



## What Better Energy Management Can Do For You

Don Johns, President of EnStar Energy



## First Things First: Manage Your Utility Bills

- A Manufacturer Should Reduce Utility Bills Before Doing Anything Else.
- Install Energy Efficiency Measures When Utility Costs are Optimal
- Managing Utility Costs will likely present the Greatest Cost-Benefits Available.
- The Focus Should be on Saving Dollars not BTUs.



## Every Manufacturer Needs an Energy Manager

- Maybe not a Full Time One, but It Must be a Regular Part of His or Her Duties.
- Your Energy Manager Must Understand Your Manufacturing Process.
- Your Energy Manager Needs a Budget to Manage Around.
- Your Energy Manager Must See Every Utility Bill.
- Your Energy Manager Must be Empowered to Implement Decisions.



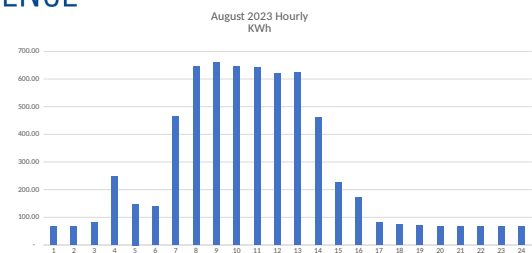
## Get your Facility on the Right Utility Rate

- It has been EnStar's Experience that as Many as 25% of MMA members are on the Wrong Rate.
- Utilities Offer Multiple Rate Tariffs Designed to Match a Customers Usage Patterns.
- Your Plant's Operating Characteristics Determine your Correct Utility Rate.
- Utilities Advise Customers regarding the Appropriate Rate, but only when Service Begins. After that You are on Your Own.
- Changing Operations can Cause your Facility to be Served on the Wrong Rate.



## Capacity Factor Determines the Right Rate

- Capacity Factor is the Ratio of Average kW per Hour to Monthly Peak kW Demand.
- Below 35% kWh Only Based Rates are Best.
- 35%-60% Intermediate Demand Rates are Generally Cost Effective.
- Above 60%, Primary Demand Rates with Interval Metering and On/Off Peak kWh Rates are Best.
- You Can Only Switch Rates Once Every 12 Months.
- Plant Operation Determines Monthly Peak Demand and can be Co



- Is Your bill Higher Than Budgeted?
- Is Your Peak Demand Increasing?
- Is Kilowatt Hour Usage in Line with Expected Use for your Level of Production?
- Are You Paying a Power Factor Penalty?
- Are You About to Set a New Maximum Demand?
- Are You Paying the Full 6% Sales Tax Rate?



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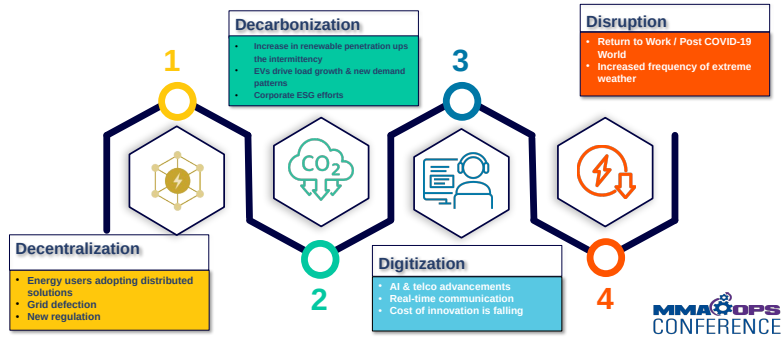
**Who is CPower?**

We unlock the full value of DERs to strengthen the grid when and where **reliable, dispatchable resources are needed most.**

<p><b>~6.7 GW</b> at 27,000 sites across the US</p> <p>100s of DER, channel and technology partners, customers across all sectors</p>	<p><b>\$1B+</b> Paid out to customers since 2015</p> <p>95% near perfect customer retention</p>	<p><b>375,000+</b> Customer CO2 Emissions Avoided in a Single Year</p> <p>Equivalent to not burning <b>420,057,500+</b> lbs. of coal</p>
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**The Grid's Growing Need for Flexibility**



**DERs Can Provide the Grid with Flexibility**

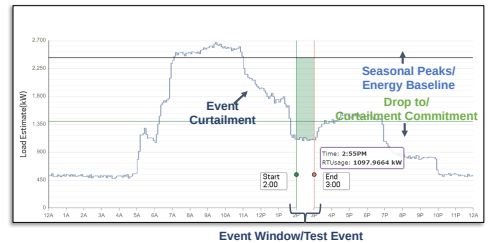
Distributed Energy Resources (DERs) are any assets that consume, generate or store electricity, and that can respond to a signal.

