This

rating system was developed by the Federal Highway Administration in the 1960s and is still used today to classify streets in accordance to traffic and use. Local and unclassified roads are not eligible for federal funding, signifying that road repairs on the majority of roads within Trenton (approximately 70%) would require other funding sources. The remaining 30% of roads are other principal arterials, minor arterials, and major collectors, including West, Jefferson, Harrison, Van Horn Roads and highway M-85.

These transportation systems do more than define land uses and patterns – they also define the movement and circulation of water. During any rainstorm, water must find a path to flow upon, following impervious, flat surfaces, which typically include parking lots, sidewalks, and especially roadways. These surfaces determine how and where water moves and direct it through a variety of foreign substances that are then found within runoff water. Within the City of Trenton, much of the area is urbanized, including large industrial parcels of land, massive parking lots, and a significant amount of paved surfaces along roads. Green spaces absorb excess water and runoff, aiding the City's water infrastructure and its capacity. The percent of impervious surface within the City is quite high, and given the City's urbanized characteristics, few green spaces exist to offset grey infrastructure.

Figure: Non motorized Circulation





Nonmotorized Circulation

In 2016, Wayne County's Elizabeth Park in Trenton and along the riverfront were identified as a part of the Downriver Linked Greenways Initiative. This community-driven regional campaign aims to improve nonmotorized transit options in the downriver communities and provide vital linkages for pedestrian circulation. Planned trail development along Jefferson Avenue will connect Trenton and Elizabeth Park with Grosse Ile, Humbug Marsh, the Detroit River International Wildlife Refuge and its new visitor's center, John D. Dingell Park, and Belanger

Park. Planning has been underway and construction is expected to begin in fall of 2016.

Aside from this planned nonmotorized trail, smaller hiking trails exist in Elizabeth Park, natural foot trails in South McLouth Park, as well as the pathway along the Frank and Poet Drain. However, nonmotorized transit options are limited in the City currently, and other trail deficiencies were identified in the Trenton Parks & Recreation Master Plan of 2013. Developing linkages to the new planned nonmotorized trail can provide residents alternative recreation and transportation options, while promoting a healthy

community, improving the quality of life, and contributing to a more sustainable City.

Transit

Transit options exist within Trenton, and have expanded over the years. The City of Trenton's improvements in transportation street standards and policies will encourage the development of a complete streets network throughout the community to create a more balanced transportation system. The Suburban Mobility Authority for Regional Transportation (SMART) regional bus system offers rides based on an

advance reservation service, providing rides within 10 miles of the requested starting point, while also providing a couple of constant transit lines.

The Community Route “Downriver 160” operates in the northern portion of the City and connects the Riverview, Wyandotte, and Southgate area to Trenton, while the Park & Ride “Downriver P & R Route 830” continues even further north into Lincoln Park, Melvindale, and onward into downtown Detroit.

This is a helpful service, surely utilized by both younger and older populations that have restricted access to vehicles, but it does not provide round-the-clock service. The 160 Route operates between 6:00 a.m. and 8:00 p.m. on the weekday and even more restrictive hours, 9:00 a.m. to 5:00 p.m. on Saturday, with no service Sunday. The 830 Route provides northbound service during the weekday from 5:50 a.m. to 8:49 p.m., with southbound service from around 3:45 p.m. to 6:35 p.m., and no service during the weekend. The routes do not serve Trenton in the late weekday evening hours, evening hours on Saturday, or Sunday. This option hinders those that rely on public transit options for their daily work commute, particularly those working during the evening hours and weekends. Options to expand ridership and ride service, in conjunction with neighboring communities, could increase the resiliency of the City particularly

regarding emergency preparedness and economic opportunity.

Rail

The formation of rail lines within Trenton have historically defined and shaped both the physical lands and local economy. Railroads have influenced the development, use, and production of industrial lands along the waterfront, many of which remain and some of which are vacant. Although the rail lines remain in Trenton, residents have expressed their preference for the remaining industrial landscape to change.

Several rail lines exist in the City, and constitute a significant portion of land use immediately adjacent to industrial properties, the waterfront, and some portions of the downtown. They are operated by Canadian National Railway, Norfolk Southern Railway, and other owners / operators, but no passenger rails exist in this area to alleviate the insufficient alternative transportation options within the Metro Detroit area. Rather, all of the rail lines within Trenton are used for commercial and/or industrial shipping purposes.

As the economy has picked up, railroad usage has increased. Because the rail lines bisect the City running north and south, and at the Van Horn cross running east to west, it can be extremely difficult to access the South end, particularly the hospital.

Deep Water Port

A considerable asset within the City of Trenton is the deep water port, located along the riverfront on the northern edge of the City, near the former McLouth Steel site. However, any potential or future uses with this port are limited. In 2002, the State of Michigan’s 91st Legislature held a regular session to discuss, approve, or deny motions and resolutions on matters within the State. The Riverview Trenton Railroad Company had been trying to develop riverfront properties, including those within Trenton, for the purpose of a rail, truck, and vessel-served intermodal transportation facility which would require deep port access. The Legislature, however, expressed strong opposition to these plans after discovering that the construction and operation of such a facility would cause adverse impacts on the region and Detroit River. Some of the problems mentioned were increased waterborne traffic that the river does not have proper capacity to handle, additional bridge openings on the River, which would isolate the 14,000 Grosse Ile residents from emergency services, and would create additional rail and vehicular traffic that could block streets, isolating hospitals and depriving Trenton and Riverview residents of emergency services. Furthermore, the Senate found that the facility would be inconsistent with the work underway along the Detroit Riverfront, of which local

municipalities and the state had actively been trying to improve its appearance and health of the river, and could harm the Detroit River International Wildlife Refuge. Even the communities of Riverview, Trenton, Wyandotte, and Grosse Ile all unanimously passed resolutions to oppose the project. It was therefore determined that this proposed development would threaten public health, safety, and general welfare.

Both the Michigan House of Representatives and later, the Michigan Senate, opposed the creation of this intermodal facility, finding the negative impacts on Trenton and the surrounding area too tremendous to ignore. When examining any potential new developments or uses for the former McLouth Steel site and surrounding properties, it would be wise to use this previous ruling as a guide. The conditions of the river have not drastically changed, the importance of the Detroit International Wildlife Refuge has only grown, and the significance of improving the Detroit River coastline has only captured increasing momentum since 2002. Exploring adaptive reuses and redevelopments that strengthen the vibrancy and value of the coastline would be much better suited for the City and aligns with the preferences of many residents. Furthermore, any deep water port uses should

be confined to a smaller scale that fit within the existing capacity for Trenton and the River channel.

SENSITIVITY

In time of need, the role of infrastructure is to be reliable to get people out of crisis, and/or to bring resources to those in need. Trenton's infrastructure is sensitive to the effects of climate change. Over one-third of its roads need to be replaced, and non motorized paths are limited. Due to high levels of impervious pavement which exacerbate urban heat island effects and flooding, and few greenways, Trenton's infrastructure may not work to alleviate people from stressors as desired.

Geographically, the neighborhoods between the railroad tracks and the coast are the most sensitive to transportation disturbances. With only Harrison, West, and Van Horn roads leading westward to access the rest of the City, an evacuation from the coastline could be slow. Jefferson provides routes leading north and south, which would be effective in dispersing from a highly localized threat such as contamination, but its course paralleling the coastline would be of limited use in extreme flooding.

Energy

INDICATORS

Below are some indicators of Trenton's sensitivity to a power outage. Otherwise, there are no strong indicators of a resilient energy system as that would require multiple different sources of renewable energy that can be integrated and distributed in alternative ways than our current system. The Trenton Code of Ordinances does not have any specific provisions for upgrading its energy system. However, the state of Michigan has outlined plans to have 40% of its energy come from energy waste reduction, increased natural gas use, and renewable sources by 2025. This is the first step towards harnessing and storing a diverse energy portfolio in order to strengthen a community's ability to protect itself from power outages.

Home heating and cooling

Ninety-three percent of Trentonites use utility gas in their homes. When preparing for a resilient future, it is important to know how homes are heated and cooled in order to know how many people will be affected by a power outage. Power outages can have a dangerous effect on the health and safety of residents, especially during a prolonged heat or cold period. 5.6% use electricity, 0.3% use fuel oil, kerosene, etc., and 0.1% use

Table : City Departments with Generators

Department/Building	% Circuit Run by Generator
Police	90%
Fire	90%
Public Works	60%
Parks & Recreation	X*
West Field Activity Center	X
Waste water Plant	70%
4 Remote Lift Stations	X
Jefferson Pumping Station	X

*The X means that the department has a generator but the exact percentage run by the circuit is unknown

Type of Impact	Annual Incidence	Valuation
Deaths	58	\$420,000,000
Heart Attacks	93	\$10,000,000
Asthma attacks	920	\$48,000
Hospital admissions	43	\$1,000,000
Chronic bronchitis	34	\$15,000,000
Asthma ER visits	50	\$19,000

Table : Human Health Impacts

other fuel. These estimates however should be double-checked with more reliable surveying methods because the margin of error is often larger than the estimate.

Site- and Community-level energy generation

Some of Trenton’s City departments have backup generators in case of a power outage. Table 6 shows which buildings or City departments have generators, and also the percent of the circuit run by the generator in case of an emergency. Essential services would remain active albeit at a reduced capacity.

SYSTEMS

Gas and Electric

In April 2016, two of the three units of DTE energy plant were closed. The entire remaining plant is scheduled to

close between 2020-2023. The closure of this coal-powered plant is a result of the federal legislation the Clean Air Act. While this closure has serious negative economic effects for Trenton, government and private studies show the consequential external costs of living in close proximity to a coal plant in terms of human health. For example, the instances of exposure to fine particle pollution (i.e. soots, heavy metals, sulfur dioxide, and nitrogen oxides) from the Trenton Channel Power Plant is displayed in the table Human Health Impacts, and shows the monetary valuation of its effects up to 2012. The valuations represent unaccounted for harm to the public. These dollars amounts and incidence are likely to continuing to rise; the average annual persons per 100,000 that die in Wayne County are between 3-7 from existing power plants.

SENSITIVITY

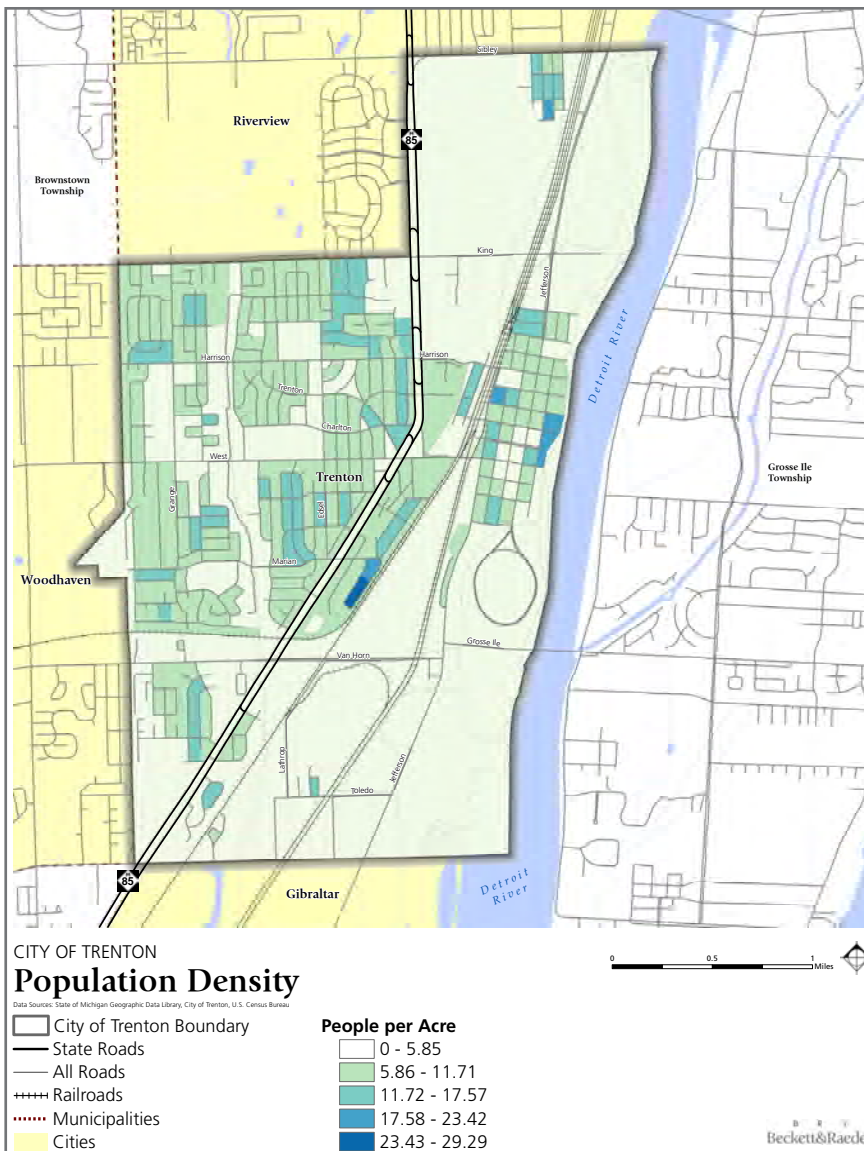
With the DTE plant closed, Trenton may experience temporary negative economic effects, but eliminating a major polluting stressor from your environment means that residents who suffer from respiratory and heart problems will be less severely impacted. Energy is no longer coming from the local DTE plant, but Trenton businesses and homes remain sensitive to a power outage until the energy is generated and transmitted differently.

Food

INDICATORS

Rainfall levels

On average there was a drought every 20-25 years recorded over the last 60 years in Michigan. The effects of



drought, depending on its severity, will primarily hit those working in agriculture first and hardest. Drought is a major stressor to crops and livestock. During the 1998-2001 drought, one-third of Michigan’s fruit, vegetable, and field crops were ruined due to lack of water. Consequently, the USDA issued an Agriculture Disaster Declaration for 82 counties, including Wayne County. While

Wayne County is the most populated county in the state, it still contains over 13,000 acres of agricultural land as of 2008.

Food deserts

Trenton does not have grocery stores within its boundaries, but does a farmer’s market twice a week during the summer.

Based on the population density map,

the City of Trenton can see where clusters of residents would struggle to purchase food in the event of extreme weather. For those with limited mobility or if the roads are closed, not having a grocery store within a short distance will become complicated in the event of a storm or heat wave. To expand its service reach, Trenton could also approach nearby grocers with a Mutual Aid Agreement to ask for their assistance in distributing food to Trentonites in a moment of crisis.

SYSTEMS

Michigan is home to a large agricultural network spread across the state. The state of Michigan’s agricultural sector is valued at \$645 million annually, making it the 4th largest agriculture producing state in the country.

SENSITIVITY

Resiliency in terms of food security is a difficult topic to frame appropriately. Our agricultural system is so globally intertwined that we could face adverse effects in Michigan if there were a disaster in a far away country that exported us a large portion of produce. Michiganders could also feel negative effects if the Midwest experienced a devastating heat wave or storm, making it very difficult to determine how or if it’s necessary to reform the system for improved

resiliency.

TRENTON IS CONNECTED

Communications

INDICATORS

Access to Internet

Most people in the modern era are reliant on the internet for daily news, social interaction, “running” errands, and instant communication.

Access to internet makes our lives infinitely more convenient, yet in the event of a disaster, people may have to function in a world without instant access. Trenton, like most cities, does not provide a public internet system. Residents pay a private provider for access to internet. 99.9% of Trentonites have internet through cable, and just .02% use fiber technology. Trenton residents are well connected to the internet, however a resiliency plan problem solves for recovery when the connection is lost, or how to secure more resilient connection.

SYSTEMS

During Hurricane Sandy, most of the areas hit by the storm lost power, except for one unlikely place. In a Brooklyn neighborhood called Red Hook, the power stayed on. Open Technology Institute (OTI) had

opened there in 2005, and created its own wifi system. Using a “mesh” design, OTI became a hub in the neighborhood because they could maintain a connection with its users, provide charging stations and Twitter updates and a platform where people could report online that they needed food or a pump. OTI was providing services more efficiently than the City. The City is now adopting this design after they sent out an RFP for building autonomous communication networks and received over 200 proposals.

Similar to the conventional electric grid, a router in the internet world has worked as a spoke and hub, where the hub directly connects to the internet, and the spokes rely on the hub’s connection. If the hub goes down, then the entire wifi network is down. The mesh network works when the routers are connected to each other. This approach is also easily scalable by simply adding more routers to the network. In this case, if one router goes down, only part of the network is affected, as opposed to the whole system. The mesh design is not only in practice in New York City. In Trenton’s backyard, the Detroit Community Technology Project is codifying the process of building local wifi systems and has already installed them in seven communities.

SENSITIVITY

Currently, Trentonites are sensitive to

an internet collapse if the wifi network goes down because they are reliant on private provider’s traditional spoke and hub design.

Intergovernmental Relations

INDICATORS

A coordinated and documented effort that plans with the appropriate governmental departments to minimize the harmful effects of an emergency is an indicator of strong intergovernmental relations. Trenton has made great strides by investing in a Resiliency Plan, Emergency Operations Plan, and an Emergency Management Plan which identify potential disasters, and how to deal them, but also identify other larger organizations or higher government that can assist during the disaster and recovery phases.

SYSTEMS

The Trenton Code of Ordinances has a designated section for emergency management, in addition to having a FEMA Coordinator on staff. An emergency management organization and an emergency coordinator were created to take full advantage of the City’s knowledgeable personnel. The mayor appointed five deputy coordinators who are responsible for covering the following areas: financial services, law enforcement, engineering services, and health and

medical services. The ordinance states that all City employees shall cooperate and support the mayor and the emergency management coordinator. During an emergency, emergency orders will supersede existing ordinances. Trenton has not only thought about emergency measures but has given them some teeth.

Separately, the City of Trenton has an Emergency Operations Plan, a plan that was mandated by the Michigan Emergency Act (PA 390) and recently updated in June 2016 for the next four years. This plan provides a checklist for how the City will work with other agencies to mitigate the effects of a disaster, and more importantly which City, state, or federal agency will be responsible for certain essential tasks in a response situation. Tasks under mitigation include having an Awareness Week for severe winter weather and education on warning systems, home safety, preparedness kits, and safety procedures.

