

A²Zero Carbon Neutrality Plan



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A²Zero



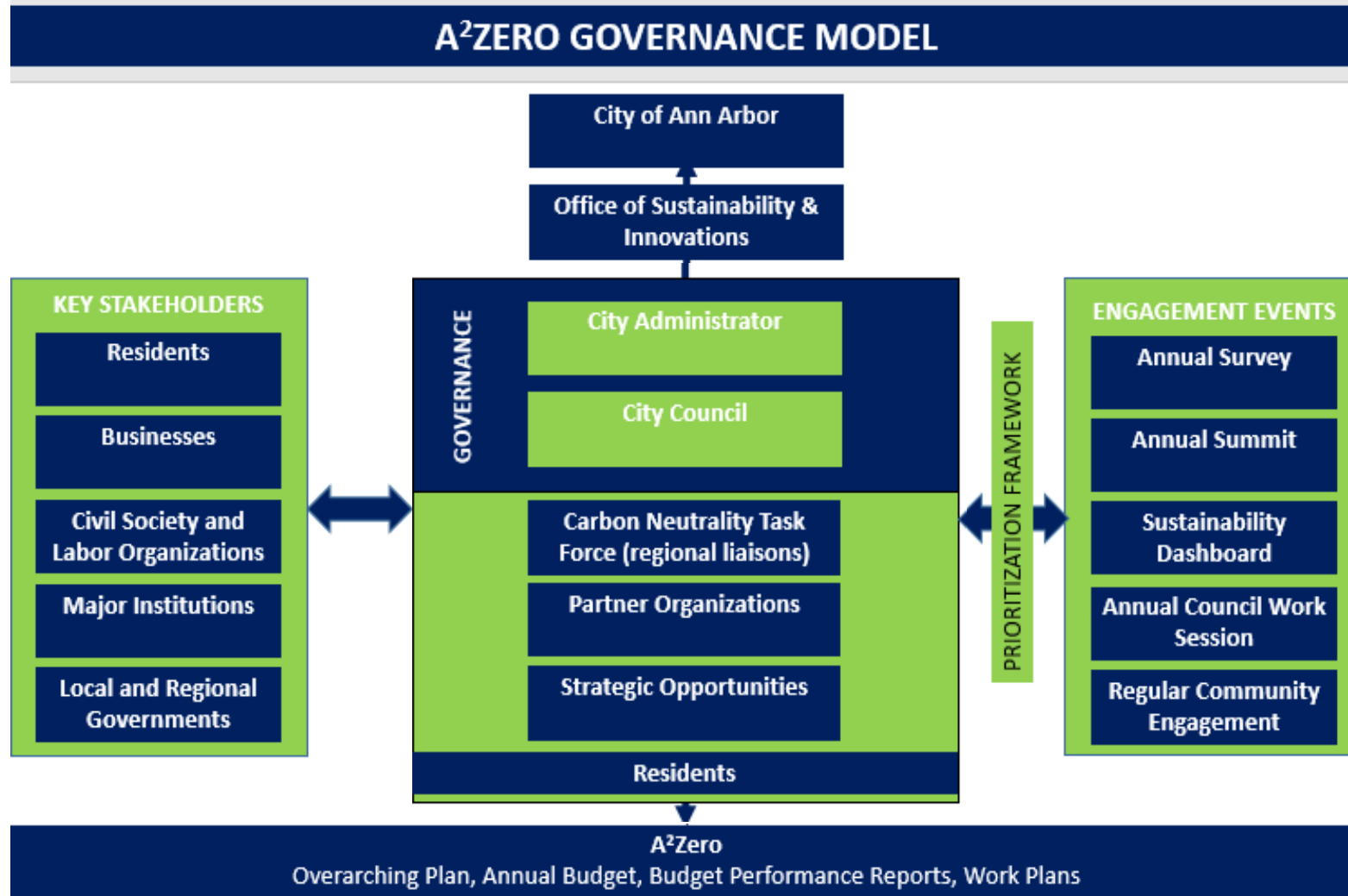
PRESENTATION OVERVIEW

- GOVERNANCE OVERVIEW
- PRIORITIZATION FRAMEWORK
- INVESTMENT PLAN

A²ZERO Governance Framework



A²ZERO Governance Framework



A²ZERO Prioritization Framework

PRIORITIZATION FRAMEWORK		
GHG MITIGATION CRITERIA		Scoring
COST CRITERIA		Scoring
FEASABILITY CRITERIA		Scoring
CO-BENEFITS		Scoring

