



Implementing A²ZERO

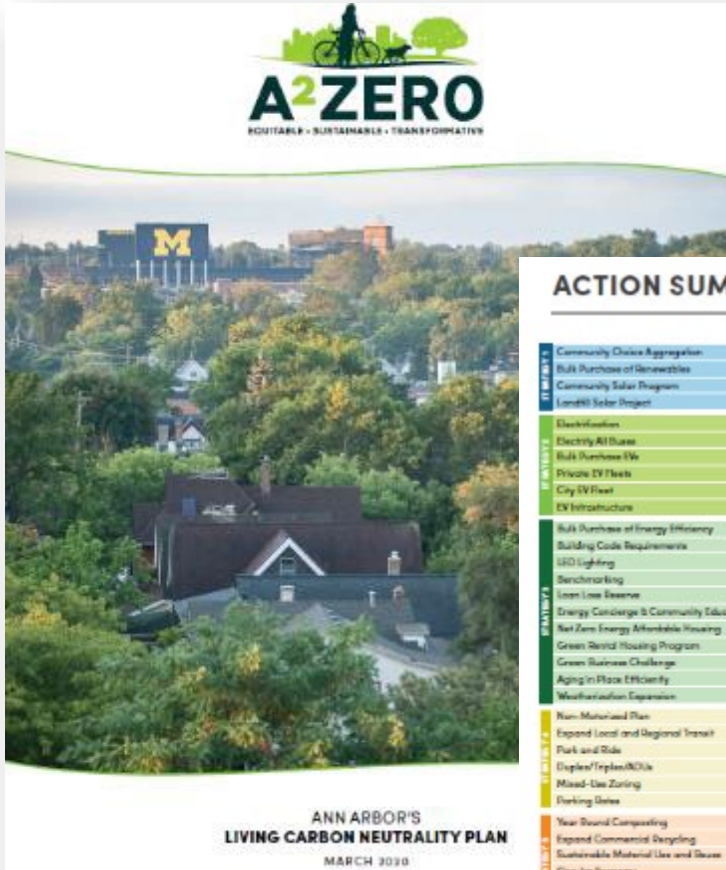
Year 4 in Review

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A²ZERO Overview



| ACTION SUMMARY TABLE | | | | | |
|--|------------------------|------------------|-----------------|-------------|---------------|
| | Total Costs | GHG Reduction | Total emissions | \$/ton | Co-Benefits |
| ENERGY | | | | | |
| Community Choice Aggregation | \$3,245,000 | 754,000 | 35.2% | \$4 | Coasting Soon |
| Bulk Purchase of Renewables | \$605,000 | 85,000 | 3.5% | \$7 | |
| Community Solar Program | \$305,000 | 15,000 | 0.6% | \$20 | |
| Local40 Solar Project | \$80,000 | 23,000 | 1.1% | \$5.6 | |
| Electrification | \$230,000 | 302,000 | 16.0% | \$20 | Coasting Soon |
| Electricity All-Buyer | \$60,075,000 | 12,000 | 0.6% | \$ 0.519 | |
| Bulk Purchase EVs | \$730,000 | 102,000 | 4.6% | \$6 | |
| Private EV Fleets | \$123,000 | 0 | 0.0% | \$0 | |
| City EV Fleet | \$4,000,000 | 1,500 | 0.1% | \$6,666 | |
| EV Infrastructure | \$40,000,000 | 0 | 0.0% | \$0 | |
| ENERGY EFFICIENCY | | | | | |
| Bulk Purchase of Energy Efficiency | \$230,000 | 243,000 | 16.1% | \$4 | Coasting Soon |
| Building Code Requirements | \$60,075,000 | 46,000 | 0.6% | \$ 40 | |
| LED Lighting | \$750,000 | 2,600 | 0.1% | \$1,306 | |
| Benchmarking | \$123,000 | 0 | 0.0% | \$0 | |
| Green Line Reserve | \$4,000,000 | 0 | 0.0% | \$0 | |
| Energy Concierge & Community Education | \$40,000,000 | 0 | 0.0% | \$0 | |
| Net Zero Energy Affordable Housing | \$800,000 | 400 | 0.0% | \$2,000 | |
| Green Rental Housing Program | \$630,000 | 0 | 0.0% | \$0 | |
| Green Business Challenge | \$700,000 | 0 | 0.0% | \$0 | |
| Aging in Place Efficiency | \$700,000 | 0 | 0.0% | \$0 | |
| Weatherization Expansion | \$7,000,000 | 0 | 0.0% | \$0 | |
| TRANSPORTATION | | | | | |
| Non-Motorized Plan | \$3,245,000 | 80,400 | 2.8% | \$40 | Coasting Soon |
| Expand Local and Regional Transit | \$605,000 | 93,000 | 4.3% | \$704 | |
| Park and Ride | \$205,000 | 28,400 | 1.3% | \$6,060 | |
| Duplicat/Replace/Disk | \$80,000 | 2,000 | 0.1% | \$714 | |
