Planning for a Clean Energy Future: Wisconsin Communities Power On

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Wisconsin Academy Environmental Breakfast Series

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Our Programs

- Federally Funded by US DOE
- Currently housed in PSCW: PSC Home (wi.gov) with the statewide, rate-payer funded energy efficiency program Focus On Energy
- Energy Security
- Grant Programs
- Energy Statistics
- Partnership between UW-Madison Extension & OEI
- Managed by Extension

Website: energyonwi.extension.wisc.edu
Newsletter: enroll on website
- Energy Independence
- Funding
- Projects
- Blog posts
- Education/training events
- Resources

- Community Development Institute
- Community Economic Development Program
- Education & Technical assistance
- Clean Energy Planning & Financing
- Sustainable Development
- Green Building
- Climate & Resilience
Background

Energy Independence

25 x ‘25: Generate 25% of Wisconsin power and transportation fuels from renewable resources locally by 2025

- 150 Energy Independent Communities
- Encompasses 3.41 million people
- 58.7% of Wisconsin’s population

EI Communities 2019 SURVEY

- Gauge activity & progress
- Identify areas of assistance needed
- Share results with communities statewide

By UW-Madison Extension: Gruder, Shropshire, Pratsch, Chen w OEI / DOE funding
Our Sample

49 EI Communities or 30% responded to the survey from across the state

28 Cities 10 Counties
9 Towns/Villages 2 Tribal Nations

Among municipalities, towns, and villages

5 Large Municipalities (pop > 40,000)
21 Medium Municipalities (2,501 - 40,000)
11 Small Municipalities (pop < 2,500)
Active EI Communities Today

Is your EI Community actively working toward its energy independence goal?

- Yes, 60% (29)
- No, 33% (16)
- Don’t know, 6% (3)

60% of EI Communities reported still being active

Active EI Communities:

**Municipalities:**
- Altoona
- Bayfield
- Beaver Dam
- Eau Claire
- Evansville
- Fitchburg
- Jefferson
- Kaukauna
- Madison
- Middleton
- Milwaukee
- Monona
- Oconomowoc
- River Falls
- Sheboygan
- Viroqua
- Washburn
- Whitewater
- Oconomowoc
- Town of Bayfield
- Town of Berlin
- Town of La Pointe
- Village of Fox Crossing
- Village of Gresham

**Counties:**
- Ashland County
- Bayfield County
- Brown County
- Dane County
- Eau Claire County

**Tribes:**
- Oneida Nation
EI Community Planning

49% of EI communities indicated they did create an EI plan.

45% of these communities believe their plan will need to be updated.

56% without plan interested in exploring options to create plan

Overall, 51% of EI communities want to create or update a plan
Energy Efficiency: Policies and Practices

76% of respondent EI Communities have implemented energy saving policies or practices

Projects Completed

- Buildings: 82%
- Streetlights: 55%
- Parking lot lighting: 51%
- Fleet Vehicles: 33%
- Wastewater Treatment Plant: 27%
- None: 12%
- Transit Vehicles: 10%
- Other: 6%
Energy Efficiency: Building and Vehicle Projects

Building-related projects

- Upgraded lighting: 93%
- Heating and Cooling: 80%
- Added Sensors: 65%
- Control Systems: 55%
- Improved Windows: 38%
- Other: 13%

Vehicle-related projects

- Purchased Hybrids: 75%
- Purchased EVs: 25%
- Purchased Hybrid-...: 19%
- Use Renewable Natural-...: 19%
- Other: 19%

Communities upgrading vehicles:

**Fleet Vehicles**
- Barron County
- Bayfield County
- Dane County
- Green Lake County
- Polk County
- Walworth County
- City of Eau Claire
- City of Jefferson
- City of La Crosse
- City of Madison
- City of Milwaukee
- City of Monona
- City of Sheboygan
- City of Shell Lake
- City of Wausau
- Red Cliff Band of Lake Superior Ojibwe

**Transit Vehicles**
- City of Eau Claire
- City of La Crosse
- City of Madison
- City of Sheboygan
- City of Monona

Half of the E1 communities with estimates were saving over $50,000 annually.

Three communities were saving over $100,000 annually.

One at a quarter million dollars saved annually.
Renewable Energy Projects

What are they powering?

**Geothermal**
Municipal Building, Fire Stations, Public Libraries

**Landfill Gas**
Hospital for heating
School district
injected in interstate gas pipeline and sold as clean RNG vehicle fuel.
powers a senior living center, a community center and a food pantry and food recovery operation.