SENSITIVITY

In the Wayne County Hazard Mitigation Plan Update from 2013, stakeholders were surveyed on how they would rank crisis mitigation strategies. The highest ranked responses centered on communication. The respondents ranked “improve agency coordination”

and “disseminate public education materials” and “encourage residents to develop a family escape plan and disaster supply kits” as their priorities. This indicates that despite the County’s planning efforts, individuals do not feel prepared or aware of how to handle a disaster. There is a disconnect between how sensitive the community feels to potential stressors and the extent that they are protected from stressors within Wayne County. While Trenton was a stakeholder in this plan update, the survey responses do not necessarily reflect Trentonites exact priorities because they were aggregated at the county level.

Emergency Preparedness

INDICATORS

The presence of a full-time Emergency Management Coordinator on site is a strong indication of emergency preparedness, and is a fairly unique feature of a City government. There are only 26 municipal emergency management sites in the state of Michigan.

SYSTEMS

The Office of Emergency Management is in charge of operating and testing the severe weather sirens located throughout the City. The

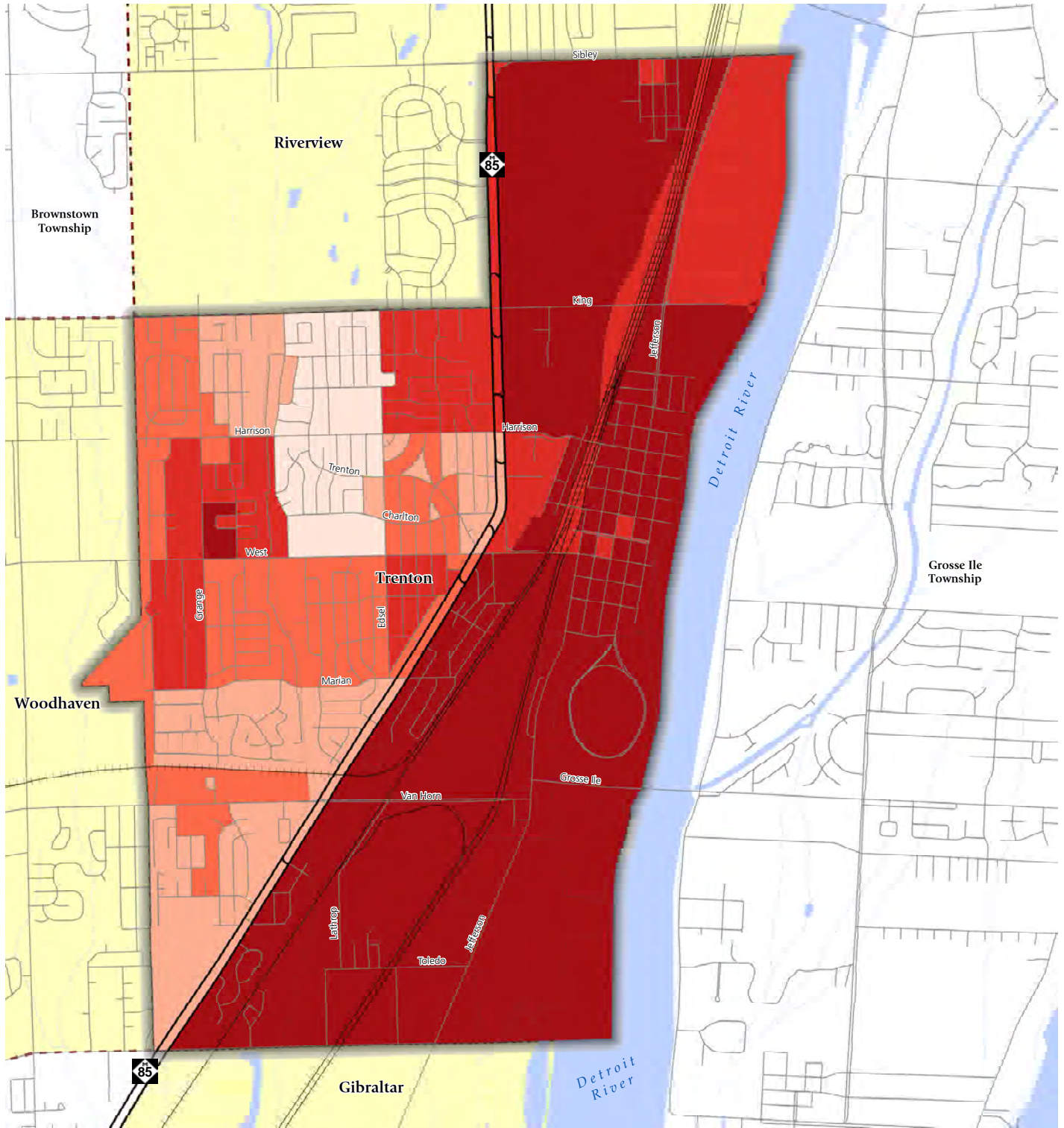
current Emergency Operations Plan outlines each City department’s responsibilities. The plan also lays out how to escalate requests for assistance to Wayne County, the State of Michigan, and FEMA.

SENSITIVITY

Despite preparation, the sensitive groups identified in this plan will remain sensitive to disasters because the Emergency Operations Plan focuses mainly on disaster response instead of investments in how to mitigate or increase individual’s adaptive capacity.

Where it will hit: Vulnerability Assessment

Structures were found to be sensitive if built prior to 1940 and were assessed at a lower median home value. If a structure were built prior to 1940, including residential, commercial, and industrial uses, then it was given a point value of 1, while those built after 1940 received no points. Similar to the Natural Breaks method of grouping for population statistics, sensitive structures were identified in the same fashion. The range of median home values were grouped accordingly and ranked, with structures in the lowest median home value group receiving 5



CITY OF TRENTON

Sensitive Structures at Risk

Data Sources: State of Michigan Geographic Data Library, City of Trenton, U.S. Census Bureau, Wayne County GIS, FEMA, NRCS

- City of Trenton Boundary
- State Roads
- All Roads
- Railroads
- Municipalities
- Cities

Vulnerable Structure Point Totals

- 1 Point
- 2 Points
- 3 Points
- 4 Points
- 5 - 6 Points



points, while structures in the highest median home value only receiving one point. These point systems were combined to produce an overall sensitive structure map.

Sensitive structures exist in virtually all block groups within the City, although some neighborhoods within the northwest portion of the City are stronger and less vulnerable than others. Neighborhoods immediately east of the Frank and Poet Drain, and north of West Road, are found to be the least sensitive in all of Trenton due to the relatively younger age of the structures and high residential property values. As property values decrease west of the Frank and Poet Drain, where some older structures are also located, the buildings become increasingly vulnerable. A similar mix is found south of West Road, north of Marian Road, and east of Fort Street, where homes were generally built after 1940 and home values fell within an average range, proportionate to the City's range of household value. South of Marian Road and west of Fort Street, these neighborhoods are stronger with higher home values and few older structures. East of Fort Street, however is a different story. Heading towards downtown, there is a transition to older structures, with a higher proportion of those built prior to 1940. Similarly, we see

home values here in the lowest two groupings, indicating that structures here are worth less than those in stable neighborhoods west of Fort Street. Although waterfront real estate is traditionally more valuable than inland property in Michigan, it appears this trend does not follow in most of Trenton, perhaps due to the leftover industrial lands surrounding the downtown. The North Trenton neighborhood off of Sibley Road and west of Jefferson exhibit similar results, as homes here were predominantly built prior to 1940 and home values fall within the lower two groupings of median home values. The traditional neighborhoods of west Trenton are considerably less sensitive than those on the eastern side of the City.

What we value

Physical Goal 1: Redevelop the waterfront so that it becomes a community asset that provides business and recreational space

- Promote the riverfront as an ecotourism destination
- Convert all vacant sites into anchor institutions, businesses, parks/green spaces, and educational or medical facilities

Physical Goal 2: Develop and improve infrastructure for recreational and functional uses

- Promote the integration of sustainable infrastructure within planned infrastructure improvements
- Develop recreational trails, facilities, and green spaces to attract young residents/families, improve recreational opportunities for the community, enhance tourism, and absorb environmental stressors

What we can do

Physical Objective: Alter the physical landscape so that it better serves the community in the case of an emergency.

LAND USE REVIEW

Land use review involves examining and possibly reforming the land use practices and zoning code to rearrange the built environment in a way that better protects the health, safety, and well-being of the residents.

Given that data indicates the only certainty is more intense weather events, it is worthwhile to review whether major community assets and institutions are located in highly vulnerable/exposed areas. With that in mind, land use reform could include prohibiting development in hazard-prone areas such as along the coast, in floodplains, or in areas far removed from infrastructure networks. This

is known as risk-based land use planning. The World Bank reports that land use plans can use a combination of regulations or incentives to discourage the private sector from building in hazard-prone areas. The land use plan should not encourage additional risk to the community in the event of a disaster, but rather control and direct development to safe locations. As a last resort, if a structure or institution is located in a vulnerable zone, the municipality should consider relocation (after conducting a cost-benefit analysis).

Or, if development is needed in hazard-prone areas such as floodplains, then the City can provide incentives for business or homeowners to adopt floodplain resiliency measures. For instance, for both homes and businesses the most commonly damaged items are building equipment like switch gears, HVAC, boilers, furnaces, sump pump power feeds, etc. One requirement could be that any development in or near a floodplain must have equipment elevated an additional 1-2 feet higher than the base flood

elevation mandated by FEMA. More so than saving building owners money, this requirement may prevent people from having to evacuate their homes because they will still have access to heating, cooling, and electricity.

INSURANCE

Monitor FIRMs to make sure that they stay up-to-date. Most of the FIRMs created for Wayne County were updated in 2012. With more accurate information, homeowners and business owners can make more informed decisions about where they chose to live and the City can zone appropriately to protect its residents. Moreover, the City may consider a buy-out program for buildings that remain in the floodplain. The purpose of the buy-out program is to restore the land to its vegetative state so that it serves the community as a buffer and possibly a place for recreation, and prevent recurring and costly damage to private and public property. Otherwise, it could become increasingly difficult to attract new business if they feel their property is at

increased risk of flooding.

MULTIMODAL TRANSPORTATION

When planning for a natural disaster, it is important to consider multi-modal alternatives for evacuation. Children, the elderly, the disabled, and lower-income groups may not have access to a vehicle to flee an impending storm, or drive to a cooling center. 251 households in Trenton do not have access to a car and therefore require a transit service to relocate them temporarily in the case of a disaster. Before Hurricane Katrina hit New Orleans in 2005, the Mayor announced the first-ever mandatory evacuation order. However, over 51,000 residents did not have access to a vehicle, leaving them stuck in the flooded City with little access to shelter and food and water. Without a plan to address transporting the most vulnerable segments of the population to safe shelter before the storm hit, thousands were left behind. Successfully monitoring a storm is the first step, but the City may also need to invest in a transportation system for storm conditions that reaches and removes carless individuals from a dangerous situation.

AMENITIES FOR PROLONGED HEAT WAVES

With predicted cooler winters and hotter summers, most households will eventually spend more on air conditioning than heating their



homes. Weatherizing homes for low-income households lowers their monthly utility bills.

Investment in improving a City's tree canopy has more than "triple bottom line" benefits. While it is an amenity for combating the effects of prolonged heat waves, the benefits of trees are abundant. First, tree canopy and vegetation help mitigate urban heat island effect, in addition to providing shade, sequestering carbon, and removing pollutants from the air. Increased temperatures are associated

with respiratory health risks such as asthma. Impervious pavement absorbs heat; as a result cities are typically a few degrees warmer than the neighboring hinterland. A healthy urban tree canopy can help reduce resident's discomfort on hot days. Increased vegetation and green space also help cool cities down.

Cooling centers are climate-controlled places where people can go to escape the heat. These are especially important for citizens that do not have access to air conditioning at

work or at home. Michigan already has a tradition of using libraries and other public institutions as cooling centers. In the future, as this service becomes higher in demand, an emphasis must also be placed on spreading awareness. Grand Rapids aims to have a heat wave safety checklist disseminated through appropriate channels such as the American Red Cross and the Public Health Services Emergency response team. Moreover, these channels can also provide residents with a list of cooling centers where they can find relief from the heat when needed.

INFRASTRUCTURE NETWORK

Currently, our infrastructure networks are single-purpose, under uniform ownership, and as efficient as possible. These characteristics have kept the networks inexpensive and simple, but they do not contribute to resiliency. To do that, our networks need to become integrated, modularized, and redundant.

While seemingly counter-intuitive, redundancy plays a vital role in building resiliency. In the event of a natural or man-made disaster, redundancy or back up facilities is a more reliable approach because it ensures continued critical services

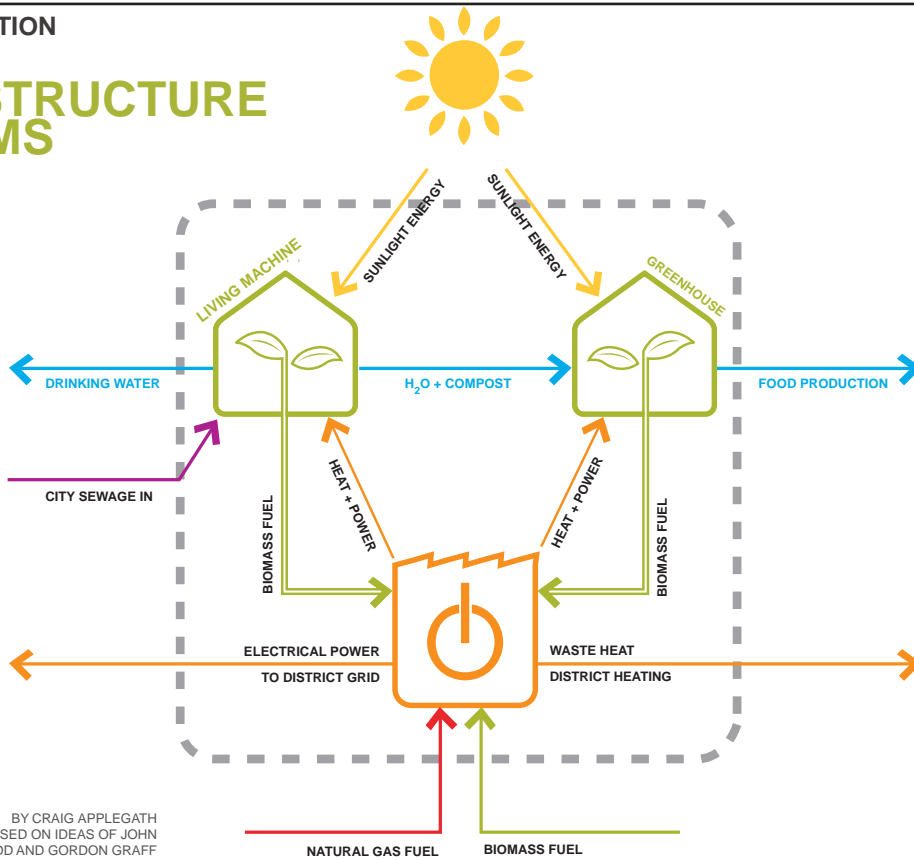
Case Study: Holland, Michigan

Holland, Michigan homeowners who are willing and able to invest \$10,000-\$30,000 in retrofitting their homes will receive a 20% rebate or "on-bill financing" loan programs (repaying the loan through the utility bill) from the City. The City hopes to retrofit 1,000 homes in the next four years. Upon signing up for the program, homeowners will undergo a comprehensive assessment to see where they can implement energy-saving features. Features range from insulation to upgraded appliances; according to the Community Energy Plan homes can be up to 50% more efficient. While this program is framed as a way to save energy, this program and similar ones offer some financial relief to low-income homeowners who may not otherwise have the incentive to invest in their home and/or see the importance of upgrading their home to protect them from severe weather. However, the initial \$10,000-\$30,000 investment could still leave lower-income homeowners unassisted.

MODULARIZATION KEY INFRASTRUCTURE SYSTEMS

THE RESILIENCE CENTRE

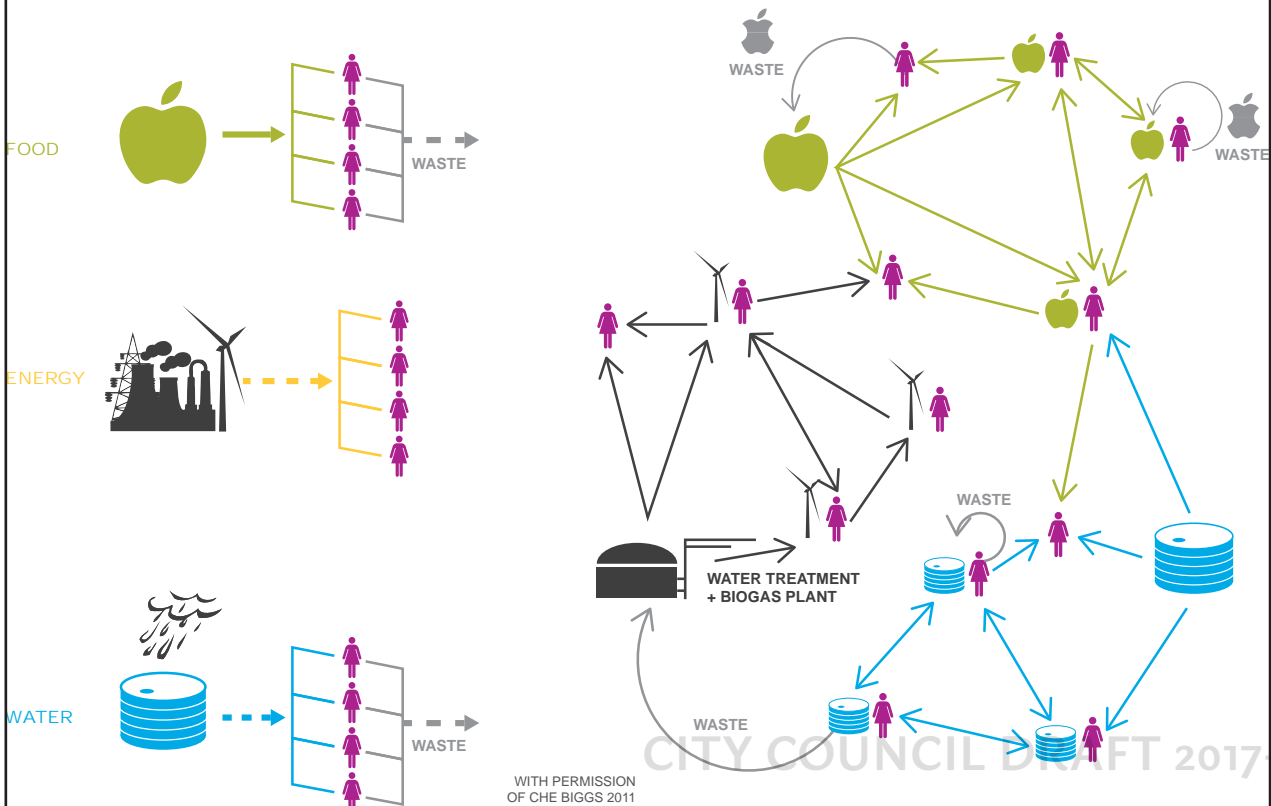
COMBINED DISTRICT POWER, HEAT, WASTE, WATER RECOVERY, FOOD PRODUCTION CENTRE. THIS PLAN WOULD BE SCALABLE - FROM NEIGHBOURHOOD CENTRES TO DISTRICT CENTRES.