| Mixed-Use Zoning | \$305,000 | 0 | 0.0% | \$0 | |
| Parking Deter | \$4,000,000 | 0 | 0.0% | \$0 | |
| WASTE | | | | | |
| Year Round Composting | \$30,000,000 | 400 | 0.1% | \$60,000 | Coasting Soon |
| Expand Commercial Recycling | \$18,400,000 | 5,600 | 0.3% | \$1,286 | |
| Sustainable Material Use and Source | \$205,000 | 0 | 0.0% | \$0 | |
| Circular Economy | \$200,000 | 0 | 0.0% | \$0 | |
| Plant-Based Diet | \$208,400 | 0 | 0.0% | \$0 | |
| Refrigerant Recycling | \$700,400 | 0 | 0.0% | \$0 | |
| COMMUNITY ENGAGEMENT | | | | | |
| Resilience Hubs | \$6,000,000 | 2,800 | 0.1% | \$3,000 | Coasting Soon |
| Neighborhood and Youth Ambassadors | \$300,000 | 0 | 0.0% | \$0 | |
| Tree Canopy | \$1,000,000 | 400 | 0.0% | \$1,000 | |
| Neighborhood Asset Mapping | \$300,000 | 0 | 0.0% | \$0 | |
| Emergency Kit | \$300,000 | 0 | 0.0% | \$0 | |
| Sensors and Data Monitoring | \$300,000 | 0 | 0.0% | \$0 | |
| JUSTICE | | | | | |
| Equity Programs | \$200,000 | 0 | 0.0% | \$0 | Coasting Soon |
| SAIT Grant Program | \$1,000,000 | 0 | 0.0% | \$0 | |
| Internal Carbon Tax | \$70,000 | 0 | 0.0% | \$0 | |
| Others | \$9,440,000 | 298,500 | 13.0% | \$32 | |
| TOTAL | \$1,098,400,000 | 2,198,000 | 100.0% | \$32 | |



Together, creating and implementing a just transition to carbon neutrality by the year **2030.**

A²ZERO Overview



STRATEGY 1:

Power Our Electrical Grid with 100% Renewable Energy

STRATEGY 3:

Significantly Improve the Energy Efficiency in our Homes, Businesses, Schools, Places of Worship, Recreational Sites, and Government Facilities

STRATEGY 5:

Change the Way We Use, Reuse, and Dispose of Materials



STRATEGY 2:

Switch our Appliances and Vehicles from Gasoline, Diesel, Propane, Coal, and Natural Gas to Electric

STRATEGY 4:

Reduce the Miles we Travel in our Vehicles by at least 50%

STRATEGY 6:

Enhance the Resilience of Our People and Our Place

OTHER STRATEGIES:

This strategy covers the remaining programs and activities that don't fit into other areas. It also includes greenhouse gas emissions offsets to close out any

