



2017

# GOVERNOR'S RECYCLING COUNCIL

## Report and Recommendations

**Prepared for:**

Governor Rick Snyder

and

Michigan Department of Environmental Quality

Director C. Heidi Grether





February 10, 2017

**GRC Members**

**Co-Chair**

**Angela Ayers**

*Executive Office of  
the Governor*

Governor Rick Snyder  
MDEQ Director Heidi Grether  
State of Michigan  
Lansing, MI

**Co-Chair**

**Jim Frey, CEO**

*Resource Recycling  
Systems*

Dear Governor Snyder and Director Grether;

I want to thank you, Governor Snyder, for the leadership and opportunity you have created in challenging Michigan to reach for the next level of performance in protecting our environment, building a thriving economy and creating vibrant communities. Your call to double Michigan's recycling rate, and your appointment of the Governor's Recycling Council to prepare recommendations on how to accomplish this important outcome is applauded.

**Mike Csapo**

*RRRASOC*

**Linda Gobler**

*Michigan Grocers  
Association*

Writing now on behalf of the members of the Governor's Recycling Council (GRC) and the Michigan Department of Environmental Quality (MDEQ) and Governor's office staff that supported this process, I am both pleased and excited to be able to bring to you the recommendations that are contained in the following report. We offer these recommendations knowing that they are timely and synergistic with two other key initiatives that your office and MDEQ have underway – the recommendations of the 21st Century Infrastructure Commission that have just been released, as well as the recommendations of the MDEQ Solid Waste and Sustainability Panel on changes to the regulatory structure for Michigan's system of managing waste materials. The synergies between these three sets of recommendations are critical to the future of our state.

**Jim Kulp**

*Plastipak Packaging  
Clean Tech*

The Governor's Recycling Council has developed the following recommendations to double our recycling rate. There are five key components:

**Bill Lobenherz**

*Michigan Soft Drink  
Association*

**Kerrin O'Brien**

*Michigan Recycling  
Coalition*

**Tonia Olson**

*Michigan Waste and  
Recycling Association*

- Mobilizing a statewide education and engagement campaign to get more people recycling and more materials recycled
- Authorizing a Michigan Recycling Market Development Initiative to grow Michigan's domestic use of recyclable materials in our industry, commerce and infrastructure
- Creating a system for convenient comprehensive recycling that is universally accessible across the state with a network of curbside and drop-off recycling in urban, suburban, exurban and rural areas.
- Establishing a Michigan Recycling Improvement Fund to fund recycling initiatives
- Committing to measurement towards clear performance goals

**Don Pyle**

*Delta County Solid  
Waste Management  
Authority*

On behalf of the GRC, we look forward to working with you both in developing Michigan's next generation of recycling infrastructure – building a foundation for success for Michigan's environment, economy and communities.

**Elisa Seltzer**

*Emmet County Public  
Works Department*

**Prior Term**

**Doug Wood**

*Kent County Public  
Works Department*

Sincerely,



Jim Frey, Co-Chair of the Governor's Recycling Council

## GOVERNOR'S RECYCLING COUNCIL PURPOSE AND CHARGE

### **Governor's Recycling Council Purpose:**

The purpose of the Governor's Recycling Council (GRC) is to advise the Governor and the Michigan Department of Environmental Quality (MDEQ) on implementing the Governor's Residential Recycling Plan and other related issues so that the state will achieve a 30 percent residential recycling rate within two years.

GRC Members include:

**Michael Csapo**, of Fenton, represents the recycling community and is the general manager of Resource Recovery and Recycling Authority of Southwest Oakland County. He has worked as a staff and transportation planner for local governments, and as the assistant city manager of the village of Holly. Csapo holds a master's degree in economics from Walsh College, a master's of public administration and a bachelor's in political science from the University of Michigan - Flint.

**Jim Frey**, of Ann Arbor, represents academics and consultants. He is CEO and co-founder of Resource Recycling Systems and has over 30 years of expertise in environmental program development both in public service and private enterprise. Frey holds an MBA from the University of Michigan Ross School of Business, and a BPh from Grand Valley State University.

**Linda Gobler**, of Lansing, represents the retailers on the council. She is president and CEO of the Michigan Grocers Association, where she has served in multiple capacities for the past 28 years. She previously served as a legislative analyst for the Michigan House of Representatives and as an administrator for the Greater Lansing Urban League. She earned a bachelor's degree in social sciences/social work from Michigan State University.

**Jim Kulp**, of Dexter, represents the processors. He has worked 32 years with Plastipak Packaging, and currently is the Operations Manager for Clean Tech Inc., the state's largest bottle recycling facility.

**Bill Lobenherz**, of Ludington, represents the bottlers. He has served as the president of the Michigan Soft Drink Association for more than 25 years. He has also worked as an attorney for Dykema Gossett PLLC, as vice president of Wayne State University, the legal counsel for Michigan School Board Association, and as a drafter for the Legislative Service Bureau. Lobenherz has a law degree from Wayne State University and a bachelor's of business administration from the University of Michigan.

**Kerrin O'Brien**, of East Lansing, represents environmental interests. She is the executive director of the Michigan Recycling Coalition and has also worked as an independent consultant, executive director of the Mid-Michigan Environmental Action Council, resource recovery agent, and a grant coordinator. O'Brien holds a bachelor's in social science, with an emphasis of environmental issues from Michigan State University.

**Tonia Olson**, of Lansing, represents businesses that provide waste and recycling related services. She is the director of Governmental and Community Relations for Granger. Olson has a bachelor's degree in resource development as well as agriculture and natural resource communications from Michigan State University.

**Don Pyle**, of Escanaba, represents county and public interests as well as being a long standing board member of the Upper Peninsula Recycling Coalition. He has worked in the recycling and solid waste industry for over 30 years in the Upper Peninsula (U.P.) of Michigan in both private and public sectors.

Over the years he has served on many different county, regional, and state boards, committees and counsels representing the U.P. He has a degree from Michigan State University.

**Elisa Seltzer**, of Levering, represents public and community interests. She has been the public works director for Emmet County for 26 years. She has also worked as a curbside recycling coordinator and personnel coordinator for Recycle Ann Arbor. Seltzer has a bachelor's degree from the University of Michigan School of Sustainability and Environment in environmental education and advocacy.

**Doug Wood**, retired Director of Public Works for Kent County, also served on the GRC from 2014 to 2016.

#### **MDEQ and GRC Charge:**

In November of 2012, the MDEQ initiated discussions on recycling with conservation groups, waste service providers, recycling experts, retailers and grocers, and local governments as directed to do so by the Governor in his Special Message on Energy and the Environment. The goal was to develop a statewide comprehensive recycling plan and the discussions focused on what drove successful programs.

Significant consistencies emerged. Participants agreed that Michigan should measure recycling efforts, educate consumers on how and why to recycle, grow recycling markets and business, and ensure consumers have convenient access to recycling opportunities. Stakeholders also recognized the need to adequately fund these activities.

A Draft Recommended Approach for Comprehensive Recycling in Michigan was presented in September 2013, to over 45 stakeholder and interest groups as a starting point to initiate discussions. The document identified a viable path to achieving comprehensive recycling and acknowledged alternatives as options. Subcommittees were formed to vet specific aspects of the recommended approach, while the larger group continued to meet to discuss goals and concepts. On February 13, 2014, the MDEQ presented their Proposed Plan of Action on Recycling.

The MDEQ's plan of action to increase the state's municipal solid waste recycling rate includes both short-term and long-term components. The MDEQ recognized that becoming a recycling leader would take a long-term commitment.

Identified components of a statewide comprehensive residential recycling program:

- Reliable measurement, tracking, and reporting system
- Leverage existing education, outreach, and technical assistance programs
- Convenient access to recycling opportunities
- Active market development and innovation support
- Up-to-date county solid waste planning process
- Continued state-level leadership

The GRC, convened in April of 2014, then began its work to review the Proposed Plan of Action on Recycling and make specific recommendations to the MDEQ Director and Governor on the practical steps required to move forward with the plan of action so that the proposed goal of doubling the state's recycling rate could be achieved. These recommendations follow.

Concurrently, the MDEQ proceeded with activities to support implementation of those components of the Proposed Plan of Action on Recycling that were within their control and that were able to move forward with funds made available in the annual budgeting cycle. These activities, carried on with advice and counsel from the GRC, are highlighted in Appendix D.

**GOVERNOR’S RECYCLING COUNCIL  
REPORT AND RECOMMENDATIONS  
TABLE OF CONTENTS**

<b>SECTION-----</b>	<b>PAGE</b>
<b>1. GRC CO-CHAIR LETTER TO GOVERNOR AND DIRECTOR</b>	<b>2</b>
<b>2. GRC PURPOSE AND CHARGE</b>	<b>3</b>
<b>3. EXECUTIVE SUMMARY</b>	<b>6</b>
<b>4. <i>CHAPTER 1</i> GUIDING PRINCIPLES, BENCHMARKING, AND PROGRESS TOWARDS CLEAR OUTCOMES</b>	<b>9</b>
<b>5. <i>CHAPTER 2</i> EDUCATION AND ENGAGEMENT</b>	<b>12</b>
<b>6. <i>CHAPTER 3</i> RECYCLING MARKET DEVELOPMENT AND THE CIRCULAR ECONOMY</b>	<b>15</b>
<b>7. <i>CHAPTER 4</i> RECYCLING ACCESS AND INFRASTRUCTURE</b>	<b>19</b>
<b>8. <i>CHAPTER 5</i> INCENTIVES AND FUNDING FOR DOUBLING MICHIGAN’S RECYCLING RATE</b>	<b>25</b>
<b>9. APPENDICES:</b>	
<b>A: Summary of Recommendations, Timing and Cost for State of Michigan</b>	<b>32</b>
<b>B: Michigan Recycling Economic Impact, Opportunity Assessment and Infrastructure Investment Strategy</b>	<b>33</b>
<b>C: Michigan’s Existing Suite of Local Government Funding Mechanisms for Recycling</b>	<b>41</b>
<b>D: MDEQ 2014-2016 Activities to Move Forward on Proposed Plan of Action on Recycling</b>	<b>43</b>
<b>E: Profile of Michigan’s Private Sector Solid Waste and Recycling Service Providers</b>	<b>45</b>

## EXECUTIVE SUMMARY

The recommendations contained in this report outline how to double Michigan's recycling rate. Per the MDEQ commissioned report *Measuring Recycling in the State of Michigan*, 15 percent of our municipal solid waste is currently being recycled. This recycling rate is calculated using the standard equation where the recycling rate (percentage) equals total tons recycled divided by the total tons municipal solid waste generated (recycled and disposed) times 100.

The national average recycling rate is 35 percent<sup>1</sup>. States like Minnesota, Florida, Washington, Oregon, California, and Massachusetts are achieving recycling rates at 50 percent and higher<sup>2</sup> providing Michigan with proof of concept that our goal can be accomplished. Doubling the recycling rate in Michigan is expected to produce positive environmental, quality of life, and economic outcomes.

- Recycling the more than 4.3 million tons of resources currently buried each year in Michigan will save more than 42 trillion Btu, or the annual energy equivalent of nearly 417,000 homes.<sup>3</sup>
- Michigan's waste (the remaining 85 percent) has an estimated \$368M in market valued recyclables<sup>4</sup>
- Capturing that value would generate an estimated additional 2,600 jobs and an additional \$399M in economic value<sup>5</sup>

Across the state, public agencies and private sector service providers are working to improve recycling - with the majority of the actual collection of recyclables performed by the private sector, frequently under contract to local units of government, with some effective publicly operated programs across the state as well. Two-thirds (67 percent) of Michigan households have some form of access to convenient recycling – either curbside recycling, or convenient drop-off locations (defined by MDEQ as one location for every 10,000 residents of a county).<sup>6</sup> While there is investment and activity in the recycling sector already, significant opportunities for improvement exist – opportunities that must be capitalized on to double our recycling rate. For example, in waste sorts conducted as part of the MDEQ commissioned report *Economic Impact Potential and Characterization of Municipal Solid Waste in Michigan*, it was discovered that most material currently being disposed of through landfills and incinerators could be recycled or composted in most metropolitan communities without great difficulty.

The Governor's Recycling Council has reviewed numerous resources to document the status of Michigan's recycling activities and has identified 30 specific recommendations to address current gaps and capitalize on the opportunities. The GRC has developed the following recommendations to double Michigan's recycling rate. To successfully double Michigan's recycling rate, it is critical that the following five core components be adopted:

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<sup>1</sup> USEPA Sustainable Materials Management: Facts and Figures

<sup>2</sup> Waste 360 The Ten Best and Worst States for Waste Diversion and Reduction and USEPA Sustainable Materials Management: Facts and Figures

<sup>3</sup> 2011 MRC State of Recycling

<sup>4</sup> *Economic Impact Potential and Characterization of Municipal Solid Waste in Michigan 2016*. Prepared by the West Michigan Sustainable Business Forum Waste Task Force. Funded by a 2014 Michigan Department of Environmental Quality Grant.

<sup>5</sup> *Economic Impact Potential and Characterization of Municipal Solid Waste in Michigan 2016*. Prepared by the West Michigan Sustainable Business Forum Waste Task Force. Funded by a 2014 Michigan Department of Environmental Quality Grant.

<sup>6</sup> *Measuring Recycling in the State of Michigan 2015*. A project of the Michigan Recycling Coalition with Grant Funding from the Department of Environmental Quality.

- Mobilizing a statewide education and engagement campaign to get more people recycling and more materials recycled
- Authorizing a Michigan Recycling Market Development Initiative to grow Michigan’s domestic use of recyclable materials in our industry, commerce and infrastructure
- Improve the existing recycling system to provide for convenient comprehensive recycling that is universally accessible across the state with a network of curbside and drop-off recycling in urban, suburban, exurban and rural areas
- Establishing a Michigan Recycling Improvement Fund to allocate resources to recycling initiatives
- Commit to measurement towards clear performance goals

Each of the recommended actions, when implemented, will work in concert to lift Michigan’s recycling rate to 30%. To achieve this ambitious goal, each part of the recycling supply chain will need improvements. Most notably, Michigan should double our efforts to educate residents and businesses on how and why to use available recycling options. This will provide the necessary push to move wasted resources from the trash can into existing and newly deployed recycling collection systems. Similarly, Michigan should double our efforts to support market development. This will provide the necessary pull on the supply chain to ensure recycled materials find their way into new products. These actions to push and pull recyclables into the supply chain will create a strong business-case for the private sector to invest in local collection and processing infrastructure.