INTEGRATED METABOLISM

CENTRALIZED PRODUCTION MODEL

DISTRIBUTED/ INTEGRATED PRODUCTION MODEL



such as electricity. With an additional electric grid, a City can mitigate some potential serious consequences at hospitals, waste water plants, police stations, and private residences.

Having a centralized power plant is more administratively efficient most days of the year, but amidst a recovery it can have catastrophic consequences. One recent example is the Northeastern power outage of 2003, where millions of people from Michigan to New York to Canada experienced the largest black out to date. To prevent such a grave predicament in the future, the City of New Orleans as of 2015 is conducting feasibility studies for modular back-up generators known as microgrids. Microgrids are not only electrical generators but they can operate independently of a tradition grid, and can distribute both renewable and nonrenewable sources of energy. Microgrids, once distributed through the City, are like substations but with the flexibility of scaling up or down as needed. Originally conceived of as a more energy efficient way to distribute electricity locally, this idea is being applied to community resiliency building because of its benefits in mitigating power outages. Moreover, current utility franchise rules forbid

transferring power services over public rights-of-way. This limitation could be ruinous. Community microgrids integrate into utility networks, combine different sources of energy, and distribute them more efficiently and locally for a sustained service. If not feasible to distribute throughout the entire City, then microgrids can be placed at designated emergency shelters to provide power during an outage.

Because microgrids can run on solar power, solar panels become an even more advantageous investment. The benefits of solar panels and their ability to store energy are two-fold. Solar power has mitigating effects on climate change as it reduces emissions, and it also has immediately beneficial adaptive effects because it can provide power to homes during an outage. Even traditional back-up generators have limits because they depend on the amount of diesel stored on site. If a building were to install solar panels and a solar battery, the power generated from the sun is transferred through the panel and stored in a battery.

Finally, our infrastructure systems share inputs and outputs that are not presently connected. Food, water, waste, and power systems can

be intertwined to reduce both. For example, wastewater is well-suited to assisting with food production, and using it for this purpose may be less energy-intensive than improving its quality to return into surface water. Food waste can be turned into energy rather than occupying landfill. The production of energy nearly always produces heat, which can be appropriated rather than dispersed. These systems-level changes are daunting and transformative in equal parts.

WATER INFRASTRUCTURE

Investment in urban infrastructure is critical to building a resilient community. With Michigan already experiencing more precipitation than ever, municipalities may need to consider expanding their capacity to treat water. In 2013, Grand Rapids experienced serious flooding and the City went into a state of emergency. Typically when a sewer plant is overloaded, it has to release untreated water into a nearby body of water. Since 2013, Grand Rapids has invested in a waste water treatment plant called Market Avenue Retention Basin (MARB) which can store an additional 30 million gallons of wastewater. Increasing capacity benefits residents because it reduces the discharge of

untreated water and keeps them safe from contaminated water and water-borne illnesses.



Measures of Preparedness:

One example of how to measure resilience is to align them to quantifiable goals. Below are questions that a community can ask itself about its level of preparedness. These are just some categories that the UN has identified as possible indicators of community preparedness.

The Department of Homeland Security’s Integrated Rapid Visual Screening Methodology has created a free software program that uses probability of occurrence for natural disasters that calculates both risk and resilience. This tool helps with data collection and storage, risk scoring (pre-determined weights for factors), and visualization (linked to Google Earth).

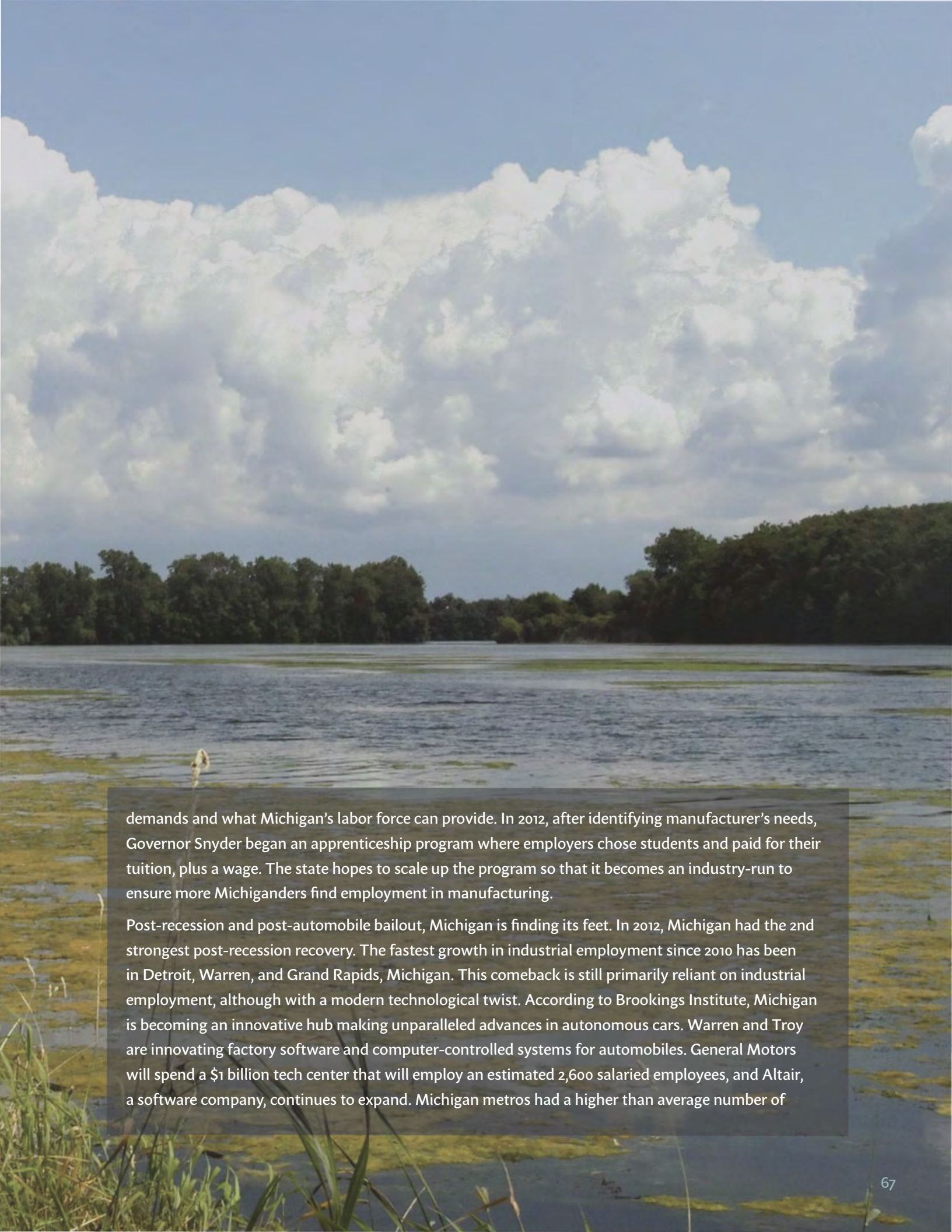
Lands



What's Coming in Economic Change: Postindustrialism

In its heyday, Michigan was the top state for lumbering and auto manufacturing; however the state is still recovering from its gradual fall from the top over the last 50 years. Globalization has not been kind to Michigan. As the U.S. economy's outputs have shifted towards services, Michigan could no longer solely rely on extractive and industrial practices. Moreover a more globally integrated economic system meant that domestic labor could not compete with lower wages in other parts of the world. With huge plant closures and massive layoffs as jobs move abroad or to the South, and the internationally known Detroit bankruptcy, Michigan has struggled to keep up with national economic trends towards service-based, knowledge jobs.

With jobs moving quickly to the service sector, there is a skills gap between what the new economy



demands and what Michigan's labor force can provide. In 2012, after identifying manufacturer's needs, Governor Snyder began an apprenticeship program where employers chose students and paid for their tuition, plus a wage. The state hopes to scale up the program so that it becomes an industry-run to ensure more Michiganders find employment in manufacturing.

Post-recession and post-automobile bailout, Michigan is finding its feet. In 2012, Michigan had the 2nd strongest post-recession recovery. The fastest growth in industrial employment since 2010 has been in Detroit, Warren, and Grand Rapids, Michigan. This comeback is still primarily reliant on industrial employment, although with a modern technological twist. According to Brookings Institute, Michigan is becoming an innovative hub making unparalleled advances in autonomous cars. Warren and Troy are innovating factory software and computer-controlled systems for automobiles. General Motors will spend a \$1 billion tech center that will employ an estimated 2,600 salaried employees, and Altair, a software company, continues to expand. Michigan metros had a higher than average number of

patents per 1,000 workers from 2001 to 2010 when compared to the average U.S. metropolitan areas and higher than average export intensity, indicating that Michigan's economy is integrating innovation and industry better than it has in its recent past.

What is: Existing Conditions and Sensitivity

TRENTON CAN MANAGE ITS NATURAL ASSETS

Land

The land system within Trenton represents the development, growth, and history of the City and the Metro Detroit area. The largest land use is residential with many stable, traditional neighborhoods that are well connected with sidewalks, green spaces, and community facilities. Industrial uses flanked the downtown and dominated the pattern of land use historically, but empty sites now yearn for employment centers, new types of land uses, and connectivity to the downtown. The downtown core, strategically located along the waterfront and near Elizabeth Park, offers tremendous potential to the City and its residents while currently

providing a mixture of commercial, retail, and civic uses. Commercial uses line the major streets, creating corridors of activity and linkages to nearby communities. Assets abound, the City has considerable strength in many of its built and natural systems.

INDICATORS

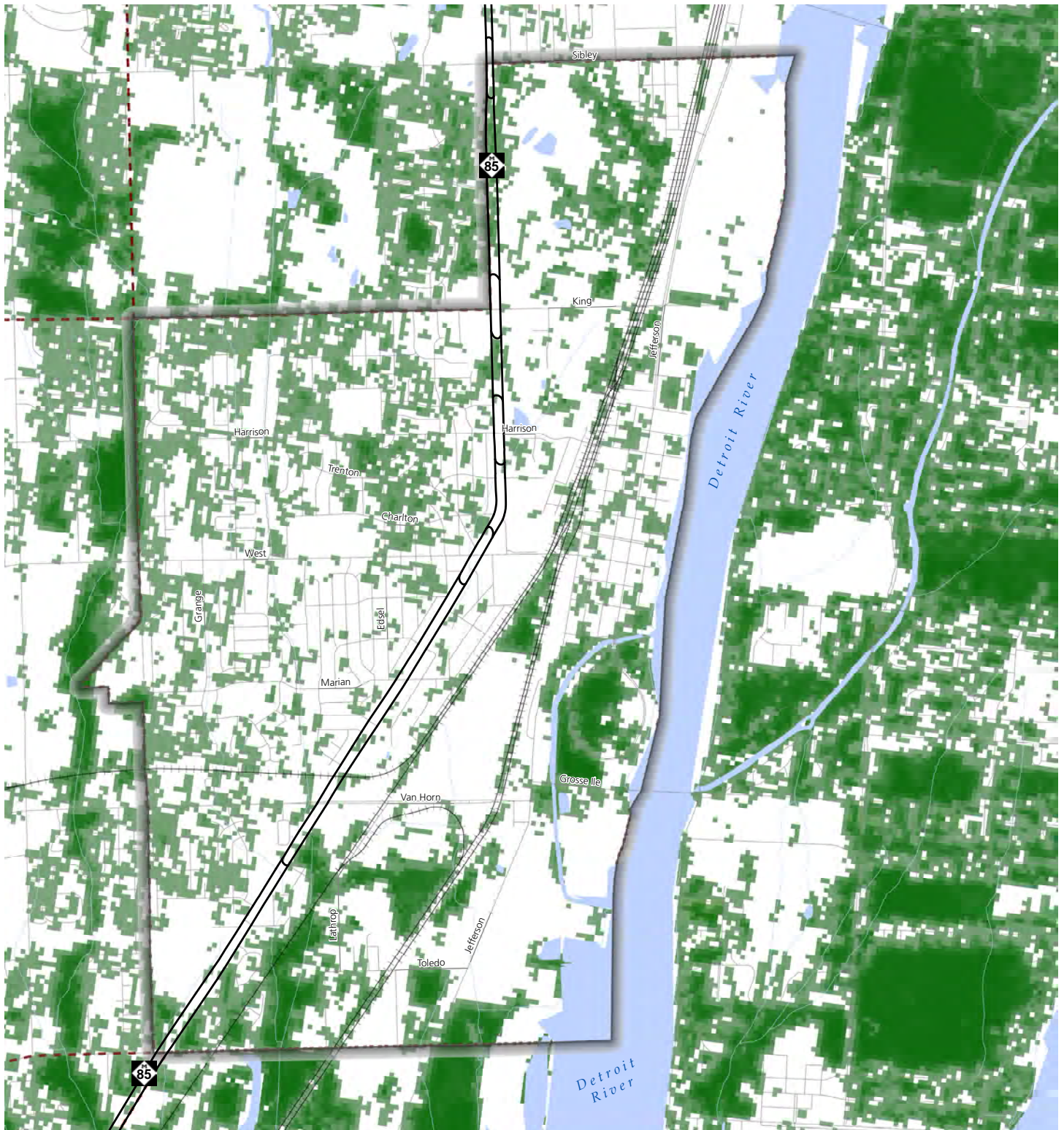
Several types of indicators can be examined and evaluated to determine the relative strength and abundance of natural features within Trenton. As a City that has reached almost full capacity regarding built structures, it is essential to study the natural features in Trenton, as they provide a tremendous deal of natural beauty, green space, and recreational opportunities. These features act as major community assets that enliven neighborhoods, provide parks, offer community gathering spaces, and are capable of enhancing property values. Given the type of natural feature, studies have even shown that green spaces, forests, and parks promote better health, both mentally and physically.

Tree Canopy

The tree canopy coverage within Trenton reflects a negative correlation with impervious surface: where impervious surface is high, tree canopy is low, and the same is true in reverse. Overall, Trenton has 8.3%

tree canopy coverage. Coverage is high in Elizabeth Park, the largest park within the City. Additionally, there are large sections of tree canopy in the southern portion of the City near the industrial lands, although these forested sections do not overlap with the large parcels that predominately consist of impervious surfaces. A significant amount of trees can be seen in the stable neighborhoods to the north and west of Fort Street, lining the streets and providing essential shade to walkable sidewalks in these neighborhoods. Again, major thoroughfares that provide large-scale commercial uses and retail have exceptionally high impervious surfaces to provide for parking lots, and therefore, exceptionally limited tree canopy coverage. Tree coverage is evident in the downtown as well, both in the forms of street trees and trees in the yards of residential properties.

Tree canopy coverage relates to the overall health of the community. Urban forests, which are identified by the U.S. Forest Service as urban parks, street trees, landscaped boulevards, river promenades, wetlands, nature preserves, natural areas, greenways / greenbelts, and even trees on industrial brownfield sites, can all have an impact on the health of a community. This definition includes the majority of tree canopy coverage found within Trenton. Higher tree

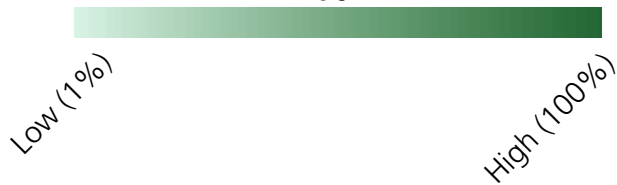


CITY OF TRENTON
Tree Canopy Cover

Data Sources: State of Michigan Geographic Data Library, City of Trenton, National Land Cover Dataset 2011

-  City of Trenton Boundary
-  State Roads
-  All Roads
-  Railroads
-  Municipalities

Percent of Tree Canopy:

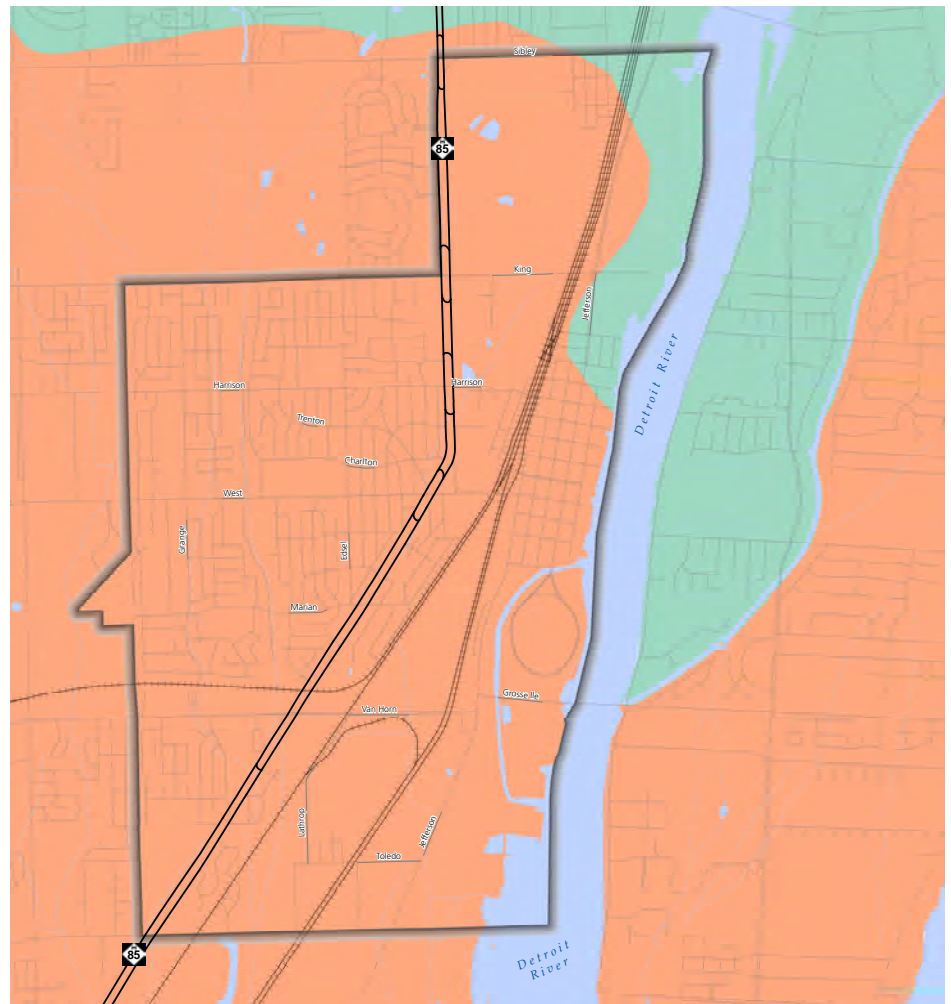


canopy coverage in the form of urban forests have been shown to reduce overall expenditures for mental health, implying that mental health issues are reduced by the presence of trees, and stress and depression levels are reduced by forests and trees as well.

