Evaluation and Review of the 21st Century Infrastructure Commission Report and Infrastructure Asset Management Pilot

Michigan Infrastructure Council
FY2019 Review

Evaluation and Review of the 21st Century Infrastructure Commission Report and Infrastructure Asset Management Pilot

Background

The 21st Century Infrastructure Commission, an advisory body comprised of 27 members, was created by Governor Rick Snyder through Executive Order 2016-5 to initiate the planning, development, and management of Michigan's complex infrastructure network over the next 30 to 50 years. Through the publication of the 21st Century Infrastructure Commission Report (2016), the Commission acknowledged the many challenges to Michigan's aging, underfunded, and siloed infrastructure environment and issued a comprehensive set of recommendations across water, transportation, energy, and communications.

The Regional Infrastructure Asset Management Pilot commenced in April 2017 through Executive Directive 2017-1 and was tasked with developing an integrated asset management process that could be leveraged across state, regional, and local government and both public and private utilities. The pilot culminated in a comprehensive report which included a set of recommendations for elevating Michigan's leadership in infrastructure asset management.

The combined reports resulted in over 150 recommendations for evaluation. Each recommendation was recorded, considered, and aligned with one of the five Michigan Infrastructure Council (MIC) goals: Educate, Collaborate, Coordinate, Prioritize, and Invest (Table 1). Recommendations were also evaluated relative to both current and future planned MIC activities.

Michigan Infrastructure Council

As defined through P.A. 323 of 2018, the Michigan Infrastructure Council (MIC) is charged with bringing together public and private infrastructure owners, regional representatives, finance and policy experts, and state departments to coordinate and measure infrastructure goals, safeguard investments, and develop an efficient, strategic, and statewide framework for integrated asset management.

In order to satisfy requirements of the legislation and begin to address the quickening pace of change and the need for long-term investment, MIC included the evaluation and review of the 21st Century Infrastructure Commission Report and the Regional Infrastructure Asset Management Pilot Report in their Year 1 Workplan. The results of this evaluation and review are in the pages that follow.

Collaborate
Facilitate a coordinated, holistic approach that optimizes the engagement of all stakeholders who manage and use Michigan's infrastructure.
Coordinate
Align strategies for infrastructure management to ensure that Michigan's assets are effectively and efficiently constructed, operated, and maintained.
Prioritize
Establish and document the condition of Michigan's infrastructure to identify the needs of greatest priority.
Educate
Provide accurate and trusted information to support effective infrastructure decisions.
Invest
Determine, recommend, and advocate for adequate funding for Michigan's infrastructure and promote effective and efficient investments to achieve maximum benefit.

Table 1. MIC Goals

21st Century Infrastructure Commission Recommendation	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
Communications - Making Michigan a Smarter State						
4.1.1 The State of Michigan should create the Consortium on Advanced Networks to develop a vision, a plan, and execution roadmap to enact the state's digital transformation by investing in emerging technologies, supporting academia in research related to the IoT, building an adaptive IoT workforce, and forming appropriate policies to create a smarter state.					X	
4.1.2 The Michigan Economic Development Corporation (MEDC), in partnership with relevant state agencies, should create a fund to support efforts that will make Michigan a global leader in smart technology development and deployment.					X	
4.1.3 The DTMB should actively participate in relevant workgroups and committees of the National Association of Chief Information Officers and the International Telecommunications Union to position Michigan as a technological leader.		X				
4.1.4 The Michigan Infrastructure Council should engage in P3s to ensure IoT adoption is included in infrastructure planning and retrofit technologies are considered,pursued, and incorporated as they become available for upgrades and maintenance activities to existing and future infrastructure.		X				MIC Future Planned
Communications - Improving Broadband Access and Adoption						
4.2.1 The Governor should issue an executive order establishing the Michigan Consortium on Advanced Networks. The group would be charged with improving coordination among stakeholders, in addressing mobile and fixed broadband access and adoption issues in the state, as well as making Michigan a smarter state.			X			

21st Century Infrastructure Commission Recommendation	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
4.2.1.1 Policy Coordination: Support local and state agenices in working with the private sector to increase mobile and fixed broadband access in Michigan.			X			
4.2.1.2 Technical Assistance: Provide guidance for local and state agencies working with the private sector to increase mobile and fixed broadband access in Michigan.		X				
4.2.1.3 Asset Management: Continue and expand efforts to map and research mobile and fixed broadband access and adoption.					X	
4.2.1.4 Digital Literacy Education: Expand, improve and create pragmatic digital literacy programs at the state and local level.	X					
4.2.1.5 Funding Options: Provide funding-and help identify funding and financing from all available sources and programs-to entice investors to provide affordable mobile and fixed broadband access to households and businesses statewide, making Michigan a top-five state for mobile and fixed broadband access and adoption.					X	
Communications - Securing Michigan's Digital Infrastructure						
4.3.1 DTMB should develop a ubiquitous enterprise log management as a service system, or cyber hub, that allows the cyber security exosystem to understand new, emerging and historical cyber threats by leveraging advanced and predictive analytics.					X	
4.3.2 DTMB should work to build a cyber-focused workforce, in partnership with the Merit Network, by continuing efforts of the Regional Cybersecurity Education Collaboration.	X					
4.3.3 DTMB should increase Michigan Civilian Cyber Corps membership to 200 members and invest in development and training for the MiC3.	X					
4.3.4 The Governor should create a shared virtual chief information security office to provide consulting and advisory services to multiple local governments.			X			