These recommendations address-actions that are necessary in the context of a long term strategy:

- Immediate: 0–2 years
- Short-term: 3–5 years
- Medium-term: 6–10 years
- Long-term: 11 or more years

These 30 recommendations outline anticipated costs and benefits, and the economic business case for Michigan in taking our recycling rate to the next level of performance. Appendix A contains a summary of these 30 recommendations, their timing and estimated cost at the state level to jump start and support ongoing implementation.

Importantly, these recommendations are being released in the same time window as two other important initiatives of the Governor’s Office and the MDEQ:

- Michigan’s 21<sup>st</sup> Century Infrastructure Report to the Governor, released by the Governor’s 21<sup>st</sup> Century Infrastructure Commission on November 30, 2016; and
- Michigan’s Solid Waste and Sustainability Advisory Panel (SWSAP) Report to the MDEQ Director, to be released concurrently with this GRC Report and recommendations.

Synergies with these parallel initiatives provide an important opportunity for Michigan to take coordinated action in infrastructure investment, programming, and funding initiatives and regulatory framework that can build the foundation for success.

Michigan’s Solid Waste Policy states that “it is important that Michigan develop the infrastructure necessary to utilize waste by converting them into resources”. Successful implementation of these three initiatives will embrace this objective. The SWSAP Report goes further to recommend how changes to Michigan’s solid waste law can facilitate the development of a sustainable materials management



infrastructure through more thoughtful regulation and local planning. Costs for relevant components of the SWSAP recommendations have been incorporated into this GRC report.

The estimated annual State of Michigan cost to achieve Michigan’s recycling goal has a one-time cost of approximately \$2M, with an annual cost, including costs for implementing related SWSAP recommendations, of approximately \$17M. These resources, with an accompanying policy framework included in the recommendations, will incentivize increased levels of private and public investment, including funding at the local level, that assures the availability and alignment of services and support that will result in success. This additional support infrastructure is estimated to cost hundreds of millions of dollars financed by private and public sector service providers to create capacity for the additional material that will be diverted from disposal facilities. Appendix B contains details of these estimates, as well as the underlying business case that demonstrates the benefits that accompany this increase in recycled materials.

Every business, resident, organization, and institution in the state generates “waste” material that must be managed. These GRC recommendations offer a systems approach of sustainable recycling and waste diversion policies, practices and performance norms that link with incentives to achieve those standards to the benefit of all. Implementation, with a focus on progress tracking for real performance outcomes, will launch Michigan’s recycling into the 21<sup>st</sup> Century.

## **CHAPTER 1: GUIDING PRINCIPLES, BENCHMARKING AND PROGRESS TOWARDS CLEAR OUTCOMES**

### **GUIDING PRINCIPLES, KEY OUTCOMES AND VISION STATEMENT**

The GRC is recommending initiatives to double the state’s recycling rate by helping to enhance Michigan residents’ quality of life, drive economic growth, and create a strong recycling foundation for vibrant communities. We can achieve this here in Michigan by planning for a 21<sup>st</sup> Century recycling infrastructure that is safe, reliable, efficient, and cost-effective for Michigan’s residents, communities, businesses, and institutions. Note that the guiding principles articulated in the Governor’s 21<sup>st</sup> Century Infrastructure Report capture much of the vision that the GRC has for Michigan’s recycling and materials management future. They are incorporated by this reference, with some worth highlighting being:

- Strong modern recycling infrastructure is vital to attracting and retaining residents and businesses;
- A culture of strategic investment and continuous improvement is critical to development of the next generation of our recycling infrastructure;
- Leveraging a variety of public and private investment and financing resources is key to successful implementation of optimal recycling solutions, as well as shared sourcing and cost allocation;
- Encourage meaningful public engagement in the development of recycling infrastructure; and
- Embrace emerging recycling technology and cutting edge policy principles to support success.

The GRC’s recommendations will lead Michigan to realize the following outcomes:

- Modern recycling infrastructure and coordinated recycling investments support Michigan’s economic prosperity;
- Investments in recycling and sustainable materials management are interconnected with the health of our people, environment, and communities;
- Our recycling infrastructure provides convenient comprehensive recycling that is universally accessible that is fully utilized by our residents, businesses, and institutions; and
- Our recycling system is supported through wise investment that ensures we get the most value from limited financial resources.

### **RECYCLING POLICY FRAMEWORK**

With these outcomes in mind, the GRC adopted a series of policy statements that provide a framework for our overall recommendations, representing a “systems solution” perspective on what Michigan’s long-term vision should be for 21<sup>st</sup> Century recycling investment for our communities, businesses, and institutions.

The provision of convenient recycling services throughout the state requires concerted leadership from both the private and public sectors at the state, regional, county, and local levels. This leadership requires an approach that supports recycling and beneficial utilization of waste as part of a broader policy framework of sustainable materials management, creating a future for Michigan where we use materials responsibly, conserve resources, protect the environment, and live well. Recycling and beneficial utilization of waste is a cornerstone of this policy framework.

This comprehensive approach incorporates the following policy statements:

- Engaging our citizens, businesses, and community leaders through an on-going state-level campaign that messages the vision for sustainable materials management and the call to action for Michigan to double its recycling rate.
- Integrating recycling and beneficial utilization into the materials management planning process administered by the MDEQ.
- Directing our sustainable management of waste materials into highest and best beneficial utilization through prevention, reuse, recycling, composting (aerobic and anaerobic), and conversion through fuel production from waste and landfill disposal of remaining residuals that cannot be beneficially utilized.
- Increasing participation by residents and businesses in recycling programs by ensuring comprehensive recycling is available and developing and maintaining policies that create a culture of recycling.
- Building the infrastructure that enables convenient and cost-effective recycling and composting by our citizens and businesses and, once those systems are set up, developing and maintaining policies to reinforce the need for our citizens and businesses to use that infrastructure.
- Integrating the combined strengths and capacity of the public and private sectors to support these sustainable materials management systems.
- Incorporating strong recycling and beneficial utilization market development capacity in the MDEQ, in collaboration with the Michigan Economic Development Corporation (MEDC), the state's economic development regions and other resources as appropriate, encouraging the continued development of infrastructure for robust recovered materials markets in Michigan.
- Engaging state government from the top down to drive metrics for sustainability and sustainable materials management into each department. Using the dashboards for each department to establish and measure the achievement of performance goals for beneficial utilization of waste for state government employees and the programs they run, establishing a model for regional, county, and local government as well.
- Engaging the resources of national partnerships in business, institutions, and government that are actively supporting sustainable materials management throughout the material lifecycle.
- Engaging our institutions of higher learning and our centers of innovation to support research and technology transfer to rapidly scale up the use of recycled commodities in Michigan manufacturing.

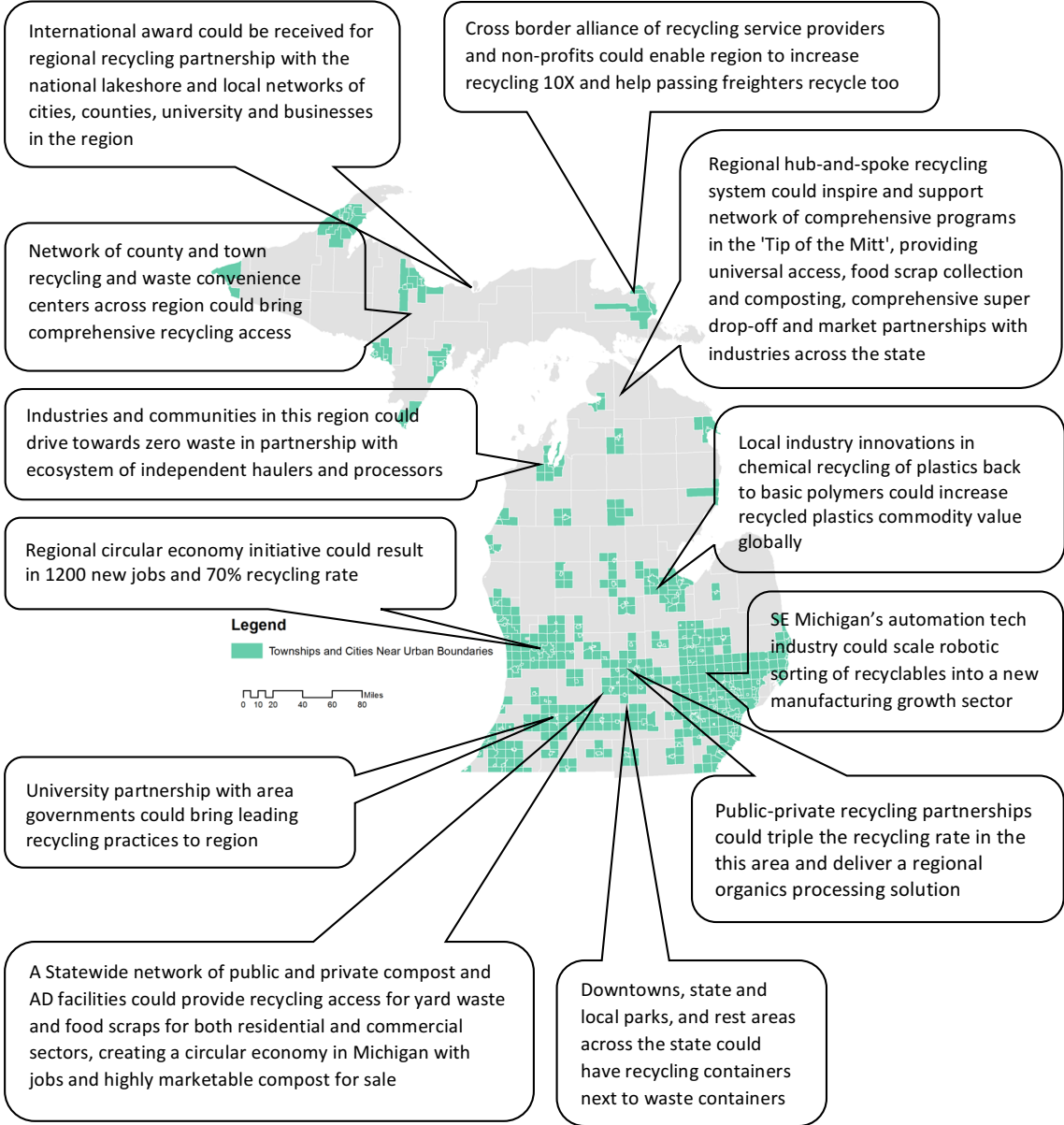
## **WHAT COULD SUCCESS LOOK LIKE? POTENTIAL STORIES FROM MICHIGAN'S RECYCLING FUTURE!**

### Vision Statement

Looking to the future, Michigan's 21<sup>st</sup> Century recycling can be a powerful engine, integrated into Michigan's economic and environmental systems. Families and businesses alike could conveniently and confidently take part in this vital flow of materials with recycling and composting bins found in every kitchen, at every workstation, in lunch rooms, at ball fields – everywhere. Recycle carts at the curb can become the norm, and haulers and sorters can spur financial activity as they prepare the collected metals, plastics, and paper for market. Michigan manufacturers can benefit from this circular economy with unparalleled security of supply and lower costs for energy and toxicity-control using these pre-refined

materials. In turn, brand owners and retailers can satisfy customers with affordable, sustainable products that meet consumer demand for recycled-content goods and packaging. Michigan’s 21<sup>st</sup> Century Recycling Economy can provide a comprehensive, convenient, and cost effective driver for sustainable materials management that grows jobs and protects resources in the state, allowing all who work and play here to easily participate in the process of beneficial resource savings.

Visioning what success could look like in the future can help align Michigan communities on their real recycling potential. Each of these future success stories for recycling in Michigan will have their own unique local flavor – building on the strengths of community leaders, businesses and institutions in each area. Visions for success offered below are possibilities that can inspire real solutions at the local level.



## **MEASURING PROGRESS TOWARDS CLEAR OUTCOMES**

These recommendations incorporate a strong commitment to progress tracking and continuous improvement towards clear outcomes. Towards that end, the GRC has already supported, and the legislature has responded with adoption of a standard recycling performance tracking and reporting mechanism that is now being rolled out across the state. As well, baseline recycling rate measurement studies were completed that provide the estimated 15 percent recycling rate in 2014, with slight improvement in that rate to 15.3 percent of 2015. The GRC recommendations require regular tracking to monitor and report on progress to the 30 percent recycling rate and beyond.

## CHAPTER 2: EDUCATION AND ENGAGEMENT

An informed and engaged public is paramount to success in doubling Michigan’s recycling rate. Without residents and businesses choosing to use the recycling programs available to them, and choosing to use them correctly, the entire system breaks down.

Residents and businesses not only need to know how and where to recycle, but also need to know why recycling is important for Michigan’s environment and economy. That way, when offered a choice to recycle or simply toss an item in the trash, they will make the choice that is best for their community.

Funds for education and engagement are often the last items to be budgeted and the first items to be cut, however, stakeholders agree that education and engagement is the first and most critical component to the success of any recycling program and to statewide alignment on our recycling goals.

A robust education and engagement campaign is a necessary tool to increase quantity and quality of materials that are recycled, as well as the number of people and businesses that participate in recycling.

Successful education campaigns focus on specific audiences, whether rural or urban residents, large or small businesses, or the recycling professionals at each stage of the value chain.

The GRC views education, outreach, and statewide messaging as a very important front end step in our efforts to increase Michigan’s recycling rate. Not only have these kinds of efforts been shown to be a quick and impactful way to increase both residential participation and set out tonnage for existing recycling programs but they also help to stimulate efforts to provide recycling access to underserved areas. Education and outreach has proven over the years to be one of the most cost effective ways to stimulate increased near term participation and set out recycling rates for existing recycling programs.