Power Generator	Utility Grid	Grid Operator	Demand Response Provider	Energy Users
Supply grid with electricity and meet demand for power most of the time.	Transmits electricity from generators to customers, can be stressed by severe weather and other events.	Ensures grid supply/demand always balanced, pays incentives to consumers for enrolling and shedding load.	Facilitates and makes demand response easy for electric customers.	Receives incentives for participating in demand response and supporting a reliable and sustainable grid.



**Demand Response 101**

- When DR is needed, grid operators call **events**.
- **Any DER** that can deploy energy when called on can **generally participate**.
- Participants are **guaranteed a fixed payment per kW** for being ready to help the grid.
- Following an event, **participants are rewarded** based on the amount of energy reduction achieved.



## Types of Demand Response

**Capacity** – Resources that can be available to be dispatched under peak conditions or when there is generation scarcity. Market is designed to ensure there is always enough capacity to meet demand.

**Economic** – Offering to reduce demand or inject energy when prices are high. DER offers are compared to generation supply offers, and clearing the market is a contract to perform.

**Ancillary Services** – Resources paid to be available to help balance the system as demand changes and generators ramp up/down. Function like a vehicle's shock absorber to keep grid stable.



## What Opportunities Are There For Michigan Manufacturers?

Characteristics	Load Modifying Resource	Energy Efficiency	Solar Install Demand	Demand Response Resource Economic	Demand Response Resource Spinning Reserve	Frequency Regulation
Notification Lead Time	LONGER 2 – 6 hrs	No curtailment action required	No curtailment action required	LONGER Day-Ahead / Day-Of	SHORTER 10 – 30 min	SHORTER: 2 second Signal
Event Duration	LONGER 2 – 4 hrs	No curtailment action required	No curtailment action required	VARIABLE Customer price trigger choice	SHORTER < or = 45 min to several hours	SHORTER: 1-5 Min +/- swing
Event Frequency (annual)	Total of 16 Events can be called annually	No curtailment action required	No curtailment action required	VARIABLE Customer price trigger choice	MORE > 12	CONSTANT in Hours APPROVED
Performance Obligation	Mandatory	Measurement & Verification	Annual Measurement & Verification	VARIABLE Customer price trigger choice	VARIABLE Customer participation choice	Variable Customer participation choice

CONFERENCE

## Opportunities in Stacking Programs

Curtailed Programs	Site Capacity Peak (kW)	Seasonal Drop (kW)	# of Events	Duration (hrs.)	Estimate Annual Payment
LMR	2,000	1,000	1-2	4-8	\$25,000
Energy Efficiency*	1,000	-	-	-	\$45,000
Solar Incentive	1,000	-	-	-	\$7,500
DRR – Economic	2,000	1,000	100	2	\$15,000
DRR – Spinning Reserve	2,000	1,000	12	.75	\$20,000
Frequency Regulation	2,000	1,000	Continuous	-	\$75,000



## Full Range of Benefits From Participating



## Energy Efficiency as a Grid Resource



Energy Efficiency is also a capacity resource to the electric grid.



Thank you!



Visit CPower at the Enstar Booth!



Onsite Energy Technical Assistance Partnerships  
**Ben Campbell**  
 March 2024

## Onsite Energy Program

The U.S. Department of Energy's (DOE) Onsite Energy Program provides technical assistance, market analysis, and best practices to help industrial facilities and other large energy users increase the adoption of onsite clean energy technologies.

