

Matrix Key

Implementation Leads

AAPS – Ann Arbor Public Schools	HC – Housing Commission	PDS – Planning and Development
AATA – Ann Arbor Transit Authority	DDA – Downtown Development Authority	PMU – Project Management Unit
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Higher Performing Buildings

Action ID	Energy and Buildings Actions
EB-1	Weatherize existing housing stock
EB-2	Build or renovate energy efficient affordable housing units
EB-3	Offer incentives for energy audits and implementation of identified energy conservation measures
EB-4	Promote use of efficient lighting technologies for both outdoor and indoor applications
EB-5	Provide incentives to commercial building owners to install motion-sensing light switches and automated thermostats
EB-6	Promote conversion to green roofs for commercial and industrial buildings
EB-7	Promote the use of reflective roofs in the commercial and industrial sectors
EB-8	Provide incentives to builders to exceed state energy codes in their renovations and new construction
EB-9	Use Property Assessed Clean Energy (PACE) to finance commercial building energy improvements
EB-10	Expand and Enforce current ordinance, Chapter 105 Section 8:524 that requires landlords to provide energy budgets to tenants
EB-11	Strengthen housing code energy standards for rental properties
EB-12	Implement a Residential Energy Conservation Ordinance with required upgrades
EB-13	Strengthen energy code for new and renovated buildings at the state or local level
EB-14	Increase use of combined heat and power units
EB-15	Create a downtown geothermal heating and cooling district
EB-16	Implement a downtown combined heat and power district system
EB-17	Create a geothermal utility to implement ground source heat pumps for residential heating and cooling
EB-18	Ensure availability of utility-level solar incentives
EB-19	Utilize digestion of waste water treatment plant material, or post consumer organics, to generate useful biogas



Energy Source

Recommended Actions

SPU – Systems Planning Unit
 UM – University of Michigan
 WTP – Water Treatment Plant
 WWTP – Wastewater Plant

Impact (Annual MTCO₂e Reduction)

* – Low (0-5,000)
 ** – Medium (5,001-20,000)
 *** – High (20,001+)

Impact Timeframe

S – short (1-5 years)
 M – medium (6-19 years)
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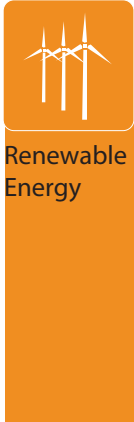
	Annual MTCO ₂ e Reduced	\$/tCO ₂ e	Impact	Implementation Leads	Impact Timeframe
	14,197	-\$56	**	SPU, CD, WC	M
	1,030	-\$46	*	HC, CD, BC	S
	Not Estimated	Not Estimated	**	SPU, PU, NGO, DDA	S
	8,034	-\$155	**	SPU, PMU, PU	S
	13,781	-\$136	**	SPU, PU	S
	2,004	\$232	*	SPU, PU, DDA	S
	2,691	-\$143	*	SPU, PU, DDA	L
	542	-\$102	*	SPU, PDS	M
	14,846	-\$87	**	SPU, NGO	M
	7,971	-\$92	**	SPU, PDS	L
	2,781	\$1	*	SPU, PDS	L
	7,103	-\$98	*	SPU, PDS	S
	2,791	-\$59	*	SPU, PDS	M
	35,134	-\$126	***	SPU, PDS	L
	12,482	-\$63	**	SPU, PDS, DDA, PMU	S
	17,567	-\$126	**	SPU, PDS, DDA, PMU	L
	26,387	-\$23	***	SPU, PMU	M
	3,952	\$188	*	SPU, PU	S
	2,080	-\$160	*	SPU, WWTP	S

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Action ID Energy and Buildings Actions Continued



EB-20	Increase the renewable portfolio standard
EB-21	Maximize purchase of Michigan renewable energy
EB-22	Implement a franchise agreement with DTE Energy to create more stringent renewable energy requirements and fund other energy efficiency and renewable energy programs
EB-23	Work with Michigan Public Service Commission and DTE Energy to allow direct purchase of renewable energy by residential electricity customers
EB-24	Implement community renewable energy projects
EB-25	Work to achieve the “5000 Solar Roofs” target (domestic hot water)

Action ID Land Use and Access Actions



LU-1	Actively support regional approaches to land use planning to reduce origin and destination distances
LU-2	Create a program that provides incentives to employees and residents who choose to live within two miles of their job
LU-3	Encourage coordinated zoning and redevelopment at higher densities, using land use, development regulations, and market forces
LU-4	Maximize incentives for mixed use and transit-oriented development
LU-5	Support future funding for greenbelt land purchases around Ann Arbor
LU-6	Revise the local Parking Ordinance to allow for flexibility with parking provisions
LU-7	Create a Travel Demand Management program that uses social and targeted marketing to encourage more residents to walk, bike, and bus to their destinations
LU-8	Implement a community-University bikesharing program
LU-9	Actively engage and support the study and delivery of commuter rail along high demand corridors
LU-10	Provide incentives for use of public transit
LU-11	Create a citywide go!pass program that combines bus use incentives with biking and walking incentives
LU-12	Enhance transit service, including more weekend and evening service