Policy Statements:

- The GRC advises the Governor and the MDEQ Director that sustainable materials management and the provision of convenient recycling services at the local level requires concerted leadership by both the public and private sectors at the state, regional, county, and local levels, and recommends the following actions at the departmental level, along with allocation of the required funding and resources:

This policy goal addresses specific gaps in our current recycling infrastructure and programming, as outlined below, with specific recommendations provided that will eliminate these barriers to Michigan’s success in doubling our recycling rate.

### Gap 1

Currently, there is a patchwork of local recycling education information and materials across the state, creating confusion on what materials can be recycled and where. Coordinated recycling education and engagement targeted at local communities and residents will help to inform the public and ease the burden of message development at the local level.

### *Recommendations*

1.1 The MDEQ should develop a “**Michigan Recycling Engagement Partnership**” with local government, state government, for profit and non-profit businesses (including retail and brands), the recycling industry (including local recycling facilities), and other organizations to develop a successful statewide campaign that can also be leveraged at the local level. These “**Recycling Engagement Partners**” should include “end market” businesses (those that buy recycled feedstocks) to provide a link to closing the loop of recycling – the ultimate proof point and motivation for recycling.

**Estimated Cost: Existing staff resources**

**Estimated Timeframe: Immediate**

1.2 The MDEQ and its Recycling Engagement Partners should complete a literature review and base marketing research to understand what will motivate audiences to adopt behaviors that will increase the amount of materials recycled to help inform the development of the public education campaign.

**Estimated Cost: \$100,000 – One time**

**Estimated Timeframe: Immediate**

1.3 The MDEQ and its Recycling Engagement Partners should lead the development of a statewide public education and engagement campaign that triggers behaviors that will increase the amount of material that is currently being recycled in residential areas, businesses, and schools. The campaign should be deployed via all media channels (TV, radio, social and written media, etc.), link to and be supportive of specific needs of local programs and include an emphasis on the value of recyclable commodities that help drive recycling, helping Michiganders make the connection to the triple bottom line benefits of the environment, economy, and community.

1.3.1 Develop and disseminate a variety of tools, templates, and media that support the connection between and consistency with statewide messaging, recycling engagement partner messaging, and local messaging, providing continuity in messaging

1.3.2 Support development of local recycling education and engagement campaigns that help residents/consumers as well as communities, businesses, schools, and institutions understand the “where, how, when, what, etc.” of their local recycling opportunities.

1.3.3 Include in the above, guided by market research, initiatives for outreach, education and engagement that reach our youth in all their settings (schools, sports, playgrounds, daycare, etc.).

1.3.4 Support continuous evaluation of the campaign and tools - what we are doing and how well we are doing it.

**Estimated Cost: \$2.5M annually including partner/stakeholder cost share**

**Estimated Timeframe: Immediate**

## **MDEQ Administration and Technical Assistance**

### **Gap 2**

Local governments, private haulers, material recovery facilities, composters, and other stakeholders should be provided with sufficient guidance and resources to help them discover how they best fit into the state’s goal of doubling the recycling rate. Providing the appropriate policy framework and technical assistance to these entities will strengthen the materials management network, foster sharing of best practices, and enhance on-the-ground problem-solving of issues related to increasing the rate of recycling in Michigan.

### ***Recommendations***

2.1 The MDEQ should continue to support and enhance the role of the four Recycling Specialists currently on staff to provide information on financing programs, operating collection and processing programs, local source reduction, and regulatory compliance assistance to local entities.

**Estimated Cost: \$500,000 annually**

**Estimated Timeframe: Immediate**

2.2 The MDEQ, working with its Recycling Engagement Partners, should lead the development of certification and training opportunities for haulers and support entrepreneurial business development through training and networking opportunities.

**Estimated Cost: \$50,000 annually**

**Estimated Timeframe: Immediate**

**2.3** The MDEQ should guide counties as each develops a Materials Management Plan (MMP). Ultimately the MDEQ will approve county and regional MMP's or in cases where a county chooses not to or does not receive approval, will create an MMP for that county.

**Estimated Cost: \$750,000 annually**

**Estimated Timeframe: Immediate**

### **Gap 3**

There is a lack of coordinated direction on recycling by state departments and in state-owned and operated facilities. The State of Michigan has an opportunity to lead by example to identify current recycling rates by state facilities and increase opportunities for recycling.

#### ***Recommendations***

3.1 The MDEQ should coordinate with DTMB and with all state departments to review materials management practices for state office buildings and properties for potential improvements in recycling and waste utilization.

**Estimated Cost: \$25,000 one-time cost  
and Existing Staff Resources**

**Estimated Timeframe: Immediate**

3.2 The MDEQ should develop a recycling dashboard for each state agency to identify current recycling rates and goals to help increase the amount of material being recycled.

**Estimated Cost: \$25,000 one-time cost  
and Existing Staff Resources**

**Estimated Timeframe: Immediate**



### CHAPTER 3: RECYCLING MARKET DEVELOPMENT AND THE CIRCULAR ECONOMY

Recycling market development aligns recycling with economic development opportunities to fuel new businesses, expand existing ones, create jobs, and divert waste from landfills. Leading states invest in strong market development programs by providing opportunities for growth on both the supply and the demand side of the recycling industry. As more recyclables are used to manufacture new products, the economy can be stimulated through new company expansion or formation and the creation of additional jobs. Businesses that use recycled materials in their manufacturing processes and create new products for sale also benefits business or individuals that collect, process, and distribute recycled materials.

For Michigan as a leader in recycling, the state should prioritize market development with emphasis on two main components: technology transfer and business development. Through collaboration with partners, such as the MEDC, the state can jumpstart these networks.

#### Policy Statements:

- Direct Michigan’s sustainable management of waste materials into highest and best beneficial utilization through prevention, reuse, recycling, composting (aerobic and anaerobic), and conversion through fuel production from waste and landfill disposal of remaining residuals that cannot be beneficially utilized.
- Incorporate strong recycling and beneficial utilization market development capacity in the MDEQ, in collaboration with the MEDC, the state’s economic development regions, and other resources as appropriate – encouraging the continued development of infrastructure for robust recovered materials markets in Michigan.
- Engage the resources of national partnerships in business, institutions, and government that are actively supporting sustainable materials management throughout the material lifecycle.
- Engage our institutions of higher learning and our centers of innovation to support research and technology transfer to rapidly scale up use of recycled commodities in Michigan manufacturing.

To achieve these policy goals, a number of recommendations have been identified that will create this vital Recycling Market Development Initiative. As in prior chapters, these recommendations are linked to gaps that demonstrate the need.

#### Gap 4

In Michigan, there is a need for strong pro-active champions to encourage the development and connection of the output from our recycling systems (as a strong industrial supply source) and the industrial and manufacturing buyers (as strong source of demand) both by industries in the state and industry elsewhere that would view Michigan as a valuable supplier of recycled commodities.

#### **Recommendations**

4.1 The MDEQ should develop partnerships, collaborations, and alliances for recycling market development – a “**Michigan Recycling Market Development Initiative**”, with the manufacturing industry, related state agencies and programs (e.g. MEDC and Michigan’s Prosperity Regions), major buyers of recycled content products and packaging (e.g. automotive, retail, and consumer goods sectors), supply chain managers, the recycling processing industry, and other organizations. These “**Recycling Market Development Initiative partners**” would work together to launch a coordinated statewide collaboration that grows Michigan’s domestic use of recyclables as industrial, manufacturing, and construction feedstocks.

**Estimated Cost: Existing Staff Resources**

**Estimated Timeframe: Immediate**

4.2 The MDEQ and its Recycling Market Development Initiative partners should grow opportunities for the use of recycled commodities by more Michigan businesses by undertaking the engagement and leadership efforts outlined to the right, and to build circular economy business to business relationships with supply chain partners, using their marketplace leverage to jointly develop and achieve recycled content and related sustainability goals.

Encouraging Michigan’s global and national scale businesses to join industry sustainable purchasing collaborative initiatives such as:

- US Chamber of Commerce Circular Economy Initiative
- US Business Council for Sustainable Development Materials Marketplace Initiative
- Close Loop Fund buy recycled content initiatives
- Sustainable Packaging Coalition

Encouraging all Michigan’s businesses and institutions to participate in and adopt the guidelines and practices of the Sustainable Purchasing Leadership Council.

**Estimated Cost: \$50,000 annually**

**Estimated Timeframe: Short-term**

4.3 With support from the MDEQ and its Recycling Market Development Initiative partners, MEDC should pursue a systematic and regular prioritization process that engages stakeholders in identifying a list of available recyclable materials to highlight in its economic development efforts. This effort would be branded as the Michigan's Recycling Markets Initiative and demonstrate Michigan's commitment to execute the balance of the recommendations herein.

**Estimated Cost: \$50,000 annually**

**Estimated Timeframe: Immediate**

4.4 In a manner similar to the existing Scrap Tire Market Development Fund, a Recycling Market Development Fund should be established to support research and development, incentivize business innovation, and local economic growth using recycled commodities like mixed plastics, glass, and wood waste, for example. A combination of statewide and local recycling market development efforts will help to create the conditions that result in a market demand for recycling program growth.

**Estimated Cost: \$2 million annually**

**Estimated Timeframe: Short-term**

## Gap 5

There is a lack of consistent data on the value that recyclables currently bring to Michigan’s economy and the lost value from those that are currently disposed.

### **Recommendations**

5.1 The MDEQ in collaboration with its Recycling Markets Initiative partners, should lead an effort to provide a credible, consistent, and current Michigan Recycling Markets Profile that: a) identifies the value that recyclables and recycling industry currently bring to Michigan’s economy and the lost value/opportunity cost from those recyclables that are currently disposed of; b) calls out infrastructure gaps in the end market, processing and collection value chain that limit Michigan industry use of Michigan generated materials; and c) identifies the targeted strategies, resources and business opportunities that the Michigan Recycling Market Development Initiative is mobilizing around to eliminate these gaps. An initial step has been taken with development of the *Economic Impact Potential and Characterization of Municipal Solid Waste in Michigan 2016*. Prepared by the West Michigan Sustainable Business Forum Waste Task Force and funded by a 2014 MDEQ Grant. Repeating this and expanding the effort as described above will reach the targeted outcomes.

**Estimated Cost: \$50,000 annually**

**Estimated Timeframe: Short term**

## Gap 6

Michigan needs policies that support both the supply and demand side of the recycling/circular economy. Policies must foster a robust and sustainable materials management system that ensures a strong supply chain even during harsh downturns in commodity value. These policies must support economies of scale, market density, and uniformity that make for strong, sustainable, end market driven recycling systems.

### **Recommendations**

6.1 The MDEQ should work with MEDC to develop and adopt a strategy to target key gaps in Michigan's recycling supply and demand system and bridge those gaps through public private partnerships.

**Estimated Cost: \$50,000 annually**

**Estimated Timeframe: Immediate**

6.2 The DEQ should evaluate strategies and consider proposing development and adoption of approaches for managing and recycling hard-to-recycle materials (to include batteries, latex paint, e-scrap, mattresses, tires, pharmaceuticals, etc.), such as producer responsibility mechanisms that engage those relevant industry stakeholders with the task of developing, funding, and executing comprehensive and effective sustainable materials management solutions. The MDEQ should evaluate and consider proposing amending the current Electronics Take Back Law to put more requirements on manufacturers to increase the percent of material recycled and better define what is convenient in terms of take back. Note that while Michigan has a very successful Scrap Tire Program that has effectively addressed large scrap tire piles and ongoing generation of scrap tires in the state, there continues to be concern about markets for scrap tires and dumping in many urban and rural areas. A producer responsibility approach for scrap tires would need to be carefully considered and layered onto the existing Scrap Tire Program to maintain and enhance program effectiveness.

Michigan's Scrap Tire Program, including its funding mechanism, demonstrates the impact that is possible with pro-active intervention in state level partnerships with a specific industry. Michigan went from 31 million passenger tire equivalents (PTEs) in piles around the state in 1991 to an estimated 360,000 PTEs at the end of 2015. This is a result of our Cleanup Grant Program and compliance and enforcement efforts under the Scrap Tire Program. And in 2016 alone, nine rubber modified asphalt paving projects were funded at \$2.9 million under the Scrap Tire Market Development Grant Program made possible via the funding mechanism that makes the Scrap Tire Program work.

**Estimated Cost: \$200,000 one time**

**Estimated Timeframe: Short-term**

## Gap 7

There is a lack of policies and practices that encourage state agencies to lead by example and use or purchase recycled content materials. State agencies can be a critical initial demonstration of commitment that can seed development of stronger market connections and higher volumes to grow large enough for buyers that have strong drivers for recycled content.

### **Recommendations**

7.1 The MDEQ, through its Recycling Markets Initiative partners, should encourage adoption of policies, technical assistance tools, and incentives that drive demand for recycled materials including engaging government, institutions, and businesses in initiatives to incorporate recycled materials in existing products and to expand production of new recycled content products.

**Estimated Cost: Existing Staff Resources plus 4.1**

**Estimated Timeframe: medium term**

7.2 The Michigan Department of Transportation (MDOT), in supporting Michigan’s leadership position in the future of transportation, should further integrate sustainable materials management strategies into its work by seeking out opportunities for and encourage the use of specifications and innovative procurement approaches that increase the use of recycled feedstock based construction materials (e.g. asphalt shingle RAP, glassphalt, and tire rubber as well as compost based soil amendments) in road

MDOT’s success in recycling concrete and asphalt demonstrates powerful “sustainable materials management” drivers that can be harnessed through specifications, purchasing practices, and coordinated technical support for emerging recycled content road and construction practices. Directing these tools to additional materials will serve as a positive disruptor to accelerate recycled content purchases across all industries in Michigan. For example, road agencies across Michigan could increase recycling by requiring a minimum percent organic content (5 percent) in its top soil blend which would use a large portion of the compost produced in Michigan each year.

construction projects including shoulders, parking lots, paved surfaces where quality and performance standards can be met and non-highway road construction to help close the materials management loop for these readily available commodities in the state.

**Estimated Cost: \$1M Annually Plus  
Construction Costs**

**Estimated Timeframe: Immediate**

## CHAPTER 4: RECYCLING ACCESS AND INFRASTRUCTURE

There are different types of recycling available and accessible in Michigan including:

- Curbside recycling: opt-in, subscription-based, and automatic/universal programs.
- Drop-off recycling: single-family homes, small multi-family buildings, and large multi-family complexes.

