MEEA is excited to present the 2020 Midwest Energy Efficiency Spotlight, which showcases the impact energy efficiency (EE) policies and programs have had for Midwestern residents and businesses. The metrics we highlight depict the Midwest EE industry and chronicle the vast benefits EE has had on the region. The following facts and figures cast a spotlight on how the EE industry creates prosperous and resilient local, state and regional economies while driving energy savings to meet current and future energy demand.
The Midwest saved 8.9 million MWh in 2018. The top five states are the regional leaders in energy savings, responsible for 76% of the region’s total 2018 electricity savings.

In 2020, our 13 states will collectively invest almost $1.87 billion dollars in EE to save both natural gas and electricity. EE investment in the Midwest has more than doubled over the past decade and is almost 15 times what it was at the turn of the millennium. This investment signals a regional commitment to energy savings, and demonstrates that utilities, policymakers, regulators and stakeholders recognize EE as a necessary resource to meet energy demand cost-effectively.
The Midwest saved 153 million therms in 2018. The top five states represent 90% of the region’s annual natural gas energy savings. Natural gas efficiency savings and spending are better reported in some states than others, and there is no federal gas EE reporting as with electricity. Enhancing natural gas EE reporting would increase our understanding of this resource for our region.
A quarter of the region’s electric customers live in primarily small cities and rural areas. These areas are served by numerous municipal and cooperative utilities in the Midwest, many of which run strong energy efficiency programs.

Based on annual federal energy reporting for 2018, these are the top 10 electricity-saving municipal, cooperative and public power utilities in the Midwest. For consistency and comparability, some municipalities have been aggregated according to the joint action agencies that serve those member utilities.
Policies designed to drive energy savings vary across the Midwest. Some states use mandatory savings requirements while others utilize long range planning processes. Regardless of the directives to utilities, it’s apparent an active statewide policy collaborative can foster transparency and improve program design. Stakeholder collaboratives can bring together utilities, implementers, evaluators, regulatory staff, consumer advocates, community leaders and other interested parties. Collaboratives facilitate information sharing and aim to reduce the number of contested issues in regulatory commission proceedings.

Illinois has a long-running statewide collaborative, and its website facilitates public participation in the collaborative.

Both Illinois’ and Michigan’s collaboratives are sustained through monthly meetings that allow for continued dialogue and regular updating of resources supporting the implementation of EE programs.

Finally, the Missouri Public Service Commission staff convene quarterly collaborative meetings with agendas jointly developed by stakeholders.
Regular adoption of updated building codes and improved compliance with existing codes is critical to ensuring new commercial and residential buildings are energy efficient. Note the five states achieving the greatest energy savings through building energy code adoption in the residential and commercial sectors – among these states are national leaders in codes adoption.

Nebraska achieved most improved adoption by completing a residential compliance study and holding hearings to adopt the 2018 IECC (most up to date version of the national model energy code), establishing Nebraska’s unamended 2018 IECC as the strongest residential code in the Midwest. This will result in approximately 30% improvement in building energy efficiency.

In 2019, St. Louis, MO updated its residential and commercial code from the 2009 to the 2018 IECC, earning the recognition of most improved adoption for a jurisdiction.

Missouri gets the most improved compliance award due to Ameren Missouri’s efforts to help improve energy code compliance throughout their territory with the implementation of a 3-year energy code support program.
Statewide collaboratives are also valuable in the building energy codes sector. The collaboratives that focus specifically on addressing barriers to building energy code compliance are gaining traction in the Midwest, as indicated by the map. 2019 saw collaboratives form in Michigan and Missouri. We anticipate greater activity in 2020 as collaboratives mature.
Combined heat and power (CHP), or cogeneration, is a system that recovers heat that would otherwise be lost in power generation and uses it to generate heating and/or cooling and power from a single fuel source. CHP can be over 40% more efficient than traditional generation and is more cost-effective than providing heat and electricity separately. In some states, utilities can count CHP toward energy efficiency goals.

Manufacturing, institutional facilities and commercial buildings are taking advantage of CHP to improve the reliability and resiliency of their operations.

