



WISCONSIN'S CLEAN ENERGY TOOLKIT

DEVELOPING A CLEAN ENERGY PLAN FOR. YOUR COMMUNITY



AGENDA

- Wisconsin's Energy Landscape: Regulations and how to get started
- Implementation: Energy Reduction, Renewable Installations, Decarbonized Transportation, Equity and Inclusion
- Financing Solutions
- Local Government Example: City of Madison
- Question and Answer Session

LAYING THE LANDSCAPE



WISCONSIN'S CURRENT ELECTRICITY SECTOR

- Fossil Fuel Dependent
- 10% Renewables
- Landscape is Changing



QUILT BLOCK WIND FARM – LAFAYETTE COUNTY

UTILITY & REGULATORY SETTING

- Public Service Commission
- Electric Utility Providers
 - Investor-Owned Utility (IOU)
 - Municipally-Owned Utility
 - Electric Cooperative



UTILITY COMMITMENTS TO CLEAN ENERGY

Utility	Customers	2020 Total Renewables Mix	Stated Goal
Madison Gas and Electric	153,000	15.5%	30% renewables by 2030 100% Net-Zero CO2 by 2050
Alliant	470,000	21.2%	33% renewables by 2024 100% CO2 reduction by 2050
Xcel Energy	241,000	32.9%	80% CO2 reduction by 2030 100% carbon free by 2050
Wisconsin Public Service	446,000	7.0%	80% CO2 reduction by 2030 Carbon neutral by 2050
WE Energies	1.4 million	5.7%	80% CO2 reduction by 2030 Carbon neutral by 2050

HOW TO GET STARTED

- Make a Commitment
- Establish Benchmarks and Baselines
- Educate the Community and Build Support



EQUITABLE DECARBONIZATION

- Affordability for lower income communities
- Reducing disproportionate effects of pollution on Communities of Color
- Careers for underemployed communities
- Equal access to efficiency, renewable energy, and sustainability
- Unintended consequences of climate action plans
- Climate change impacts on low-income communities



STEPS TO IMPLEMENTING A CLEAN ENERGY PLAN

1. INVENTORY OF ALL FACILITIES AND CITY-OWNED TRANSPORTATION VEHICLES
2. COLLECT AT LEAST 12 MONTHS OF ENERGY DATA
3. ANALYZE ENERGY CONSUMPTION TRENDS TO IDENTIFY UNDERLYING ENERGY CONSUMPTION PATTERNS
4. CREATE AN ACTION PLAN TO REDUCE ENERGY CONSUMPTION AND INCORPORATE RENEWABLE ENERGY
5. TRACK AND REPORT PROGRESS

IMPLEMENTATION



REDUCING ENERGY CONSUMPTION

- HVAC Retrofits
- Lighting Retrofits
- Smart Street Lighting
- Load Management
- Water Utility Optimization



ESCUELA VERDE – MILWAUKEE

RENEWABLE ENERGY SOLUTIONS

- Onsite Renewables
- Offsite Renewables



DECARBONIZING TRANSPORTATION

- Fuel Alternatives
- Electrification
- EV-Charging Infrastructure
- EV-Charging Costs
- Communitywide Transportation



FINANCING SOLUTIONS



FUNDING SOURCES

- Funding Renewable Energy Projects
- Funding Transportation Initiatives
- Funding for Tribal Governments