**battery storage | combined heat and power | district energy | geothermal | industrial heat pumps | renewable fuels | solar PV | solar thermal | thermal storage | wind**



## Agenda



- Introduction to the U.S. Department of Energy Onsite Energy Technical Assistance Partnership Program
- U.S. Department of Energy "Industrial Decarbonization Roadmap"
- Onsite energy technology applications and interactions in microgrids
- Inflation Reduction Act tax credits



## Onsite Energy Technical Assistance Partnerships (TAPs)

DOE's 10 regional Onsite Energy TAPs provide technical assistance to end users and other stakeholders about technology options for achieving clean energy objectives. Key services include:



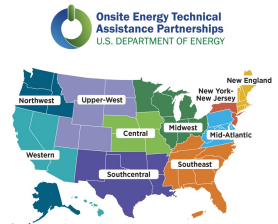
**Technical Assistance:** Screen sites for opportunities to implement onsite energy technologies and provide advanced services to maximize economic impact and reduce risk from initial screening to installation to operation and maintenance.



**End-User Engagement:** Partner with organizations representing industrial and other large energy users to advance onsite energy as a cost-effective way to transition to a clean energy economy.



**Stakeholder Engagement:** Engage with strategic stakeholders, including utilities and policymakers, to identify and reduce barriers to onsite energy through fact-based, unbiased education.



<https://betterbuildingssolutioncenter.energy.gov/onsite-energy/taps>

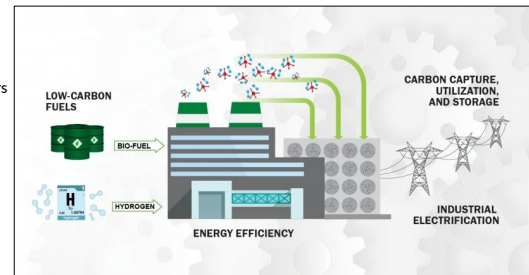
## U.S. Department of Energy's (DOE) Onsite Energy Technical Assistance Partnerships (TAPs)

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## Strategies for Decarbonizing U.S. Industries

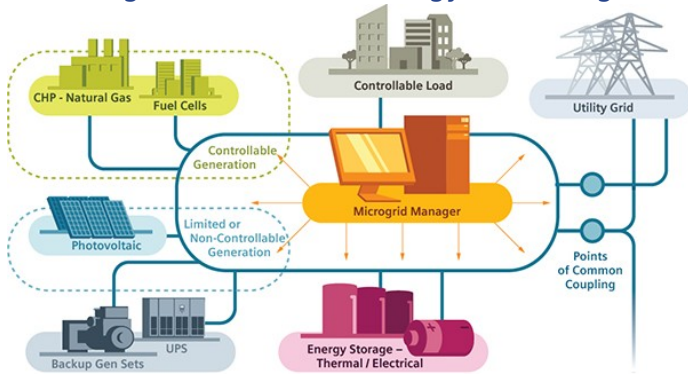
- The DOE Industrial Decarbonization Roadmap identifies 4 key technological pillars to significantly reduce emissions for these five subsectors studied. With the application of alternative approaches, 100% of annual CO2 emissions could be mitigated.

1. Energy Efficiency
2. Industrial Electrification
3. Low-Carbon Fuels, Feedstocks, and Energy Sources (LCFFES)
4. Carbon Capture, Utilization, and Storage (CCUS)



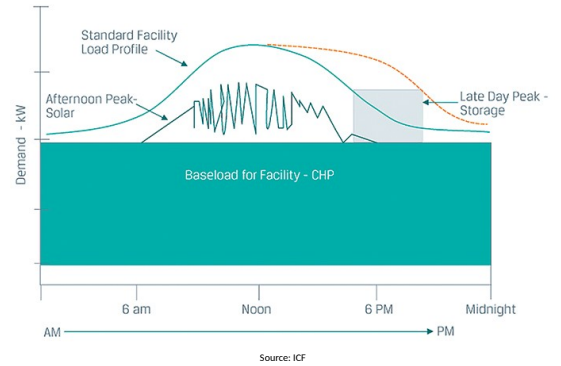
Source: <https://www.energy.gov/eere/industrial-decarbonization-roadmap>

## Microgrids and Onsite Energy Technologies



Source: (Center for Climate and Energy Solutions 2020)