Current Strategies

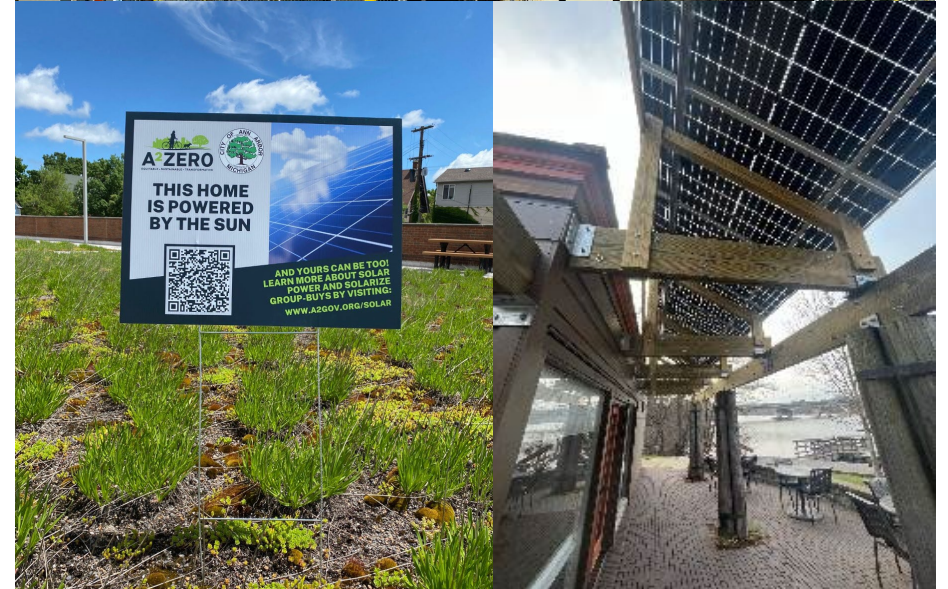


1. Community Choice Aggregation
2. On-Site Renewable Energy Generation with Battery Storage (Bulk Buys)
3. Community Solar Program
4. Landfill Solar Project
5. Home and Business Electrification Policies and Support
6. Electrify Buses
7. Support Community Electric Vehicle and Solar Bulk Buys
8. Electrify City Fleet
9. Electrify Private Fleet
10. Expansion of Electric Vehicle Charging Infrastructure
11. Support Transition to More Energy Efficient Homes and Businesses
12. Update Building Codes
13. LED Powered Streetlights and Traffic Signals
14. Energy Disclosure / Benchmarking
15. Loan Loss Reserve
16. Energy Concierge and Community Education
17. Net Zero Energy Affordable Housing
18. Green Business Challenge
19. Green Remodeling Program
20. Aging in Place Support
21. ...
22. ...
23. Expansion of Transit
24. Expansion of ...
25. Increase ... Rides and ...
26. Increase Housing Opportunity
27. Mixed-Use Neighborhoods
28. Tiered Parking Rates
29. Expansion of Composting Program
30. Expansion of Commercial Recycling
31. Require Sustainable Materials in New and Existing Developments
32. Move Toward a Circular Economy
33. Support a Plant Rich Diet
34. Enhance Refrigerant Recycling and Reuse Program
35. Invest in Resilience Hubs
36. Foster Neighborhood and Youth Ambassadors
37. Preserve & Enhance Local Tree Canopy
38. Conduct Asset and Needs Mapping of Neighborhoods
39. Assist in Assembling and Disseminating Emergency Preparedness Kits
40. Implement Sensors to Monitor Heat, Air Quality, Waterways, and Flooding
41. Equity Programs
42. Sustaining Ann Arbor Together Grant Program
43. Internal Carbon Price
44. Greenhouse Gas Emissions Offsets

37+

Strategy 1 - Renewable Energy

- Installed over 250kw of rooftop and ground mounted solar at 5 City parks
 - Active work to design nearly 4 MW additional
- Installed 231 solar installations (over 1.8 MW) across Ann Arbor in calendar year 2023, the highest in a single year!
- Solarize
 - 96 installations, 722kW in year 4
 - Total 4.9MW; \$2.2 million saved in upfront costs (~\$3k per person); over 650 installations
 - Piloted battery bulk buy (over 40 sold - over 440kw of batteries and over \$100,000 in upfront cost savings)
- Published an HOA/MUD guide to sustainability
- Drafted CCA and supported Microgrid legislation
- Advanced landfill solar - the solar industry is topsy turvy
- Designed and applied for funding to create microgrid at Veterans Memorial Park and Fire Station 3
- Advanced Sustainable Energy Utility
- Submitted testimony in multiple cases before MPSC