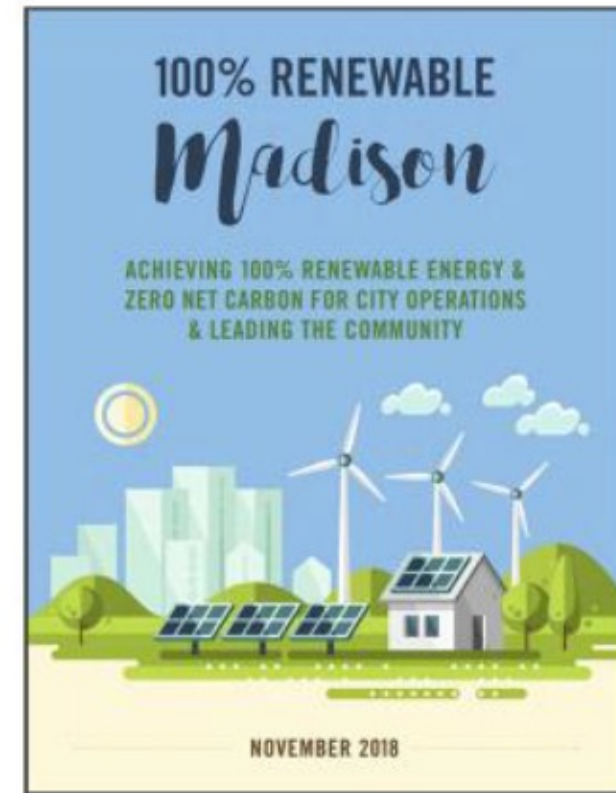
POLICIES

- Net Metering Policies
- Community Solar
- Third-Party Ownership



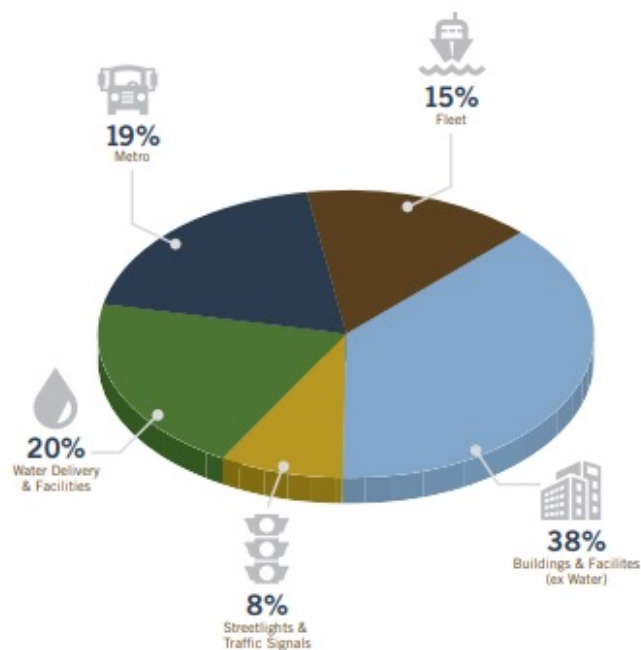
CITY OF MADISON: 100% RENEWABLE JOURNEY

March 2017 – 100% Resolution



CITY OF MADISON: 100% RENEWABLE JOURNEY

FIGURE A-2. BASELINE CARBON EMISSIONS FOR CITY OPERATIONS BY CATEGORY*



**Excludes landfill, city employee commute, and City-owned housing emissions. Source: HGA based on ICLEI

DEMAND MEASURES
(Efficiency)