21st Century Infrastructure Commission Recommendation	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
4.3.5 DTMB should enhance threat intelligence gathering and sharing among states, federal agencies and private sector partners develop responses to common threats, in keeping with guidance published by the National Institute of Standards and Technology.		X				
4.3.6 DTMB should advocate for changes to the state's Freedom of Information Act (FOIA) exemptions-which currently prevents Michigan agencies from communicating and coordinating with infrastructure asset owners about cyber and physical security threats/attacks-to allow for appropriate exemptions for agencies protecting Michigan's critical infrastructure.			X			
4.3.7 Entities within the cyber security ecosystem should collaborate to develop a public awareness campaign and other learning opportunities to educate residents, consumers, and families about the reality of online risks and promote cyber safety practices among residents, particularly children and businesses.	X					
4.3.8 Work with the cyber security exosystem and other entities to design and encourage the adoption of a curriculum focusing on technology throughout the science, technology, engineering and mathematics education system.	X					
4.3.9 Michigan should develop a next-generation solution to centrally manage identity and authentication management for workers, partners, and residents.					X	
Energy: Resource Adequacy						
5.1.1 The Michigan Agency for Energy (MAE) and the MPSC should continue to work with MISO and other stakeholders to reform Michigan's current electric market structure by requiring all electric providers to protect their customers from massive outages due to lack of supply by securing adequate capacity resources.			X			

21st Century Infrastructure Commission Recommendation	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
5.1.2 MAE and the MPSC should closely monitor all proposed solutions to the energy supply concerns in the Upper Peninsula and work with stakeholders to ensure resolution implementation by 2019.			X			
Energy: Energy Waste Reduction						
5.2.1 The Michigan Legislature should remove the artificial cap on how much utilities can spend on energy-efficiency programs and provide the MPSC with the ability to evaluate energy waste reduction like any other resource.				X		
5.2.2 The Michigan Legislature should ensure that there is no financial disincentive for the use of cost-effective energy waste reduction.					X	
5.2.3 The Michigan Legislature should remove the prohibition on on-bill financing for energy waste reduction efforts.					X	
Energy: Cleaner Energy Sources						
5.3.1 The MPSC and MAE should continue to work together to ensure continued investment in energy waste reduction, meeting at least 15 percent or more of Michigan's energy needs by eliminating energy waste between now and 2025, as well as meeting any of its additional capacity needs from a combination of cleaner technologies, including renewables and natural gas.					X	
5.3.2 Through coordinated efforts, the MPSC, MAE, and MDEQ (now EGLE) should continue to ensure that emissions from the electric power sector are reduced by helping utilities choose the cleanest energy sources for the future, in consideration with affordability and reliability.		X				
5.3.3 The MPSC and MAE should work to reduce barriers to additional cost-effective renewable energy investment by reducing barriers to interconnection, net metering, and siting.		X				
Energy: Electric Reliability						

21st Century Infrastructure Commission Recommendation	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
5.4.1 Michigan's utilities should take steps to expedite their response to outages and restore power to their customers in a timely manner by completing plans to deploy AMI while also evaluating additional measures, like vegetation management and other distribution investments. Smaller electric utilities that do not currently have plans to deploy AMI in their service territory should evaluate potential benefits and deploy where prudent and cost effective.					X	
5.4.2 The MPSC and MAE should convene a stakeholder group with the aim of establishing a performance goal for CELID and CEMI metrics and requirements in order for utilities to provide information related to these metrics, as well as their currect reliability reporting.				X		
5.4.3 The MPSC should evaluate investments that provide greater insight into equipment condition and system loading, such as supervisory control and data acquisition, which will allow for greater insight into distribution system operation, enabling proactive maintenance to address problems prior to these issues resulting in an outage.					X	
5.4.4 The MPSC should evaluate proposed new capital investments through a transparent, forward-looking distribution system planning process, and monitor proposed changes to the distribution system planning process for each utility as needed on an ongoing basis.					X	
Energy: Natural Gas Safety						
5.5.1 The MPSC should consider further accelerating plans to replace at-risk natural gas distribution pipe beyond the currently planned 25-30 year window by evaluating utilities current replacement timelines. Emphasis should be placed on coordinating replacements with local investment in other infrastructure asset categories to accelerate progress and leverage investment.					X	
Energy: Adaptable Regulation						

21st Century Infrastructure Commission Recommendation	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
5.6.1 The Michigan Legislature, in consultation with MAE and the MPSE, should act to remove the barriers in the current CON process that prevent the MPSC from weighing all large investments against alternatives and determining the impact on reliability, affordability, adaptability, and protection of the environment.			X			
5.6.2 The MPSC and MAE should continue efforts to ensure that Michigan's regulations are adaptable in the face of new technologies. The need for regulatory changes should be evaluated as new technologies emerge.			X			
Energy: Information Security						
5.7.1 The Michigan Legislature, together with MAE and the MPSE, should revise FOIA exemptions to allow the appropriate agencies to communicate with infrastructure asset owners about physical and cyber security, and alleviate concerns related to the security of sensitive information when the State is working with infrastructure asset owners.	X					
Energy: Business Attraction and Economic Development						
5.8.1 The MPSC and MAE should work together with utilities and companies to expand opportunities for industrial customers to participate in programs that help them reduce energy bills, such as demand response programs.	X					
5.8.2 The MPSC, MAE and MEDC should confer regularly to continue improving the factors that impact business decisions.	X					
Transportation: Road and Bridge Conditions						
6.1.1 The Michigan Infrastructure Council and transportation agencies should work with the Michigan Legislature to identify and enact revenue options that will provide predictable and sustainable funding sufficient to return most higher level roads and bridges to good or fair condition.				X		MIC Future Planned
Transportation: Bridges and Culverts						