High performing states identify universal recycling access metrics and norms for industry and communities to target to help increase the availability of recycling<sup>7</sup>. Additionally, these high performing states identify designated agencies to implement, monitor progress, and intervene when benchmark metrics are not being met.<sup>8</sup> The GRC recommends that Michigan, like these high performing states, should ensure convenience comprehensive recycling is universally accessible and promote strong participation in cost effective recycling options that will direct valuable commodities into the supply chain for industry and manufacturing resulting in a strong economic foundation for Michigan’s Materials Management Strategy.<sup>9,10,11</sup>

### Policy Statements:

- Increase participation by residents and businesses in recycling programs by ensuring convenience and comprehensive recycling is universally available and developing and maintaining policies and practices that create a culture of recycling.
- Build an infrastructure that enables convenient and cost effective recycling and composting by our citizens and businesses and, once those systems are set up, developing and maintaining policies to reinforce the need for our citizens and businesses to use that infrastructure.
- Mobilize the combined strengths and capacity of the public and private sectors to support these materials management systems through engagement strategies.

Recycling availability and access are key components of recycling success. Both public and private sector service providers offer recycling options to their clients in a variety of ways and the design of their offerings can have a significant impact on outcomes including participation and volume recovered.

One program design feature, automatic recycling service with an “Opt-out” feature, has been proven across the country to result in both high recycling participation and volume. In an “Opt-out” system, all households in the program receive curbside recycling collection services and a recycling cart or bin. Households can opt-out of the program by requesting the bin or cart be returned. Recycling program participation rates typically remain in the 75 percent to 95 percent range for these “Opt-out” programs.

The reverse, an “Opt-in” approach, has not yet been able to demonstrate a high level of predictable success with typical participation rates of 20 to 35 percent. Under an “Opt-in” system the only way a household can get the service is to actively request the service. While there may be variations of “Opt-in” that could produce recycling success comparable to “Opt-out” design features, if these programs are to be considered they should demonstrate the capacity to meet established recycling service benchmark standards.

Michigan’s success in reaching a 30 percent recycling rate will only be possible with policies that support good recycling program design features for both availability and access.<sup>9,10,11</sup>

<sup>7</sup> GRC presentations given by State recycling coordinators from North Carolina, Minnesota and Ohio

<sup>8</sup> GRC presentations given by State recycling coordinators from North Carolina, Minnesota and Ohio

<sup>9</sup> The 2016 State of Curbside Report prepared by the Recycling Partnership and funded by US EPA

<sup>10</sup> Moving Towards Universal Recycling, CartonOpportunities.org

<sup>11</sup> 2015/16 Centralized Study on the Availability of Recycling, Green/Blue, Sustainable Packaging Coalition

To achieve these policy goals, a number of recommendations have been identified, linked as before to gaps that articulate need.

### **Gap 8**

There is a need to make recycling more available and accessible in some parts of Michigan and access in other parts is not at a level of convenience that has successfully secured citizen participation. This represents an opportunity for improvement to bring both convenience and participation levels for recycling closer to matching that of waste disposal - resulting in both more people recycling more materials – the fundamental goal we should achieve as a state.

#### ***Recommendations***

8.1 The Michigan Legislature (via statute), the MDEQ (through administrative actions) and Michigan Recycling Engagement Partners should establish a framework of goals and benchmark metrics for convenient comprehensive recycling that is universally accessible that address the following components:

- Residents in higher density more urbanized areas as well as both suburban and exurban lower density areas, should be serviced by curbside recycling and convenience centers that allow drop-off of a wider variety of recyclable materials.
- Residents in apartments and multi-family housing should be serviced by on-site recycling dumpsters as well as convenience centers that allow drop-off of a wider variety of recyclable materials.
- Residents in rural areas without curbside service should be serviced with recycling drop-off center access
- Students and residents in schools and institutions need to be serviced with on-site recycling access.
- Away from home, on-the-go, and public spaces of all kinds including parks and rest areas, downtown, publicly accessible places in commercial developments, etc. should have recycling collection access.
- Employees and customers in small and medium-size businesses and commercial establishments should be serviced with on-site recycling collection access.
- Residential and commercial generators of food waste should be serviced by on-site organics collection access for more densely populated areas, as well as large generators with more rural areas able to take their yard waste and organics to convenience centers that allow drop-off of these materials along with a wider variety of recyclable materials.
- Residential and commercial generators of electronic waste should have access to on-site and/or drop-off recycling collection services for these materials.
- Residential and commercial generators of hard-to-recycle and bulky recyclable materials should have access to on-site and/or drop-off recycling collection services for these materials.

**Estimated Cost: Existing Resources**

**Estimated Timeframe: Immediate**

8.2 The statutory and administrative policy framework outlined in Recommendation 8.1 should clearly define recycling and waste diversion benchmark metrics - new norms that need to be implemented at the appropriate level of local government (e.g. local jurisdiction and/or county jurisdiction) and coordinated through the new materials management planning system.

These benchmark metrics should establish specified authority granted to these jurisdictions to provide options for local units to implement programming to meet those new norms (e.g. local recycling access and recycling programming). This authority should include the flexibility granted to these jurisdictions to implement recycling access and reach recycling goals through franchise or contract arrangements, municipal services, hauler licensing (via ordinance) or public private partnerships. This flexibility effectively transfers the funding burden of meeting the standard to those private sector service providers and their customers, the residential and commercial generators of waste and recyclables.

Recycling access is one attribute applied by high-performing programs considered to produce higher participation and recycling rates. Therefore, plans developed as part of the new materials management planning system (MMPs) should identify management responsibility and institutional arrangements necessary for implementation of programs for access to recycling in each municipality located within the county. In addition, the MMP's should include a strategy for implementation that includes acceptance of responsibilities from the municipalities assigned a role.

- Those local jurisdictions that choose to implement solutions themselves would willingly take on the responsibility for funding, as many Michigan municipalities already have.
- Those local jurisdictions that choose not to implement a funding mechanism would be able to use franchising and ordinance tools to engage private sector solution providers, thus passing the funding responsibility on to those private sector solution providers, which may avoid unfunded mandate restrictions in the Headlee Amendment.
- Should a local jurisdiction choose to take no action, then the counties or State should be responsible for filling the gap via the default minimum benchmark metrics set through state statute. Consideration for Headlee issues should be taken into consideration for communities currently providing waste services directly to residents.

The SWSAP emphasis on the Materials Management Plan (MMP) as part of legislative update to Part 115 will provide the necessary framework for incorporating these more detailed and specific recommendations that will advance the Governor's recycling goals.

The SWSAP recommends that the MMP contain goals for waste utilization consistent with state policy and then provide the framework for how those goals will be achieved and measured. In addition to the siting and development of infrastructure like composting and organics processing facilities, the plans would incorporate specifics on how recycling access and participation goals would be achieved.

**Estimated Cost: Existing Resources**

8.3 Recommendations 8.1 and 8.2 should be embedded in implementation mechanisms that are part of the state's new Materials Management Planning Process as proposed by the Solid Waste and Sustainability Advisory Panel (SWSAP) to replace the County Solid Waste Management Planning process. In these plans local units will outline their intended approaches for handling materials and their responsibilities.

**Estimated Timeframe: Immediate**

Many counties across the state have used the existing solid waste planning process to grow their local recycling capacity. Great examples include Oakland County with its two local authorities (SOCRRA and RRRASOC) that have both implemented advanced public/private partnerships and intergovernmental solutions to build recycling performance. Another great example is Kent County and their countywide system for all aspects of materials management.

The planning process as proposed by SWSAP includes relevant features that support the achievement of access and recycling goals recommended by GRC. The GRC recommends MMPs include:

- The establishment of goals and objectives for prevention of adverse effects on the public health and on the environment resulting from the improper solid waste collection, processing, or disposal.
  - The establishment of local goals and objectives for utilization of materials that supports the State Solid Waste Policy.
  - Each Material Management Plan (MMP) should include an enforceable program and process to assure that the materials generated or to be generated in the planning area are collected and recovered, processed, or disposed of at facilities that comply with state law and rule.
- Michigan’s network of private sector service providers play a crucial role in growing access to recycling opportunities and educating their customers on how and why to recycle. Private recycling service providers are known for their innovation and problem-solving. With examples throughout the state, Michigan’s private hauling industry works to provide convenient recycling access in a competitive marketplace through innovative partnerships with local communities for collection. See Appendix E for more on private sector service capacity in Michigan.
- The enforceable program and process should include identification of the municipalities within the county responsible for implementing recycling access programs, including but not limited to, franchise or contract arrangements, municipal services, hauler licensing (via ordinance) or public-private partnerships.
  - The MMP should encompass all municipalities within the county.
  - Facilities and programs provided for in MMP’s should be developed and operated in compliance with state law and rules, technically demonstrated and financially responsible.

Emmet County's Solid Waste Management Plan (SWMP) laid the foundation for policies and programs which achieved 30 percent recycling long before the goal was set. Emmet County put in place policies that encouraged communities towards recycling, including "Pay as you Throw" charges for landfilling, recycling funding through flow control and a solid waste surcharge, and a requirement that waste haulers offer their commercial customers cardboard recycling services for less than the cost of disposal.

Using their SWMP as a map, Emmet County developed a MRF to process and market their recyclables, along with 12 drop sites, a convenience center, followed by curbside recycling and a composting site, expanding to include commercial recycling and food scrap collection. Neighboring counties began recycling under contract with Emmet County’s MRF as early as 1998. Today Emmet County's program services four counties, networking with local and regional governments, private haulers and vendors and recycling markets statewide. Over 80% of Emmet County households recycle and 42% of the waste stream is recycled.

The GRC recommends that counties and local units of government that support development of programs to improve access and meet recycling rate goals will be eligible for grant funding to support and implement their Materials Management Plan activities. A SWSAP subgroup discussed distributing these funds to counties through an equitable formula to update and maintain Materials Management Plans and associated activities, but did not make any formal recommendations. As planning activities slow between plan updates, the fund will form the Local Recycling Grant Program to support grant opportunities that will incentivize planning and support implementation and progress towards goals.

**Estimated Cost: \$10.25M Annually**

**Estimated Timeframe: Immediate**



8.4 In moving forward with action on Recommendations 8.1 and 8.2 on amendments to Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA451, as amended, there should be an evaluation to identify mechanisms to ensure provision of convenient comprehensive recycling that is universally accessible in counties that are unable or unwilling to meet the minimum level of recycling service identified in this process. A requirement to identify a minimum level of recycling services by recycling and solid waste service providers should be considered.

Hauler requirements referred to in Recommendation 8.4 could be modeled after Kalamazoo County's hauler recycling requirements. Components of the that system could include provisions that incorporate:

- Requirements that allow for local innovation and problem solving to achieve convenient comprehensive recycling that is universally accessible – avoiding a one-size-fits-all approach.
- Provisions for counties and communities to opt-out of the hauler access requirement if they have successfully implemented a system to meet these requirements for convenient comprehensive recycling that is universally accessible.
- Requirements for haulers providing waste collection service to provide minimum benchmark level of recycling service to customers if the county and local unit choose not to opt out.
- A benchmark level of recycling services that is based on the resident's community population density.

**Estimated Cost: Existing Resources**

**Estimated Timeframe: Immediate**

8.5 MDEQ should create a recognition and incentive program for solid waste haulers and community provided recycling programs that encourages adoption of leading practices to achieve access and recycling rate goals.

**Estimated Cost: Existing Resources**

**Estimated Timeframe: Immediate**

## Gap 9

Significant investment is needed to further develop and modernize a sustainable materials management infrastructure that has the potential to serve communities, businesses, and industry across Michigan. In some areas of the state there is a need for adequate, convenient recycling collection and processing capacity, in other areas secondary processing capacity would add value for Michigan manufacturers, and almost the entire state lacks modern organics/food waste processing capacity.

Michigan's sustainable materials management infrastructure is comprised of approximately \$3.2 billion in private, public, and public-private partnership assets<sup>12</sup> – and likely is more than double that when industrial materials management and commercial source separated materials management infrastructure is accounted for. The majority of this asset base represents private investment. The private sector will respond with the majority of new investment as implementation of the SWSAP and GRC recommendations make conditions more favorable for the development of additional sustainable materials management infrastructure. See Appendix E for a profile of these private sector capabilities.

The funding needs and estimates represented in this report, with detail in Appendix B – summarizing details on infrastructure investment from the Michigan End Use Markets Analysis Report prepared concurrently with GRC deliberations, itemize the investments required to double the amount of material being recovered and processed for manufacturing into new products. Some of the proposals recommended by SWSAP go beyond GRC funding recommendations for recycling. Funding for proposals

<sup>12</sup> Michigan Recycling End-Use Market Survey and Recommendations, RRS, commissioned by MDEQ – See Appendix B for Details

that include MDEQ oversight and regulation of the Michigan materials management industry are important and are also itemized in Appendix B. All of these funding recommendations represent the critical state investment needed to level the playing field, inform stakeholders, and catalyze plans to move the much needed private and public sector investment potential at the local and regional level.

**Recommendations**

9.1 MDEQ should provide technical assistance to draft an implementation strategy consistent with the approaches embodied in the Michigan 21st Century Infrastructure Report that champions the development by private and public sector service providers of interconnected recycling and organics processing infrastructure, such that convenient and affordable recycling and organics processing services are available throughout the state.<sup>13</sup>

Item	Unit Cost	Estimated Cost	Assumptions
Recycling Facilities and Recycling Transfer Stations	\$6,443,000	\$135,300,000	Includes updating existing facilities - See Appendix B for details
Composting Facilities and Organics Transfer Stations	\$2,083,333	\$25,000,000	Includes updating existing facilities – See Appendix B for details
AD Facilities	\$15,000,000	\$60,000,000	Number and scale of facilities may vary – See Appendix B for details
Convenience Centers	\$1,250,000	\$62,500,000	Primarily new sites plus updates of existing – See Appendix B for details

**Estimated Cost: \$282,800,000 one-time\***

**Estimated Timeframe: Short-term**

\*The estimated costs are for guidance on the overall level of capital spend that can be expected by private and public sector to double Michigan’s recycling rate and provide adequate receiving and processing capacity for the additional tons that will be diverted from disposal facilities. Appendix B contains details on these costs and assumptions as well as the underlying business case that demonstrates the benefits that accompany the projected capital spend outlined above. Incentives, programming support, and the changes proposed by SWSAP to expand regulatory oversight and planning for all facilities managing materials are expected to create an environment of increased confidence and support that will drive this investment.