Strategy 2 - Electrification

- Hosted 2nd annual electrification expo
- Supporting EGLE with IRA rollout
- Hit 25% electrification of City's light duty fleet - procured 2 e-bikes; EV refuse trucks; electric forklift
- Installed State's first EV curbside charger and added 10 more chargers (+EV readiness ordinance)
- Began designing district geothermal system
- Initiated city-wide geothermal feasibility study
- Supported gas leaf blower phase-out ordinance
- Initiated contracting and final design for Home Energy Rebate program
- Assisted Ann Arbor Housing Commission with electrification designs and implementation
- Supported zero emissions propulsion study and grant application at TheRide
- Leading work on heating franchise review
- Working to make Bryant Community Center living learning laboratory of climate action
- Actively implementing the City's sustainability review as part of the City's plan review process



Strategy 3 - Efficiency



- **Adopted Home Energy Rating Disclosure**
- **Continue pushing for updated Michigan building and energy codes**
- **Launched Green Business Challenge**
- **Launched Home Energy Advisor (concierge)**
- **Completed LED lighting replacement at Wheeler**
- **Joined DOE's Better Buildings Coalition**
- **Drafted Green Rental Housing ordinance**
- **Implementation of energy and water benchmarking ordinance**
- **Supported weatherization expansion programming**
- **Advanced Bryant decarbonization project (over \$1.3 million in funding awarded)**
- **Collaboration with 2030 District**



Strategy 4 - Mobility

- Funded more bike lanes and sidewalks
- Supporting Comprehensive Land Use Plan update
- Supported re-introduction of bike share



**Ann Arbor Comprehensive Plan
OPEN HOUSES!**

The Open Houses will include information about the city and activities to get your opinion on how it should change in the future. Each event will have the same material — choose the day and location that works best for you. Snacks and light refreshments will be available. If you're interested and know you'd benefit from translation, assistance please contact: planning@cityofa.org

| | | |
|---|--|---|
| TUESDAY APRIL 23 4 - 7pm | WEDNESDAY APRIL 24 4 - 7pm | FRIDAY APRIL 26 4 - 7pm |
| Ann Arbor District Office Traversewood 3737 Truesdell Dr. | Ann Arbor District Office Westgate 2637 Jackson Ave. | Ann Arbor District Office Middle Creek 1901 Elmwood Place |

Come share ideas for your neighborhood!

Visit the program site for more info:
www.a2zero.org/plan04



Strategy 5 - Circular Economy



- Plant-based education series
- Continuing zero waste challenges and education
- Launched Sustainable Food Business Coalition
- Develop strategy to scale-up returnable container program
- Launching circular economy planning initiative
- Pursued grant for refrigerant recycling and replacement program
- Neighborhood swap days
- Expanded commercial recycling - working on composting



Strategy 6 - Resilience

- Piloted battery bulk buy through solarize - added over 40 batteries
- Bryant Community Center is second resilience hub
 - Initiated work to make Green Baxter and Peace next two resilience hubs
- Nearly at 10,000 trees
- Won \$1,000,000 USFS grant for tree planting in underserved areas
- Graduated 5th A2ZERO cohort and started 6th - 100 Ambassadors
- Won \$1,000,000 for regional resilience network
- Air quality monitoring
- Pollinator-Aware Yard Care
- Collaborated with Avalon on emergency preparedness working group



Engagement

- Hosted Science Communication Training for Ambassadors with R.E.L.A.T.E.
- Created Green Energy Neighbors program
- Launched Nourishing Neighbors program
- Energy Equity community of practice
- Champions for Change program
- Launched A²ZERO dashboard
- Recognized by CDP as one of 119 global climate leaders
- Continued grants through Sustaining Ann Arbor Together program
- Won national AmeriCorps program



Dashboard



[Intro](#) [Greenhouse Gas Emissions](#) [1 Renewable Energy](#) [2 Electrifying Vehicles and Appliances](#) [3 Energy Efficiency](#) [4 Transportation](#) [5 Circular Economy](#) [6 Community Resilience](#) [Community Engagement](#)

A²ZERO Dashboard

Office of Sustainability and Innovations | City of Ann Arbor

A²ZERO is the City of Ann Arbor's plan for achieving a just transition to community-wide carbon neutrality by 2030. This dashboard shares data on the progress of actions included in the A²ZERO Plan. This is a living dashboard, and will be regularly updated with new information and initiatives as the City continues advancing the A²ZERO goals and as data becomes available.