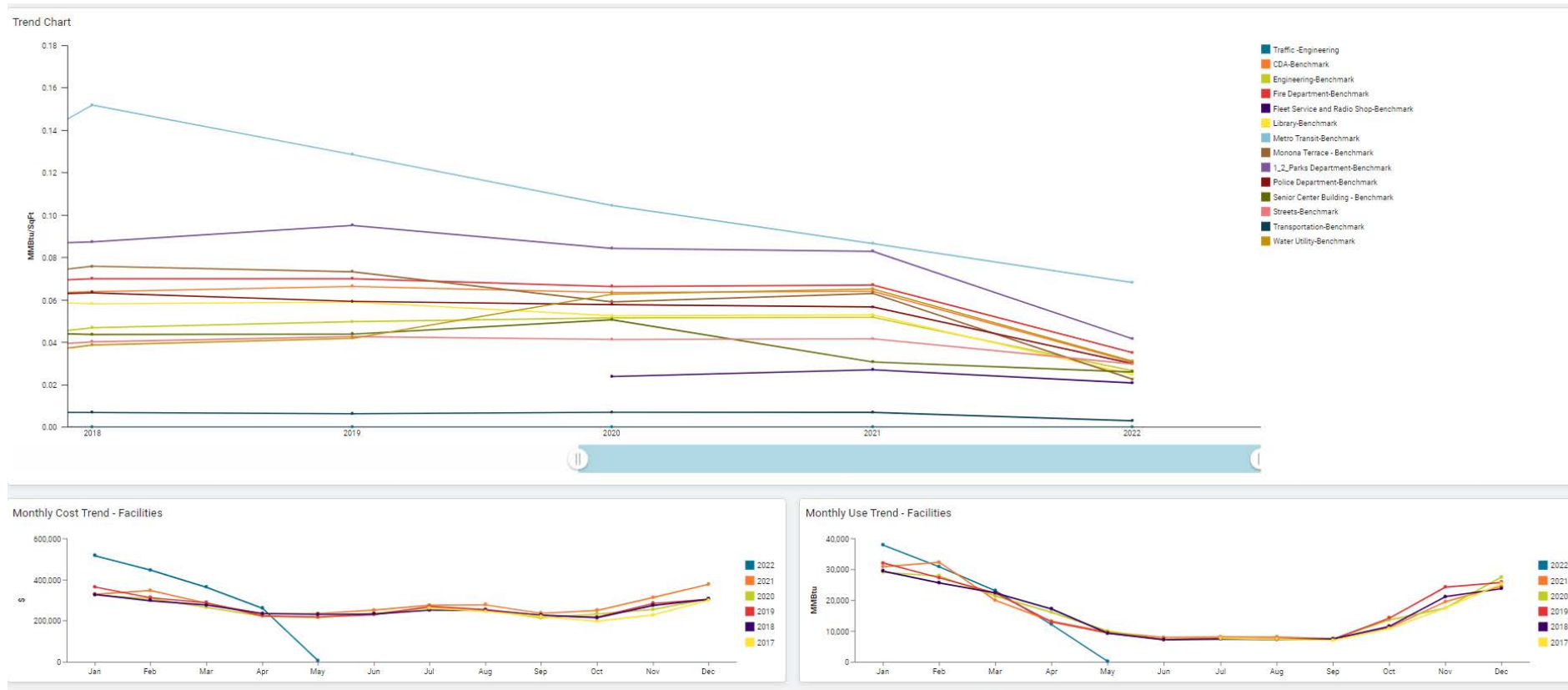
SUPPLY MEASURES
(Renewables)

TRANSPORTATION

SCENARIO 3
100% Renewable
Energy and Zero
Net Carbon by 2030

- 55% carbon reduction with 25% self-generated renewable energy
- 45% RECs and carbon offsets
- \$95M investment over 13 years; IRR 17%
- Cost savings to city of \$78M by 2030
- Reduce total carbon emissions by 426,000 tons by 2030
- Societal co-benefits range from \$21M - \$162M by 2030

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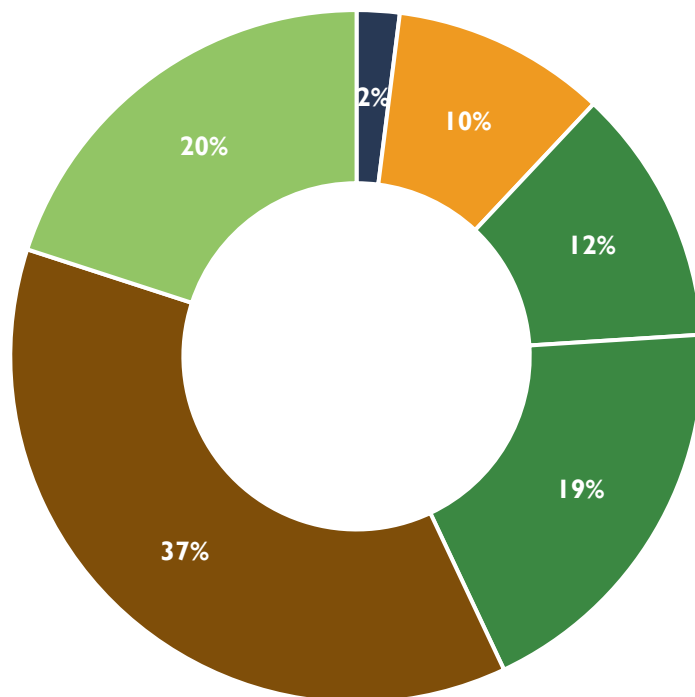
SCENARIO 3 - 2030