**Gap 10**

There is a need for designated responsibility at agency levels (both state and local) as well as at implementation levels (both public and private) to develop and implement the framework driven programming that will provide quality and affordable convenient comprehensive recycling that is universally accessible across Michigan communities.

**Recommendations**

10.1 Private sector and public service providers (e.g. private haulers, recyclers, public works agencies, authorities, etc.), should continue to develop, finance, and operate the necessary infrastructure and programming to provide quality and affordable convenient comprehensive recycling that is universally accessible across Michigan communities. The chart below describes the capital that must be invested to meet collection and transportation needed for this increase in recycled materials recovered for productive economic use.<sup>14</sup>

<sup>13</sup> Michigan Recycling End-Use Market Survey and Recommendations, RRS, commissioned by MDEQ – See Appendix B for Details

<sup>14</sup> Michigan Recycling End-Use Market Survey and Recommendations, RRS, commissioned by MDEQ – See Appendix B for Details

<b>Item</b>	<b>Unit Cost</b>	<b>Estimated Cost</b>	<b>Assumptions</b>
Roll Carts for Recycling	\$55	\$110,000,000	2M households - See Appendix B for details
Roll Carts for Organics	\$55	\$137,500,000	2.5M households - See Appendix B for details
Recycling Dumpsters/Roll-offs	\$804	\$20,500,000	25,500 containers for drop-offs, multi-family and commercial – See Appendix B
Collection Trucks	\$215,215	\$74,250,000	345 vehicles of various types – with some repurposing of waste collection vehicles assumed – See Appendix B

**Estimated Cost: \$342,250,000 one-time\*    Estimated Timeframe: Short-term**

\*The estimated costs are for guidance on the overall level of capital spend that can be expected by private and public sector to double Michigan’s recycling rate and provide adequate collection capacity for the additional tons that will be diverted from disposal facilities. Appendix B contains details on these costs and assumptions as well as the underlying business case that demonstrates the benefits that accompany the projected capital spend outlined above.

## CHAPTER 5: INCENTIVES AND FUNDING FOR DOUBLING MICHIGAN’S RECYCLING RATE

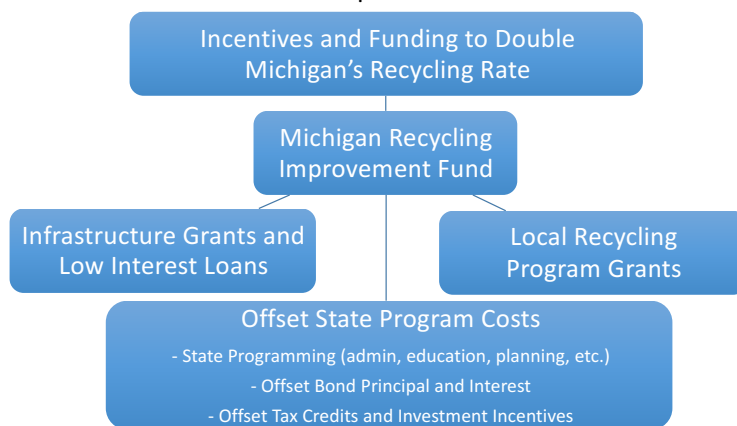
This final chapter outlines not only the GRC’s recommended funding program to support strong incentives for the investment and programming required to meet the access standards and implement complementary measurement, engagement, and recycling market development initiatives, but also the funding needs outlined in the Solid Waste and Sustainability Panel (SWSAP) report.

There is a need for state funding mechanisms to support planning and program implementation as well as to provide incentives to drive private and public sector capital and program investments needed to double Michigan’s recycling rate. Adapting leading practices from other states who have already achieved what Michigan should accomplish provides a strong road map for GRC and SWSAP recommendations on funding and incentives that follow.

Doubling Michigan’s recycling rate will accelerate an already strong force in our economy up to a new level of performance. Consider the following<sup>15</sup>:

- In Michigan, the recycling, reuse, and recovery economy is already estimated to contribute nearly \$25 billion in total economic output, with a full impact of over 90,000 jobs and labor income approaching \$6 billion annually. This is obviously a small fraction of Michigan’s gross state product estimated at \$417 billion in 2014 by the US Economic Development Administration, and clearly is well behind our leading industry sectors of tourism, auto manufacturing and agriculture. It is, however, a major cog in our state’s system of commerce and materials management.
- Michigan’s total volume of residential and commercial waste is about 10.4M tons per year, with residential waste at 6.8M tons, commercial waste at 3.2M tons, 0.25M tons of take back recovery, and 0.62M tons of deposit recovery. About 1M tons per year is recycled, 278k tons of organics processed, and the balance recycled through residential and curbside collection programs.
- Michigan communities and businesses (private and local) spend approximately \$1.3B each year to manage these materials. The majority of this cost is for waste collection and disposal with only \$150M spent on recycling (excluding deposit recovery).
- An increase in the recycling rate from 15 to 30 percent will mean adding approximately 1M to 1.4M tons to the recycling/organics flows.

The diagram shown below presents the components of the recommended funding incentive mechanisms, which are then detailed in the balance of this chapter.



<sup>15</sup> Michigan Recycling End-Use Market Survey and Recommendations, RRS, commissioned by MDEQ – See Appendix B for details

**Recommendations**

11.1 A Michigan Recycling Improvement Fund should be created and serve as the funding source for the grant and low interest loan programs detailed below as well as supporting programs such as planning, recycling market development, technical assistance, outreach and engagement, measurement and compliance, and more.

**Estimated Cost: Existing resources for legislative development. Fund sources to be determined by legislature. Estimated Timeframe: Short-term**

A portfolio of mechanisms would be the funding source for the Michigan Recycling Improvement Fund. The portfolio of funding sources may draw from one or more of the following proven mechanisms as evidenced by success in many other states across the nation:

Source of Funds	Description	Estimated \$ generated/Yr
Deposit Law Escheats Fund Allocation	Redeploying the unclaimed deposits (escheats) that are derived from the state’s Container Deposit Law – currently dedicated to other uses.	\$9M to \$14M annually
Disposal Fee Surcharge	A flat or graduated “surcharge” fee on the tipping fees as waste handling facilities and potentially other materials management facilities.	\$16M for every \$1/ton in tipping fees <sup>16</sup>
State Environmental Bond	A general obligation bond issued by the state that would then be retired over 10 to 20 years at public bond interest rates.	\$10M to \$100M+ one time source
Half-back Type Deposit or Delaware Model	The consumer would only receive half their 10¢ container deposit back.	\$200M per year
Transaction Fees	A flat fee of per retail transaction. A 1¢ fee would generate an estimated \$40M in revenue. Also referred to as a sustainability fee or “the penny plan”.	\$40M per year for every 1¢ per transaction
Advance Disposal Fees for Special Materials	A flat fee attached to a particular type of targeted material, then used to fund the end of use handling of that material (e.g. e-scrap, mattresses, carpet).	Varies by material – set at rate that covers program costs
State Green Infrastructure Bond	A variation of the state environmental bond issued by the state that would then be retired over 10 to 20 years at public bond interest rates.	\$10M to \$1B+ one time source
General Fund Allocation	Part of the State’s annual budgeting process, either as a specific line item call-out, or bundled in with a larger budget category.	The state has been budgeting approximately \$1M each year

It will be important to legislatively protect the integrity and purpose of the fund and to identify what activities are eligible. The expectations for and prioritization for use of the funds should be specifically identified in statute. A sunset provision may be desirable.

<sup>16</sup> MDEQ, noting that landfill volume and thus any revenue from a tip fee surcharge will vary significantly each year.

Note that the funding sources eventually chosen through the legislative process could be selected based on a “market price message” criteria in order to leverage economically driven decision making at key decision points – whether at the resident, home, or business level. These decision points are: 1) at the point of purchase of products and packaging; 2) at the point of purchasing of waste and recycling hauling services; and 3) at the point of disposal of products and packaging. Price messaging could be a key driver for engagement in the overall strategy – driving up participation by citizens, by businesses and by communities and institutions – helping insure success in reaching the 30% goal.

### **How the Fund Works**

The proceeds from the Michigan Recycling Improvement Fund would be distributed through three mechanisms:

1. The Recycling Infrastructure Investment Grant and Low Interest Loan Program would focus on driving capital investment by creating an effective incentive to leverage the required infrastructure investment for private and public recycling service providers. Both public and private sector entities would be able to apply. Eligible infrastructure investments would include collection equipment (recycling/organics carts and collection vehicles), recycling drop-offs and convenience centers, recycling and organics transfer, and processing facilities and related infrastructure. Grants and Low Interest Loans would require the targeted nine to one match ratio of leveraged investment from private and local public funding sources
2. The Local Recycling Grant Program would create a consistent year-after-year support and an incentive for local jurisdictions and potentially their private or public sector recycling service providers to achieve compliance with recycling and waste diversion benchmark standards. Eligible programs would include:
  - County material management planning
  - Local recycling education and engagement
  - Recycling market development to get more recyclables in new products
  - Recycling and organics collection and drop-off programs
  - Source reduction and reuse programs
  - Recycling and organics hub and spoke processing networks, especially in rural areas
  - Other important coordinating and support activities
3. Program Support Offsets – would cover the state’s programming costs that could include:
  - a) state program support for implementing both GRC and SWSAP recommendations as outlined in each report - including administration, technical assistance, statewide education campaigns, materials management planning, recycling market development, etc.;
  - b) public sector costs for the use of either the environmental or green infrastructure bonds approach described above or tax-exempt private activity bonds to support development of recycling businesses; and

c) offsetting costs for GRC recommended sales tax exemptions and tax credits, and/or incentives for private sector capital purchases and investments in recycling infrastructure, both supply chain (i.e. trucks, MRFs, etc.) and demand (i.e. PRFs, secondary glass processors, front end upgrades at paper mills, cleaning technology at plastics processors, etc.).

**Pilot Project Funding Recommendations**

11.2 The GRC recommends that a Michigan Recycle By Design (RbD) Pilot Challenge should be immediately authorized to pilot engagement of communities, counties and regions to focus on development of partnerships with recycling facilities, secondary materials processors and manufacturers for use of recyclables for production of new products, supplied through private/public partnerships with private sector recycling service providers. Alliances between local units and recycling service providers are the key to this approach, known as private/public partnerships or P3. This is a key step to leveraging the “9 to 1” local private and public sector investment required to implement recycling programs in those jurisdictions. Ideally these local RbD initiatives would work to leverage all or some of the following sources of capital and operating funds.

<ul style="list-style-type: none"> <li>• Traditional bank financing</li> <li>• Private equity capital</li> <li>• Working capital</li> <li>• Lease financing</li> <li>• Industry/association partnerships</li> <li>• MEDC private activity bonds</li> <li>• Investment tax credits</li> <li>• Crowd sourced funding</li> </ul>	<ul style="list-style-type: none"> <li>• Municipal fees (see Exhibit A)</li> <li>• User fees</li> <li>• Social impact capital</li> <li>• Private foundations</li> <li>• Community foundations</li> <li>• Municipal revenue bonds</li> <li>• Tradable carbon credits</li> <li>• Community contributions</li> </ul>
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The RbD Pilot Challenge would support the roll-out of the above grant and low interest loan programs, timed to kick-off prior to and operate concurrently with the materials management planning process.

**Estimated Cost: \$1.5M over two years**

**Estimated Timeframe: Immediate**

11.3 The GRC recommends that existing state statutes for funding recycling and related waste diversion programs (as referenced in Appendix C) should be updated so that these statutes: 1) clearly define the authorization that those mechanisms are to be used for materials management programs such as recycling, organics management, education and engagement, recycling market development, waste reduction and reuse initiatives, and the like; 2) increase the funding caps outlined in some of those funding mechanisms (where applicable) to meet the larger scale of these efforts that will be needed; 3) more clearly outline the approval mechanisms and procedures; 4) link these mechanisms to the standards and planning mechanisms outlined in recommended changes to Part 115; and 5) clearly establish the implementation mechanisms and their authorization to use private sector solution providers for that purpose should the local jurisdiction so decide.

Appendix C lists Michigan existing suite of local government funding mechanisms for recycling programs. These funding mechanisms should be updated and, where appropriate, written into statute to make way for local units to fund their own programs at no cost to the State.

**Estimated Cost: Existing Resources**

**Estimated Timeframe: Immediate**

11.4 The GRC recommends that appropriate policy and funding mechanism advisory committee(s) should be activated to provide oversight and input into the development of the above mentioned grant, loan, and engagement programs. These advisory committees should have broad representation across the recycling supply chain from public, private, NGO, institutional and academic interests as appropriate for the specific charter that they are given.

**Estimated Cost: Existing Resources**

**Estimated Timeframe: Immediate**

### **Gap 12**

Michigan's Container Deposit System (i.e. the Bottle Bill) provides access to deposit container recycling across the state, but the system is not integrated into the broader municipal recycling infrastructure. This may inhibit long-term recycling success for Michigan. The deposit system achieves a 90+ percent diversion rate, prevents litter and marine debris, and produces high quality recyclables, with Michigan's deposit system diversion rate being highest among the nation's ten states that have a container deposit law as part of their statewide recycling system. This comes, however, with a high cost per ton of material recycled and does divert valuable material from the local recycling stream and may result in loss of plastic and aluminum beverage container revenue at single and dual stream recycling processing facilities, while saving these recycling facilities from the net cost of processing much higher quantities of glass beverage containers. The matter of more deposits, versus no deposits, versus potential constructive changes to Michigan's current Deposit Law is both controversial and complex. The GRC believes, however, that Michigan's deposit system and its place in a comprehensive statewide recycling effort needs continued discussion and exploration

### ***Recommendations***

12.1 The GRC recommends that in-depth examination should continue of Michigan's Deposit System and its place in a comprehensive statewide recycling effort and its role as part of the statewide funding mechanisms covered in Recommendation 11.1. There are examples from other deposit states that could make Michigan's Deposit Law more cost-effective and complement efforts to recycle the other 98 percent of municipal solid waste not covered by the current Deposit Law. These range from the convenience zone concept which allows a redemption opt-out for small retailers when the immediate area is already serviced by a redemption location; to the incorporation of municipal recycling sorting centers into the deposit container redemption system, to the Delaware model which used its deposit law to transition into and finance statewide comprehensive local recycling programs.