Learn more about A²ZERO: [Read Ann Arbor's A²ZERO Carbon Neutrality Plan and Annual Reports.](#)

How to use this dashboard

This dashboard is best viewed on a desktop or laptop computer.

Click on tabs to explore data of Ann Arbor's greenhouse gas emissions and A²ZERO's strategies to reduce those emissions.

NOTE: When switching tabs, you may need to scroll back to the top of the webpage.

The charts on this dashboard are interactive. Hover your mouse over a chart to view numerical data. Click on categories in the legend to add or remove them from the chart. Click **All** to select all categories, and **Inv** to invert your current selection. It can be helpful to view categories individually, or certain groups of categories together. Charts will scale based on selected categories.

A²ZERO Goals are stated in **green text** and represented on charts using **green dashed lines**.



<https://www.a2gov.org/departments/sustainability/Carbon-Neutrality/Pages/Dashboard.aspx>

Dashboard



- Intro
- Greenhouse Gas Emissions
- 1 Renewable Energy
- 2 Electrifying Vehicles and Appliances
- 3 Energy Efficiency
- 4 Transportation
- 5 Circular Economy
- 6 Community Resilience
- Community Engagement

Citywide Greenhouse Gas Inventory

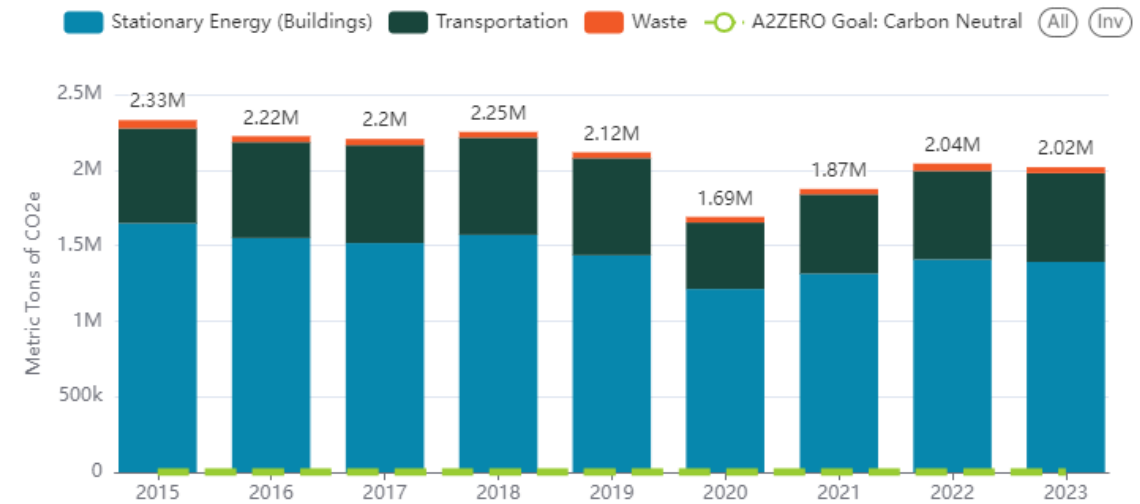
Anthropogenic (man-made) greenhouse gases are the primary cause of climate change across the world. By tracking them on a local level, we can see Ann Arbor's contributions to climate change and take actions to decrease emissions over time.

Ann Arbor's Community-Wide Greenhouse Gas Emissions Inventory is updated on an annual basis.

A²ZERO Goal: 100% of Citywide Greenhouse Gases will be eliminated or offset by 2030.

Note: All charts below are measured in metric tons of CO₂ equivalents (CO₂e). This measurement represents the amount of carbon dioxide (CO₂) that would have the same global warming impact of other types of greenhouse gases, including methane (CH₄) and nitrous oxide (N₂O).