To cut carbon emissions by 55%, the city will implement demand reduction measures including:

- Develop RCx program
- Lighting Retrofits
- HVAC Controls
- HVAC Retrofits
- Plug Load Management Strategies
- Building Envelope Improvements
- Street light efficiency
- Water distribution system optimization

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Electricity Mix



Renewable Generation (Supply)

- 2% = Behind-the-Meter Solar - Phase I (1 MW, 2020)
- 10% = Behind-the-Meter Solar - Phase 2 (+ 8 MW by 2030)
- 12% = Utility Fuel Mix (MGE and Alliant, 2016)
- 19% = Utility Solar Project (MGE RER, 2022)
- 37% = Renewable Energy Credits (Butter Solar, 2019)
- 20% = VPPA?

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BTM - Phase I

- Roof or Ground Mounted
- 30+ installations since 2008 (3/yr.)
- 2/3 In-House | 1/3 Bid / Subcontract
- 2016 Green Power Trainee Program
- 2020 = 1st MW
- CIP = \$
- Focus on Energy Incentives

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BTM - Phase 2

- Move from one crew to two crews
- Move from 6-9 months per year through the solar-installation season to year-round
- Help install LEDs & electric vehicle infrastructure
- 2021-2022 = 2nd MW
- Starting in 2023, we'll install nearly 1 megawatt every year.

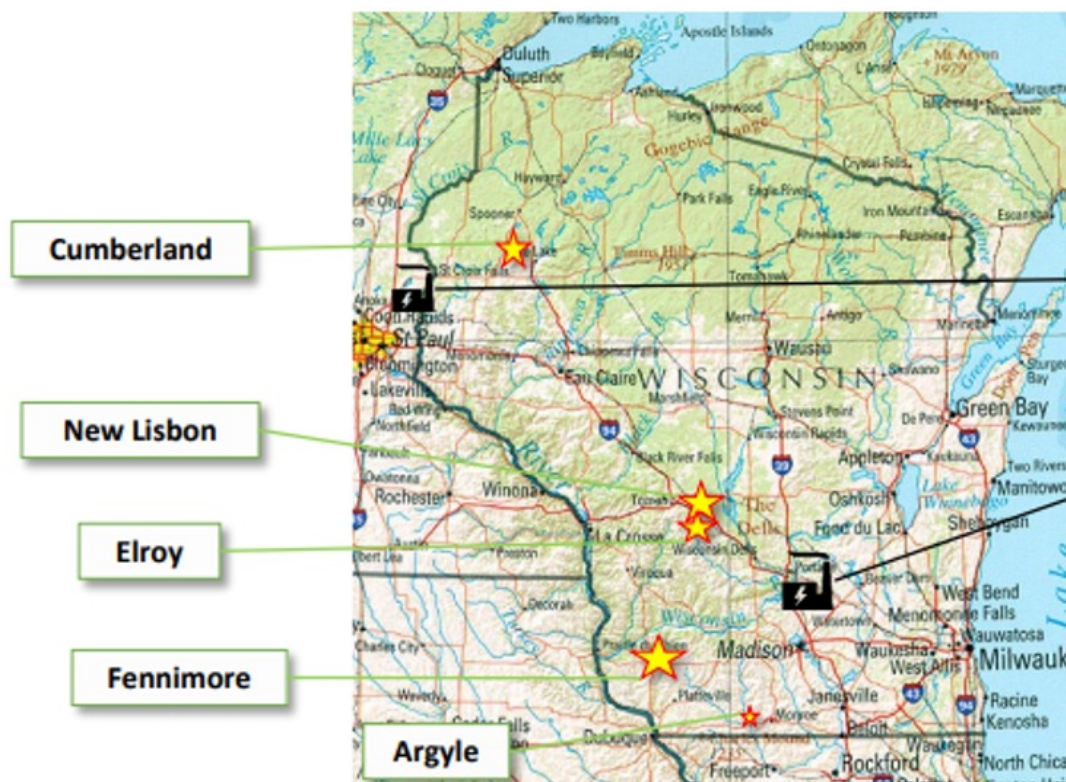
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MGE RER – “Hermesdorf Solar Fields”