**Estimated Cost: Existing Resources**

**Estimated Timeframe: short-term**

### **Gap 13**

The strong environmental and economic "business case" for recycling should be central to Michigan culture and business philosophy. Jobs, economic growth, greenhouse gas reductions, savings in waste disposal costs, reduced reliance on landfills, reductions in environmental externalities, and stronger community networks are amongst the cornerstones of recycling and waste diversion benefits, part of what is emerging as a "circular economy" point of view in the global business community. Michigan's legacy of reliance on landfills and low disposal tip fees has been part of this unsupportive culture. Tracking these costs and benefits (beyond just measuring our increasing recycling rate) should be central to



successful roll-out of the Michigan recycling initiative and transforming our community and business culture around a circular economy.

***Recommendations***

13.1 The MDEQ, with its implementation partners, as part of its progress tracking role and Recommendation 6.1, should regularly update analysis of the environmental and economic “business case” for recycling, tracking the performance of the recycling initiative over time not just in an increased recycling rate but also in jobs created, disposal capacity conserved, greenhouse gases reduced, environmental externalities eliminated, recycled commodities used in new products, and utility as a supply chain provider of feedstock to industry, etc.

**Estimated Cost: Existing Resources**

**Estimated Timeframe: Short-term**

## Appendix A

### Summary of Recommendations, Timing and Combined GRC/SWSAP Cost for State of Michigan

Count	Rec #	Recommendation	Cost	Timeframe
1	1.1	MDEQ should develop a Michigan Recycling Engagement Partnership	Existing resources	0-2 years
2	1.2	MDEQ should complete a literature review and base marketing research	\$100,000 one-time	0-2 years
3	1.3	MDEQ should lead development of statewide public education and engagement campaign	\$2.5 million annual	0-2 years
4	2.1	MDEQ should continue to support and enhance the role of the four (4) Recycling Specialists currently on staff	\$500,000 annual	0-2 years
5	2.2	MDEQ should develop certification and training opportunities for haulers	\$50,000 annual	3-5 years
6	2.3	MDEQ should establish planning staff to guide counties developing MMPs	\$750,000 annual	0-2 years
7	3.1	MDEQ and DTMB should coordinate with all state departments to review materials management practices for state office buildings and properties	\$25,000 one time	0-2 years
8	3.2	MDEQ should develop a state agency recycling dashboard	\$25,000 one time	0-2 years
9	4.1	MDEQ should develop partnerships, collaborations and alliances for recycling market development – a “Michigan Recycling Market Development Initiative”	Existing resources	0-2 years
10	4.2	MDEQ should grow opportunities for the use of recycled commodities	\$50,000 annual	3-5 years
11	4.3	MEDC should pursue a prioritization process that identifies a list of available recyclable materials to highlight in its economic development efforts.	\$50,000 annual	0-2 years
12	4.4	MDEQ should establish a Recycling Market Development Fund	\$2,000,000 annual	3-5 years
13	5.1	MDEQ should lead an effort to provide a credible, consistent and current Michigan Recycling Markets Profile	\$50,000 annual	3-5 years
14	6.1	MDEQ should work with MEDC to develop and adopt a strategy to target key gaps in Michigan’s recycling supply and demand system and bridge those gaps through public private partnerships.	\$50,000 annual	0-2 years
15	6.2	MDEQ should evaluate strategies for hard-to-recycle materials	\$200,000 one time	3-5 years
16	7.1	MDEQ should encourage adoption of policies, technical assistance tools and incentives that drive demand for recycled materials	Existing resources	6-10 years
17	7.2	MDOT should seek out opportunities and encourage use of recycled feedstock based construction materials	\$1 million annual (plus construction costs)	0-2 years
18	8.1	The Michigan Legislature and MDEQ should establish a framework of goals and benchmark metrics for convenient comprehensive recycling that is universally accessible	Existing resources	0-2 years
19	8.2	The statutory and administrative policy framework outlined in Recommendation 8.1 should clearly define recycling and waste diversion benchmark metrics	Existing resources	As part of 8.1
20	8.3	Recommendations 8.1 and 8.2 should be embedded in the implementation mechanisms that are part of the state’s new Materials Management Planning Process and MDEQ should establish Materials Management Planning Grants	\$10,250,000 annual	0-2 years
21	8.4	Recommendations 8.1 and 8.2 should include amendments to Part 115 to establish a minimum level of recycling options to be provided by solid waste hauling service providers	Existing resources	0-2 years
22	8.5	MDEQ should create a recognition and incentive program for solid waste haulers and community provided recycling programs	Existing resources	0-2 years
23	9.1	Public and private sector service providers should continue to develop, finance, and operate necessary processing infrastructure and programming to provide recycling across Michigan	\$282,800,000 one-time private and public investment	2-10 years
24	10.1	Public and private sector service providers should continue to develop, finance, and operate the necessary collection infrastructure and programming to provide recycling across Michigan	\$342,250,000 one-time private and public investment	2-10 years
25	11.1	A Michigan Recycling Improvement Fund should be created and serve as the funding source for grant, low interest loan, and recycling programs. Fund sources to be determined by legislature	Existing resources for legislative development	0-2 years
26	11.2	MDEQ should launch Michigan Recycle By Design (RbD) Pilot Challenge	\$1,500,000 over two years	0-2 years
27	11.3	State statutes should be updated for funding recycling and related waste diversion programs	Existing resources for legislative development	0-2 years
28	11.4	MDEQ should activate policy and funding mechanism advisory committee(s) to provide oversight and input into the development of the Fund	Existing resources	0-2 years
29	12.1	Should continue in-depth examination of Michigan’s deposit system	Existing resources	3-5 years
30	13.1	MDEQ should regularly update a comprehensive analysis of the environmental and economic “business case” for recycling	Existing resources	3-5 years
		Total one-time costs	\$1,850,000	
		Total annual funding needed	\$17,250,000	

## Appendix B

### Michigan Recycling Economic Impact, Opportunity Assessment and Infrastructure Investment Strategy

#### ***Framework for GRC Recommendations for infrastructure investment***

The GRC work on identifying strategic best practices to modernize the state's waste materials management infrastructure drew from analysis of required infrastructure and investment needed to collect and process two times the tonnage of recyclables currently being moved in the state – prepared in partnership with RRS's work stream for the Michigan Recycling End-Use Market Survey and Recommendations, Commissioned by MDEQ in 2015.

The analysis and approach summarized below shows what types of tools can be used to leverage an estimated \$600M to \$700M infrastructure investment in recycling by private and public sector service providers while keeping a proposed “state recycling infrastructure investment” in the \$100M range. If that state share were bond financed over a ten to fifteen-year timeframe then the actual annual spend for principal and interest would be more likely in the \$10M+ range. These approaches may be one of the most important tools the State could use to cause required investments to be made that will result in the target 30% to 50% recycling rate that has been discussed as an ambitious but realistic goal for the state.

#### ***Background on Michigan's System of Waste Materials Management and our Recycling Economy***

Michigan's system of waste materials management is built to be responsive to the basic public health, safety and welfare needs of our communities. Michigan's constitution establishes authority for local units of government within the state and holds those local units responsible for the capacity to provide or cause to be provided necessary governmental services essential to the public health, safety and welfare.<sup>17</sup> Waste materials management has long been established as an area of responsibility for these local units, and the public health, safety and welfare obligation is central to several statutes in Michigan law that enable local units to manage those responsibilities. In this way, waste materials management in Michigan is a fundamental infrastructure obligation at the local level. That function is typically carried out by the waste and recycling services industry – as summarized in Appendix E.

As Michigan has become a more industrialized economy, our system of waste materials management has evolved and begun to move towards a recycling, reuse, and recovery (RRR) industrial economy. As part of the Governor's Recycling Plan of Action, the economic impact of this RRR industrial activity makes use of locally generated raw materials to create jobs and provide economic benefits to local economies in MI.

The RRR industry economic impact results show 35,954 direct jobs in the state with a total annual labor income of \$2.6B. When indirect and induced labor impacts are included, the industry has an impact of 93,722 jobs and a labor income of \$5.7B. Direct economic output of the RRR industry in the state is \$14.8B and the total economic output (including indirect and induced effects) is \$24.3B.<sup>18</sup> Michigan's recycling economy is a cornerstone of the state's manufacturing base, with the potential for even greater economic impact and job contribution that could be accomplished through doubling of the state's recycling rate – a level of performance that many other states across the country have already achieved.<sup>19</sup>

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<sup>17</sup> *Home Rule in Michigan – Then and Now*, Communities Count, Michigan Municipal League

<sup>18</sup> *Michigan Recycling End-Use Market Survey and Recommendations*, RRS, Commissioned by MDEQ

<sup>19</sup> *Michigan Recycling End-Use Market Survey and Recommendations*, RRS, Commissioned by MDEQ

## ***Waste as a Resource – Michigan’s Lost Economic Opportunity and Our Recycling Performance Gap***

Even with the efforts of this \$24B “waste as a resource” economy – Michigan’s current approach to waste materials management still results in landfilling more than 6.2M tons of residential waste and 3.2M tons of commercial waste each year. The current amount of residential and commercial waste that is recycled each year is 1M tons along with .25M tons of take back recovery and .62M tons of container deposit recovery.<sup>20</sup> This represents an aggregate recycling rate of 15% - only half the national average and a third of some of our peer states. A material flow analysis of those tons shows that nearly 8.2M tons are landfilled, waste that is no longer available as a resource to our economy, but for a small amount of energy recovery from landfill gas. Michigan’s residents, businesses, private haulers and local units of government pay \$1.15B to collect this material and move it out of communities and into disposal facilities. An additional \$150M is paid to manage the non-deposit law recyclables, moving those materials back into the manufacturing system as new industrial feedstocks. The lost value of the waste materials that are disposed instead of recycled has been estimated in the range of \$368M<sup>21</sup> to \$600M annually.<sup>22</sup>

In April 2014, Governor Rick Snyder announced a statewide recycling initiative to double the state’s recycling rate to 30%. This will require the implementation of a coherent infrastructure modernization that guarantees the percentage of recycling increases in a compressed timeframe and ensures that the recycling rate will continue to grow.

An increase in the recycling rate from 15% to 30% will mean adding approximately 1M to 1.4M tons in additional recycling/organics material flows – an average of the two or 1.2M tons will be used in the balance of this evaluation. This first stage of increase to 30% can’t be viewed in isolation with the larger performance gap. The infrastructure investments required to realize a 30% goal will reach a “tipping point” in performance that will set the stage for a second push to 50%. Investments in processing infrastructure (new and expanded material recovery facilities aka “MRFs”), hub and spoke recycling and organics transfer operations, secondary processing for challenging materials like mixed plastics, flexible packaging and glass and end market investments (paper, plastics, glass, etc.) will all be ready for higher volume throughput.

### ***The Materials Management Infrastructure Need***

Preliminary analysis is projecting that the total investments necessary to increase Michigan’s recycling rate to the 30% to 50% range would include infrastructure development in the following areas:

#### ***Infrastructure Investment in Processing and Marketing of Recyclables***

Preparing recyclables to rigorous market specifications is an industrial scale activity, requiring a range of investments in infrastructure of all kinds – from recycling and organics processing facilities to a network transfer and drop-off operations to secondary processing and end market upgrades. Material Recovery Facilities: A range of investments in new and upgraded recycling processing facilities (material recovery facilities or MRFs) is anticipated as required to meet geographic and population density driven location decisions. These new developments will take place over the next 2 to 8 years.

- **Organics Processing Capacity:** Similarly, a range of both larger scale as well as smaller community

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<sup>20</sup> *Michigan Recycling End-Use Market Survey and Recommendations*, RRS, Commissioned by MDEQ

<sup>21</sup> *Economic Impact Potential and Characterization of Municipal Solid Waste in Michigan 2016*. Prepared by the West Michigan Sustainable Business Forum Waste Task Force. Funded by a 2014 Michigan Department of Environmental Quality Grant.

<sup>22</sup> *Michigan Recycling End-Use Market Survey and Recommendations*, RRS, Commissioned by MDEQ

scale organics processing facilities are anticipated.

- **Hub/Spoke Transfer for Recycling/Organics:** Rural areas and lower density suburban and exurban areas would function as satellite transfer “spokes”, feeding regional MRFs and composting facilities (the “hubs”) to reach diversion goals while the system achieves benefits from economy of scale.
- **Super Drop-off Convenience/Take Back Centers:** A system of full service drop-off locations are anticipated across the state to enable direct haul by residents and small businesses of a wide range of recyclables that are not collected in curbside recycling programs (e.g. appliances, textiles, Styrofoam, film, mattresses, tires, latex paint, construction materials, wood waste, electronic waste, etc.) along with other special difficult to handle materials (household hazardous waste, batteries, bulbs, etc.). These centers could be co-located with recycling facilities, transfer sites, public works yards or similar facilities.
- **Secondary Processing:** There are two challenging streams of material in the curbside recycling system that likely will require additional “secondary” processing to prepare them to market specifications. These include mixed plastics as well as mixed glass cleaning operations needed to insure a robust market channel for these materials after they have moved through MRFs. In some cases, even the MRF residue can be further harvested in secondary processing operations to recover additional materials or to prepare engineered “spec” fuels.
- **End Market Capacity Expansions:** Recycling markets are global, with recyclable “commodities” having strong demand throughout, even while recycling prices fluctuate – just like oil and agricultural products. The greatest economic benefit is realized, however, when those recyclables are processed locally in domestic in-state markets – even though the price paid for those recyclables may not be as attractive as distant export markets. Michigan has a strong manufacturing base that is built on our legacy of paper making, steel production and plastics/chemical processing – helping Michigan realize additional economic and job creation benefits – connecting the dots between our recycling system as a source of supply and our manufacturers as converters of that supply into valued end-products.