According to federal electric generation data, 89.8 million MWh of electricity were generated through CHP in our region in 2018.
Within the residential sector, five Midwest states operate Home Performance with ENERGY STAR (HPwES) programs. HPwES helps homeowners save money on their energy bills, helps the residential real estate market value energy efficiency and allows homebuyers to easily identify energy efficient homes. MEEA contributed to this by implementing the award-winning Illinois Home Performance with ENERGY STAR program from 2009-2019. Over the duration of the program, more than 11,000 ENERGY STAR certificates were issued to Illinois residents. MEEA also facilitates the Midwest Home Performance collaborative, which brings together home performance program staff from across the region to foster discussions and create solutions through quarterly webinars and meetings.
The Building Operator Certification® (BOC) program drives operational efficiency and creates economic opportunities for operators of facilities in the commercial and industrial sectors. The BOC program achieves measurable energy savings by training maintenance technicians and individuals directly responsible for day-to-day building operations. BOC graduates use the tools learned in training to help their facilities save energy, reduce costs and improve the efficiency of their building systems.

Fundamentally, BOC is a job training and workforce development program that adds skill sets to increase building operators’ value in the job market. According to NEEC’s 2012 Career Advancement Survey, 51% of BOC-certified professionals receive a salary increase, 25% are promoted, 16% receive bonuses and 9% acquire a new position. MEEA began running this program in 2003, helping 6,373 building operators achieve certification along the way.
Energy efficiency is proudly made in the Midwest. We have identified nearly 600 manufacturing locations for energy efficient products, as well as company headquarters, across the region. The points on the map represent facilities associated with more than 400 companies and brands. This map represents 52 more locations than our map from last year and reflects the additional DOE Better Plants and EPA Energy Star challenge for industry partners added since last year.
Energy efficiency employs more than half a million people across the Midwest and is rising. The workforce increased by more than 14,000 jobs from 2017 to 2018. This map shows where these jobs are located across the region.

So, what is an EE job? EE jobs span the sectors of blue- and white-collar work, driven primarily by small, local businesses as well as multinational corporations and research institutions. EE jobs can include installation, financing, program evaluation, manufacturing, advocacy and engineering of energy efficiency goods and services, among others.
For some customers, the upfront cost of energy efficiency upgrades is a barrier to energy savings. Financing mechanisms can increase an energy customer’s access to energy efficiency. Property Assessed Clean Energy (PACE) and on-bill are two financing tools used by Midwestern states to expand the adoption of energy efficiency upgrades. PACE administrators offer loans to customers which cover all upfront costs of EE measures. The loan is paid through a special assessment on the property’s tax bill. The on-bill model allows customers to pay for energy efficiency measures over time using a portion of bill savings from those measures. On-bill financing is now allowed in eight Midwestern states; PACE is also allowed in eight states and has funded 377 projects in the region since 2008.
Michigan PACE Market

Presented by:

Bali Kumar, CEO
Lean & Green Michigan, LLC
Agenda

• Michigan PACE market 101
• 2019 Recap
• 2020: Looking Forward
Agenda

• Michigan PACE market 101
  • 2019 Recap
  • 2020: Looking Forward
What is PACE?

Property Assessed Clean Energy (PACE):

a long-term financing mechanism that allows commercial, industrial, multifamily, non-profit, and agricultural property owners to make their buildings more energy efficient without incurring upfront costs.
The PACE Solution

“Property Assessed” - the energy project is repaid through a special assessment on the property tax.

**Result:** no money down and *positive cash flow*
Example

<table>
<thead>
<tr>
<th>Project Illustration</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency project cost</td>
<td>$500,000</td>
</tr>
<tr>
<td>Annual energy and maintenance savings</td>
<td>$70,000</td>
</tr>
<tr>
<td>Simple payback</td>
<td>$500,000/$70,000=7.14</td>
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</table>
Short-term bank loan payback

<table>
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<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<td>50,000</td>
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<tr>
<td>Maintenance savings</td>
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<td>20,000</td>
<td>20,000</td>
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<tr>
<td>Total savings</td>
<td>70,000</td>
<td>70,000</td>
<td>70,000</td>
<td>70,000</td>
<td>70,000</td>
<td>70,000</td>
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<tr>
<td>Debt payments</td>
<td>87,654</td>
<td>87,654</td>
<td>87,654</td>
<td>87,654</td>
<td>87,654</td>
<td>87,654</td>
<td>87,654</td>
</tr>
<tr>
<td>Net savings</td>
<td>-17,654</td>
<td>-17,654</td>
<td>-17,654</td>
<td>-17,654</td>
<td>-17,654</td>
<td>-17,654</td>
<td>-17,654</td>
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<tr>
<td>Cum. net savings</td>
<td>-17,654</td>
<td>-35,308</td>
<td>-52,962</td>
<td>-70,616</td>
<td>-88,270</td>
<td>-105,924</td>
<td>-123,578</td>
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</table>
Long-term PACE assessment payback