- 8 MW: 5 MW City & 3 MW MMSD
- Sleeve Tariff – 100+ qualifying meters
- 30 Year Contract
- No Up-Front Capital Costs

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RECs (unbundled) – “Butter Solar”

- 5 Arrays = 14 MW
- 25 Year Contract, Staggered Full Pre-purchase & \$4.75/MWH
- Quarterly Transfers, Green-E Certified
- Values: Additionality; Geographically Close; “But-For” Clause

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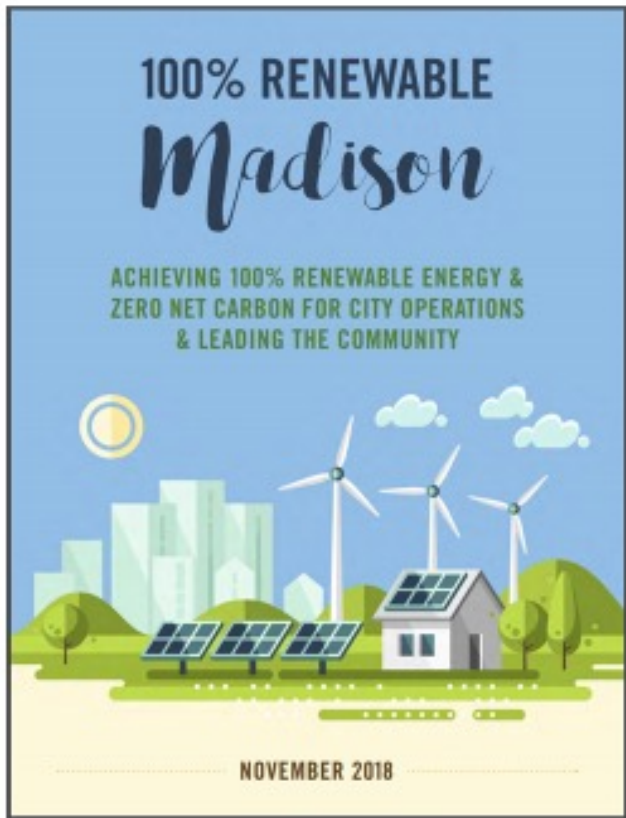


SCENARIO 3- 2030

The city will reduce carbon emissions from transportation measures by implementing:

- Green fleet strategies
- Electrify Light & Medium Duty Vehicles
- Biodiesel for Heavy Duty
- All Metro & BRT are electric buses in this scenario
- GPS & Anti-Idling Technologies
- Soybean Tires

CITY OF MADISON: 100% RENEWABLE JOURNEY



HOW CAN I CONTRIBUTE TO MADISON'S 100% RENEWABLE ENERGY GOALS?



Call or email your alder to let them know you support the City's 100% renewable energy goal for city operations and leadership for the greater community



Reduce your energy consumption

- Replace incandescent lights with LEDs
- Install a smart thermostat and schedule your residence's HVAC system
- Enroll in the Focus on Energy Assessment Program
- Work with your employer to join Sustain Dane's MPower program



Explore solar PV for your residence or workplace through the MadiSUN Solar Group Buy Program



Sign up for MGE's Shared Solar program or Alliant's Second Nature program



Decide if you can save money through MGE's Time of Use rate or Alliant Energy's Time of Day Pricing program



Vote for elected officials that support clean energy policies



Support organizations that lobby for state and federal policies that accelerate the transition to 100% renewable energy



Purchase voluntary RECs or carbon offsets

Source: HGA

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Wisconsin Local Government Climate Coalition

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Advocating for clean energy and climate
change solutions in Wisconsin.

QUESTIONS?

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