A²ZERO Prioritization Framework

PRIORITIZATION FRAMEWORK			
GHG MITIGATION CRITERIA			Scoring
High Long-Term GHG Reduction Potential	High Long-Term	The action has a high (over 5%) community greenhouse gas emissions reduction potential past 2030	6
	Medium Long-Term	The action has a medium (between 3%-5%) community-wide greenhouse gas reduction potential past 2030	4
	Small Long-Term	The action has a small (between 0%-2%) community greenhouse gas reduction potential past 2030	2
High Short-Term GHG Reduction Potential	High Short-Term	The action has a high (over 5%) community greenhouse gas reduction potential before the year 2030	6
	Medium Short-Term	The action has a medium (between 3%-5%) community greenhouse gas reduction potential before 2030	4
	Small Short-Term	The action has a small (between 0%-2%) community greenhouse gas reduction potential before 2030	2
COST CRITERIA			Scoring
City Cost Effectiveness	Benefits Significantly Outweigh Costs	Long-term financial benefits greatly outweigh implementation costs	2
	Benefits Outweigh Costs	Long-term financial benefits outweigh implementation costs	1
	Benefits Match Costs	Long-term financial benefits match implementation costs OR don't know the overall cost effectiveness of the action	0
	Costs Outweigh Benefits	Implementation costs slightly outweigh the long-term financial benefits	-1
	Costs Significantly Outweigh Benefits	Implementation costs significantly outweigh the long-term financial benefits	-2
City Relative Cost (Capital)	None	The City can pursue without a major capital investment	2
	<\$5M	The City can pursue with a modest capital investment OR don't know what kind of capital investment is needed	1
	>\$5M	The City requires a major capital investment to pursue this action	0
City Relative Cost (Operation)	Decreases Costs	Action will minimize operating costs for the City (i.e., staffing, maintenance)	2
	No Impact	Action will have no impact on operating cost for the City OR don't know the relative operating costs	0
	Increases Costs	Action will not minimize and may increase operating costs (i.e., staffing, maintenance) for the City	-2
Residential and Businesses Cost Effectiveness	Benefits Outweigh Costs	Long-term financial benefits outweigh implementation costs	2
	Benefits Match Costs	Long-term financial benefits match implementation costs OR don't know the overall cost effectiveness of the action	0
	Costs Outweigh Benefits	Long-term financial benefits do not outweigh implementation costs	-2

A²ZERO Investment Plan

- Framing - Investment
- Historical impact of emissions
- Presentation of an investment scenario
- Cost of inaction

A²Zero Investment Plan

OVERVIEW

This document outlines an investment approach for the A²Zero Carbon Neutrality Plan. It includes an alternative framing around our community's commitment to carbon neutrality, a look at the historical impact of our community's greenhouse gas emissions, and a projected investment scenario, highlighting investments and costs specific to actions identified as falling under the responsibility of the City of Ann Arbor, and a presentation of the cost of inaction. As there is no way to know exactly what the funding landscape will look like 10 or 11 years into the future, the investment scenario should be viewed as directional and only one possible scenario of what the future may look like. Many things will inform what resources are actually available to do this work and staff will continue to aggressively pursue funding opportunities, collaborations, and innovative financing mechanisms to lower the upfront cost to the city and our residents.

FRAMING

To-date, the financial conversation around A²Zero has focused on the costs to implement the plan. While there will be costs, nearly all actions are investments. What this means is that investing in nearly all of the actions return benefits to the City, to our residents, to our businesses, or to society as a whole. As illustration, data shows that \$1 invested in energy efficiency saves between \$4 and \$5 in energy costs (DTE's figures are closer to \$5).^{1,2} Moreover, every one dollar invested in preparedness and resilience shows a return on investment of \$7 in avoided costs.³ Onsite renewable energy installations, such as rooftop solar, have a payback of 10-12 years but are warranted for 25 years meaning 13-15 years of direct cost savings.⁴ Operating an electric vehicle is at least 50% less than an internal combustion engine.⁵

Entities regularly make investments in order to create an opportunity or to reduce future costs. In much the same way, A²Zero is an opportunity for Ann Arbor to make an investment in our community. A²Zero is a proposal to spend money over the next ten years to reduce the community's greenhouse gas emissions and thereby eliminate future social costs of carbon and to reap benefits for residents, businesses, and the surrounding area which will more than pay back the initial investment.