21st Century Infrastructure Commission Recommendation	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
6.2.1 State, county and local agencies should design and install road-stream crossings to ensure safe pedestrian and vehicle passage, along with natural stream function and aquatic organism passage.		X				
6.2.2 MDOT and MDNR should continue to follow state and federal required inspection processes for bridges, as well as hydraulic and drainage analysis for culverts. These agencies should complete regular statewide inspection of all in-service bridges to determine and record conditions using the newest available technologies and techniques.				X		
6.2.3 MDOT should work with local road agencies to encourage inspection of culverts greater than five feet in diameter at least once every five years. Inspection results should be included in local road agencies' asset management plans.		X				
6.2.4 MDOT should undertake a pilot project to inspect and document all culverts running under state trunkline highways in one county, for the purpose of assessing data collection costs for a statewide asset management inventory of state highway culverts.					X	
Transportation: Seasonal Weight Restrictions						
6.3.1 MDOT and local road agencies should work together to improve regional consistency and the permitting process in order to create coordinated seasonal weight restriction systems between road agencies.			X			
6.3.2 Based upon economic considerations, MDOT and local communities should evaluate and prioritize the need to convert additional roads to all-season conditions. Using statewide asset management databases and in coordination with public agencies and private utilities, plan and fund the conversions to all-season roads in a timely and strategic manner.				X		
Transportation: Transit, Passenger and Freight Rail						

21st Century Infrastructure Commission Recommendation	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
6.4.1 The Michigan Legislature should enact alternative sources for transit funding or provide additional funding for the CTF to encourage robust bus transit, passenger rail, and rail freight systems in Michigan.					X	
6.4.2 Transit agencies should integrate new technology into their transit services and work with MDOT to support their efforts to modernize their technology systems.			X			
6.4.3 MDOT should continue to work in partnership with the railroads to develop components of the DIFT as warranted by increasing volumes of railroad traffic.		X				
6.4.4 MDOT should identify current and future passenger and freight rail service needs and gaps in Michigan as part of its effort to update the federally required State Rail Plan and State Freight Plan.				X		
Transportation: Soo Locks						
6.5.1 The Michigan Legislature should pass a resolution to urge the federal government to expedite completion of the Economic Reevaluation Report currently being prepared by the U.S. Army Corps of Engineers and to provide the necessary funding to construct the new lock.					X	
Transportation: Port Authority Landside Improvements						
6.6.1 The Michigan Legislature should consider legislation that provides port authorities with the flexibility to form private sector partnerships for the purpose of developing contiguous and adjacent landside infrastructure consistent with the local vision for the port.		X				
Transportation: Routine Port Maintenance						
6.7.1 The Office of the Governor, Michigan's Congressional delegation, and the Michigan Legislature should encourage Congress to provide the necessary funds and encourage the U.S. Army Corps of Engineets to prioritize fully maintaining the federal navigation channels at the congressionally suthorized dimensions to ensure that port conditions do not deteriorate.					X	

21st Century Infrastructure Commission Recommendation	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
6.7.2 The Conference of Great Lakes and St. Lawrence Governors and Premiers should analyze the dredging needs for individual docks and nonfederal navigation channels specifically, including privately owned facilities to the greatest degree possible.			X			
6.7.3 MDOT should encourage the appropriate state, county, and city road agencies to work together to perform the infrastructure assessments that would evaluate the needs of the "last mile" roads that serve as connectors linking port facilities with the highway system.		X				
Transportation: Aviation						
6.8.1 MDOT will complete a comprehensive assessment of general aviation needs across Michigan as part of the ongoing Michigan Airport System Plan update, as well as examine existing capacity, use, costs, and revenues the State receives in order to determine whether the system or airports properly supports the future needs of Michigan communities.			X			
Transportation: Intelligent Vehicle Techonolgy						
6.9.1 The Michigan Legislature, Governor, and relevant stakeholders should pass, sign, and support the implementation of currently proposed legislation that will enable Michigan to stay at the forefront of the intelligent vehicle industry.				X		
6.9.2 MDOT and MEDC should work with auto manufacturing companies, technology companies, private stakeholders, and Michigan universities to support the development of intelligent vehicles through investment research, and develop a plan to invest in the installation of new technology.				X		
6.9.3 The Governor's Office and MDOT should promote Michigan as the focal point of the global intelligent vehicle industry.	X					
6.9.4 MDOT and MEDC should leverage unique partnerships between all governmental agencies, companies, universities, and other organizations to advance Michigan's intelligent vehicle industry.	X					

21st Century Infrastructure Commission Recommendation	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
6.9.5 The Michigan Infrastructure Council should include an emerging technologies group that is tasked with research, education, and coordination of implementing innovative technologies that impact infrastructure planning and delivery, particularly the emerging autonomous vehicle industry.	X					MIC Future Planned
Transportation: Signalized Intersection Technology						
6.10.1 The Michigan Infrastructure Council should work with local road agencies to elevate traffic signal infrastructure as a key asset of similar importance to road condition and bridge condition and encourage each road agency to pursue a goal to modernize and optimize the timing of 90 percent of traffic signals in congested corridors with current and emerging technologies, including signal communications, interconnectivity, transit signal priority, and vehicle detection equipment.		X				MIC Future Planned
Transportation: Nonmotorized Transportation						
6.11.1 MDOT should continue to work with road agencies to encourage full integration of bicycle and pedestrian planning into transportation infrastructure planning, including by implementing performance measures that measure the connectivity of nonmotorized facilities.				X		
6.11.2 MDOT and MDNR should work with regional transportation coordinating bodies to encourage or incentivize communities to coordinate their nonmotorized investments and work toward improving connectivity across communities.		X				
6.11.3 MDOT and MDNR should study the potential to create new incentives or realign existing incentives to further enhance and encourage coordinated nonmotorized planning, both between communities and at the regional level.			X			
Transportation: Right-sizing						