SYSTEMS

Geology

The majority of the City sits on the Detroit River Group of bedrock geology, although the northeast corner constitutes Dundee Limestone. Both of these groups contain the vital resource of stone, including dolomite (dolostone), sandstone, and importantly, limestone; the Detroit River Group composition may vary from place to place, but the first layer of bedrock is dolomite and underneath is limestone, whereas the Dundee Limestone geology is host to an immediate and easily accessible layer of valuable limestone. The prevalence of limestone has significantly impacted the history and development of Trenton, as well as many other places in Michigan. Limestone has long been intertwined with local Michigan economies, playing a vital role in employment, land use, natural resource extraction, and economic development. Limestone deposits are found in select areas throughout



CITY OF TRENTON Bedrock Geology

- Data Sources: State of Michigan Geographic Data Library, City of Trenton
- City of Trenton Boundary
 - State Roads
 - All Roads
 - Railroads
 - Rivers / Streams
 - Lakes / Ponds
 - Dundee Limestone
 - Detroit River Group

Beckett&Raeder

Michigan, most outcrops following the outer ring of the Michigan basin, and therefore, occurring in southeast Michigan (predominantly Wayne and Monroe Counties), the northeast and northwest lower peninsula, and the eastern half of the

upper peninsula, along with some smaller areas in Michigan's "thumb" and the Grand Rapids area. Each instance of limestone in Michigan is unique, however, geographically smaller occurrences of outcrop do not necessarily relate to the depth

CITY COUNCIL DRAFT 2017-03

Trenton Coast Resiliency Master Plan

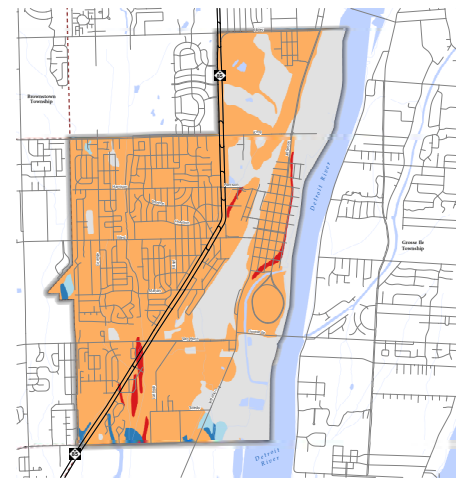
and quantity of the natural resource. The limestone quarry in Rogers City, Michigan, in what appears to be a small occurrence when compared to the upper peninsula, has long held the title of the largest limestone quarry in the world.

Originally opened, owned, and operated by Solomon Sibley himself in the early 1800s, the Trenton quarry too was an impressive limestone resource. Sibley employed local Native Americans to excavate the site by hand, and from that point forward it became one of the first and most prominent business operations within the City. The limestone found in Trenton was a considerably high grade limestone used to produce sodium bi-carbonate (“soda ash”) and purify beet sugar, both of which were high in demand in the late 1800s and early 1900s. The quarry’s famous “9-foot bed” indicated that workers need not dig deep before reaching the limestone bedrock. Opportunities for synergy with other businesses occurred, including the Sibley Company Store, and for many years during the 1900s this particular quarry yielded material used to make Arm & Hammer baking soda. Since its creation, the quarry has long been a resource for jobs and was eventually mined to a depth of 300 feet, although today has become an inactive quarry and rather functions as a Type III low hazard waste landfill for DTE Energy.



CITY OF TRENTON
Soil Classifications

- City of Trenton Boundary
- State Roads
- All Roads
- Railroads
- Municipalities
- Alfisols
- Entisols
- Inceptisols
- Mollisols
- No Data

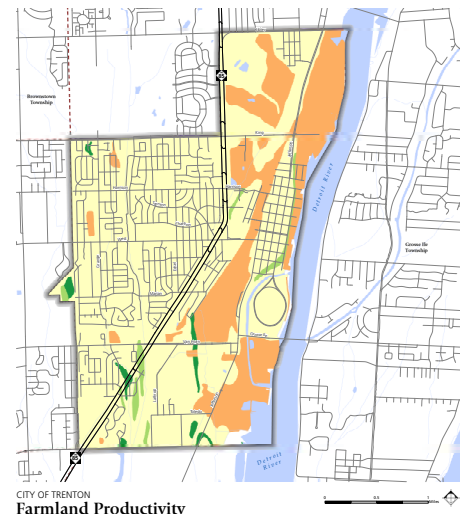


CITY OF TRENTON
Soil Runoff Rates

- City of Trenton Boundary
- State Roads
- All Roads
- Railroads
- Municipalities
- Runoff Rates
- Negligible
- Low
- Medium
- High
- No Data

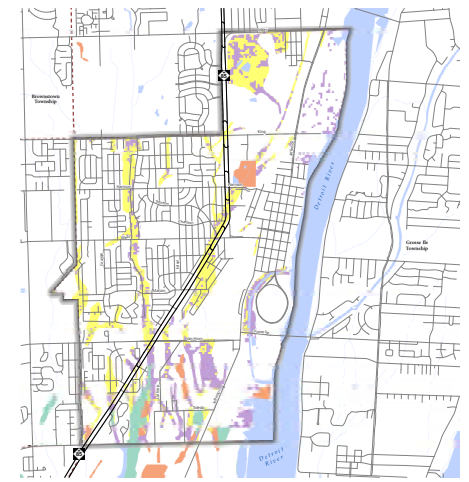
Soils

Most soils within the City are Alfisol soils, although some Mollisols, Inceptisols, and Entisols are found. These soil types are common in this part of Michigan, and would typically represent soils suitable for agriculture, although the majority of soils found within the City are considered not



CITY OF TRENTON
Farmland Productivity

- City of Trenton Boundary
- State Roads
- All Roads
- Railroads
- Municipalities
- Prime Farmland
- Farmland of Local Importance
- Prime Farmland if Drained
- Not Prime Farmland



CITY OF TRENTON
Hydric Soils and Wetlands

- City of Trenton Boundary
- State Roads
- All Roads
- Railroads
- Municipalities
- Potential Wetland Restoration Area
- Hydric / Ponding Soils
- Forested / Shrub Wetlands
- Emergent Wetlands

prime farmland or only

prime farmland if drained. The largest clustering of the Mollisol soil group in Trenton is found in the northeast section of the City, corresponding with the location of the Trenton Quarry, as limestone is the parent material for this group of soil and this relationship has defined the location of many

quarries throughout Michigan. The particular group of soils found within the City, however, do contribute to threats of runoff – almost three-fourths (73.5%) of lands within the City have medium and high rates of runoff. Hydric soils, which are soils formed under saturated conditions, commonly saturated with water, and assist with the identification of wetlands, are found in the City and represent approximately 17.7% of soils. Along with soils prone to ponding, which are saturated at least 50% of the time, both types of soils are helpful when determining areas susceptible to flooding. Every hydric soil identified within the City has at least an 89% chance it will be saturated and therefore capable of supporting ponding, standing water.

Forests and Green Spaces

Since the City has become urbanized in the last several decades, little natural land is left within its limits. This should be of no surprise, given its relationship and history to Detroit, as well as the fact that less than 3% of soils within the City are considered suitable for agriculture. Nevertheless, maintaining green space and preserving natural resources are still necessary for urban areas. Their uses range from daily average needs to the ability to absorb shock from extreme weather and climatic events. Small

pockets of forested land cover exist, although the majority of forest lands are within Elizabeth Park. Some small pockets exist in the southern and northern portions of the City.

The parks within the City are the largest source of green space, found scattered throughout the City. Elizabeth Park, the oldest Wayne County Park, is a vital source for recreation and green space and constitutes the largest park in the City, representing 46% of total park acreage within Trenton. Approximately 33% of park lands within Trenton are found adjacent to the Frank and Poet Drain, traversing south from King Road to the Canadian National Railway line, just north of Van Horn Road. The other approximately 20% of park land is distributed in smaller parks, typically near neighborhoods or along the coastal downtown area.

SENSITIVITY

Tree species can become threatened as warming temperatures change their ecosystems, inviting new pests and altering their water and nutrient sources. Beyond the biological threats, green spaces and vegetative cover are at greatest peril from development. A tree ordinance can protect large, old trees which are irreplaceable for all practical purposes. When saving trees is impossible or impractical, strong landscaping standards can ensure

that the community's tree stock is replenished as development occurs.

Environmental water

The City's relationship to the Detroit River and inclusion in the Coastal Management Zone Boundary is an exceptionally important consideration for resiliency planning.

INDICATORS

Vegetative Buffers Around Surface Water

Trenton has 12.93 miles of surface water shoreline (rivers, drains, etc.). Just over half of that shoreline (6.85 miles, or 53%) is protected by a swath of vegetation that serves as a buffer between the land and the waterbody. These vegetative buffers slow and clean runoff entering the water body, absorb floodwaters, and form a physical barrier that prevents the construction of damage-prone structures.

A current best practice is the institution of a 25- or 50- foot vegetative buffer around all surface water. Elizabeth Park and the land surrounding the Frank and Poet Drain are excellent examples of vegetative buffering which double as recreation and open space.



Wetland preservation

Wetland preservation is an important indicator for natural health within any community. Wetlands are essential, acting to absorb water in major storm events, which is beneficial for the Trenton area as runoff from excessive water events have polluted waterbodies in the past, particularly including the Frank and Poet Drain. Wetlands constitute a small portion of lands within the City: just 1.3% is forested wetland (62 acres), and 1.54% emergent wetlands (74 acres). Still, many sites for restoration efforts have been identified within the industrial lands in the south and southeast, surrounding the Frank and Poet Drain and the Trenton Channel, as well as some areas within the northeast industrial lands. Efforts to preserve and restore wetlands have already occurred in the Detroit River International Wildlife Refuge at both the Humbug Marsh Unit and the future site of the Refuge Welcome Center, each within City boundaries.

SYSTEMS

Floodplains

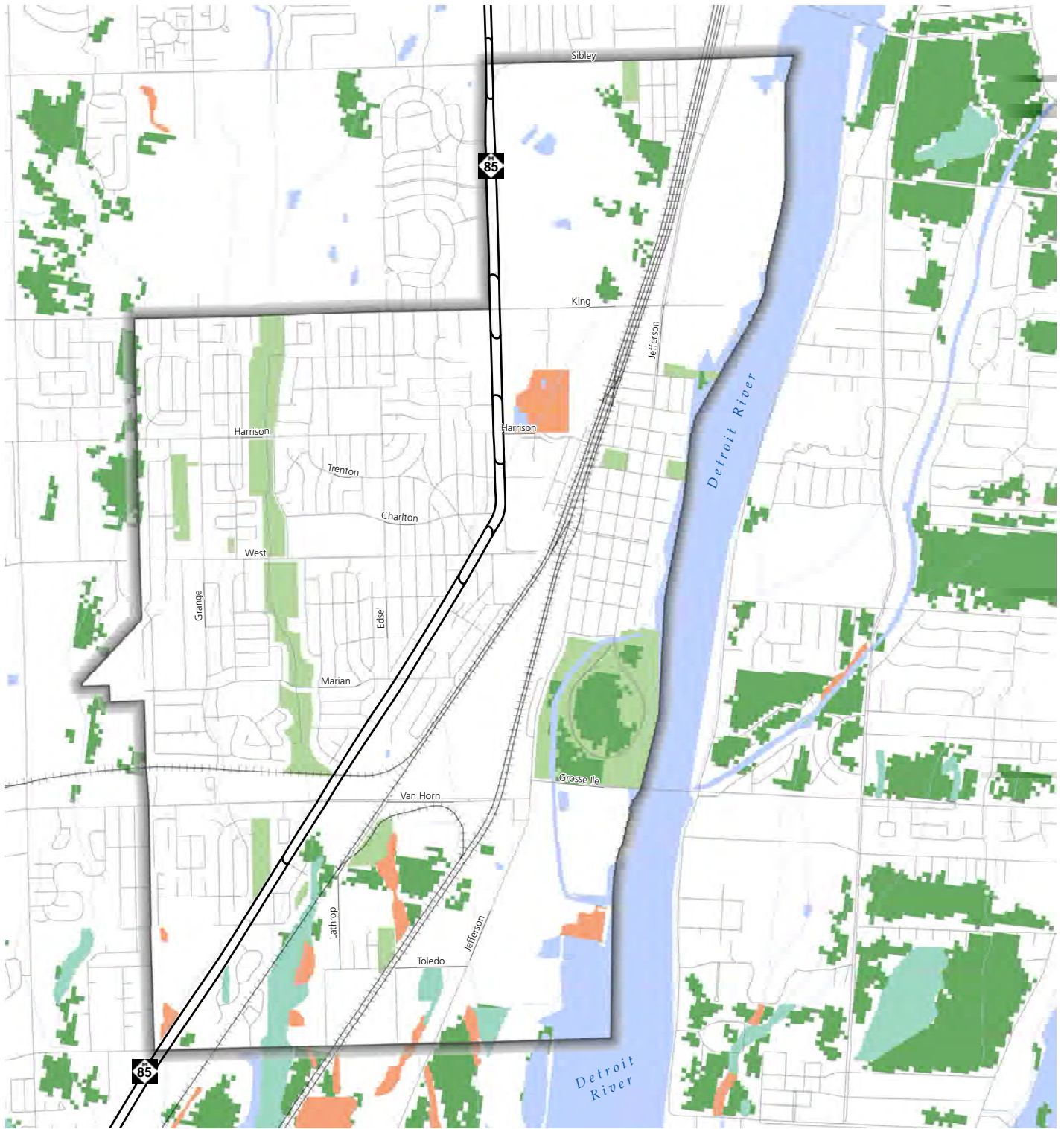
Trenton's proximity to the Detroit River has been an influential connector to many community assets, land uses, and properties. This adjacency impacts the patterns and location of floodplains, wetlands, watersheds, hydric soils, and land

cover, which in turn can significantly control the migration of water, runoff, and contaminants during heavy rains and flooding. Floodplains are found along the Detroit River coastline, including 100-year and 500-year flood zones, extending into industrial parcels in the south, encompassing the Trenton Channel in Elizabeth Park, encroaching on dozens of smaller residential and commercial parcels in the downtown, and extending into the northern industrial parcels. Floodplains are also found elsewhere in the City, surrounding the Frank and Poet drain, including the 100- and 500-year flood zones as well as the regulatory floodway. This set of flood zones surrounds the drain throughout the entirety of its path through the City. A small portion of floodway runs parallel with the western edge of City limits, following alongside Marsh Creek and stretching into both residential and Trenton Public School properties.

Floodplains are exceptionally important considerations when it comes to development. Any development that occurs in any floodplain, such as residential, commercial, or industrial development, is subject to certain standards and conditions. Often times, special permits are required, additional building standards are imposed, and property owners are obligated to have flood insurance.

Moreover, any property owners that own structures or build structures within the 500-year floodplain carry an increased risk for flood damage that is absorbed by the property owner. Trenton has had their Federal Insurance Rate Map (FIRM) updated recently to include additional properties along the Frank and Poet Drain that previously were not included in the floodplain, and these types of changes can immediately impact property owners. The inclusion of any property within a floodplain can affect property values, but it is difficult to grasp the rate of change and variables that would influence changes in value. Discouraging new development in floodplains would be ideal, given the uncertain variables involved and risk potential for damage.