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	Annual MTCO ₂ e Reduced	\$/tCO ₂ e	Impact	Implementation Leads	Impact Timeframe
	98,764	\$29	***	SPU, NGO, RES	M
	99,706	\$27	***	SPU, PU	M
	44,188	\$109	***	SPU, PU	S
	64,572	-\$12	***	SPU, PU	M
	1,099	\$106	*	SPU	S
	3,243	\$308	*	SPU	M

	Annual MTCO ₂ e Reduced	\$/tCO ₂ e	Impact	Implementation Leads	Impact Timeframe
	Not Estimated	Not Estimated	**	PDS, SPU	M
	Not Estimated	Not Estimated	*	SPU, BC, GDT, DDA	S
	Not Estimated	Not Estimated	**	PDS, SPU, CD	M
	3,352	-\$372	*	PDS	L
	Not Estimated	Not Estimated	**	PDS, NGO, CC	M
	Not Estimated	Not Estimated	***	PDS, DDA	L
	9,962	-\$335	**	PDS, SPU, DDA, GDT	M
	143	\$249	*	SPU, UM, NGO, GDT	S
	1,077	\$2,798	*	PDS, SPU, NGO, AATA	S
	Not Estimated	Not Estimated	*	SPU, GDT, AATA, AAPS, UM	S
	621	Not Estimated	*	SPU, AATA, UM, GDT	S
	125	Not Estimated	*	AATA, UM	S

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Action ID Land Use and Access Actions Continued



Transportation
Options

LU-13 Encourage market-based and incentive-based parking strategies and rates

LU-14 Create an innovative ride-sharing system

LU-15 Encourage business and building owners to reduce in-bound vehicle traffic

LU-16 Increase events and activities that raise awareness of commuting benefits



Sustainable
Systems

LU-17 Ensure that sidewalk/bike/transit service exist within ¼ mile of every Ann Arbor household

LU-18 Establish requirements for electric vehicle parking infrastructure for projects and increase city-wide infrastructure for electric vehicle charging

LU-19 Make all possible signal and intersection pedestrian improvements

LU-20 Evaluate project life cycle and upstream CO₂e emissions as criteria for City's Capital Improvements Plan scoring prioritization system

LU-21 Evaluate public infrastructure to prepare for redevelopment readiness and densification in the downtown and major corridors

Action ID Resource Management Actions



Responsible
Resource
Use

RM-1 Increase residential and commercial rainwater capture and reuse

RM-2 Increase residential and commercial grey water reuse

RM-3 Review water and wastewater water rate structures

RM-4 Adopt a water conservation ordinance

RM-5 Increase pipe replacement to avoid the loss of treated water

RM-6 Reduce Ann Arbor's consumption/total waste stream

RM-7 Advocate for county, state, regional, and federal product stewardship policies

RM-8 Re-evaluate "pay as you throw" system for residential solid waste

RM-9 Reduce residential solid waste pick-up schedule to bi-weekly

RM-10 Encourage residents to place garbage, recycling, and compost carts out for collection only when full

RM-11 Implement a single-use bag ban or fee

RM-12 Facilitate more material reuse opportunities throughout the community

RM-13 Reduce packaging waste

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	13,350	Not Estimated	**	SPU, DDA, GDT	S
	8,253	\$4,615	**	NGO, AATA, UM, GDT	S
	Not Estimated	Not Estimated	*	SPU, AATA, GDT, UM, BC	S
	847	\$99	*	SPU, NGO, GDT	S
	4,752	\$550	*	SPU, PMU, GDT, AATA, UM	S
	1,602	-\$294	*	SPU, PDS, PMU, DDA, UM	M
	18	Not Estimated	*	PMU, SPU, PDS	S
	Not Estimated	Not Estimated	*	SPU, PMU	S
	Not Estimated	Not Estimated	**	SPU, PDS, PMU	L
	Annual MTCO ₂ e Reduced	\$/tCO ₂ e	Impact	Implementation Leads	Impact Timeframe
	944	-\$2,783	*	SPU, NGO	M
	122	-\$899	*	WTP, SPU, NGO, RES	M
	662	-\$588	*	SPU, WTP, WWTP	S
	3,432	-\$850	*	SPU, WTP	S
	Not Estimated	Not Estimated	*	SPU, PMU, WTP, FS	M
	2,726	-\$73	*	SPU, BC	M
	Not Estimated	Not Estimated	*	SPU, NGO	S
	731	\$0	*	SPU, NGO	S
	197	-\$1,186	*	SPU	S
	79	-\$1,080	*	SPU, NGO	S
	2,599	\$146	*	SPU	S
	16	Not Estimated	*	SPU, PDS, UM	S
	Not Estimated	Not Estimated	*	SPU, NGO	S