<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
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<td>50,000</td>
<td>50,000</td>
<td>50,000</td>
<td>50,000</td>
<td>50,000</td>
</tr>
<tr>
<td>Maintenance savings</td>
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<td>20,000</td>
<td>20,000</td>
<td>20,000</td>
<td>20,000</td>
<td>20,000</td>
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<tr>
<td>Total savings</td>
<td>70,000</td>
<td>70,000</td>
<td>70,000</td>
<td>70,000</td>
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<td>42,984</td>
<td>42,984</td>
<td>42,984</td>
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<tr>
<td><strong>Net savings</strong></td>
<td>27,016</td>
<td>27,016</td>
<td>27,016</td>
<td>27,016</td>
<td>27,016</td>
<td>27,016</td>
<td>27,016</td>
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<tr>
<td><strong>Cum. net savings</strong></td>
<td>27,016</td>
<td>54,032</td>
<td>81,048</td>
<td>108,064</td>
<td>135,080</td>
<td>162,096</td>
<td>189,112</td>
</tr>
</tbody>
</table>
Lean & Green Michigan

LENDERS

PROPERTY OWNERS

CONTRACTORS
Map of Participating Jurisdictions

Counties
- Antrim
- Bay
- Calhoun
- Delta
- Eaton
- Emmet
- Genesee
- Grand Traverse
- Gratiot
- Houghton
- Huron
- Ingham
- Jackson
- Kalamazoo
- Leelanau
- Macomb
- Marquette
- Midland
- Montcalm
- Oakland
- Otsego
- Saginaw
- St. Clair
- Washtenaw
- Wayne

Cities
- Bloomfield Twp.
- Cascade Twp.
- Ferndale
- Grand Rapids
- Hartland Twp.
- Jackson
- Kentwood
- Orion Twp.
- Pleasant Ridge
- Pontiac
- Rochester Hills
- Royal Oak
- Southfield
- Troy
- Wyoming
Local governments have joined Lean & Green Michigan.

$37M worth of C-PACE projects have been completed in Michigan.

71% of Michigan’s population lives in Lean & Green jurisdictions.
National C-PACE Market

- More than 2,000 commercial projects, over $1.1BN financed
- Over 16,500 jobs created
Agenda

• Michigan PACE market 101
• 2019 Recap
• 2020: Looking Forward
LAGM market updates

24
Total Number of PACE Projects

Over $37 million
Invested in PACE Projects

293,000,000
Total kWh of Electricity Savings

207,163
Total Tons of CO2 Savings

181,391,000
Total Gallons of Water Saved

Over $65 million
Total Savings

Over 540
Number of Jobs Created
LAGM market updates

2019 New Local Governments

- Jackson County
- Emmet County
- Cascade Township
- City of Hillsdale
- Bath Township
- Bedford Township
LAGM market updates

2019 PACE Summits

• Detroit (with IBEW-NECA)

• Grand Rapids (West Michigan)
LAGM market updates

“PACE Express”

- PACE projects $250,000 and below
- SIR and ESG not required
- Cheaper, faster, easier
First PACE Express project

Storer Camps
YMCA of Greater Toledo finances with PACE Express

Project Quick Stats:
PACE district: Jackson County
Property owner: YMCA of Greater Toledo
PACE contractor: GEM Energy
PACE lender: Greenworks Lending, LLC
Amount financed: $153,270
Project term: 20 years
Total Energy Savings: $111,480*
Energy conservation measures:
- Multiple furnace upgrades
- Digital thermostats
- Boiler upgrade
- LED lighting
- Domestic hot water

Impact: The YMCA Storer Camps will result in a reduction in CO2 emissions equivalent to eliminating the energy use of 74.7 homes for each of the 20 years of the project.

*Under PACE Express, savings is not required to exceed investment.

Overview

Sitting on approximately 1,300 acres of beautiful Irish Hills region of southeast Michigan, the YMCA Storer Camps PACE project is part of a larger energy efficiency initiative the Greater Toledo YMCA has in the works, in which five other YMCA properties in northwest Ohio will be utilizing PACE.