A PROJECTED INVESTMENT SCENARIO

At the request of Council, City staff put together a projected investment scenario for A²Zero. There are many possible scenarios for how the A²Zero Plan could be funded so the attached document should be viewed as one possible scenario, amongst many. Additionally, the scenario should be considered directional as it is impossible to know what types of federal, state, or philanthropic grants, or public-private partnership may exist for all 7 strategies identified in the Plan over the next 10 years. Moreover, costs for the plan were modeled using today's dollars. It is highly likely, however, that major advances in technology will help lower some of the costs within the plan.

¹ A 2015 MISC study estimated the return at \$4.38 per \$1 spent; see: https://www.michigan.gov/documents/misc/2015_Energy_Optimization_Report_501548_7.pdf

² Based on DTE's and Consumers Energy's EE programs, the figure is closer to a 5-fold return; see: <https://www.nrdc.org/experts/ariana-gonzalez/michigan-utilities-plan-most-energy-efficiency-ever>

³ See <https://www.secure.syracuse.com/article/2016/07/24/energy-3-spent-on-natural-disaster-preparedness-15-1x-return>

⁴ See <https://www.energy.gov/understanding/solar/solar-payback-period>

⁵ See <https://www.fuel.gov/sites/default/files/pdf/fuel/costs.pdf> and a 2018 study from the University of Michigan's Transportation Research Institute, which found that electric vehicles cost less than half as much to operate as gas-powered cars. The average cost to operate an EV in the United States is \$485 per year, while the average for a gasoline-powered vehicle is \$1,117.

Underlying the Investment Scenario are the following assumptions:

- That all actions would start in 2021 and 2022. This may not be physically possible, but it allowed us to front load the costs to identify an optimal scenario to maximize our chance to achieve carbon neutrality by 2030.
- The Office of Sustainability and Innovation's annual budget is \$2,000,000 (all inclusive) – meaning an 11 year budget of roughly \$22,000,000 which can be applied to achieving A²Zero.
- Charges to the Solid Waste Fund can be absorbed by other structural changes (per the SWRMP) that make these programs possible, should these changes be implemented (total impact of nearly \$45,000,000 over 10 years).
- Pertinent projects will be placed into the CB but it was assumed that for those projects, outside capital would need to be secured to complete the project. This may mean we over-estimated the impact of debt the City might take on if some of these projects could be covered through existing funding sources.
- \$1,300,000 in funds for Tree Planting already exist through the Stormwater Fund meaning this wouldn't be a new cost to the City.
- Existing City staff such as planners, building code inspectors, and folk in fleet and facilities, are assumed to have a portion of their time allocated to advancing actions in A²Zero that clearly fall under their existing job descriptions.
- Where possible we estimated the cost savings from measures, but only savings accruing to City operations. We included notes that highlighted which actions had well established paybacks for residents or businesses.
- Where possible private sources of funding may exist, those were indicated. The years in which those sources are attributed to the budget are best estimates.
- A federal stimulus and/or federal dollars will help build the park and rides. This is similar to how previous park and rides have been built.
- An estimate for how much of existing City budgets could be allocated for each action is included. Where gaps in City budget exist, the City could 1) reprioritize existing City resources; 2) fundraise; or 3) take on debt. If not otherwise indicated, any gaps were assumed to be filled by reprioritizing the City budget.

Using these assumptions, staff created a A²Zero Draft 10-Year Investment Scenario. This document is one possible scenario, amongst many, of potential investment amounts, sources, and funds between 2020 and 2030 that could occur to achieve the goals as outlined in the living A²Zero Carbon Neutrality Plan. This Investment Scenario will certainly change as actions start to be implemented, new sources of funding become available, and as new actions are identified.

How Much Investment is Required to Deliver the Plan?

The attached matrix, "A²Zero Draft 10-Year Investment Scenario" presents one possible path for how to fund the City portions of the A²Zero plan. Looking specifically at the years 2021-2023, the scenario outlines operational costs (A), operational credits (aka, savings to the City from implementing actions) (B), the amount of debt service payments we'd have to make (C), the total net city impact (D), the total capital or debt we could issue (E), and potential external funding (F). The large amount of external funding in 2022 is related to potential federal stimulus dollars specifically focused on park and ride infrastructure.