Following are the compiled estimates for these infrastructure investments for the processing and marketing of recyclables. Investments directly related to transfer and processing of recyclable and organics total \$282.8M. Investments in the end-market capacity expansions and the secondary processing capacity that will increase the quality and value of those commodity streams, totaling \$210M. The total of \$492.8M is the targeted capacity expansion anticipated to handle the additional 1.2M tons to be diverted from disposal and bring maximum value to the Michigan economy.<sup>23</sup>

SYSTEM INVESTMENTS	UNITS	AVERAGE COST PER UNIT	TOTAL CAPEX
<b>MRF, AD/Composting, Hub &amp; Spoke, Secondary Processing and End Market Investments</b>			
Large MRF	1	\$ 35,000,000	\$ 35,000,000
Medium MRFs including Upgrades	5	\$ 12,000,000	\$ 60,000,000
Small MRFs including Upgrades	5	\$ 5,000,000	\$ 25,000,000
Hub/Spoke Transfer for Recycling/Organics	10	\$ 1,530,000	\$ 15,300,000
Super Drop-off Convenience/Take Back Centers	50	\$ 1,250,000	\$ 62,500,000
Secondary Processing (glass/plastics)	4	\$ 15,000,000	\$ 60,000,000
Organics Processing - Wet and Dry/AD Large Scale	4	\$ 15,000,000	\$ 60,000,000
Organics Processing - Community Scale Composting/AD	12	\$ 2,083,333	\$ 25,000,000
End Market Capacity Expansions	5	\$ 30,000,000	\$ 150,000,000
<b>Subtotal - Direct Transfer and Processing of Recyclables and Organics</b>			<b>\$ 282,800,000</b>
<b>Subtotal - End Market and Secondary Processing Development</b>			<b>\$ 210,000,000</b>
<b>TOTAL- MRF, AD/Composting, Hub &amp; Spoke, Secondary Processing and End Market Development</b>			<b>\$ 492,800,000</b>

<sup>23</sup> Michigan Recycling End-Use Market Survey and Recommendations, RRS, Commissioned by MDEQ

### **Infrastructure Investment in Collection Containers and Trucks**

Providing convenient and high capacity collection containers to residents and businesses along with the collection trucks to move the material to processing facilities is a key link in the recycling and organics value chains. Two types of infrastructure investments are anticipated here: a) a range of collection containers of all types and b) specialized high tech automated container collection trucks.

- Containers: A range of investments in collection containers will be required – including convenient rolling curb-carts (35 gallon to 95 gallon in size) for both recyclables as well as source separated organics, primarily servicing curbside routes in non-rural cities, villages and townships. Recycling roll-offs will also be needed (20 to 40 cubic yards) as collection containers for drop-off sites and higher density residential, commercial and institutional buildings. Recycling collection “dumpsters” (6 to 10 cubic yards) will also be required for commercial and institutional locations – as well as for low-rise multi-family housing.

Detailed assumptions are shown in the chart below for the unit counts, cost per unit and total capital investment of \$268M anticipated for containers. Note that one of the major US suppliers of curbside carts is located right here in Michigan, with potential to bring even greater economic benefit to the state both in jobs and economic activity as well as demand for post-consumer resin that is used to manufacture those carts.

SYSTEM INVESTMENTS	UNITS	AVERAGE COST PER UNIT	TOTAL CAPEX
<b>Cart and Container Investments</b>			
Curbside Carts for Recycling	2,000,000	\$ 55	\$ 110,000,000
Curbside Carts for Organics	2,500,000	\$ 55	\$ 137,500,000
Recycling Roll-offs for High Density Drop-offs	500	\$ 3,000	\$ 1,500,000
Commercial Recycling Collection Containers	15,000	\$ 800	\$ 12,000,000
Multi-Family Recycling Dumpsters	10,000	\$ 700	\$ 7,000,000
<b>TOTAL- Cart and Container Investments</b>			<b>\$ 268,000,000</b>

- Collection Trucks: These containers required specialized trucks to service them – most of them utilizing automated or semi-automated arms and lifting devices – both side load, rear load, front load, all with high-compaction capabilities – along with roll-off trucks and service support vehicles. Estimates are provided for anticipated trucking requirements.

Detailed assumptions are shown in the chart below for the unit counts, cost per unit and total capital investment of \$74.25M anticipated for collection vehicles.

SYSTEM INVESTMENTS	UNITS	AVERAGE COST PER UNIT	TOTAL CAPEX
<b>Collection Truck Investments</b>			
Automated	150	\$ 300,000	\$ 45,000,000
Semi-Automated	60	\$ 190,000	\$ 11,400,000
Front Load	60	\$ 160,000	\$ 9,600,000
Roll-off	50	\$ 140,000	\$ 7,000,000
Support	25	\$ 50,000	\$ 1,250,000
<b>TOTAL- Collection Truck Investments</b>			<b>\$ 74,250,000</b>

### **Infrastructure Investment in Support Systems**

Investment in the “bricks and mortar” of a modernizing recycling materials management infrastructure requires supporting systems to effectively enable target diversion goals to be reached. The following types of support services are anticipated: a) Collection Container Roll-out and Outreach, b) Technology; c)

Outreach, Engagement & Messaging; d) County Materials Management Plans and e) Program Support/Management. These investments are described in much more detail in the main body of the GRC Report and Recommendations.

**SWSAP Implementation and On-going Management**

The development of the SWSAP recommendations concurrent with GRC’s report and recommendations provided a unique opportunity to link the two initiatives. There are important synergies that have been outlined in key sections of the main body of the GRC report and recommendations. MDEQ will play a critical role in a number of areas that are key to the success of the sustainable materials management approach and the growth of recycling as part of the state’s material management strategy. This MDEQ role is an increase above what functions they already serve. MDEQ staff and the SWSAP have been working to inventory these functional roles for materials management as follows:

<ul style="list-style-type: none"> <li>• Technical Reviews and RAPs</li> <li>• Composting</li> <li>• Inspections</li> <li>• Permits and Licenses (composting, transfer stations, MRFs, processing facilities, landfills)</li> <li>• Materials Management Plans</li> <li>• Enforcement and Compliance Assistance</li> <li>• Office Support Staff</li> </ul>	<ul style="list-style-type: none"> <li>• Recycling</li> <li>• Complaint Response</li> <li>• FA and Surcharge Collection</li> <li>• Legislative Assistance</li> <li>• Training &amp; Outreach</li> <li>• Environmental Sampling</li> <li>• Beneficial Use</li> </ul>
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MDEQ staff have estimated the following staffing program and costs showing the increase that will be necessary to fully support the materials management strategy and the implementation of the Governor’s recycling program goals:

Roles and Responsibilities	Current Staff	Proposed Staff
Planning	1	5
Enforcement	2	3
Materials Management Oversight	33	39
Beneficial Use	1	1
Total Staffing Plan	37	48
Total Staffing Costs	\$ 5,550,000	\$ 7,200,000

While these estimates may be refined as legislation to implement the recommendations evolves, it is important that these costs be incorporated into the funding mechanisms that are recommended for establishment as part of the GRC report.

**The Recycling Infrastructure Investment**

Together these anticipated infrastructure and support system investments represent the comprehensive best practice “system” that has been proven in other states to result in the achievement of 30% to 50% diversion.

The recycling infrastructure outlined and detailed above and in the main body of the GRC Report and Recommendations are anticipated to total in the range of \$600 to \$700 million USD in one-time costs – most of which will be made as part of private and public sector service provider investment. Note that

\$210M in the estimates of capital spend in the tables above are for end-market development – private sector investments in manufacturing – so not directly related to the collection, transfer and processing of the newly recovered recyclables. The \$650M figure used in the following analysis does not include these investments. This investment will not only occur in new and expanded infrastructure but also in the development and support of stronger, more resilient end markets within the state.

Based on an annual amortization of the \$650M investments at an average of 10 years (accounting for both shorter life and longer life investments) brings an annualized rate of capital coverage in the \$65M range. If we assume that this annualized capital cost represents 30% of operating costs, then an annual operating cost associated with the investment is projected at approximately \$217M as shown in the table below.

TOTAL INVESTMENT IN COLLECTION, PROCESSING AND SUPPORT SYSTEMS	\$	650,000,000
ANNUAL AMORTIZATION @ 10 YEARS	\$	65,000,000
ESTIMATED ANNUAL OPERATING COST @ 30% CAPITALIZATION	\$	216,666,667

There are off-sets to these costs, however, as shifting economies of scale and avoided costs in the current situation are realized through the recycling infrastructure investment including a) avoided disposal costs that will be realized (\$75M); b) redeployment and contraction of waste collection and transfer capacity (\$27M); c) improved utilization of existing recycling collection and processing capacity.

These off-setting costs are real - repurposing not just capital assets but deployment of the current spend across the State for managing these materials. As shown in the table below, accounting for only the top 3 of these potential benefit streams lowers the net impact of the operational costs for the recycling infrastructure investment by an estimated \$102M from \$217M to approximately \$115M per year.

NET IMPACT OF OFF-SETTING OPERATIONAL COST BENEFITS		
AVOIDED DISPOSAL COSTS ON 3M TONS @ \$25/TON	\$	75,000,000
AVOIDED WASTE COLLECTION COSTS ON 3M TONS @ \$6/TON	\$	18,000,000
AVOIDED WASTE TRANSFER ON 20% OF 3M TONS @\$15/TON	\$	9,000,000
SUM OF ADDITIONAL OFF-SETS	\$	102,000,000
ORIGINAL ESTIMATED ANNUAL OPERATING COSTS	\$	216,666,667
ADJUSTED "NET" ANNUAL OPERATING COSTS AFTER OFF-SETS	\$	114,666,667

This represents less than a 9% increase in the \$1.3B that has been calculated as Michigan’s current annual spend – while increasing overall diversion and transitioning from a linear “make, use, dispose” economy to the circular economy of sustainable materials management – with diversion approaching 50% - up from our current 15% level. And these calculations do not account for the overall economic benefits compiled in the opening section to this report, nor the economic value of environmental externalities that are often associated with avoiding disposal through increased recycling.

Note that the \$1.3B in existing spend is already supporting a sunk capital investment that can be calculated at over \$3.2B using an assumed 25% of operating costs basis and 10-year amortization. In this context, the estimated \$600 to \$700M in anticipated infrastructure investment is in line with existing industry practices for a built out sustainable materials management system.

## PUBLIC AND PRIVATE SHARED INVESTMENT

Finding the mechanisms to incentivize that level of investment to take place takes serious commitment, planning and discipline in execution – not to mention collaboration on many levels. While some states have taken the approach of using top-down mandates to cause such investment (e.g. California and its goals and franchise tools) the track record in Michigan historically has been to use grants and or bond financing to incentivize investment. In fact, many of the more successful legacy recycling programs in the



state have roots in prior state efforts like the Clean Michigan Fund of the past. Luckily a great deal has been learned across the country on best practices in such matters. In fact, development of recycling programs across the country have demonstrated that funding tools can be used as “carrots” to leverage the bulk of required infrastructure investment from private as well as public funding mechanisms. The following chart illustrates an example of how a “10 cents on the dollar” approach could be an important tool to leverage a significant portion of the targeted capital.

As shown in the charts below, each area of capital spend has been reviewed to determine what an optimum State Infrastructure Investment grant allocation might be to leverage the necessary contribution by the recipient. So for, example, the second column from the right shows a 10% “state recycling infrastructure investment” contribution for MRFs leveraging the remaining 90% of the investment from other private and or local public sources. Similarly, a 20% “state recycling infrastructure investment” for collection containers leverages the 80% match on the private/local public side.

***Incentivizing Investment in Processing and Marketing of Recyclables***

The chart below shows how the needed investments in processing and marketing of recyclables would be leveraged through the proposed incentive. For the direct costs of transfer and processing the approximately \$28M in the proposed State Infrastructure Investment column would leverage the balance of \$284M investment by others (private and public sector service providers). Similarly, the \$21M in in the proposed State Infrastructure Investment column for the End Market and Secondary Processing Development investments would leverage a balance of \$189M investment by the manufacturing sector.

SYSTEM INVESTMENTS	TOTAL CAPEX	INVESTMENT BY OTHERS (PRIVATE AND PUBLIC)		PROPOSED STATE INFRASTRUCTURE INVESTMENT	
		PERCENT	AMOUNT		
<b>MRF, AD/Composting, Hub &amp; Spoke, Secondary Processing and End Market Investments</b>					
Large MRF	\$ 35,000,000	90%	\$ 31,500,000	10%	\$ 3,500,000
Medium MRFs including Upgrades	\$ 60,000,000	90%	\$ 54,000,000	10%	\$ 6,000,000
Small MRFs including Upgrades	\$ 25,000,000	90%	\$ 22,500,000	10%	\$ 2,500,000
Hub/Spoke Transfer for Recycling/Organics	\$ 15,300,000	90%	\$ 13,770,000	10%	\$ 1,530,000
Super Drop-off Convenience/Take Back Centers	\$ 62,500,000	90%	\$ 56,250,000	10%	\$ 6,250,000
Secondary Processing (glass/plastics)	\$ 60,000,000	90%	\$ 54,000,000	10%	\$ 6,000,000
Organics Processing - Wet and Dry/AD Large Scale	\$ 60,000,000	90%	\$ 54,000,000	10%	\$ 6,000,000
Organics Processing - Community Scale Composting/AD	\$ 25,000,000	90%	\$ 22,500,000	10%	\$ 2,500,000
End Market Capacity Expansions	\$ 150,000,000	90%	\$ 135,000,000	10%	\$ 15,000,000
<b>Subtotal - Direct Transfer and Processing</b>	<b>\$ 282,800,000</b>	<b>90%</b>	<b>\$ 254,520,000</b>	<b>10%</b>	<b>\$ 28,280,000</b>
<b>Subtotal - End Market and Secondary Processing Development</b>	<b>\$ 210,000,000</b>	<b>90%</b>	<b>\$ 189,000,000</b>	<b>10%</b>	<b>\$ 21,000,000</b>
<b>TOTAL- All</b>	<b>\$ 492,800,000</b>	<b>90%</b>	<b>\$ 443,520,000</b>	<b>10%</b>	<b>\$ 49,280,000</b>

***Incentivizing Investment in Containers and Collection***

The chart below shows how the needed investments in containers and collection of recyclables would be leveraged through the proposed incentive.