Community Greenhouse Gas Inventory - Sector



Dashboard



- Intro
- Greenhouse Gas Emissions
- 1 Renewable Energy**
- 2 Electrifying Vehicles and Appliances
- 3 Energy Efficiency
- 4 Transportation
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Renewable Energy [@](#)

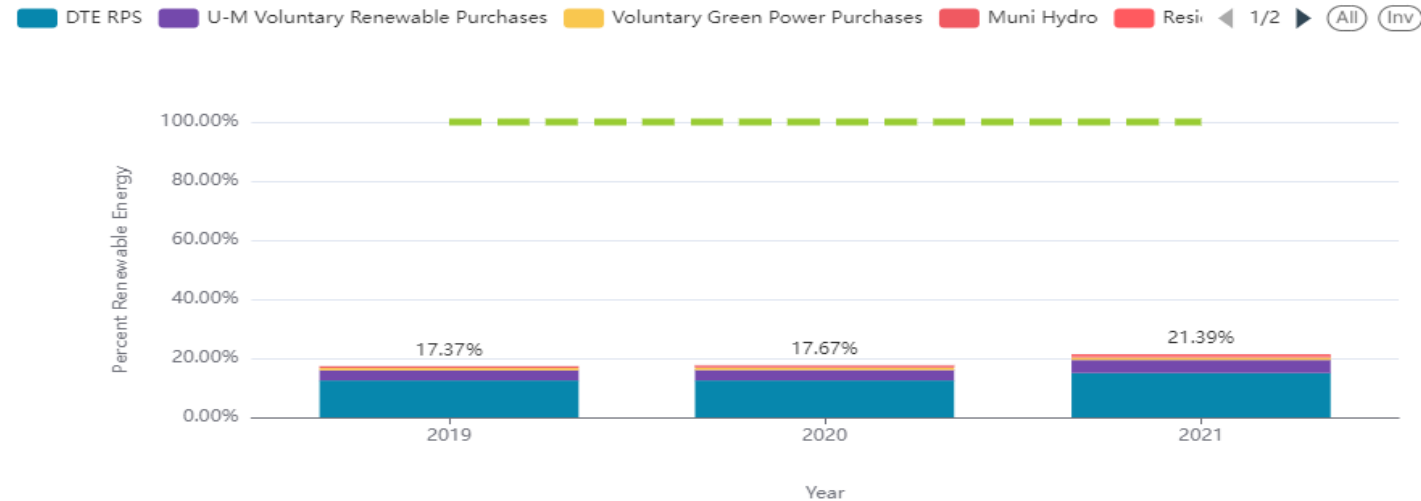
Powering our Electric Grid with 100% Renewables

In 2020, Ann Arbor used approximately 1.21 million MWh of electricity. Unlike fossil fuels such as natural gas, electricity can be provided and directly offset by renewable sources.

Some renewable energy is provided by DTE Energy, as mandated by the [State of Michigan's Renewable Portfolio Standard \(RPS\)](#). Other sources include solar and hydroelectric power installed in Ann Arbor, and voluntary green power purchases made by the public and by institutions like the University of Michigan.

A²ZERO Goal: By 2030, the Ann Arbor community will use 100% renewable energy.