		2020	2021	2022	2023
A	TOTAL City Operating Costs	\$793,281	\$8,491,870	\$7,119,461	\$6,847,486
B	TOTAL City Operating Credits	-\$17,500	-\$1,305,748	-\$1,078,896	-\$686,682
C	TOTAL City Debt Service	\$0	\$10,656,425	\$3,909,500	\$3,272,000
D	TOTAL Net City Impact	\$775,781	\$17,842,547	\$9,950,065	\$9,432,804
E	TOTAL City Capital	\$0	\$42,875,075	\$3,612,500	\$0
F	TOTAL Other (i.e., philanthropic, state, federal, pro bono, public-private partnership)	\$150,000	\$3,259,500	\$87,588,500	\$455,000

Using this scenario as a starting point, the City would need to generate roughly \$17.8 million in 2021 to implement all the identified actions in the carbon neutrality plan (NOTE: this scenario assumes all the city-based debt for the plan is issued).

A²ZERO Investment Scenario

DRAFT A2ZERO INVESTMENT PLAN

This document outlines one possible scenario, amongst many, of potential investment amounts, sources, and funds between 2020 and 2030 in order to achieve the goals as outlined in the living A2Zero Carbon Neutrality Plan. The near years have more certainty than later years. As such, staff recommend that this document be considered a 3-year investment plan, which can provide greater direction and clarity regarding investment opportunities and needs in years 1-3 and serve as guidance for future years. This is similar to how the City budgets. If done this way, this investment plan would be reviewed every 2-years to make refinements and provide a revised, rolling 3 year investment plan that could guide the A2Zero work.

The remainder of the A2Zero Investment Plan is organized as follows:

Column A provides the name of a given action. Underneath is an *estimate* of how much funding is already available or is likely to be available within the existing City budget. For example, this may include existing staff or some alignment with existing actions/priorities meaning that some resources are already available to support a given action.

Column B provides information on investment source. This includes operating costs, operating credits (savings accrued to the City from the given action; not to residents), any debt service payments the City may have to make (based on estimates in the "city capital row"), the net budget impact to the City, and external sources of investment, including philanthropic, grants, pro-bono assistance, public-private partnerships, etc. The values in these rows will change over time as new sources of investment become available.

Column C shows the total *estimated* cost for a given action, over the full 10-years.

Columns D - N show annual *estimates*, by investment source, for each action.

Column O identifies the party primarily responsible for implementation.

Column P provides notes about the investment estimates provided for each action.

ACTION		TOTAL	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Implem. Respon.	NOTES
COMMUNITY CHOICE AGGREGATION		\$1,645,000	\$49,000	\$49,000	\$49,000	\$49,000	\$799,000	\$300,000	\$200,000	\$150,000	\$0	\$0	\$0	City of Ann Arbor	Nationally, CCA's are at cost parity if not cheaper than existing, utility energy pricing meaning that this action will most likely save our residents (and the City) money. The "City Operating Credits / Savings" estimates only look at energy savings related to City operation; is anticipated that residents
EST: \$392,000 Already in City Budget	City Operating Costs		\$49,000	\$49,000	\$49,000	\$49,000	\$49,000	\$50,000	\$50,000	\$50,000	-				
	Savings										-\$81,000	-\$81,000	-\$81,000		
	City Debt Service														
	Net City Impact		✓ \$49,000 ✓	✓ \$49,000 ✓	✓ \$49,000 ✓	✓ \$49,000 ✓	✓ \$49,000 ✓	✓ \$50,000 ✓	✓ \$50,000 ✓	(\$31,000)	(\$81,000) ✓	(\$81,000) ✓	(\$81,000)		
	City Capital														
City Funding Source			GF	GF	GF	GF	GF	GF	GF	GF	GF	GF	GF		

A²ZERO Updates

	Year One				Year Two			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Annual Survey								
Annual Summit								
Sustainability Dashboard								
Annual Council Work Session								
Regular Community Engagement								
Quartely Council Reports								
City Budget								
Revisit A2Zero Investment Plan								

Resolution Adopting the Plan



Powering our electrical grid with 100% clean and renewable energy



Switching our appliances and vehicles from gasoline, diesel, propane, and natural gas to electric



Significantly improving the energy efficiency in our homes, businesses, schools, places of worship, and recreational sites



Reduce the miles we travel in our vehicles by at least 50%



Significantly change the way we use, reuse, and dispose of materials



Enhance the resilience of our people and place



Other

Thank You