To finance energy improvements at Storer Camps, the property owner utilized Lean & Michigan’s PACE Express program — a new 2019 program that is designed to help finance smaller PACE projects (at and below $250,000 in PACE financing). The YMCA Storer Camp marks Lean & Green Michigan’s first PACE Express project!

The YMCA Storer Camps PACE project also marks the first PACE project to close in Jackson County, and the first Michigan PACE project for contractor GEM Energy.

The YMCA Storer Camps serves as an excellent example for how smaller PACE Express projects can finance significant energy efficiency upgrades through PACE Express.
First House of Worship

LEAN & GREEN MICHIGAN CASE STUDY: Detroit Unity Temple  Dec. 2019

Detroit Unity Temple
Michigan’s first House of Worship PACE project

Project Quick Stats:
PACE district: Wayne County
Property owner: The Detroit Unity Association
PACE contractors: Green Portfolio Solutions, Wright Energy Partners
PACE lender: Greenworks Lending, LLC
Amount financed: $250,000
Project term: 20 years
Total energy savings: $527,825*
Energy conservation measures:
- Lighting improvements
- Insulation
- Building envelope
- Roof repair

Overview
Located in the heart of Detroit’s Palmer Park, the historic Detroit Unity Temple is the first house of worship to take advantage of PACE financing! This project is also the first PACE Express project completed in Wayne County.

Green Portfolio Solutions helped Detroit Unity Temple to receive $250,000 - the maximum amount of financing under the PACE Express program.

Wright Energy Partners will complete the retrofit. The project bundles important roof repair with lighting, insulation, and building envelope improvements. Wright Energy Partners curated a cash-flow positive PACE project for Detroit Unity Temple that will result in long-term utility savings for the Detroit Unity Association, and a more comfortable building for all who visit and worship at Detroit Unity Temple.
LAGM market updates

New construction policy

• 2019 Policy – based on Wisconsin and grandfathering prior code \(\rightarrow\) transitioning to new code

• 2020 Policy – finance measures that exceed code
Cambria Hotel project in Detroit receives $6.8 million in PACE energy efficiency loan funding

• Cambria Hotel in Detroit is being redeveloped using special energy efficiency funding stream
• About $6.8 million of the $49 million total development cost will come through PACE program
• Cambria is expected to open in 2020
Agenda

• Michigan PACE market 101
• 2019 Recap
• 2020: Looking Forward
2020 – The Next Frontier

- New Construction will take off
- Cannabis
- Offices in Lansing and Grand Rapids
- PACE Summits in Ann Arbor and Northern MI
- Closer partnerships – incl. MEDC, MEDA, ULI, etc.
- PACE → Real Estate Finance, Economic Development
Contact

www.leanandgreenmi.com

Bali Kumar, 313-444-1474
bali@leanandgreenmi.com

info@leanandgreenmi.com for general inquiries
PACE was authorized by the Missouri State Legislature in 2010

Legislation spells out
> requirements for acceptable projects
> assessment process
> designation of clean energy districts as political subdivisions.
FOUR ACTIVE MISSOURI PACE PROGRAMS

Clean Energy Development Boards (CEDB) are authorized by Missouri law and serve as the local governing boards for Missouri PACE programs.

There are four active CEDBs:

- **Show Me PACE Clean Energy District – 55 Communities (2015)**
- **Missouri Energy Savings Program (STL County) (2016)**
- **Missouri Clean Energy District – 80 Communities (2010)**
- **Set the PACE St. Louis (City of St. Louis) (2013)**
$5.93 Billion Total National PACE Deal Flow

C-PACE: $756mm
-~1790 projects
-~20 active states

R-PACE: $5,172mm
-~220,000 projects
-3 states: CA, MO, FL

□ Residential PACE □ Commercial PACE
Economic Impact 2015-2019

- **25** Commercial Show Me PACE projects funded
- **$47 million** In commercial PACE financing
- **$52 million** Total energy savings
- **$225 million** Total economic impact

The Missouri Energy Initiative established Show Me PACE in July, 2015. Fifty-five municipalities across Missouri have joined Show Me PACE since then.
Show Me PACE Approved Commercial Projects
$47 million in C-PACE financing

Greater Kansas City Area

Hy-Vee Arena $6.3 million
Building Type: Arena
Measures: Lighting, HVAC
Lender: Twain Financial Partners