21st Century Infrastructure Commission Recommendation	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
6.12.1 MDOT should identify and work with stakeholders across all modes to complete a comprehensive assessment that determines the kind of transportation infrastructure that is needed-and where-to support the industries and communities Michigan expects to have in the future.			X			
6.12.2 MDOT should continue to work with local agencies and transportation stakeholders to identify areas of the state where excess road infrastructure undermines the potential for community success, develop context sensitive solutions to transportation problems, and encourage the use of design solutions that make more effective and beneficial use of the excess road capacity.		X				
6.12.3 The Michigan Infrastructure Council should work with local agencies to encourage and incent cross-collaboration and opportunities for consolidation to provide transparent, safe, efficient, and cost effective solutions.		X				MIC Future Planned
6.12.4 MDOT, metropolitan planning organizations, and regional planning organizations should enourage greater coordination between agencies and provide technical assistance to local agencies seeking solutions that help right-size their infrastructure.		X				
Transportation: Act 51 Review						
6.13.1 The Michigan Infrastructure Council should work with the Michigan Legislature and transportation stakeholders to revise Act 51 to make the distribution of state transportation revenues simpler, equitable, more transparent, and more accountable, while improving system outcomes.					X	MIC Future Planned
Transportation: Local Revenue Generation Options						

21st Century Infrastructure Commission Recommendation	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
6.14.1 The Michigan Legislature should enact legislation to enable new methods of generating local revenue to increase transportation investment including, but not limited to, a regional-optional gasoline tax and impact fees from land developments that burden road systems or from permits for driveways that diminish traffic flow. Additional legislative considerations should include regional-option sales taxes, levied in addition to the Michigan sales tax, which are used for transit operations in many states and could be made eligible for road and transit infrastructure use as well as regional-option vehicle registration surtax.				X		
Transportation: Road and Bridge User Fees						
6.15.1 MDOT and the DTMB should pilot test a per-mile fee system (such as GPS-based) in Michigan and use that test to become the first state to distribute user fees among road jurisdictions or within regions based on the miles of travel in each jurisdiction or region.				X		
Transportation: Tolling						
6.16.1 MDOT should position Michigan to apply for the Interstate System Reconstruction and Rehabilitation Pilot program (ISRRPP) if one of the openings becomes available.		X				
6.16.2 The Michigan Legislature should enact a bill authorizing toll finance as an option for road finance in Michigan to indicate to the Federal Highway Administration that Michigan is ready to implement a pilot tolling project through the ISRRPP.				X		
6.16.3 MDOT should work with the Office of the Governor and the Michigan Legislature to encourage Michigan's Congressional delegation to authorize toll fincance on existing federal-aid roads.				X		
Water: Ensuring Public and Environmental Health						

21st Century Infrastructure Commission Recommendation	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
7.1.1 The MDEQ (now EGLE) should provide financial assistance to communities in need to invest in replacing aging infrastructure where there are immediate risks to public health or the environment due to lagging water infrastructure investments.					X	
7.1.2 The MDEQ (now EGLE) should develop an outcome-based regulatory framework that ensures compliance is achieved, while enabling flexibility of means and methods through a permitting system that supports innovation to achieve public and environmental health goals. State and local programs should be revised to achieve these outcomes.		X				
7.1.3 The MDEQ (now EGLE) should use resources such as the recommendations of the national Drinking Water Advisory Council, municipal utilities, current U.S. Environmental Protection Agency (U.S. EPA) standards, and evolving research to inform legislative updates to the regulation of drinking water.		X				
7.1.4 The MDEQ (now EGLE) should provide grants and technical assistance to schools to develop and implement a science-based drinking water quality testing and remediation program for lead and other contaminants.					X	
7.1.5 The MDEQ (now EGLE) and MDHHS should incorporate science-based research in establishing drinking water standards and evaluate sources of drinking water contamination as technology advances, enabling better detection of pollutants to determine whether further controls are warranted in drinking water and wastewater systems.			X			
7.1.6 The MDEQ (now EGLE) should continue to provide funding through the Clean Michigan Initiative (CMI) to assist with cleanup efforts of contaminated properties that threaten public health and drinking water supplies.					X	

21st Century Infrastructure Commission Recommendation	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
7.1.7 The MDEQ (now EGLE) and MDHHS, local municipalities, and utilities should expand public outreach, engagement, and state and local communication efforts regarding regulatory standard to manage risk and ensure public and environmental health are maintained, and the necessity of water supply, sewer, and stormwater investments.	X					
7.1.8 The MDEQ (now EGLE) the MDHHS, in partnership with drinking water system operators, regional partners, and federal agencies, should expand comprehensive real-time surface and groundwater monitoring to detect potential threats to water supplies, develop early responses, and provide regular public reporting.		X				
Water: Water Asset Management						
7.2.1 The MDEQ (now EGLE) should compile and evaluate asset management plans submitted under the first phase of the Stormater, Asset Management, and Wastwater program. If necessary, the program should be updated to ensure that completed asset management plans are comprehensive and provide sufficient detail for planning purposes and meet MDEQ (now EGLE) criteria.				X		
7.2.2 The MDEQ (now EGLE) should expand the current SAW program, to provide a portion of the funding necessary to complete condition assessments and the development of asset management plans for drinking water supply systems.					X	
Water: 21st Century Infrastructure Systems						
7.3.1 The Michigan Infrastructure Council and other asset management entities should partner with economic development entities to identify and prioritize areas for targeted infrastructure water, sewer, and stormwater replacements or upgrades.				X		Active