Ann Arbor Renewable Energy Portfolio



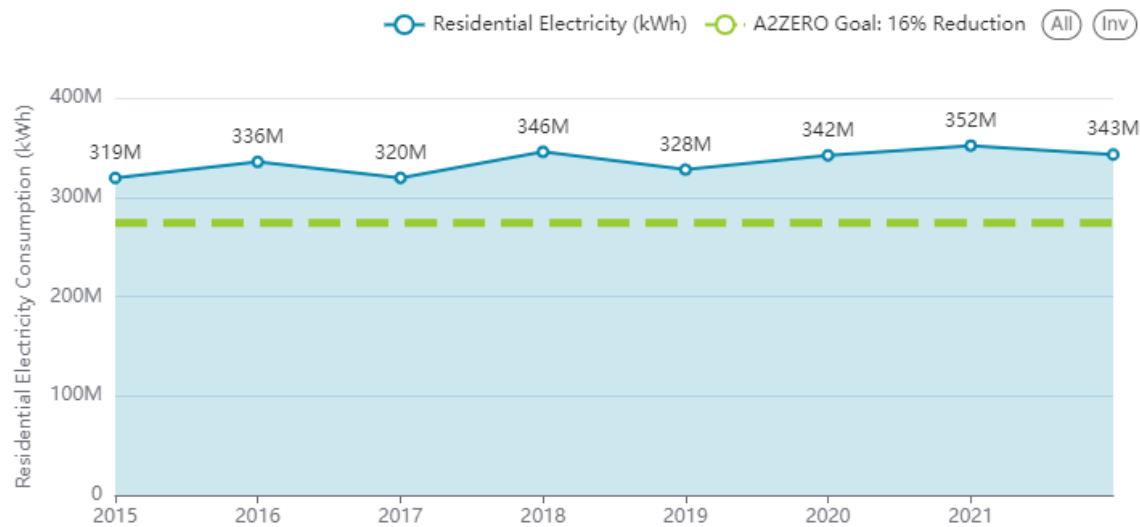
Dashboard



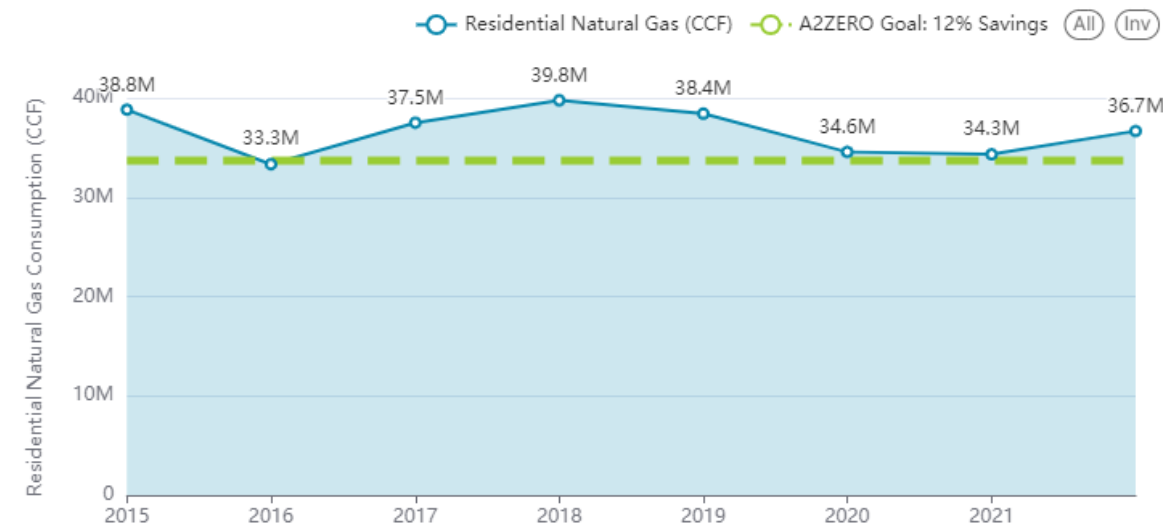
Intro Greenhouse Gas Emissions 1 Renewable Energy 2 Electrifying Vehicles and Appliances **3 Energy Efficiency** 4 Transportation 5 Circular Economy 6 Community Resilience Community Engagement

A²ZERO Goal: 85% of owner-occupied units and 80% of renter-occupied units achieve a 20% reduction in electricity use and a 15% reduction in natural gas use.

Residential Electricity Consumption



Residential Natural Gas Consumption



What's Next?

- Sustainable Energy Utility engagement and education
- Green Rental Housing ordinance
- Circular Economy strategy
- Sustainable Food strategy
- AmeriCorps member engagement
- Geothermal heating strategy and deployment
- Heating franchise negotiations
- Emergency preparedness curriculum
- 2 more resilience hubs
- So much more!



Completed Actions

12/44 Actions will be complete in 2024!

1. LED Powered Streetlights and Traffic Signals
2. Energy Disclosure / Benchmarking
3. Energy Concierge and Community Education
4. Green Business Challenge
5. Aging in Place Efficiently
6. Implement Non-Motorized Plan
7. Mixed-Use Neighborhoods
8. Foster Neighborhood and Youth Ambassadors
9. Preserve & Enhance Local Tree Canopy
10. Implement Sensors to Monitor Heat, Air Quality, Waterways, and Flooding
11. Equity Programs
12. Sustaining Ann Arbor Together Grant Program





THANK YOU

sustainability@a2gov.org