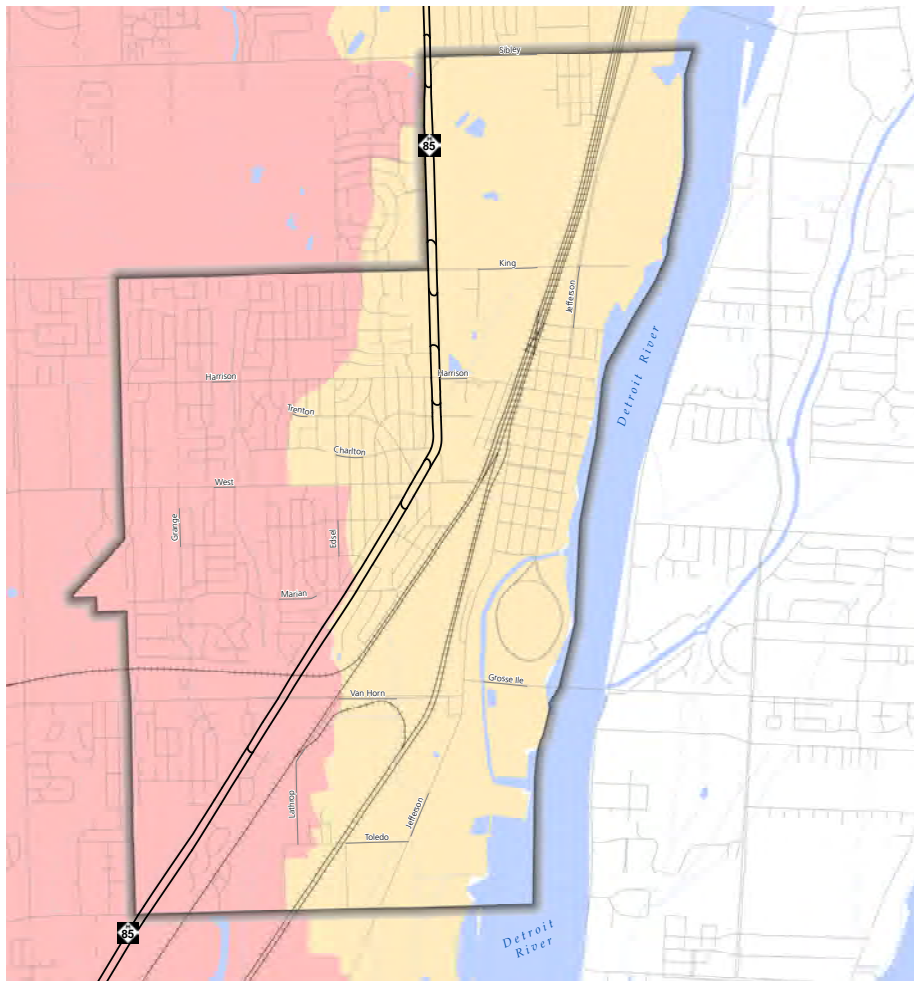
CITY OF TRENTON

Natural and Sensitive Features

Data Sources: State of Michigan Geographic Data Library, City of Trenton, National Land Cover Dataset 2011

- | | |
|--------------------------|---------------------------|
| City of Trenton Boundary | Open Space and Parks |
| State Roads | Forested Land Cover |
| All Roads | Forested / Shrub Wetlands |
| Railroads | Emergent Wetlands |
| Rivers / Streams | |
| Lakes / Ponds | |





**CITY OF TRENTON
Watersheds**

Data Sources: State of Michigan Geographic Data Library, City of Trenton

- City of Trenton Boundary
- State Roads
- All Roads
- Railroads
- Rivers / Streams
- Lakes / Ponds
- Huntington Creek - Frontal Lake Erie
- Brownstone Creek



Beckett&Raeder

Wetlands

While many wetlands have been destroyed in Michigan, especially in urbanized areas along Michigan’s coastline, Trenton still contains some wetlands. It is necessary to identify their locations and understand their

contribution to the local ecosystem. Wetlands are located in the southern portion of the City, aligned with several sections of hydric and ponding soils. Wetlands have the potential to absorb heavy rainwater and contaminants, assisting with

the protection of both the Detroit River and any structures on lands susceptible to flooding. Potential wetland restoration sites have been delineated and correspond to hydric soils within the City, particularly located along the Trenton Channel within Elizabeth Park, following the Frank and Poet Drain, and largely in the southern portion of the City otherwise.

Wildlife habitat and diversity

The diversity of wildlife in Trenton is astounding. Although much of the City is developed, urban spaces and the influence of the Detroit River International Wildlife Refuge is beneficial for the habitats and species found in the Trenton area. The Humbug Marsh Unit located in the City has been called a “hotspot of biodiversity in this urban landscape” and was designated as Michigan’s first wetland of international importance. A variety of plants, waterfowl and migratory birds, reptiles and amphibians, fisheries, and dragonflies, constitute this ecosystem and represent many different habitats indigenous to this area.

Watersheds

Watersheds and bedrock geology are strong determinants of physical features for an area. The City of Trenton falls within two

subwatersheds, the Huntington Creek – Frontal Lake Erie and Brownstone Creek subwatersheds, and is contained within the greater Detroit watershed, as identified by the USDA. Examples of point and nonpoint source pollution have been found in the Detroit watershed and the Brownstone Creek subwatershed, each of which can affect Trenton. Watersheds act as localized areas that confine and contain the movement of water and have an influence its quality.

Within the Brownstone Creek subwatershed, the Brownstone Creek itself contained total suspended solids (TSS) in 2006, which led to monitoring a Total Maximum Daily Load (TMDL) for this waterway in 2007. These types of solids, which range from

decaying plant matter to industrial wastes and sewage, can be damaging to the local aquatic ecosystems. The 2006 pollution study determined the indigenous aquatic life in the creek, including “Fish, Shellfish, and Wildlife Protection and Propagation” to be impaired, and therefore rated the macroinvertebrate community “poor” by EPA standards. The probable source for the pollution was identified as urban-related runoff/stormwater. This is not the only time this Creek has been recorded as impaired. In 2002, the Fish, Shellfish, and Wildlife Protection and Propagation was found impaired due to flow alterations, and in 2004, the Overall Water Quality Standards designated use was determined to be impaired due to unknown causes.

The Frank and Poet Drain is also vulnerable to increased TSS, and it has been found to have impaired waters in 2002, 2004, and 2006 as well. In 2002, it had the same impaired designation for Fish, Shellfish, and Wildlife Protection and Propagation but a much longer list of probable causes, including channelization, erosion and sedimentation, industrial uses, loss of riparian habitat, urban-related runoff/stormwater, and streambank destabilization. In 2004, the Overall Water Quality Standards were impaired for unknown reasons, and in 2006, the Fish, Shellfish, and Wildlife Protection and Propagation were found impaired again due to channelization, habitat modification, and urban-related runoff/stormwater. The nearby Blakely Drain/Marsh



Creek waterbody, which only runs through the northwest corner of Trenton, was found to have the exact same pollution issues and impairment listing as the Frank and Poet Drain for 2002, 2004, and 2006.

Since 2007, these waterbodies within the watersheds have not been listed as impaired, but they should still be considered sensitive areas due to their history of collecting pollution and previous status of impairment. It should also be noted that TSS will increase in the Frank and Poet Drain with any precipitation event, and the more intense the storm, the more likely the Drain will exceed the allowable load for TSS and could be listed as impaired once again.

Detroit Riverkeeper

Detroit Riverkeeper is a nonprofit citizen action group. Its goals are to protect, preserve, and restore the ecology of the Detroit River Watershed. Through education, partnerships and research they are successful stewards of the river. Detroit Riverkeeper is a key partner in building resiliency because they are actively monitoring the quality of river water, and have a history of working with local, state and federal governments. They are involved in several projects including labeling storm drain and overseeing the implementation of the Remedial

Action Plan of the Detroit River. They also served on the local Coast Guard's Southeast Michigan Area Committee.

SENSITIVITY

Water Quality Concerns

The State of Michigan, and particularly the Detroit metropolitan area, are no strangers to water quality concerns. The Great Lakes Water Quality Agreement (GLWQA), originally signed in 1987, is a collaborative project between the United States and Canada aimed at improving the Great Lakes water systems and responsible for identifying Areas of Concern (AOC). The Detroit River is one of 43 contaminated waterways identified as an AOC due to sewer overflows, industrial discharges, stormwater runoff, and industrial and urban development. Due to these pollution sources, contaminant issues include high levels of metals, oils, greases, bacteria, polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs), the latter two of which are considered carcinogens. As discussed in the Watershed section, the nearby Brownstone Creek, Frank and Poet Drain, and Blakely Drain/Marsh Creek have been listed as impaired waters multiple times with a history of collecting point and nonpoint source pollution.

Although the Detroit River listed as an AOC is unacceptable, substantial work has been underway to improve water quality in the Trenton area and the Detroit River for the last 25 years, and much progress has been accomplished. The Black Lagoon Legacy Act Cleanup effort completed ten years ago removed heavy concentrations of grease and oil, restoring the natural Trenton shoreline and removing a catastrophic environmental scar from Trenton's shore. This cleanup effort, the first of its kind to be funded by the Great Lakes Legacy Act, removed over 470,000 pounds of contaminants including 115,000 cubic yards of polluted sludge and cost \$9.3 million dollars over the course of 13 months for a site only around 2 acres in size. The photo on the next page illustrates the clean up effort in action.

Even though polluted discharges within the River have been reduced, a significant amount of polluted material still exists, sunken to the bottom of these waterways and influencing the continued listings of AOCs. This project had a variety of unique factors and conditions such as the flow of water and shape of the shoreline made this the perfect area for materials to collect and settle for fifty years. The current carried industrial discharges immediately downstream from Trenton's industrial

waterfront sites straight to this location; a special silt curtain was required to block the remainder of the Detroit River from the cleanup site to prevent sediment from escaping into the river. Mechanical dredging was required, and due to the polluted nature of the material, it needed to be shipped away from the site for proper disposal. But were this level of cleanup effort required for the entire riverbank around Trenton, approximately

469 acres in size, it would have cost around \$2.19 billion dollars in 2005; adjusting for inflation rates, the same effort would be closer to \$2.7 billion dollars in 2016.

Restoration projects and protected habitats continue to improve the conditions of the Detroit River, working towards the goal of removing the river from its AOC listing. It is important to remember why the river became an AOC in the first place.

Industrial uses along the coastline were among the primary culprits. When examining the City of Trenton through a sustainable, resilient lens, remember that the shift from industrial uses to nonindustrial would benefit the Detroit River, International Wildlife Refuge, and quality of the natural resources, and to do anything else would be taking three steps back from the momentum of cleanup efforts.



Photo: Detroit River Clean up Effort

TRENTON HAS ECONOMIC OPPORTUNITIES

The City of Trenton has begun a more robust focus on economic development the last five years. The Mayor has established an Economic Development Committee that meets on a monthly basis to review potential development, address dormant parcels, and entertain prospective developer's proposals.

Three major issues of concern for the committee have been the former McLouth Steel property, the former Riverside Hospital site, and the City's challenged downtown. In addition, the recent announcement by DTE Energy's impending closure of their Trenton Channel Power Plant has moved this site to the forefront with the others. The strength of downtown, and the City in general, is dependent on the successful repurposing of these sites. The City needs to create and maintain a strong, vibrant economy. The policies and actions that Trenton takes to promote economic goals are crucial to increasing overall employment and maintaining a healthy tax base.

Industry

INDICATORS

The City has slightly over 500 acres of industrial land which represents 10.7%

of all the land. The amount of vacant industrial land is approximately 10%. The taxable value of improved industrial land is \$41,749,693. The vacant industrial land in the City is valued at \$7,166,325, which represents almost 6% of the value of the improved industrial land. The majority of the vacant lands are located along the City's waterfront. These properties historically were manufacturing/ industrial and have issues of contamination, blight, as well as some being functionally obsolete. One of the main challenges is the former McLouth Steel site (now known as the DSC site) which is nearly 1,000 acres. Though not "vacant" as determined by assessing, the property is largely underutilized and represents a major opportunity, and challenge. These opportunities and challenges are similar for the smaller sites as well.

Returning the former McLouth Steel site and other vacant industrial properties to new uses represents perhaps the greatest obstacle in transforming Trenton into a complete and fully sustainable community. This is due to not just the amount of vacant industrial land, but also the location of the properties and the shrinking federal and state dollars available for cleanup of contaminated sites. Many of the properties are located on the Trenton Channel, which complicates cleanup. Some of these sites show

leakage of contamination near the waterfront. Federal authorities are also looking at placing the DSC site on the National Priorities List (NPL), further limiting the possibility of turning this site into productive use(s) since Superfund sites (NPL) such as the "Love Canal" traditionally have been extremely difficult to develop.

Funding available for cleanup has also shrunk over the recent decade as both the State of Michigan's DEQ and Region 5 of the EPA have less funding to make available for grants and loans to assist with cleanup. However the City of Trenton is a member of the Downriver Area Brownfield Consortium (DABC), which has been one of the leading groups in the nation in receiving federal funds. Opportunities exists, even though they are limited.

Trenton has made the switch to an "ed and med" economy, with 26% of its workers employed in that field. This is a significant shift for the City's economy, especially considering that this move reduces the pressure on obsolete industrialized lands to remain industrialized, further emphasizing the citizens' desire to see new types of uses on these vacant lands. Manufacturing still remains substantial, however, at 15%, and retail trade and the arts, recreation, and accommodation sectors each employ about 10% of the City's residents.

Fewer persons work in construction as compared to the national proportions, and agriculture is barely represented at all. The switch to an “ed and med” based economy coincides with an increased desire found in the community’s collective priorities to convert contaminated industrial sites into “environmentally-sensitive industry.” There was no desire expressed to repeat their economic past and seek out traditional industry, but rather recruit modern, cleaner business models.

SYSTEMS

Being an older community with waterfront access, it is not unusual to find many former industrial sites vacant, many with river access or rail. Trenton has its share of these sites. The City has I-1, I-2, and I-3 industrial zoning districts. Historically the most intense industry has been located on the City’s waterfront or on rail access near the waterfront. However as economies changed and waterfronts have become less “intense” and more residential and recreational, Trenton has followed suit. Trenton’s Master Plan, adopted in 2002, calls for just one heavy industrial property on the City’s waterfront north of the Grosse Ile Parkway.

Each of these industrial properties pose a particular challenge. Concerning the former McLouth Steel property, the City met with current owners in hopes of making the site more productive. A major challenge

is the contamination on the site. The City went to Chicago in 2015 to meet with the EPA along with the MDEQ to address these challenges. Recently the City has begun a monthly roundtable with federal, state and local officials in hopes of bringing more productive uses to the site. More progress has been made on the former Riverside Hospital site, where there is currently an approved site plan for the former hospital to become a wellness center to be built in four phases. The DTE Energy site is slated to close in 2020. The prime waterfront site has potential for recreational, residential, commercial, or industrial. Recently the City entertained graduate students from Eastern Michigan University who presented their ideas for the site.

In terms of economic resilience, Trenton has a relatively diverse business portfolio, however employees are concentrated in just a few areas. There are 657 businesses in Trenton that employ 7,493 residents, less than half of the total population. For every one resident in Trenton, there is .41 employees. Using the NAICS codes to identify the largest industry by number of employees, health and human services (21.1%), educational services (10.2%), other services (12%), and retail trade (9.3%) make up for over 50% of jobs.

Investigating industry by number of businesses shows a slightly different story. Construction seems to be a vital industry, accounting for 10.2% of all business and employing almost

6% of the Trentonites. Trenton has a concentration of automotive repair and maintenance shops. With 29 automotive businesses, they employ about 7% of the population. Furthermore, Trenton also has 65 financial and insurance businesses which include securities, commodities, insurance carriers, funds, trust, credit intermediation, etc. However, amongst all of these companies, only 2.2% of Trentonites are employed. For all three of these industries the proportion of “number of business” is larger than the proportion of Trenton employed by this industry which indicates that they draw in labor from surrounding communities. Retail also falls into this category but is discussed further in the following section.

SENSITIVITY

The portions of industry to be affected by climate change are similar to other areas of our region that do not experience flooding. Even though the City borders the Trenton Channel of the Detroit River, it does not experience flooding, even during its most recent heavy rains. Therefore industrial sensitivity is not likely to be enhanced by climate change. In addition, the City does not have any freeways. The major thoroughfares within the City are on level ground, eliminating issues of road closures due to flooding that is becoming common in other parts of the Detroit region. The City’s industrial property is more challenged by the existing

contamination, which would not be affected by climate change any more than other properties.

Retail

INDICATORS

The City's taxable value of all commercial improved property is \$52,998,287, while the taxable value of vacant commercial land is \$3,658,143. This represents approximately 14% of the value of improved commercial property.

Roughly 7% of the City's land use is noted as commercial while nearby municipalities such as Woodhaven has almost 13% while Southgate has nearly 20%. This leads to retail leakage out of the City. Some of this leakage may be beyond Trenton's control due to the fact that no major Interstate runs through the City while Interstate 75 goes through both Southgate and Woodhaven. The City has had some recent success in attracting retail and limiting some retail leakage out of the City by the recent addition of a Tractor Supply store on Fort Street and Van Horn Road.

A major challenges to a strong retail economy in the City is the lack of foot traffic throughout Trenton's shopping areas on West Road, Trafford Square Shopping Center (on Van Horn and Fort Street), and most notably the

downtown area. Poor foot traffic is associated with increases in the carbon footprint within the City as people continue to rely on cars for transit (carbon footprint is the total amount of greenhouse gases produced to directly and indirectly support human activities, usually expressed in equivalent tons of carbon dioxide (CO₂)). Since one of the ways to reduce your footprint is to walk or ride your bike whenever possible, the City should focus efforts on designing a walkable community by having wide sidewalks, bike share and bike racks, and also encourage carpooling.

Data clearly shows that younger adults want a walkable community. Trenton has the opportunity to provide more walkable neighborhoods to a growing segment of its population. The City predominately has a grid pattern, including sidewalks, with an historic downtown that has seen abandonment, demolitions, and closings. One of the best ways

for the City to create a sustainable community is to have a downtown that has the proper mix of shops and restaurants in close proximity to one another. This would not only attract this movement of younger residents looking for a more urban lifestyle, but also create a more environmentally sensitive community.

Table: Where Trentonites Work and Live

People Who Work In Trenton		
Live in...	4632	%
Trenton	557	12
Southgate	218	5
Detroit	215	5
Wyandotte	185	4
Taylor	162	4
Lincoln Park	137	3
Woodhaven	133	3
Riverview	110	2
Flat Rock	82	2
Dearborn	76	2
All other	2757	60
People Who Live in Trenton		
Work in...	8320	%
Detroit	981	12
Dearborn	887	11
Trenton	557	7
Wyandotte	384	5
Romulus	337	4
Taylor	337	4
Southfield	270	3
Livonia	255	3
Southgate	232	3
Woodhaven	221	3
All other	3859	46

Another challenge is the mismatch between Trenton's workforce and its labor pool. Just 557 people both live and work in Trenton, representing about 13% of Trenton's workforce (people who work in Trenton) and just

6% of Trenton’s labor pool (Trenton residents who have jobs). This means that the vast majority of Trentonites are strongly invested in at least one other community, given that many spend as much time at work as they do at home. The opportunity to shop and conduct business elsewhere is compelling. Connecting Trenton’s jobs and workers requires a two-pronged approach. An inventory of home-based businesses, incubators, and temporary “pop-up” retail opportunities can be economic gardening efforts that grow entrepreneurial activity from within the community. Conversely, a real estate liaison focused on the local business community can provide knowledge and resources to help merchants and entrepreneurs decide that Trenton is a good investment for their families as well as their businesses.