21st Century Infrastructure Commission Recommendation	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
7.3.2 The Michigan Department of Agriculture and Rural Development (MDARD) should help support access to wastewater treatment capacity, potable water, and drain infrastructure in rural communities to promote land-based industries such as food, fiber-crops, tourism, and mining in order to keep rural communities competitive in a global economy.	X					
Water: Understanding Risk (The report has an error in numbering)						
7.3.1 The State of Michigan, local municipalities, and utilities should expand public outreach, engagement, and state and local communication efforts regarding how regulatory standards are developed to manage risk and ensure public and environmental health maintained, as well as why water supply, sewer, and stormwater investments are necessary.	X					Active
7.3.2 The State of Michigan, in partnership with drinking water system operators, regional partners, and federal agencies, should expand comprehensive real-time surface and groundwater monitoring to detect potential threats to water supplies, develop early responses, and provide regular public reporting.					X	
Water: Fiscally Sustainable Water, Sewer, and Stormwater Pricing Models						
7.4.1 Through new policy, state auditing, regulatory processes, and technical support, Treasury and MDEQ (now EGLE) should require self-sufficient transparent operation of enterprise organizations for water, sewer, and stormwater utilities that are supported by rate structures that cover all capital, operation, maintenance and replacement expenditures based on up-to-date asset management plane.					X	

21st Century Infrastructure Commission Recommendation	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
7.4.2 Utilities should engage in customer outreach when developing financing and ratemaking processes for all water, sewer, and stormwater utilities to achieve greater degress of transparency.					X	
7.4.3 The MDEQ (now EGLE) and Treasury should evaluate and modify Michigan's Water Pollution Control Revolving Fund, better known as the State Revolving Fund (SRF), to increase opportunities for participation in the program.					X	
7.4.4 The Michigan Legislature should adopt legislation authorizing stormwater utilities that is consistent with the Bolt v. City of Lansing decision, establishes the requirements for structuring and charging a fee, and provides a streamlines process for local adoption.					X	
7.4.5 Water utility rate structures should incorporate incentives to promote water-use efficiencies to reduce operating costs and delay or eliminate the need for capital investment.					X	
Water: Green Infrastructure						
7.5.1 The Michigan Department of Licensing and Regulatory Affaris (LARA), MDEQ (now EGLE), MDNR, and MDOT should encourage the integration of low-impact development/design standards and green infrastrucutre for stormwater management.		X				
7.5.2 To enhance community resiliency and optimize costs, the MDEQ (now EGLE) and MDNR should facilitate the development of tools that enable stormwater and wastewater system owners, managers, and operators to fiscally operationally manage green infrastructure through asset management plans.				X		
7.5.3 Treasury and the MDEQ (now EGLE) should update and revise funding and financing mechanisms that support infrastructure investments to incent evaluation and implementation of both efficiency-oriented approaches and green infrastructure.					X	

21st Century Infrastructure Commission Recommendation	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
7.5.4 The MDEQ (now EGLE) should periodically review and revise its programs and permitting requirements to ensure that engineering and design practices for sanitary sewer overflow (SSO) and combined sewer overflow (CSO) correction and stormwater management are based on assumptions that anticpate increased storm intensity and/or frequency.			X			
7.5.5 Drinking water, wastewater, and stormwater agencies should evaluate the resiliency of systems and facilities that enhance a community's readiness for increased storm intensity and/or frequency as well as their timely recovery as part of their asset management planning.			X			
7.5.6 The MDEQ (now EGLE), MDARD, and county drain commissioners should develop draft revisions and then work with other stakeholders to provide recommendations to the Michigan Legislature to update the Michigan Drain Code (if appropriate) and municipal separate storm sewer system (MS4) program to better facilitate joint action and collaboration among jurisdictions to manage stormwater on a watershed basis. Chapter 22 of the drain code should be updated to allow petitions to request development of collaborative watershed management plans as well as watershed-based engineering and design studies.		X				
7.5.7 The MDEQ (now EGLE), MDARD, and county drain commissioners should develop draft revisions then work with other stakeholders to provide recommendations to the Michigan Legislature to address inconsistencies between the drain code and MS4 programs, with a goal of more explicitly authorizing projects focused primarily on management of water quality especially in urbanized areas.		X				

21st Century Infrastructure Commission Recommendation	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
7.5.8 Relevant state agencies, including the Department of Technology, Management, and Budget, and the MDEQ (now EGLE) should assess properties to identify and implement opportunities to use green infrastructure to manage stormwater. The MDNR and MDOT should be the first agencies to conduct this evaluation.			X			
Water: Onsite Well and Wastewater Treatment Systems						
7.6.1 The MDEQ (now EGLE), Michigan Department of Health and Human Services (MDHHS), and LARA should revise regulations to require county and municipal governments, as well as water and sewer utilities, to use planning and permitting processes, taxes, fees, and other policies to promote connection to public water supply and wastewater treatment systems when they are available or when a new or expanded municipal system would be cost effective.		X				
7.6.2 The MDEQ (now EGLE), MDHHS, and LARA in partnership with local health departments, should encourage local governments to adopt ordinances requiring new homes and businesses with failed onsite wastewater treatment systems to connect to established community systems if they are available within 200 feet, consistent with Michigan Public Health Code (Act368).		X				
7.6.3 The Michigan Legislature should pass new legislation that would enable local governments to adopt ordinances requiring homes and businesses to connect to community drinking water systems when onsite water wells fail if they are within 200 feet of an existing system.			X			