What renewable energy projects have you installed?

- Solar: 45%
- No Projects: 39%
- Geothermal: 10%
- Landfill Gas: 8%
- BioEnergy: 8%
- Wind: 4%
- Other Projects: 14%

Communities with multiple types of renewable energy projects

- **Bayfield County**: installed Solar PV and Compressed Natural Gas projects
- **Brown County**: installed Solar PV, solar thermal, and Landfill Gas projects
- **Fitchburg, Kaukauna, and Madison**: installed solar and geothermal projects
- **Milwaukee**: installed solar and wind
- **Plymouth, La Crosse, and Beaver Dam**: installed solar and bioenergy projects
- **Dane County**: installed solar, geothermal, and landfill gas projects
Solar Projects

**Number of Solar Projects**

- Sixteen or more: 10%
- Eleven-fifteen: 5%
- Four - Ten: 14%
- Three: 10%
- Two: 24%
- One: 38%

**Madison and Dane County** installed the most solar projects (16+); and **Bayfield County** installed 11-15 projects.

40% of EICs that installed solar projects installed three or more.

**Where are they/What are they powering?**

Projects were located at and powered a range of buildings:

- "Energy sold back to (utility) under rate schedule PG-4"
- "On a county courthouse"
- "It powers our southeast campus which primarily a main highway garage and the medical examiners office and the RNG fueling station"
- "Hot water for a county jail"
- "Hot water for (a) Neighborhood Center"
- "On public libraries"
- "On a health center"
- "On a community/bingo center"
- "Fire stations"
- "Municipal Swimming Pool"
- "Municipal building operations"
- "On a nursing home"
- "Bus garage"
- "It powers our jobs center"

**Average Size PV System** 130 kW

25% of the projects were under 55 kW

25% were over 185 kW

Beaver Dam 105kW  La Pointe 23kW
Solar PV Projects & Renewable Energy Status

Just under half of EI communities had confident estimates for their renewable energy share.

Calculating Energy Independence
- Energy efficiency savings
- Renewable energy generated
- Renewable energy purchased
  - additionality
- Utility mix - % renewables
- Baseline energy
- Reduced CO2 emissions

Energy Independence is local energy
Local energy creates resilience, jobs, local self-reliance

What portion of your energy consumption comes from renewable sources as of 2019?

<table>
<thead>
<tr>
<th>Share of Renewable Energy, # of Communities</th>
<th>None, 4</th>
<th>1-10%, 7</th>
<th>11-15%, 7</th>
<th>16-20%, 4</th>
<th>21-25%, 2</th>
<th>26-50%, 2</th>
<th>51%-75%, 0</th>
<th>76%-100%, 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portion of Communities in Category</td>
<td>9%</td>
<td>16%</td>
<td>18%</td>
<td>16%</td>
<td>9%</td>
<td>4%</td>
<td>4%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Combined Range and Point Estimates

- 6% (3) have met their goal
- 22% (10) are unsure of their renewable share
- 10% (5) have more than 20% renewable energy
- 43% (19) have less than 10%
Telling the Story: Plans associate with more measurement, activity, staffing, & progress

Communities with plans are more likely to:

- Actively work toward their goals: 83%
- Have designated staff: 71%
- Measure and have estimates of renewables use: 71%
- Know how much they spend on energy: 62%

Make more progress toward their goals

Of communities without a plan: 80% have not completed any solar projects compared to 33% of communities with plans.
Community Engagement

- Over one third of EI communities engaged residents and businesses in energy efficiency programs and C-PACE.
- Other program engagement through:
  - solar group buy
  - community solar gardens
  - climate resiliency

Low-Income Assistance Programs

- Have a program, 13%
- Not sure, 27%
- Would like to create a program, 31%
- Don’t have a program, 29%

About the Programs

- Putting solar power on affordable housing.
- We supported solar projects with our Housing Authority. We tried to get the utility to offer community solar to low income residents, but they declined.
- PACE for buying community solar
- Renew Monona Loan Program
- Housing Rehabilitation Loan Programs

Communities with Programs:
City of Monona,
Dane County,
Prairie Du Chien,
River Falls,
City of Sheboygan,
City of Milwaukee
Overall Findings

10 years later, the status of EI communities’ progress toward energy independence is mixed