SYSTEM INVESTMENTS	TOTAL CAPEX	INVESTMENT BY OTHERS (PRIVATE AND PUBLIC)		PROPOSED STATE INFRASTRUCTURE INVESTMENT INCENTIVE	
		PERCENT	AMOUNT		
<b>Cart and Container Investments</b>					
Curbside Carts for Recycling	\$ 110,000,000	80%	\$ 88,000,000	20%	\$ 22,000,000
Curbside Carts for Organics	\$ 137,500,000	80%	\$ 110,000,000	20%	\$ 27,500,000
Recycling Roll-offs for High Density Drop-offs	\$ 750,000	100%	\$ 750,000	0%	\$ -
Commercial Recycling Collection Containers	\$ 5,625,000	80%	\$ 4,500,000	20%	\$ 1,125,000
Multi-Family Recycling Dumpsters	\$ 2,450,000	90%	\$ 2,205,000	10%	\$ 245,000
<b>Collection Truck Investments</b>					
Automated	\$ 38,250,000	100%	\$ 38,250,000	0%	\$ -
Semi-Automated	\$ 11,400,000	100%	\$ 11,400,000	0%	\$ -
Front Load	\$ 9,600,000	100%	\$ 9,600,000	0%	\$ -
Roll-off	\$ 3,500,000	100%	\$ 3,500,000	0%	\$ -
Support	\$ 1,250,000	100%	\$ 1,250,000	0%	\$ -
<b>Subtotal - Cart and Container Investments</b>	<b>\$ 256,325,000</b>	<b>80%</b>	<b>\$ 205,455,000</b>	<b>20%</b>	<b>\$ 50,870,000</b>
<b>Subtotal - Collection Truck Investments</b>	<b>\$ 64,000,000</b>	<b>100%</b>	<b>\$ 64,000,000</b>	<b>0%</b>	<b>\$ -</b>
<b>TOTAL- All</b>	<b>\$ 320,325,000</b>	<b>84%</b>	<b>\$ 269,455,000</b>	<b>16%</b>	<b>\$ 50,870,000</b>

For these Containers and Collection Investments a proposed incentive of \$50.1M would leverage and additional \$205M. For Collection Truck Investments no incentive is proposed.

***Summary***

As stated in the introduction, the net benefit of the approach outlined above, one that is unique to the waste and recycling space, is that various tools like this can be used to leverage the anticipated \$600M to \$700M infrastructure investment, while keeping the “state recycling infrastructure investment” in the \$100M range, and if that spend were to be bonded the actual annual spend would be more likely in the \$10M+ range. These approaches may be one of the most important tools that the State could use to cause the required investment to be made that will result in the target 30% to 50% recycling rate that has been discussed as an ambitious but realistic goal for the state.

## Appendix C

### Michigan's Existing Suite of Local Government Funding Mechanisms for Recycling Programs

#### LOCAL GOVERNMENTAL UNIT ENABLED

**Legislatively Authorized Millages:** Cities and villages are authorized by Act 298 of 1917 (MCL 123.261) to collect up to 3 mills for solid waste, recycling, and organics collection services. The elected body approves an "annual garbage tax" as part of annual budgeting, with the funds being collected as part of the next tax cycle. Charter Townships are authorized to collect up to 2 mills.

**Municipal Utility/Service Fees:** A local unit can establish an exclusive service provision (e.g. waste collection, recycling, and organics) and charge for that service through a utility billing system or other user fee system. This is a common method when a local unit already has other utility billing systems in place (water, sewer, electricity). The fee system can include pay per volume features (aka "pay-as-you-throw" or PAYT) - an incentive for waste reduction and recycling.

**Special Assessment Districts:** Michigan Townships (Public Act 188, 1954 MCL, 41.721) and Villages (Public Act 116, 1923, MCL 41.411) can create special assessment districts for improvements that provide for waste and recycling services. Many of Michigan's townships and villages use this approach in contracting and paying for solid waste, recycling, and organics collection services.

**Exclusive Hauler Franchise and Hauler Collected Fees:** A local unit can award an exclusive hauler contract/franchise for the collection of waste from residential and/or commercial sources and bundle recycling and organics services in with the contract/franchise. The hauler is responsible for providing all services and collecting the fees from system users following a pricing schedule contained in their franchise/contract with the local unit. The local unit can also charge an additional franchise fee to be paid to the local unit to cover costs of supporting programming.

**Non-Exclusive Hauler Licensing and Hauler Collected Fees:** A local unit can award non-exclusive hauler licenses for the collection of waste from residential and/or commercial sources and bundle recycling and organics collection in with the service. The hauler is responsible for providing all services and collecting the fees from system users in compliance with all requirements of the enabling ordinance. The local unit can also charge an additional fee (e.g. per customer) to be paid to the local unit to cover costs of supporting programming.

**Voter Approved Program Millage:** The majority of voters in the city can approve a millage to fund recovery programs, either for capital or operating costs. Majority approval of voters would implement this funding mechanism. These almost always have a sunset clause (e.g. five years) to require re-evaluation and re-voting by citizens. Some are temporary millages limited in scope to specific capital projects.

**General Fund:** Some local units have managed to cover recovery program costs out of their general fund, most often when the program offerings are limited in scope (e.g. spring/fall cleanups) or are provided jointly through a larger inter-governmental project (e.g. regional household hazardous waste services).

**Supplemental Fees for Service:** Additional charges and supplemental fees are used by many municipalities to cover costs for value added services that some but not all citizens use and that citizens often expect to be provided by their municipality. Examples include curbside bulky waste pickup, curbside brush collection, tire drop-offs and drop-off/convenience center refuse and recycling services.

## COUNTY/INTER-GOVERNMENTAL ENABLED

**Act 185 County Public Works Assessment:** This funding mechanism is used in water, sewer, refuse/recycling and related environmental projects by counties that have an organized Act 185 Department of Public Works. Specific procedures must be followed to develop a project including an engineer's cost-estimate and required public hearings and county/local approvals. This allows collection of a flat fee assessment for the project over a set time period. (Public Act 185, 1957, MCL 123.732)

**Act 69 and Act 138 Surcharge Fees:** With Act 69, through county and local unit resolutions, voters in each jurisdiction are asked to approve this resource recovery charge (up to \$50) per household/business per year that can then be collected (if voters approve in that local unit) by the county as part of winter taxes. This is similar to a Public Act 138 fee that is limited to households only with a maximum of \$25/year, but just requires approval by the elected officials of the local unit. (Act 69, 2005, Act 138, 1989, Urban Cooperation Act 7 of 1967, MCL 124.508a)

**Hauler License Resource Recovery Fee:** Licensed haulers can be charged a "Resource Recovery Charge" for each household and commercial account and be required to pass through that charge as a line item to their customers. The charge is set as part of the annual budgeting process to cover all costs for Resource Recovery Programs and then allocated to the haulers on a common dashboard metric basis (e.g. customer counts).

**Landfill Surcharge:** A Resource Recovery Fee can be imposed by ordinance/licensing mechanism (e.g. Grand Traverse County), by contract (e.g. Clinton County) or as part of the budget of publicly owned facilities (like Kent County and Emmet County). Applies to all incoming tons (residential and commercial) and varies with incoming waste volumes.

**Voter Approved County-wide Millage:** The majority of voters in the county can approve a millage to fund resource recovery programs, either for capital or operating costs. Majority approval of voters would implement this funding mechanism county-wide. Almost always has a sunset clause (e.g. five years) to require re-evaluation and re-voting by citizens.

**Supplemental Fees for Service:** Additional charges and supplemental fees are used by many counties to cover costs for value added services that some but not all citizens use and that citizens often expect to be provided by their municipality. Examples include curbside bulky waste pickup, curbside brush collection, tire drop-offs and drop-off/convenience center refuse and recycling services.

## Appendix D

### MDEQ 2014-2016 Activities to Move Forward on the Proposed Plan of Action on Recycling

From the time that the GRC was launched in April of 2014, and the MDEQ began to support its purpose, the MDEQ also proceeded with activities to move forward with implementation of those components of the Proposed Plan of Action on Recycling that were within their control and that were able to implement with funds made available in the annual budgeting cycle. These activities, carried on with full participation of the GRC, are highlighted below.

Activity Area	Status
<b>Measure</b>	<p>With a fiscal year (FY) 2014 Community Pollution Prevention Grant:</p> <ul style="list-style-type: none"> <li>• A Michigan Recycling Index was developed to determine baseline recycling metrics.</li> <li>• Best practices for successful recycling programs were developed and statistical analysis conducted of the waste composition in Michigan.</li> <li>• The composition and economic value of waste disposed of in Michigan was determined.</li> </ul> <p>Public Act 55 of 2016 (Effective: 6/27/2016). Environmental protection; recycling; registration and reporting requirements; establish for recyclers of material from residential and commercial waste. Amends 1994 PA 451 (MCL 324.101 - 324.90106) by adding pt. 175.</p>
<b>Education/Outreach</b>	<p>The MDEQ is using the Recycle Michigan signs and branding for state park and rest area recycling.</p> <p>A FY 2017 Grant RFP was announced in January of 2017 to provide small grants to local units and non-profits, totaling \$250,000 for education and outreach materials.</p>
<b>Technical Assistance</b>	<p>By November 2014, the MDEQ had established four field positions in the district offices to enhance recycling efforts. The specialist positions will provide onsite training, outreach, and technical assistance.</p> <p>Recycling Webinar Series</p> <p>Recycling and Solid Waste Forums hosted</p>
<b>Access</b>	<p>The FY 2015 grants were used to support local recycling programs to establish or improve recycling opportunities. The grants will be targeted toward increasing the number of counties providing convenient access to residential recycling. The number has recently increased to 25. The goal is to increase that number of counties to 29 in 2015, 45 in 2016, and 83 in 2017.</p> <p>Recycling bins have been purchased for eight rest area pilots.</p> <p>The MDEQ offered up to \$450,000 to cities, villages, townships, charter townships, counties, tribal governments, and municipal solid waste or resource recovery authorities for the purchase of residential recycling carts through the MDEQ's 2016 Residential Recycling Grant Program.</p>

	<p>A FY 2017 Grant RFP was announced in January, 2017 to provide small grants to local units and non-profits, totaling \$250,000 for small recycling infrastructure projects.</p>
<b>Market Development</b>	<p>By November 2014, the MDEQ had realigned the existing Recycling Specialist position in Lansing so that it can take on the leadership role for developing markets for recycled materials.</p> <p>A contract to complete a market development study, and an evaluation of program focus, as well as a contract to update the Recycled Materials Market Directory has been entered into.</p> <p>A 2016 Community Pollution Prevention Grant Program Request for Proposal was announced on December 23, 2015, for a total of \$250,000. The 2016 grants will focus on reducing and diverting food waste.</p>
<b>SW Planning</b>	<p>By May 2015, The MDEQ created a Solid Waste and Sustainability Advisory Panel (SWSAP) that will convene to address planning and other solid waste issues related to Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, in a more holistic way. The Waste Management and Radiological Protection Division is facilitating the SWSAP to assist with a broad and comprehensive review of Part 115 and other statute's related to furthering our solid waste and sustainability goals. The SWSAP is comprised of representatives from state and local government and industry.</p>
<b>Leadership</b>	<p>The Governor's Recycling Council was established to advise the MDEQ on implementing the Governor's Residential Recycling Plan and other related issues so that the state will achieve a 30 percent residential recycling rate within two years.</p> <p>The Governor's Recycling Summit has been hosted twice, with third planned for Spring 2017.</p>
<b>Funding</b>	<p>\$1 million general fund appropriation in the MDEQ's FY2015, FY 2016 and FY2017 Budget. \$1 million general fund appropriation proposed in the MDEQ's FY2018 and FY2019 Budget.</p>

## Appendix E

### Profile of Michigan's Private Sector Solid Waste and Recycling Service Providers

Estimates of capital needed for collection and processing will largely be the result of private sector investment. Michigan's system is built upon a strong reliance on this private sector collection and processing investment. The information in the Appendix B charts for needed capital is to demonstrate this investment – again, with the majority coming from the private sector.

While a responsibility of local units of government, solid waste and recycling infrastructure in Michigan is predominantly provided as a service of the private sector, often under contract to these local units. Currently, sixteen communities offer publicly operated collection of trash or recyclables while the majority of Michigan's cities, villages and larger townships contract for those services with the remaining relying upon single subscription services. In MDEQ and Waste Management, Inc. interviews for the American Society of Civil Engineers for their update to the Michigan Infrastructure Report Card the results found that following 16 Michigan communities staff their own waste and recycling collection programs – Bay City, Benton Charter Township, City of Ann Arbor, City of Chelsea, City of Escanaba, City of Gladstone, East Lansing, Grand Rapids, Grosse Point Shores, Lansing, Midland, Muskegon, Muskegon Charter Township, Trenton and Warren – while some communities have publicly operated recycling programs including Cheboygan County (including City of Cheboygan), Otsego County (including city of Gaylord), Emmet County (including the cities of Petoskey and Harbor Springs).

As a result, the infrastructure for materials management in Michigan is largely provided by the private sector, including collection containers, modern trucks, transfer stations, recycling centers, composting facilities, modern landfills, landfill gas-to energy and waste-to-energy.

Michigan's waste and recycling industry does more than simply collect trash. These private sector environmental stewards advocate safe, economically sustainable and environmentally sound waste hauling, disposal, recycling, composting and landfill gas-to-energy programs.

The fragmented and local-based nature of the waste disposal industry makes pinpointing its size difficult. A study published by the Environmental Research & Education Foundation in April 2001 sought to capture data on the private entities in this sector. This data has been extrapolated to provide estimated information for Michigan. There are approximately 250 facilities owned, 11,000,000 million tons managed, and 8,000 employees.