21st Century Infrastructure Commission Recommendation	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
7.6.4 Communities should use Section 208 of the federal Clean Water Act to plan wastewater treatment facilities under an area-wide wastewater treatment management plan. In such cases, the MDEQ (now EGLE) should use the permissive authority granted under Act 451, Part 21, Rule 39 to ensure that state or national permits (e.g. National Pollutant Discharge Elimination System) are addressed consistently with the approved Section 208 plan.			X			
7.6.5 The MDEQ (now EGLE) and local health departments should strengthen permitting requirements to allow community systems only where a municipal system connection is not available, cost effective, or environmentally necessary. Community systems should be adaptable to future increases in the number of users, demonstrate a financially supported asset management plan, and provide for eventual connection to a municipal system.		X				
7.6.6 The MDEQ (now EGLE) and MDHHS should work with the Michigan Legislature and local public health departments to update Michigan's Statewide Sanitary Code. The revised code should include 1)inspections of septic and community systems on a routine basis (e.g. every five years); 2) an approval route for alternative systems where public health or environmental quality is at risk; 3) minimum requirements for permitting; 4) a local health department-based, statewide registry of septic systems, including location, installation, and inspection dates; and 5) requirements for maintenance, pumping, repair, or replacement based on inspection results.		X				
7.6.7 The MDEQ (now EGLE) and MDHHS should develop a financing mechanism such as a low-interest revolving loan fund or loan loss reserve program to support maintenance and replacement of existing onsite and community systems for system owners with a demonstrated need for financial assistance.					X	

21st Century Infrastructure Commission Recommendation	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
Water: Embracing New Technology to Develop 21st Century Utilities						
7.7.1 The MDEQ (now EGLE), municipalities, and local utilities should put in place a process to periodically review and update new technologies, procurement manuals, or standard operating practices to allow for open competition for technology and materials meeting relevant professional standards.	X					
7.7.2 The MDEQ (now EGLE), municipalities, and local utilities should put in place a process to periodically review and update regulatory programs, implement methods of continuous improvement, and create standard work to further enable innovative approaches to achieve environmental protection and public health outcomes, as well as to control costs.	X					
7.7.3 The MDEQ (now EGLE) should work with municipal utilities to amend the current wastewater regulatory framework to advance the State of Michigan's Water Resources Recovery Facility framework and educate municipalities about the benefits of these approaches.	X					
7.7.4 The MDEQ (now EGLE) should work with municipal utilities to amend the current drinking water regulatory framework to advance the development of 21st century water utilities and inform municipalities about the benefits of these approaches.	X					
7.7.5 The MDEQ (now EGLE) should encourage and incent strategies like resource recovery, as well as energy conservation and management options at wastewater and drinking water facilities, to help conserve resources and drive down costs. Revisions to Michigan's revolving loan fund could help incent those changes.					X	
7.7.6 The MDEQ (now EGLE) should support innovation through partnerships and or funding with Michigan universities to expand research programs in the drinking water and wastewater fields.					X	

21st Century Infrastructure Commission Recommendation	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
7.7.7 The MDEQ (now EGLE) and water utilities should support new and emerging cost-effective technologies through permitting requirements that integrate water utilities with innovative communication and energy networks.		X				
Water: Dams						
7.8.1 The MDEQ (now EGLE)'s Dam Safety Program should maintain a publicly accessible geospatial data layer within the statewide asset management system that includes the number, condition, risk and ownership of public, and private, regulated and nonregulated dams in the state. Working with partner organizations, the MDEQ (now EGLE) should develop publicly available decision-support tools and training programs to assess risk, reinvestment and removal options for dams and low-head barriers.				X		

Michigan Infrastructure Asset Management Pilot Recommendations	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
The Value Proposition						
4.4.1 Ensure that all participants in the statewide asset management database at the local, regional and state level receive a benefit for participating					X	MIC Future Planned
4.4.2 Clearly articulate to public and private asset owners submitting data to the system the value-add of participation including a better understanding of asset performance and cost in the State of Michigan as well as an icreased ability to make better informed decisions that align with community priorities	X					Active
4.4.3 Provide actionable infrastructure data on public assets to local, regional and state level officals so that they can make more informed asset management and investment decisions				X		MIC Future Planned
4.4.4 The MIC should create a venue to share asset management best practices, accomplishments, innovations and new ideas across infrastructure owners to promote the culture of asset management		X				Active
Building a Statewide Asset Management Culture						
4.5.1 The MIC should further review and develop a definition of asset management for the state that better portrays the more strategic elements of asset management	X					Active
4.5.2 The MIC should develop a draft policy template for adoption as part of Asset Management Plans and implement associated training and encourage use by communities	X					Active
4.5.3 Develop, agree to, and use terms that are easily understood when communicating across and outside the state regarding asset management	X					Active
4.5.4 The MIC should develop guidelines and associated training to assist communities in developing their Levels of Service (LOS) framework and measures	X					Active
4.5.5 The MIC should develop an asset management competency framework that is sufficiently generic so that it can be applied to a broad range of asset owners	X					Active
4.5.6 The MIC should use the knowledge and resources of infrastructure organizations (ASCE, APWA, MWEA, TAMC, etc) to make use of existing or develop a standard suite of training packages that can be used for technical and non-technical staff	X					MIC Future Planned