SYSTEMS

Downtown has seen small spurts of development and promising new restaurants. To many, the most critical corner is the southwest corner of West Road and West Jefferson. The City recently has cleared the site and issued an RFP. Though the City is open to any idea, the right development could be the catalyst to make downtown Trenton the destination it once was. ESRI Business Analyst combines data on what consumers buy, how they spend their free time, and socio-



economic characteristics to create 67 unique categories that define different segments of the population. The segments presented below summarize resident’s concerns that Trenton has an aging population; 3 of the 5 most common segments are senior citizens. It also becomes apparent that there is demand for diverse and local goods and services.

The top 5 segments make up for 86% of the population.

Comfortable Empty Nesters (31%)

Babyboomers that are aged 55+ with a net worth above the national average. They generally live in single family detached homes with two cars, without children in the home, and prefer to eat at home rather than go out. Home maintenance is a priority.

Rustbelt Traditions (16.4%)

They are considered the backbone of industrial cities. These households are family-oriented and value time at home. They live in modest single family homes on the fringe of metropolitan areas. They are also primarily white-collared workers who favor buying American-made products.

Small Town Simplicity (15.4%)

These residents are defined as community-oriented. Twenty-five percent are below the poverty level and are therefore price-conscious shoppers. Given that, they are still more likely to be homeowners residing in small towns. They enjoy rural activities like hunting and fishing. They don’t have the latest gadgets but are still connected.

Midlife Constants (14.6%)

This group is comprised of senior citizens that are primarily in married couples. They are considered traditional as they prefer the radio and newspaper as media sources, and comfort over cutting-edge purchases. Forty-two percent of them are receiving social security. They also prefer American-made products.

Golden Years (8.5%)

The people in this group are nearing the end of their careers or recently retired. They pursue leisure activities such as travel, sports, concerts, and dining out. They are generally still active and independent, as well as educated and financially secure.

Based on ESRI Business Analysts Retail Market Place profile, Trenton's residents spend more annually in other markets instead of in Trenton. That is to say, the Trenton retail market is not capturing as much sales tax and revenue from its current retail stock as it could because residents feel forced to shop elsewhere to fulfill their retail needs. This finding is felt by Trentonites in real time. During the community engagement phase, participants lament a lack of diverse retail options downtown. In fact, they gave the statement "Trenton has economic opportunities" a D grade, the lowest grade possible. Their number one response for how Trenton

will look in 10 years is a place with "diversified businesses and a local economy."

Based on retail potential (demand) and retail sales (supply), it becomes clear which types of retail have room to expand and which may need to shrink to match reduced demand. Retail groups that draw in the highest amount of consumer dollars (and therefore likely have a reach outside of Trenton) are motor vehicle dealers, specialty food stores, office supplies, stationary and gift stores. On the other hand, retail groups that are "leaking" money are grocery stores, clothing stores, shoe stores, sporting good, hobby and musical instrument stores, and general and used merchandise stores. Only calculating the top seven leakages, Trenton is forfeiting an estimated \$97 million. When accounting for all retail leakages, the total amounts to over \$200 million. However, as seen above there are segments of the population that are likely looking for sporting goods (Small Town Simplicity), home wares (Comfortable Empty Nesters), and entertainment (Golden Years) in Trenton.

The Retail Market Potential profile reports that almost 50% of Trenton residents think buying American is important and almost 1 in 5 report buying based on quality and not price. Trenton residents support an ideology

conducive to higher-quality products from local businesses. The differences between supply and demand give insight on where and how business owners can invest. For example, over one-half of residents bought either a paperback or hardback book in the last 12 months, however book, periodical and music stores are not capitalizing on this potential in Trenton, to an estimated loss of over \$1 million annually.

SENSITIVITY

Commerce, broadly defined as the interchange of goods and services, is a basic function of human civilization that will likely persist as long as we do. Adaptation may redefine the conditions and content of the exchanges, but our social proclivities ensure their existence.

Retail sensitivities are therefore more incidental than direct. A given weather event may temporarily depress sales; a string of such events may affect the quarter's earnings; several successive poor quarters may lead to site relocation. Transportation events such as flooding and reconstruction after damage can hinder the access upon which a retail establishment depends. Conversely, some establishments may see an uptick in patronage of their air-conditioned businesses during heat events.



Recreation and tourism

INDICATORS

City exempt land acreage is 195 acres, or 8,494,200 square feet. About 2/3 of that land would be valued at about \$.50/square foot (flood plan land) or \$1,415,700 Taxable Value. The other 1/3 would be valued at \$1.70/square foot or \$2,406,700 Taxable Value.

With the City's retail as challenged as it is, the economic impact of

Elizabeth Park is not a great as it could be. People visiting the County Park come from throughout the County and beyond (there is no residency requirement), and stop to pick up their items nearer to home. The park is not a place for long term stay so people tend to visit, fish, and or picnic but leave within a few hours. There are no bait shops nearby, and just one former A&W restaurant converted into a coffee shop (Elizabeth Perk). Zoning is also not conducive for increased retail near the park as it borders single

family residential zoning.

Data from ESRI Business Analyst shows that Trentonites spend money on recreation. On a retail index where 100 indicates a national spending average, Trenton ranks in the 90th percentile for 24 of the 44 categories and never dips below the 78th percentile for any category. This suggests that support exists for recreation-based businesses even without drawing from surrounding communities.

SYSTEMS

Several opportunities for natural resource related tourism exist in and directly around the City of Trenton. Elizabeth Park, which has been open since 1919 and functions as a part of the Wayne County Park System, offers tremendous recreational value to the City. This 162-acre park follows the Trenton coastline, connected to the City by several bridges and provides over 1,300 feet of riverwalk for park visitors to enjoy. Outdoor activities include hiking, skating, cycling, and others, and the attraction of the oldest Wayne County Park is a major pull for recreational tourism.

The Detroit River International Wildlife Refuge (DRIWR) has both local ties and land holdings within the City of Trenton, neighboring communities, and the Detroit River. The DRIWR represents a successful transformation away from industrial land uses to natural resource conservation, emphasizing the shift from uses that harm the river to uses that enhance and protect the river. Opportunities to collaborate for natural resource tourism exist, as synergistic programs could be developed to offer tourists a fascinating look into this natural area.

The DRIWR has local, regional, statewide, international, and academic influence. Representing the

only international wildlife refuge in North America, its importance as a downriver resource is tremendous. The extent of the refuge runs along 48 miles of the Detroit River and Western Lake Erie shorelines, and includes several islands, marshes, and coastal wetlands. The Refuge Gateway, a 44-acre piece of former industrial land within Trenton, was purchased by Wayne County in 2002 to develop a Refuge Visitor Center. In 2010, a greenway trail was completed that links Humbug Marsh with the Lake Erie Metropark, cleanup and restoration of this industrial land followed in 2012, and design work for the property has begun. This property is also adjacent to one of the most critical DRIWR sites, Humbug Marsh, which remains the last mile of natural shoreline on the U.S. mainland of the Detroit River and Michigan's only Wetland of International Importance. The site work and restoration on these lands provide an important boost to wetlands, especially given that this area has historically lost 97% of its original coastal wetlands to accommodate industrial uses – many of which are now obsolete.

Bird-watching enthusiasts have recognized the DRIWR as a critical asset for following, understanding, and viewing a staggering amount of bird species. The Michigan Natural Features Inventory and Eastern

Michigan University both conduct ground-breaking research, monitoring dangerous invasive species, water quality, local habitats, and ecosystem relationships, to name a few. Hosting special events at the Refuge Gateway catered to bird-watching activities or educational programs about the biology and ecosystems within the area can bring tourists to Trenton to enjoy its natural resource. Collaboration between the City, downtown businesses, and the DRIWR could launch a partnership that holds events or festivals promoting this natural resource and the Trenton experience. The only publicly-accessible refuge unit, located in neighboring Grosse Ile at the Gibraltar Bay Unit, could be enjoyed in conjunction with Trenton's assets. Joint programs between Grosse Ile and Trenton could offer tourists the opportunity to explore Elizabeth Park, The Refuge Gateway, and across the Detroit River to the Gibraltar Bay Unit.

SENSITIVITY

Climate change can affect the type of foliage that can survive and prosper in a hotter, wetter, more extreme weather environment. The City should prepare by providing plants, shrubs, trees that can adapt to a changing climate and provide a pleasant surroundings to enjoy the City's parks and green space.



Where it will hit: Vulnerability Assessment

Sensitive lands can have a lasting impact on the development of any geography or municipality. They are lands that have an environmental duty, although these functional responsibilities can cause damage. Sensitive lands within the City of Trenton are those that influence the movement of water. A small, albeit vital, portion of wetlands are found in the City and they serve an important role by absorbing a significant volume of water in the event of an extreme rain or flood event. Similarly, the flood plain exists to collect large volumes of water and move them accordingly during and after any major storm event. Hydric soils, which are soils that hold water and are found around wetland and flood plain features, act as nature's sponges to absorb excess water. The downside of these natural features, however, is that they can weaken or damage structures located on and around them. During any major storm event sensitive lands will be hit the hardest.

Hydric soils with over an 89% chance to be ponded or flooded were

identified using soil data. If a block within the City had ponded soils, it received 1 point. If the block contained the floodplain, either the 100-year floodway, the 500-year floodway, or the regulatory floodway, it was given 1 point. Despite the increased or decreased likelihood for flooding in the specific floodways, the possibility that strong storms will occur more frequently in the greater Detroit area warrant the inclusion for each of the three floodways. Finally, any blocks containing wetlands were given 1 point.

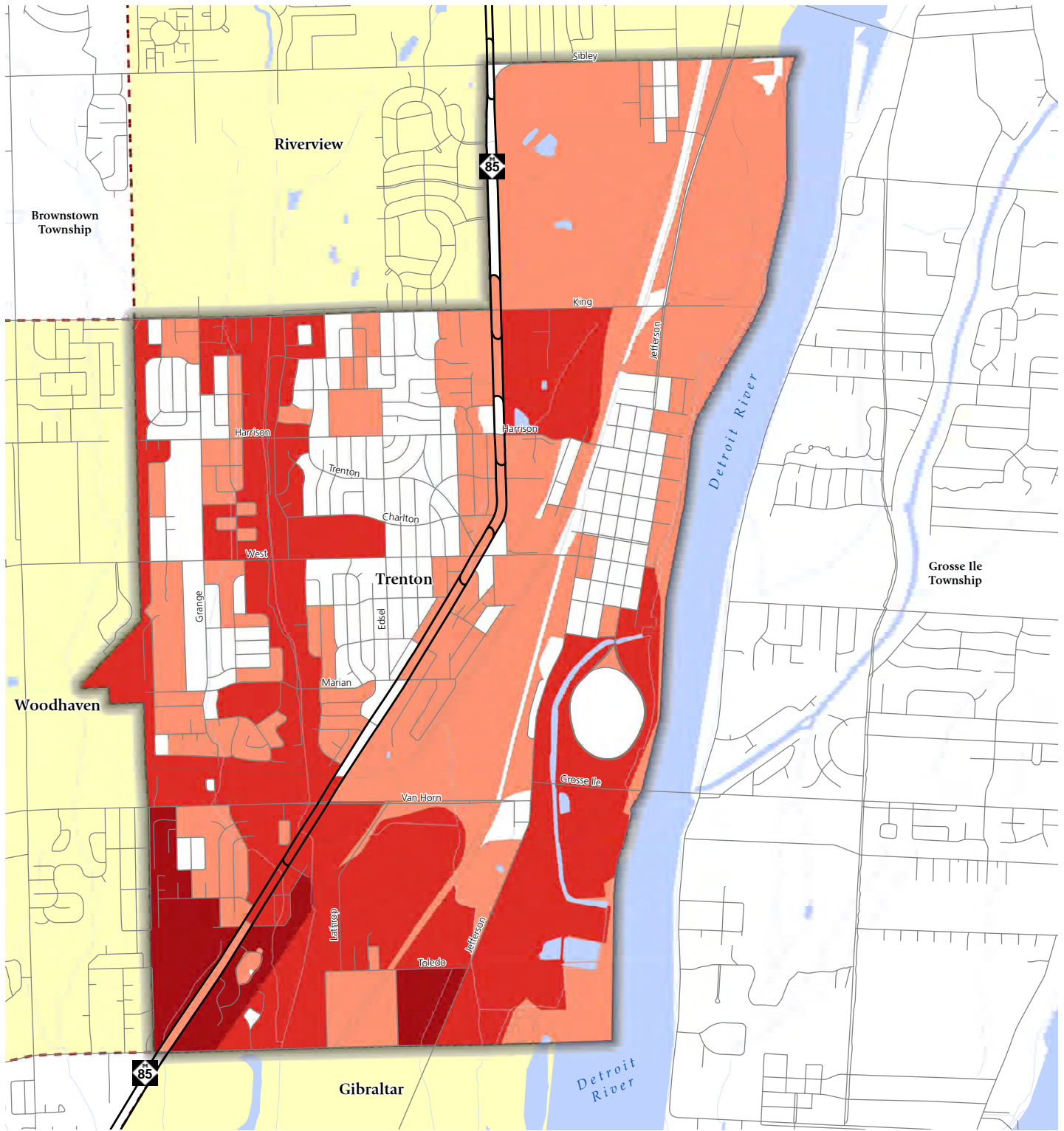
Most of the sensitive lands were those located within the floodplain and had hydric, ponding soils, receiving 2 points. However, the southwest portion of the City contains several larger blocks which received 2 to 3 points each. The southeast corner of the City has some smaller blocks that still received the highest value of all 3 points. The majority of the downtown area received no points at all, indicating strength in this portion of the City, although the Elizabeth Park area is moderately sensitive, given the presence of wetlands and the floodway. Most of the sensitive lands are therefore found in southern Trenton and adjacent to the floodways.

Environmental water vulnerability assessment

If the price tag for a potential \$2.7 billion dollar cleanup effort isn't enough to send someone running, there are plenty of other concerns that can affect the vulnerability of the water systems. As mentioned previously, approximately 74% of the soils within Trenton have medium and high rates of runoff, with the potential to carry heavy amounts of pollutants through natural drainage systems and back into the river.

Economic vulnerability assessment

Trenton would likely stay economically vulnerable if it sought to re-create its past legacy of heavy industry and resource extraction. A reliance on one economic model has been disastrous for Michigan and need not be replicated even if it can guarantee employment in the short-run. The community members have had the foresight to vocalize steps that would diversify Trenton's local economy and protect them, at least somewhat, from an economic downturn.



CITY OF TRENTON

Sensitive Lands at Risk

Data Sources: State of Michigan Geographic Data Library, City of Trenton, U.S. Census Bureau, Natural Resources Conservation Service, FEMA

- City of Trenton Boundary
- State Roads
- All Roads
- Railroads
- Municipalities

Vulnerable Land Point Totals

- 0 Points
- 1 Point
- 2 Points
- 3 Points



CITY COUNCIL DRAFT 2017-02
Beckett & Raeder

To weather the future together

LANDS

What we value

Economic Goal 1: To have a thriving, walkable downtown with diverse retail, entertainment, and dining options

- Improve business recruitment to attract out-of-the-box businesses
- Promote events in Trenton to a wider audience
- Revitalize the downtown and strengthen community assets

Economic Goal 2: Remediate contaminated industrial sites and rebuild the site to accommodate environmentally sensitive industry

- Convert industrial properties to new uses that align with the sustainable future of Trenton, such as “ed & med” facilities, mixed-use developments
- Create incentives to attract new developers

Economic Goal 3: Increase the tax base to strengthen neighborhoods and the local economy

- Attract new businesses and younger residents/families without displacing current businesses and residents

What we can do

Economic Objective: To build a local economy where business owners property investments are properly protected.

BUFFERS

The NYC Resiliency Plan shows that sand, dunes, wetlands, bulkheads, and elevated drainage systems helped to absorb the storm’s powerful waves.

Areas along the shore that were not buffered experienced greater destruction than shore-side areas with nourished beaches. In particular, buildings that were elevated suffered minor damages in comparison to nearby locations that were built on top of historic wetlands and marshes. Nourishing a beach consists of adding vast amounts of sand at regular intervals to protect the waterfront and adjacent neighborhoods.

Lastly, landscaping worked as an efficient drainage system and areas with appropriate vegetation and design recovered more quickly. Local landscaping can be an effective recovery approach when faced with higher precipitation and flooding risks.

GREEN INFRASTRUCTURE

Green infrastructure refers to using nature to manage storm water, as opposed to relying on traditional grey infrastructure such as pipes and sewers. Grey infrastructure obstructs nature’s filtration system. Instead of rainwater being absorbed by vegetation and become groundwater, rain water cannot penetrate the

ground and is re-directed to storm water drains. The problem stems from the rain water’s journey through paved streets because it carries pollutants with it to the nearest body of water. In the event of a heavy storm, extreme precipitation can overwhelm the water and sewage system. Biomimicry specifically through green infrastructure is becoming a popular way to manage storm water. Some examples of successful practices are:

- Green roofs
- Bioswales
- Retention ponds
- Tree planting
- Permeable pavement
- Rain gardens
- Constructed wetland

Shifting the focus to green infrastructure also shifts how cities view land use. Open spaces and parkland now become more valuable land uses, and potentially more cost-effective than expanding or upgrading grey infrastructure. This also means that ecosystem management would become a necessary component of master plans as well as coordination with other jurisdictions that share similar vulnerabilities. One example that encourages stakeholders to participate is to provide preferential tax treatment to those who use storm water management features.

New Orleans, a City that has been ravaged by hurricanes and flooding, now requires new development to implement storm water run-off mitigation techniques, for example, on-site water catchment.

The City of Stuttgart in Germany is located in a basin and is therefore subject to limited air flow and at times is left sitting beneath a layer of polluted, stagnant air. While Trenton does not lie within a basin, the air quality of the Detroit-Ann Arbor region is also poor. Stuttgart, along with another 179 towns, is

following planning recommendations to spare the air and protect itself from worsening weather patterns. Stuttgart is using its topography to its advantage. For example, valleys and hillsides will no longer be considered developable land. Valleys are considered “air delivery corridors” and help to push polluted air out, and therefore must be preserved in their natural state. Again, Trenton may not be situated in a valley, but air streams play a role in how contaminated air is distributed in a region and should

be accounted for when planning for development in already heavily polluted area. Moreover, trees that meet the City’s criteria are protected under a tree preservation order, preserving about 90,000 trees. Vegetation is also strategically placed near large developments and such that green spaces connect and now cover more than 60% of the City. As a result, through green infrastructure and careful limitation to developments, Stuttgart has improved urban air circulation.