Interstate Building $2.6 million
Building Type: Hotel
Measures: Lighting, HVAC, envelope & domestic hot water
Lender: Twain Financial Partners

Brookfield Building $2.4 million
Building Type: Hotel & Apartments
Measures: Lighting, HVAC, Roof, Windows
Lender: CleanFund Commercial PACE

Hotel Indigo $1.7 million
Building Type: Hotel
Measures: Lighting, HVAC, Roof, Windows
Lender: Twain Financial Partners

Beacon Hill $1.4 million
Building Type: Hotel
Measures: Lighting, HVAC
Lender: Twain Financial Partners

Shopping Center $1.4 million
Building Type: Retail
Measures: Lighting, HVAC, Roof
Lender: Petros PACE Financing

LSP Walnut $622,512
Building Type: Hotel & Apartments
Measures: Lighting, HVAC, Roof, Windows
Lender: CleanFund Commercial PACE

Greater St. Louis Area

Cambridge Engineering $610,000
Building Type: Manufacturing
Measures: Lighting, AC, roof
Lender: PACE Equity

7208 Weil St., Shrewsbury $149,000
Building Type: Manufacturing
Measures: Lighting, HVAC Controls
Lender: PACE Equity

2458 Old Dorsett, Maryland Heights $133,000
Building Type: Commercial
Measures: Lighting, HVAC Controls
Lender: PACE Equity

Mid-Missouri

Columbia Independent School $325,000
Building Type: School
Measures: Solar, Lighting, HVAC
Lender: CleanFund Commercial PACE

Broadway Hotel, Columbia $3.5 million
Building Type: Hotel
Measures: Lighting, HVAC
Lender: Stonehill Strategic Partners

Fairfield Hotel, Jefferson City $465,219
Building Type: Hotel
Measures: Lighting, HVAC, Signage
Lender: Petros PACE Financing
SMP PROJECTS CONTINUED

**Flashcube** $3.7 million
Building Type: Mixed use
Measures: Lighting, Roof, Wall, Windows, Energy Recovery
Lender: PACE Equity

**Shankman/Michelson** $3.3 million
Building Type: Mixed use
Measures: HVAC, Lighting, Electrical Systems, Building Envelope
Lender: Twain Community Partners

**West Bottoms Flats** $2.9 million
Building Type: Mixed use
Measures: Lighting,
Lender: Twain Community Partners

**KC Hyatt House** $8 million
Building Type: Mixed use
Measures: HVAC, Lighting, Roof, Windows
Lender: Petros PACE Financing

**MoonRidge Foods** $4,000,000
Building Type: Agricultural
Measures: Solar, Lighting, HVAC,
Custom measures
Lender: Twain Financial Partners

**Hammerspace** $158,824
Building Type: Manufacturing
Measures: Solar
Lender: Dividend

**Comfort Inn** $1,141,571
Building Type: Hotel
Measures: Lighting, HVAC,
Insulation
Lender: Petros
$118 Million Total Missouri PACE Deal Flow

C-PACE: $84mm
~40 projects

R-PACE: $34mm
~2500 projects
Residential PACE in Missouri

- 1st residential occurred in 2016 (3 years following first CPACE closing)
- Bankers and Collectors have expressed concern with Residential PACE
  - Primary lien position
  - County Collector collecting assessments
  - Oversight – consumer protection
- Resulted in legislation (looking like California law)
  - State oversight, increased costs
National Residential PACE

- 4 to 5 providers (2 majors)
- California was largest volume of RPACE
  - 2018 legislation resulted in 50% reduction in volume
- National providers seeking other opportunities
  - Ohio, NY, NJ and Chicago
Show Me PACE

MEI is administrator of Show Me PACE

WE ARE

MEI

Missouri Energy Initiative

Not Listed: Governor Bob Holden, Congressman Kenny Hulshof, Steve Mahfood, Jim Fischer, Ron Wood

Josh Campbell – Exec. Dir. MEI – Administrator Show Me PACE
Josh@moenergy.org | 573-616-1046 | www.moenergy.org |
www.showmepace.org

www.ShowMePACE.org
The Midwest Energy Efficiency Spotlight shares the impacts associated with strong energy efficiency practices across the region, from the impressive energy savings to job creation and empowering customers to save money on their energy bills. MEEA will continue to shine a spotlight on the successes across the Midwest.

Learn about our methodology and sources here. Questions? Contact MEEA Policy Director Nick Dreher at ndreher@mwalliance.org.