Michigan Infrastructure Asset Management Pilot Recommendations	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
4.5.7 The DEQ (now EGLE) should work with the MIC and WAMC to further refine asset management requirements within the Department. The DEQ should apply asset management principless across their divisions working towards an outcome of a flexible regulatory framework that allows strategic investments in water infrastructure in a prioritized, collaborative fashion.					X	MIC Future Planned
4.5.8 The MIC should establish infrastructure goals and develop metrics to assess whether the state is on track to meet those goals.				X		Active
4.5.9 The MIC should consider what needs to be done to further incentivize an asset management culture in infrastructure/asset managers.	X					Active
Facilitating the Data Collection Process						
4.6.1 Facilitate the further collection of asset data (not necessarily fund it) and develop a prioritization approach for data collection, such as asset criticality, along with data collection frequency.				X		MIC Future Planned
4.6.2 Ensure that the focus of data collection is better understanding performance outcomes as opposed to only focusing on asset condition.	X					MIC Future Planned
4.6.3 The statewide asset management system must work to involve all communities who wish to participate regardless of their current technical capabilities or systems.		X				Active
4.6.4 The MIC, WAMC and TAMC need to consider the time required to collect and verify data from a broad range of asset owners. Many of the time related challenges that were noted will potentially be magnified when this program is scaled up.				X		MIC Future Planned
4.6.5 A further review of data ownership should be carried out at the state, regional and local levels, including the review of contracts between communities and the consulting community.			X			MIC Future Planned
4.6.6 The MIC, WAMC and TAMC should work together to coordinate data governance structures for any data collected.			X			Active
4.6.7 MIC, WAMC and TAMC should continue with the further review and development of the data standards with a specific focus on: Defining the age of construction assets, agreeing on a proposed asset condition approach for use across all asset types and additional data to be collected.		X				Active

Michigan Infrastructure Asset Management Pilot Recommendations	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
4.6.8 MIC, WAMC and TAMC, continuously, as a coordinated effort, review how emerging technology can be leveraged and recommended for the data collection process which is the single largest cost of any asset management system.			X			Active
4.6.9 For private utility asset owners, it is recommended that data that is already currently submitted is utilized.				X		MIC Future Planned
4.6.10 The MIC should investigate the possibility of and need for a universal data sharing agreement for any entity submitting data to future asset databases.		X				Active
4.6.11 It is recommended that a change is made to Michigan statute in order to protect data from being released and potentially having public safety ramifications.		X				MIC Future Planned
4.6.12 The Pilot supports the mission of the MIC to revise as needed and create if not otherwise available, a comprehensive drinking water, wastewater, stormwater, transportation and in some cases public dashboard with a safe level of information viewable by the general public.	X					MIC Future Planned
4.6.13 MIC, WAMC and interested parties need to determine what alternative methods there may be for determining date of construction, where that information might not be captured today in these areas.		X				MIC Future Planned
4.6.14 Abandoned utility lines should be considered moving forward to determine if there is benefit to having location based information for abandoned facilities.				X		MIC Future Planned
4.6.15 Further refine the age-based approach to condition assessment.	X					MIC Future Planned
4.6.16 The MIC should further develop and agree upon the required asset data and that any state funded data collection is focused on an agreed upon data set.				X		MIC Future Planned
4.6.17 A SME group should continue as part of the statewide rollout and provide input to the process.		X				MIC Future Planned
Creating the Statewide System						
4.7.1 The statewide asset management database should provide local communities the ability to collect, store and make data driven decisions utilizing a geospatial format which is the industry standard.				X		MIC Future Planned

Michigan Infrastructure Asset Management Pilot Recommendations	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
4.7.2 In partnership with local or regional entities, MIC should provide Tier 1a Functionality (Minimum/Basic level) GIS Based Asset Registry for use at the local level, along with associated training.	X					MIC Future Planned
4.7.3 Tier 2 data repository is housed by DTMB utilizing Michigan Geographic Framework (MGF), which will act as a central clearing house for data management and analysis.		X				MIC Future Planned
4.7.4 In partnership with local entities, MIC should provide a statewide IT System (Tier 3) and associated training.	X					MIC Future Planned
4.7.5 The statewide system should enable trending of key metrics associated with the performance of the assets and these should be transparent for public use.	X					MIC Future Planned
4.7.6 Identify and remove barriers for communities of all sizes to participate in the system.			X			Active
Enabling Better Coordination						
4.8.1 MIC should facilitate the continuation of coordination and communication meetings both at a regional level and at a more focused local level on a regular basis.		X	X			Active
4.8.2 Local or county level coordination and communication meetings should take place on more frequent occasions such as quarterly or bi-annually focusing on project specific coordination and planning.		X	X			Active
4.8.3 MIC should facilitate the creation of a geodatabase of project information from all disciplines, with the goal of facilitating project coordination of planned long-term projects that fall in the common right-of-way, with the understanding that project priorities change and system flexibility is necessary.		X	X			Active
4.8.4 Local governments, municipalities, and private utility owners should review current permitting practices for modernization opportunities to minimize public and private resources and time needed to process applications.		X				Active

Michigan Infrastructure Asset Management Pilot Recommendations	MIC Goal: Educate	MIC Goal: Collaborate	MIC Goal: Coordinate	MIC Goal: Prioritize	MIC Goal: Invest	Status
4.8.5 The MIC should continue to discuss the following points: Investigate a standardized permitting process. Further coordination with other utility owners and organizations such as railroad agencies, facilitation of long-term strategies which will help to better coordinate short-term planning, look for opportunities to minimize impact to other asset owners, a project coordination cost savings allocation model based off the Geospatial Utility Infrastructure Data Exchange (GUIDE) pilot program.			X			MIC Future Planned

Conclusion

As demonstrated in the preceding evaluation and review of the 21st Century Infrastructure Commission Report and the Infrastructure Asset Management Pilot report, the 150+ recommendations that came out of the two reports align with the five goals of the Michigan Infrastructure Council (MIC): Educate, Collaborate, Coordinate, Prioritize, and Invest. As noted in the following charts, the Commission and Pilot recommendations are well represented and fairly evenly distributed through the MIC goals. Furthermore, the analysis demonstrated that 35% of the combined recommendations are currently being implemented through ongoing MIC activities.