Case Study: Two Harbors, MN

The Great Lakes Coastal Resilience Planning Guide sought out case studies in the Midwest where communities have implemented strategies to reduce the effects of climate change. One example takes place in Two Harbors, Minnesota, a town outside of Duluth located on the shore of Lake Superior. In 1999, Two Harbors experienced a 100-year storm that had a devastating effect on private property and municipal infrastructure. In addition to the physical damage, riverbank erosion and run-off entered the water system.

Over the next 10 years, the community invested about \$80,000 on a rain garden, three retention ponds, and two stream stabilization projects, using its sloped topography to its advantage. These green infrastructure projects were tested in 2010 when Two Harbors experienced 8-10 inches of rain within 48 hours. Natural flood control structures helped to reduce the amount of damage that occurred within the City.



Community Resiliency

Total Vulnerability

Once all three measures of sensitivity were produced, using people, lands, and structures as the mechanisms for identifying vulnerable areas of the City, the results were combined to generate one overall vulnerability map. Each of the point totals for sensitive people, lands, and structures were aggregated to highlight the most vulnerable and least vulnerable parts of the City. Even at the lowest end of the vulnerability spectrum, blocks received no less than 3 points, indicating no place within City limits is completely free of concern. However, these blocks should be considerably less concerned than blocks that received a score between 18 and 30 points, which are significantly more vulnerable. This dataset illustrates the neighborhoods in the northwest portion of the City to be less vulnerable and more stable, and several blocks along the Frank and Poet drain fall within the middle range of the vulnerability spectrum. Highly vulnerable areas follow along the M-85 / Fort Street corridor, particularly in the southwest and northeast sections of the City, as well as several blocks in the downtown area and along the Trenton coastline.



Community Engagement Mapping

The community engagement mapping exercise demonstrated specific places that were considered a major concern and why they caused concern. The most common causing concern were the DTE power plant, downtown development, Trenton High School, the Riverside Hospital and the McLouth Steel plant. The concern over Trenton's older industrial sites contamination and vacancy is recurring and has been voiced throughout the entire planning process. The looming uncertainty of how to convert those sites to more appropriate uses contributes to the community's concern. Trenton High School was listed as a major concern due to asbestos and its poor image and undesirable characteristics. The downtown was also mentioned due to its lack of business and the continued loss of business, as well as the loss of single family housing surrounding the downtown.

Other sites of concern were along major infrastructure, for example Beaumont Railroad, Van Horn Road, M-85 corridor, and both the Frank and Poet drains. When these concerns are aggregated and overlaid on a map displaying the vulnerability index, some areas that concerned residents matched what were determined to be the most vulnerable areas of Trenton. Residents are correct to be somewhat concerned about the industrial sites along the water. Because these sites are contaminated, and close to the river they are a particular threat to carrying run-off into the Detroit River. The residents also correctly identified the downtown as an area of concern. Despite receiving the most votes as a “major concern” from the public, there are far more vulnerable areas of Trenton.

Marsh Creek, near the Frank and Poet drain has one of the highest vulnerability scores, but received little attention from the public. Its high score means that it scores high in all three categories: sensitive populations, sensitive structures, and sensitive lands. The southwest corner of the City has high proportions of minority groups, lower educational attainment, and poverty, in addition to being located near a drain that typically floods in heavy rainfall.

Recommendations for a Resilient Trenton

If the government’s role is to protect and plan for all of its citizens, then resiliency planning can be seen as a public good. The goals of building community resiliency are not only to become robust and flexible community, but also to be highly inclusive as the most vulnerable segments of the population are at the greatest risk. This section discusses practices that have been implemented elsewhere and can serve a guide for how to advance Trenton’s resiliency efforts.

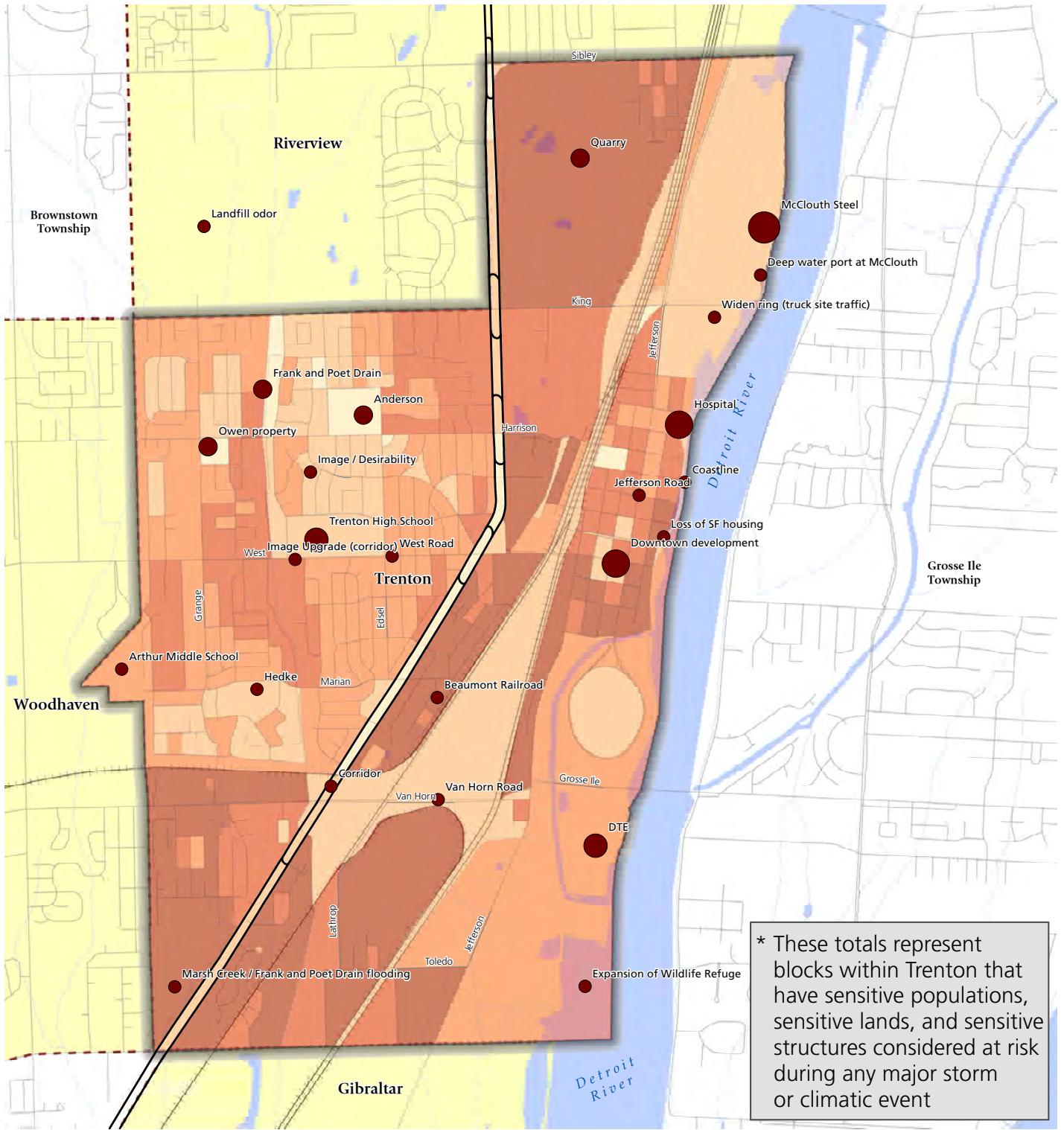
PLACEMAKING

As census data clearly shows, Millennials, the generation between Gen X (born between 1965-1980) and Gen Z (born after the year 2000) what to live in a more urban environment than previous generations. Cities of all sizes have seen a movement back to their downtowns and nearby neighborhoods. Businesses noting this trend have followed as they too are moving their offices and headquarters from the more traditional office park and suburban environment of the last 60 years to downtowns to be near this talent pool of younger workers. Placemaking is an important

component in making cities desirable for Millennials specifically, but for people of all ages in general what to live.

To attract and retain Millennials and young growing families and in turn to minimize population loss, it is important for the City to maintain its strong housing stock, continue to redevelop existing parcels, and attract commercial businesses that will fulfill the needs of the current shifting population characteristics. And it is important that the City of Trenton maintain the quality of its educational facilities. However in order to attract and retain Millennials and young families the City also needs to create public spaces that people of all ages desire.

What defines a community is not necessarily what has made previous generations of people want to live there. Some chose a community based on concern for schools, safety, and services. Others considered proximity to work, transportation, or family. These factors tended to influence decision for people who are older than Millennials, generally people who were starting a family, buying a home, “putting down roots”. And since those who historically have roots have voted more than renters, municipalities have tended to focus the services they provide, the resources they allocate,



CITY OF TRENTON Total Vulnerability with Concerns

Data Sources: State of Michigan Geographic Data Library, City of Trenton, U.S. Census Bureau, Wayne County GIS, NRCS, FEMA

- City of Trenton Boundary
- State Roads
- All Roads
- Railroads
- Municipalities
- Cities

- Vulnerability Point Totals**
- 3 - 8 Points
 - 9 - 13 Points
 - 14 - 17 Points
 - 18 - 21 Points
 - 22 - 29 Points

- Number of Times Mentioned**
- 1 - 2 Times
 - 3 - 4 Times
 - 5 - 6 Times



and the communities they designed for homeowners. Today there is clear evidence that municipalities large and small need to create a “there there”. To focus on creating places that pay close attention to all the attributes which create a sense of place, where people want to go to visit or live, not just to drive through.

The City begins with good foundations for placemaking as it is laid out in a grid pattern and has sidewalks throughout almost the

entire City allowing for easy access for both pedestrians and vehicles, both positives for creating a sense of place. Recently the City has further strengthened placemaking efforts as they are dedicating efforts on reviving their historic downtown and creating a more people-oriented center. There are established components in place to assist with placemaking as the City already has a Downtown Development Authority and a Downtown District. Additionally,

the zoning map also notes a Central Business District (CBD). The Planning Commission has also recommended major text amendments over the last few years to reduce parking requirements and to give reductions for bicycle racks, to allow second story residential over retail, and to allow more uses in the CBD and nearby zoning districts. These have all been approved by the Trenton City Council. Additional placemaking activities already in place include established



events such as a Boo Bash, Jazz on the River, Trenton Riverfront Days, and a Farmers Market. However these tend to be isolated events and there is little to make people linger in the downtown besides a few retail stores and restaurants after these activities.

In an effort to confront the weakening downtown occupancy levels, the City issued a RFP for the demolition of the existing structures on the southwest corner of West Road and West Jefferson, the main intersection of the City's downtown. The City is having the parcels cleared of all structures and will market it for development. This is perhaps the best opportunity for creating a "there there" as it is large, at a critical intersection, and has nearby restaurants.

The area should be the cornerstone of the City's pedestrian oriented commercial area because it promotes the concentration and mixture of related uses. To further strengthen this compact and unique business district for the City the following design and development components are suggested:

- New development should be managed through a planned unit development approach which gives the developer flexibility on the building and parking program and the City some control over design and site integration with adjacent residential neighborhoods. This will ensure that the proposed uses, architecture, parking,

and placement of structures are completed as a unified development.

- Future development in the downtown should have more of a pedestrian focus, limiting the number of auto related uses, and allow for multiple residential options as infill development.
- Building heights along West Jefferson should be increased.
- Site improvements (lighting, landscaping, and signage) should be complimentary for public and private areas.
- Walkability applications include a variety of techniques, including appropriate dimensions for walkways and sidewalks, the width of roadway cross-sections, availability of pedestrian crossings, and travel speeds on major and local streets. In addition, a walkability survey could be done in conjunction with a sidewalk inspection program.
- Traffic Calming and Pedestrian Safety are factored into a walkability program. However, this has to be a primary initiative for this intersection. The City should look to implement access management techniques throughout its community which should also include better parking stripping.

This node could become the definable intersection of downtown for the City of Trenton, and would have the depth

and dimensions to accommodate a planned commercial, civic, and mixed-use center. The City should also look to provide additional on-street parallel parking, lower speed limits, and add additional streetscape to further increase opportunities for a more pedestrian-friendly business district.

Since this area is the natural entranceway into the downtown, the City should create a gateway. Currently nothing effectively announces your arrival and nor communicates the sense of pride and the character that embodies downtowns. Gateways are physical symbols of City or district limits that express a sense of new territory to those entering. Signs usually display the name of the area being entered while sign materials and landscaping express the tone which best describes the theme set forth by the community.

Depending on their location, they can simply be set alongside the adjacent thoroughfare or can be incorporated into the thoroughfare via boulevards or traffic circles. One option to explore for the City of Trenton would be to look at major intersections downtown as preferred locations to incorporate gateways.

The City of Trenton has all the ingredients needed to develop the downtown into a place that people visit, shop, and live. Following the guidelines of placemaking will ensure that it will happen.

ACTION PLAN

TRENTON IS KNOWLEDGEABLE AND HEALTHY

- o Responsible organization: City Administration

Continue collaborations among the City of Trenton, Trenton Public Schools, and Beaumont Hospital on initiatives such as the Trenton Healthy Coalition

Closely monitor and participate in Beaumont's Community Needs Assessment, seeking opportunities to collaborate on shared goals

Work with programs aimed at seniors and geospatially targeted communications to ensure a reliable two-way communication network that reaches as many of Trenton's seniors as possible

TRENTON IS ORGANIZED

- o Responsible organization: City Administration

Acknowledge the racial poverty gap: 9.3% among all people, 20% among American Indian / Alaskan Native / Hispanic populations; 55% among African Americans

Identify all service-oriented nonprofit organizations in the community as assets and consider ways to link,

support, and promote them

Extend Wayne County's "new Americans" efforts into Trenton

Address impending racial change head-on with business recruitment efforts, diversity programming in schools, multicultural events, and other activities aimed at emphasizing tolerance and cooperation

TRENTON HAS INFRASTRUCTURE AND SERVICES

- o Responsible organization: Planning Commission

Review landscaping requirements for opportunities to reduce impermeable surface and increase vegetative cover throughout the community

Identify the nonmotorized circulation network throughout the City

Review Code of Ordinances to permit and encourage site-scaled energy

TRENTON IS CONNECTED

- o Responsible organization: Engineering Department

Investigate the level of support for a community wireless mesh network as demonstrated by the Detroit Community Technology Project

TRENTON CAN MANAGE ITS NATURAL ASSETS

- o Responsible organization: Emergency Management Coordinator

Institute a Coastal Management Zone along the City's Detroit River frontage which protects its ecological sensitivity and contains the degradation already present

Aggressively pursue all available funding routes to address, mitigate, and reverse industrial land and water contamination

Proactively increase tree canopy cover on publicly controlled lands throughout the City

Monitor watersheds for total suspended solids and other pollution indicators

Enhance, support, promote, protect, and invest in the Detroit River International Wildlife Refuge and related opportunities

Document the City's green infrastructure assets in order to preserve them, strengthen them, and connect gaps in the network

TRENTON HAS ECONOMIC OPPORTUNITIES

- o Responsible organization: Economic Development Committee

Focus on strengthening the connection between where people work and where they live from both directions

Improve and preserve walkability throughout the downtown, with special attention to connectivity with

the waterfront and Elizabeth Park

Identify home-based businesses within the community that may be ready to consider expanding to a brick-and-mortar presence

Use market data to begin recruitment conversations with retailers and services that may fit Trenton's niche particularly well, such as American-made products of substantial quality

Adjust zoning to permit a retail node serving visitors to Elizabeth Park

A STRONG SUSTAINABLE ECONOMY

The City of Trenton's location has been instrumental in the City's development. Trenton capitalized on its waterfront with jobs that provided residents with a good quality of life due to the income those jobs provided. Today the City must capitalize on the changing economy and use its natural assets, including its waterfront, to position itself in the 21st century and beyond.

Planning Commission

Rewrite zoning ordinance to reflect more environmental friendly regulations including

- Shifting away from impervious and providing incentives for pervious surfaces
- Moving heavy industrial zoning away from waterfront
- Increasing landscaping

requirements

- The further reducing of parking requirements
- Allowing mixed use throughout business districts
- Allowing for commercial nodes that have walkable stores within neighborhoods
- Allowing for wind and solar farms where appropriate
- Enacting a sign ordinance

Work with adjoining communities to strengthen connectivity of walking and biking

City Council

Work to attract businesses that are beneficial not just for the economy, but also the City's environment

Find proper uses for the large vacant and soon to be vacant sites including DTE's Trenton Channel

Work to decrease the dependence on the automobile for all transportation needs.