- The vast majority of communities are making progress toward their goal of developing local renewable energy and improving energy efficiency
  - 76% had implemented policies and practices to save energy
  - 88% had made energy efficiency upgrades to at least one usage area, while 50% had made upgrades to at least 3 areas
  - 45% of communities had installed solar projects

- Progress toward the goal of 25 by ‘25 is highly varied and not uniform in how measured and reported
  - 25% were below 5% renewable energy
  - 10% were above 20% renewable energy
  - 22% didn’t know their renewable energy

- Most helpful factors in making progress

<table>
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<tr>
<th>Factors</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Grants and Other Funding</td>
<td>47%</td>
</tr>
<tr>
<td>Dedicated or Responsible Staff</td>
<td>43%</td>
</tr>
<tr>
<td>Government Leadership</td>
<td>43%</td>
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Limiting Factors

State Laws or Other Policies
- Restrictive energy procurement laws and interconnection mean we are limited by what our utilities will allow
- Up front costs cannot be absorbed with tax restrictions set by the State.
Conclusions

• Areas for Improvement Going Forward
  ❖ Communities need help with measurement, tracking, and standardized reporting of their renewable energy status
  ❖ Communities need assistance sustaining these efforts so that changes in staff, elected officials, or other priorities do not stifle progress

“The EIC concept was/is a brilliant platform to normalize actions statewide and glad is it gaining greater traction again.”
Q & A
Discussion
From Incrementalism to Transformational Change

“Fight for the things that you care about, but do it in a way that will lead others to join you.”

RUTH BADER GINSBURG

LEED Zero ENERGY

LEED Zero CARBON

ZNE Portfolio Plan

Plan Strategies
1. Baseline
2. Proactive Energy Management
3. Planned PV with PPA
4. New Construction is ZNE
5. Community Solar, Small Meters
6. Increase Energy Efficiency
7. Future PV with PPA
8. 2030 Target

Annual Energy Consumption (GWh/Mp-hp)

Energy Goal

1,114 hours of usable sunlight per year
Based on day-to-day analysis of weather patterns

3,019 sq ft available for solar panels
Based on 3D modeling of your roof and nearby trees

$7,000 savings
Estimated net savings for your roof over 20 years

Wrong building? Click another roof to view details.
Case Study: Transformational Change
Bayfield County Gets to 100% Carbon-Free Electricity

100 Percent Carbon-Free Electricity Resolution

Pathway

• 43% local on-site generation
  • Solar installations 174kW
  • Community solar RECs 195kW

• 30% utility electricity mix (56% carbon-free – Xcel)

• 26% purchase green-e power from MN
  • From Xcel, $1600/yr
Transformational Change

Key Features
- Collaboration, partnerships
- Energy Equity – for LMI, elderly, BIPOC communities
- Local projects = local jobs
- Workforce training
- Carbon sequestration = trees, soils, wetlands
Policy Update

• **Governor Evers Executive Order 38-** Creates Office of Sustainability and Clean Energy, sets goal of 100% carbon-free electricity by 2050

• **Executive Order 52-** Creates Task Force on Climate Change
  • Task Force is led by Lt. Governor Mandela Barnes and features state agencies, Tribal leaders, Indigenous knowledge, utilities, energy and social justice organizations; a wide variety of stakeholders were engaged
    • recommendations delivered December 2020
  • Link to Report
    [https://climatechange.wi.gov/Pages/Home.aspx](https://climatechange.wi.gov/Pages/Home.aspx)

• **Key Energy Recommendations:**
  • Create a Green Bank
  • Create an Office of Environmental Justice
  • Pilot Microgrids for Critical Infrastructure (w/storage)
  • Expand funding for Focus on Energy
  • Update state commercial and residential code
  • Support Community Solar
  • State Facilities could lead by example – hit 100% clean energy for state operations by 2025/26

https://www.naacp.org/climate-justice-resources/just-energy/
Grant Programs and Other Opportunities

- **Energy Innovation Grant Program (EIGP)**

- **Critical Infrastructure Microgrid Feasibility Study & Community Resilience Center grant program** (coming in Spring 2021)

- **Wisconsin Inclusive Solar Community Offering (WISCO) project:**
  - OEI will pilot 2 community solar gardens with a special carve out for low-income citizens, deploying innovative financing techniques, with technical assistance from New York’s Solar for All program, the National Association of State Energy Officials, and the National Energy Assistance Directors Association
Questions?

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