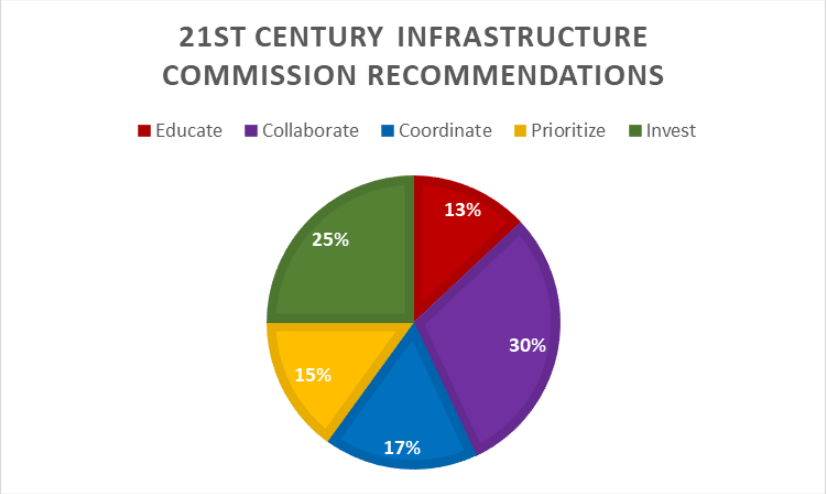

Chart 1. Alignment between Commission Recommendations and MIC Goals

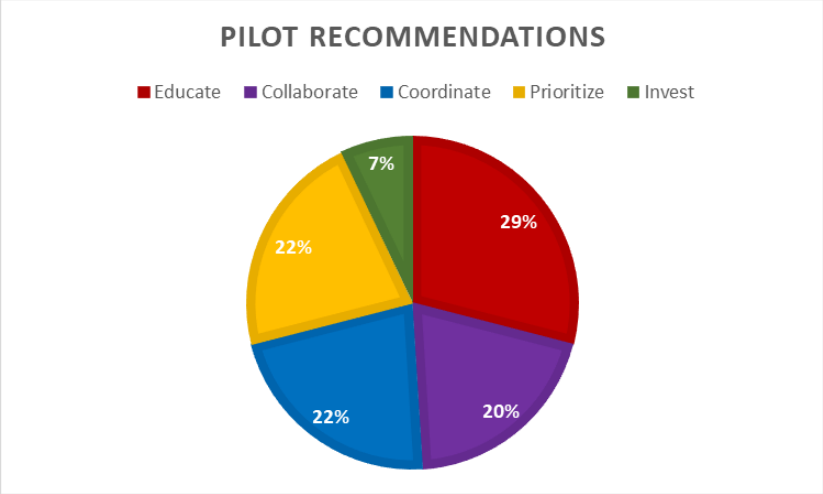

Chart 2. Alignment between Pilot Recommendations and MIC Goals

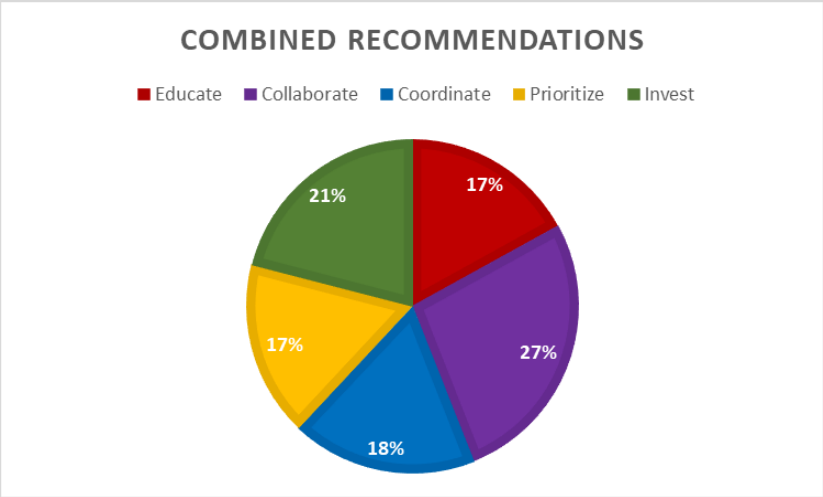

Chart 3. Commission and Pilot Recommendations Combined and Aligned with MIC Goals

References

21st Century Infrastructure Commission. (2016). *21st Century Infrastructure Commission Report.* Lansing.

21st Century Infrastructure Commission. (2018). *Michigan Infrastructure Asset Management Pilot Final Report.* Lansing.

To read the full 21st Century Infrastructure Commission Report, please visit: https://www.michigan.gov/documents/snyder/21st_Century_Infrastructure_Commission_Final_Report_1_544276_7.pdf

To read the full Michigan Infrastructure Asset Management Pilot Report, please visit: https://www.michigan.gov/documents/snyder/asset_management_report_621264_7.pdf