Continue to apply for grants to clean up contaminated sites

DDA

Fund a TMA for the downtown

Purchase property where appropriate

Target development in critical areas

FUTURE LAND USE CLASSIFICATION

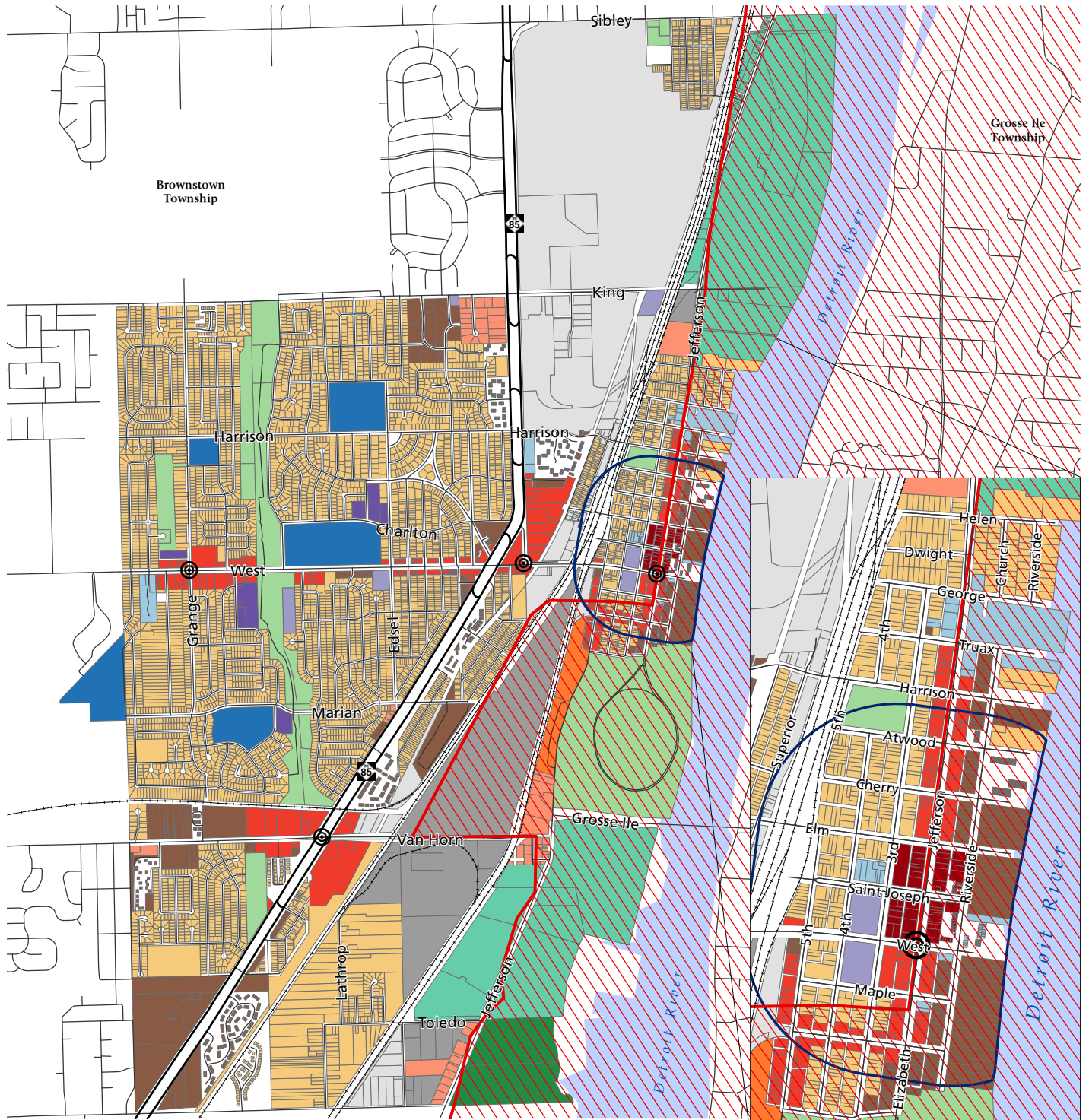
A Future Land Use Map is a traditional

aspect of a master plan that gives a broad overview of the spatial distribution of land uses within the community, both existing and future. Based on sound planning principles and overlaid with the community's expectations, it builds on the historic development patterns of the community, factoring in the need to revitalize long-standing residential neighborhoods and focusing redevelopment on key nodes, districts, and corridors. The purpose of this document is to assist the City in promoting the harmonious, efficient, and economical use of land as well as the public health, safety, and general welfare of the community. Planning objectives used to create the map were based on the goals and strategies and supplemented with the following:

A long-range opportunity to create walkable neighborhoods where the design and land development regulations, through the application of form, will revitalize and redevelop traditional neighborhoods

- Accommodation of expected growth through a deliberate and planned process
- Advancing sustainable design through the application of new urbanism and walkable urban best management practices
- Efficient use of existing infrastructure, development, and transportation patterns





CITY OF TRENTON

Future Land Use

Data Sources: State of Michigan Geographic Data Library, City of Trenton, Wayne County GIS

- Single Family Residential
- Multiple Family Residential
- Mobile Home Park
- General Business
- Neighborhood Business
- Town Center
- Town Center 5-Minute Walk

- Planned Unit Development
- School
- Public
- Quasi Public
- Light Industrial
- General Industrial

- Park
- Preservation Area
- Redevelopment Area
- Coastal Zone Management Boundary
- Activity Centers



- Classification of residential areas by type and density, recognizing their character, qualities, and opportunities for innovative development and adaptability to changing market conditions
- Integration of the other recognized planning and economic development recommendations
- Respecting the City's historic development pattern

In a use-based zoning code, the Future Land Use Map represents the framework for making individual zoning decisions that fit into a coordinated whole. Trenton is interested in broadening that framework to include consideration of the built form and the mixing of compatible uses. Accordingly, this Future Land Classification Map addresses both. In most categories, more than one type of use is permitted, reflecting actual conditions as well as compatibility and convenience.

HOUSING

Moderate Density Residential (Single Family Housing)

This land use category includes all planned areas of single family residential development. The intent of this designation is to maintain the residential neighborhoods

within the City. All future development within these areas shall be consistent with the existing traditional neighborhood design.

Areas with prevalent single family use include a large area west of Fort Street to the western border of the City, a smaller area just west of downtown, and a small pocket west of Jefferson and south of Sibley Road.

Including mobile homes, the City has eight categories of residential districts. A more unified application of single family residential zoning districts is needed in order to control the type and density of residential development in a manner that is compatible with this plan.

High Density Residential (Multiple Family Residential)

This designation serves a number of purposes as the City continues to redevelop. This designation preserves the existing multiple family areas, and also expands existing multiple family areas to increase the residential presence within the community.

This designation provides land use transitions between single family and more intense uses. Having high density residential allows for more opportunities to diversify housing options for residents while offering a more appropriate and adaptive reuse of industrial facilities, whether occupied or abandoned.

The largest areas of high density residential include the southwest corner of Trenton and downtown along the waterfront. Permitted uses in these areas include various types of high density residential development including but not limited to, attached single family, townhouses, condominiums and apartments.

BUSINESS

General Business

This category represents auto-oriented business such as gas stations, drive-through restaurants and larger scale commercial uses such as full service multipurpose stores including some office uses. In the past, these businesses required large parking areas and generated high volumes of traffic. The intent of this district is to offer necessary commercial businesses that meet resident's daily consumer needs within the City, the needs of those traveling through the City, and those that live in abutting municipalities. The City also has to make sure that the design of the facilities meets the needs of the businesses while maintaining Trenton's unique character and image.

The primary location for this land use classification is West Jefferson

Avenue.

Neighborhood Business

This type of land use caters to convenience shopping, for example, when brand and cost are not as important as the ease of acquiring the product. These districts are intended to be small and located near residential districts. The reorganization of commercial properties along West Road to create urban villages will create walkable neighborhoods near important intersections along one of the City's primary east west access. In addition to the organization and intensity of uses along West Road, allowing for a slight increase in building height to accommodate mixed uses is appropriate. The intent is to create defined pedestrian-oriented commercial nodes that are compatible with surrounding residential uses. These uses should be limited by size and type and should include strict design guidelines in order to preserve neighborhood scale. Uses in these districts should be limited to neighborhood services such as small sit down restaurants, hair salons, dry cleaners, day cares and convenience stores.

Presently West Road, Van Horn Road, and West Jefferson Avenue

are the major areas for this land use classification.

Town Center (Downtown)

The Core Mixed Use category represents the focal point of the City. It is designed to provide retailing, lodging, personal services, and office and business services for the City as well as for the surrounding communities. Residential use is encouraged above the first floor to generate activity around the clock and increase density; clustered residential uses such as townhouses, courtyard apartments, and live/work units would also be desirable. Currently this area has many underutilized parking lots which are a result of retrofitting suburban parking standards to a downtown urban area. These properties should be converted into redevelopment projects that provide employment opportunities, offer residential options for daytime workers who currently do not reside in the City, and increase both property valuation and tax receipts. To further strengthen this compact and unique business district for the City the following design and development components are suggested:

- New development should be

managed through a planned unit development approach which gives the developer flexibility on the building and parking program and the City some control over design and site integration with adjacent residential neighborhoods. This will ensure that the proposed uses, architecture, parking, and placement of structures are completed as a unified development.

- Site improvements should be complimentary for public and private areas.

This node has been the definable downtown for the City of Trenton, and would have the depth and dimensions to accommodate a planned commercial, civic, and mixed-use center. Additional modifications to further increase opportunities for a more pedestrian-friendly business district should be implemented when applicable.

INDUSTRIAL

Light Industrial

The intent of this designation is to provide an exclusive area for low intensity industrial development. Guidelines ensure sites are designed in a proper manner. Guidelines should relate to proper

screening, deep setbacks, open space, landscaping and quality architectural design and building materials. Outdoor storage should be restricted, and in many cases prohibited. For the most part, this designation is located north of West Road, and west of the West Jefferson.

Heavy Industrial

This designation is limited to an industrial corridor east of Fort Street and west of the railroad tracks. The FLUM does not designate any type of industrial activity along the waterfront. Operations that are considered heavy industry include those that involve manufacturing a product and stamping and machine operations. These types of operation are necessary since they are important to the City's and region's economy and must be supported to continue. As with light industrial, performance standards should be applied in addition to truck traffic, loading, and outdoor storage guidelines.

PARKS/PRESERVATION AREAS

These broad categories primarily include areas that, due to the presence of sensitive natural features, should be preserved in their natural state. There is also potential for adjacent land, not owned by the City, to be included in

this designation. If these properties remain under the control of other entities there is the potential to coordinate with the City to preserve some portions of these areas. Presently these areas include Riverside Park, the Frank and Poet Drain, and the Detroit River International Wildlife Refuge.

SCHOOLS/PUBLIC/QUASI PUBLIC

These uses are an important part of the City's history. They include parks, government buildings, schools, and places of worship. These areas must be maintained in order to ensure residents are offered adequate community facilities and services. Expansion of these facilities must continue to be compatible with the character and scale of the neighborhood. If any of these sites are reused in the future the City should commit to continuing a public/institutional use in order to maintain a high visibility of these types of facilities.

REDEVELOPMENT AREA

The City wants to create an environment with a high level of concern for land use principals appropriate for the redevelopment area. These areas are located along the City's waterfront and have been industrial historically. The goal is to promote economic development of environmentally sound commercial

and light industrial uses. The City also wants to control growth through revitalization activities and new development that meets the needs of the area, the City and its citizens. Another goal is to eliminate and prevent the spread of blight and deterioration through the conservation, rehabilitation and redevelopment of the area in accordance with the Master Plan.

ACTIVITY CENTERS

In an attempt to create neighborhoods that are more assessable to all modes of transportation, the City has identified five Activity Centers. They are located at West Road and Grange Road, West Road and Veterans Parkway, West Avenue and West Jefferson, and Van Horn Road and Fort Street. These centers are located in important areas of the City as they can strengthen the vital building block of their neighborhoods.

These areas are defined by the five-minute walking radii, which is roughly one-quarter mile. These areas should anchor the neighborhood and include shared spaces. These centers can also become the focal point for their neighborhoods, with walkable storefront destinations that provide services to nearby residents. Ideal Activity Centers also have small



parks and playgrounds along with educational, religious, and cultural activities in addition to stores and housing.

The success of these centers will also depend on diverse housing types that include rowhouses and apartments and allow for a more diverse population. Having these centers will not only strengthen the quarter mile of space around them, but also the City in general as research shows cities that are walkable have higher housing values, more occupied stores, and a healthier population.

ZONING PLAN

The Michigan Planning Enabling Act of 2008 requires that a master plan also includes a zoning plan. The zoning plan is meant to highlight necessary changes to the zoning ordinance so that it matches the new master plan. In particular, the zoning plan discusses the relationship between the future land use map and the current zoning map and suggests ordinance updates that align the two more closely.

The City of Trenton is currently served by a traditional single use-based zoning ordinance that delineates eight categories of residential intensity, five categories of commercial intensity, and three

categories of industrial intensity in addition to one waterfront marina and one planned unit classification.

Due to the excessive number of zoning classifications, the City has expressed interest in consolidation and would like no more than five residential, three commercial, and two industrial areas. In addition, Trenton would like to focus more interest on form over use, and adopt certain elements of a form based code, most importantly in the commercial districts in general and the downtown in particular. The City has also been focusing more attention on developing an environmentally sensitive ordinance.

Steps to implement these changes have already begun and additional action items will be worked on over the next years. These include:

- Revised standards for landscaping, creating a more visually pleasing community
- Reduce parking, allowing the Planning Commission to waive up to 20% of the parking requirements
- Focusing on Dark Sky Friendly lighting
- Developing building design standards that allow more flexibility of use
- Requiring bike racks at all

appropriate new developments

- Creating a stream lined site plan review process with an Administrative Site Plan Review procedure

To bring the zoning ordinance into compliance with the recommendations in this Master Plan, the following action steps should be taken:

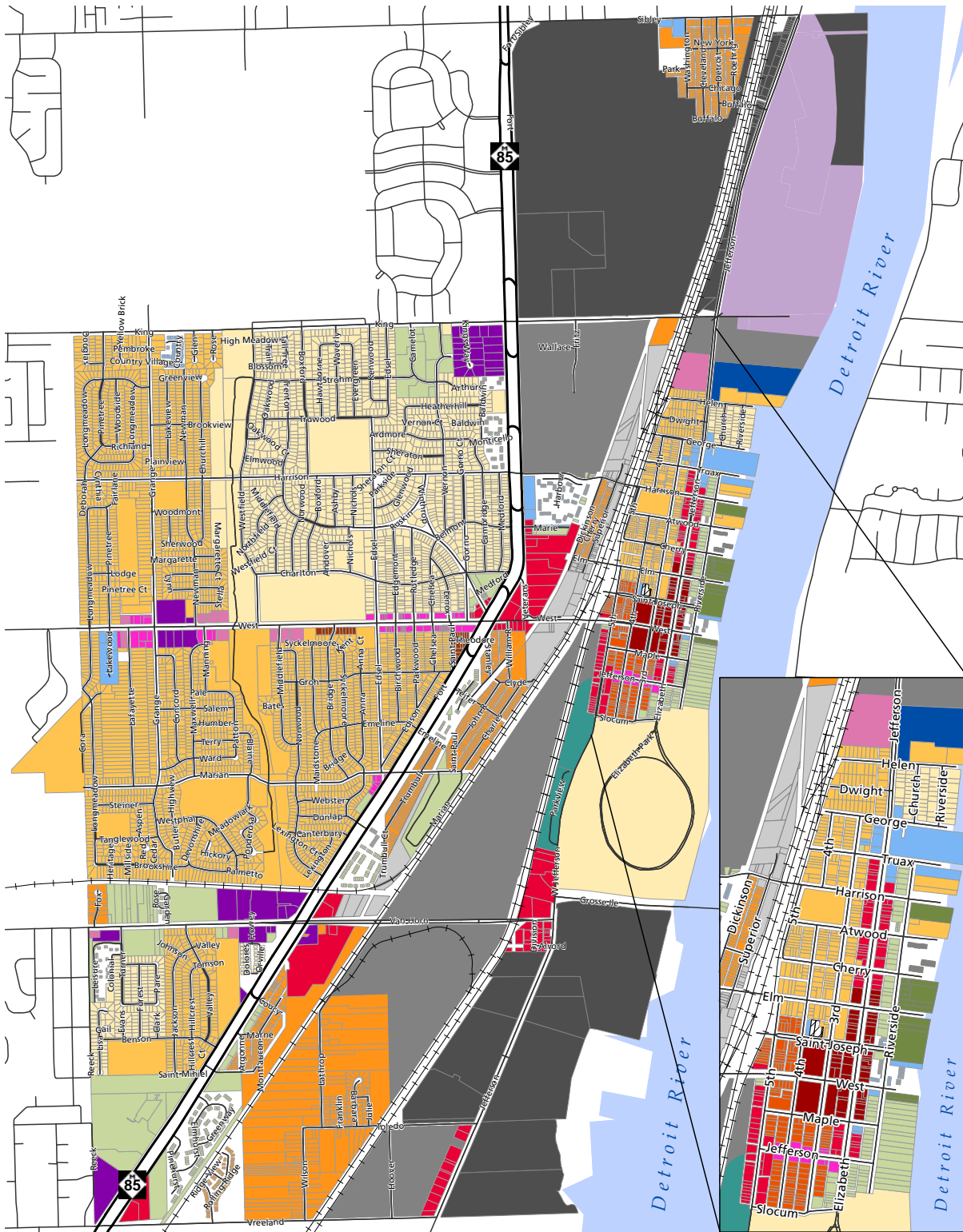
- Revise the zoning ordinance to accommodate walkable mixed uses in the designated area
- Reduce all the principal zoning districts (industrial, commercial, and residential) allowing of more flexibility of uses in each
- Add the basic infrastructure to create village nodes accessible to walking and biking
- Institute ordinances to permit and regulate stormwater installations
- Pursue form based code in a gradual process focusing first on the downtown

SUMMARY OF ZONING PLAN'S PROPOSED CHANGES

The plan reduces the R-1 One Family, R-2 One Family, R-3 One Family, and R-4 One Family classifications on the zoning map to one single family residential district on the FLUM.

CITY COUNCIL DRAFT 2017-03





Trenton Coast Resiliency Master Plan



CITY OF TRENTON

Trenton Zoning Map

Data Sources: State of Michigan Geographic Data Library, City of Trenton, Wayne County GIS

- | | | |
|---|---|--|
|  R-1: One-Family Residential |  CBD: Central Business District |  Mixed Use Redevelopment |
|  R-2: One-Family Residential |  B-1: Local Business |  OS-1: Office Building |
|  R-3: One-Family Residential |  B-2: Planned Community Business |  PD: Planned Development |
|  R-4: One-Family Residential |  B-3: General Business |  MH: Mobile Home Park |
|  RT: Two-Family Residential |  I-1: Industrial - 1 |  WM: Waterfront Marina |
|  RM1: Multiple-Family Residential |  I-2: Industrial - 2 |  P-1: Vehicular Parking |
|  RM-2: Multiple-Family Residential |  I-3: Industrial - 3 | |



CITY COUNCIL DRAFT 2017-03
Beckett&Raeder

The City's four commercial and one office district on the zoning map have been replaced with two business and one town center districts on the FLUM. The three industrial districts have been reduced to two industrial districts and the goal of the City is to reduce it to two.

Both the FLUM and zoning map contain one mobile home district and one PUD district. When the City begins the process on updating its zoning map, it will show reduced commercial districts.

The major differences between the FLUM and zoning map are along the City's waterfront. Heavy industrial districts have been removed on the FLUM and been replaced with new classifications, Preservation Areas and Redevelopment Areas. The FLUM districts along the waterfront reflects the recently announced closing of DTE Energy's plant along with earlier closings of heavy industrial manufacturing facilities located along the Trenton Channel. By removing industrial from the City's waterfront on the FLUM, the City can continue transforming its waterfront and it's economy to reflect current and future opportunities for development.

CITY COUNCIL DRAFT 2017-03

Trenton Coast Resiliency Master Plan



To weather the future together

CITY COUNCIL DRAFT 2017-03

COMMUNITY RESILIENCY