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Action ID	Resource Management Actions Continued
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Responsible Resource Use

RM-14	Implement a compostable/recyclable to-go packaging ordinance
RM-15	Utilize zoning incentives to encourage reuse of existing buildings, structures, and recycled building materials
RM-16	Promote "climate impact" labeling for restaurants as well as other businesses
RM-17	Develop a comprehensive green business certification program to include solid waste, pollution prevention, green purchasing, water reduction, and energy efficiency
RM-18	Require any city-sponsored (or city-located) outdoor event to be zero-waste
RM-19	Increase residential and commercial recycling participation and tonnages
RM-20	Implement a construction and demolition debris recycling ordinance
RM-21	Improve recycling opportunities at the city's drop off station
RM-22	Increase incentives and collection of residential and commercial organic waste (including food and soiled paper products)
RM-23	Implement a home composting education and outreach program, including providing incentives to increase participation in home composting programs



Local Food

Healthy Ecosystems

RM-24	Increase local food production and consumption
RM-25	Increase forest canopy across public and private property



Engaged Community

Action ID	Community and Health Actions
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CH-1	Create, design, and implement a sustainable community energy efficiency program
CH-2	Provide a centralized energy resource that empowers citizens with information, tools, and opportunities to take action on their energy use
CH-3	Create neighborhood "green teams" or "sweeps" to promote climate mitigation strategies
CH-4	Implement a community net-zero home building/renovation contest

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	Not Estimated	Not Estimated	*	SPU, UM, PDS	M
	Not Estimated	Not Estimated	*	SPU, BC, NGO	S
	7,620	-\$160	**	SPU, NGO, BC	M
	4	\$2,218	*	SPU, NGO	S
	3,710	-\$354	*	SPU, NGO	M
	Not Estimated	Not Estimated	*	SPU, NGO	S
	Not Estimated	Not Estimated	*	SPU, NGO	S
	66	Not Estimated	*	SPU, NGO, BC, UM	S
	258	-\$198	*	SPU, NGO, UM	S
	Not Estimated	Not Estimated	**	SPU, PRU, PDS, NGO	M
	12,356	\$58	**	SPU, PRU, UM, NGO	L

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	Not Estimated	Not Estimated	**	SPU, NGO, PU, UM	S
	Not Estimated	Not Estimated	*	SPU, NGO	S
	17,973	Not Estimated	**	SPU, PDS, NGO, UM	S
	47	\$133	*	SPU, NGO, PU, PDS	S

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Engaged
Community



Safe
Community

Action ID

Community and Health Actions Continued

CH-5

Expand existing environmental education curriculum in coordination with Ann Arbor Public Schools and local private schools

CH-6

Motivate residents and business owners to alter behavior to facilitate emissions reductions

CH-7

Develop and deliver training and education programs for building code officials, homebuilders, construction contractors, and all trade professionals in green building, renewable energy, energy efficiency, and water efficiency.

CH-8

Design and implement urban stormwater infrastructure that enhances ecological functioning

CH-9

Integrate mitigation and adaptation planning into park design and improvements

CH-10

Develop a policy that requires private and municipal projects to plant shade trees and vegetation that help lower the heat island effect within the city

CH-11

Implement an idling reduction ordinance

CH-12

Generate better local air quality data

CH-13

Reduce non-GHG emissions from vehicles and buildings

Adaptation Strategies

Implement “no regrets” adaptation actions now

Ensure an integrated systems planning approach to built and natural infrastructure for all climate change planning scenarios

Protect our citizens from health and safety hazards

Update and maintain technology and plans to support emergency management response to extreme climate events

Integrate climate projections into all City planning across all systems

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	Not Estimated	Not Estimated	*	SPU, RES, BC, UM, NGO, DDA	M
	Not Estimated	Not Estimated	*	SPU, PDS, NGO	S
	Not Estimated	Not Estimated	*	SPU, PMU, PDS, NGO, UM, PRU	L
	Not Estimated	Not Estimated	*	PRU, SPU, PMU	M
	Not Estimated	Not Estimated	*	SPU, PDS, PMU, UM	S
	557	Not Estimated	*	AAPS, SPU, AATA, UM, NGO	S
	Not Estimated	Not Estimated	*	SPU, UM	M
	Not Estimated	Not Estimated	*	SPU, UM, PDS	M