## Example of Multiple Onsite Energy Technology Integration



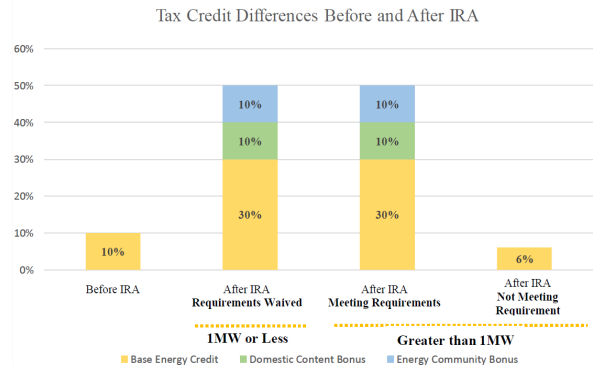
Source: ICF

## Onsite Energy Technologies Work Better Together

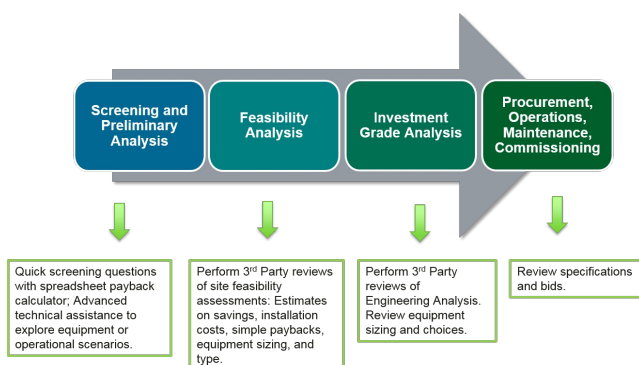
- CHP can work together with PV, wind, energy storage, and other technologies in resilient microgrids with diverse resources and multiple value streams
  - Active management system with programmable logic controllers to strategically utilize all microgrid resources
- Compared to a single DER technology, a microgrid with multiple DERs can provide:
  - Stronger resilience
  - Higher operational flexibility
  - More use cases
- **For utilities,** microgrids can offer locational value, increased grid reliability, power quality, ancillary services, and demand response functionality
- **For end users,** microgrids provide reliable and resilient power with the potential for energy and emissions savings

## Inflation Reduction Act and Tax Credits

Source: Northeast Clean Heat and Power Initiative (NECHPI)




## Onsite Energy TAP Role: Technical Assistance





**Onsite Energy Technical Assistance Partnerships**  
U.S. DEPARTMENT OF ENERGY  
Midwest

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Mike Johnston, MMA  
 Executive Vice President Government  
 Affairs  
 And Workforce Development

**What Better Energy  
 Management Can Do  
 for You Impact of  
 Michigan's 2023 Energy  
 Legislation**



**Clean and Renewable Energy and Energy Waste  
 Reduction Act -  
 PA 235 of 2023 - - SB 271 (Geiss)**

A Clear Threat to Michigan's Economic Future



**MMA Opposed**



**MMA Opposed**

- Mandates vs Integrated Resource Plan
- Balance Price and Reliability
- Mandates Cause Uncertainty and Higher Costs
- Attorney General and Citizens Can Bring Civil Suits

The Whole Business Community Opposed



**MMA Opposed**



**Renewable Energy Mandate**

- Other States Recruit From Michigan
- MMA Member Example
  - \$250,000/ month - \$3 million/year
  - Missouri Called - Save \$600,000/year

- 15% by 2029
- 50% by 2030-2034
- 60% by 2035 and beyond
- Battery Storage - 2,500 mw by 2029

**MMA OPS**  
CONFERENCE **Renewable Energy Mandate**

“...means a resource that naturally replenishes over a human, not a geological, time frame and that is ultimately derived from solar power, water power, or wind power.”

**MMA OPS**  
CONFERENCE **Renewable Energy Mandate**

Includes:

- Biomass, landfill gas, methane digester, grandfathered biomass including trees and wood (sustainably managed forest), solar, wind, kinetic water, geothermal, landfill gas, municipal wastewater treatment sludge, food waste, animal manure

**MMA OPS**  
CONFERENCE **Renewable Energy Mandate**

Does Not Include:

- petroleum
- nuclear
- natural gas
- industrial waste
- post-use polymers
- tires
- tire-derived fuel
- plastic or coal
- hydroelectric pump storage
- existing municipal incinerator

**MMA OPS**  
CONFERENCE **Clean Energy Mandate**

- 80% by 2035-2039
- 100% by 2040 and beyond

**MMA OPS**  
CONFERENCE **Clean Energy Mandate**

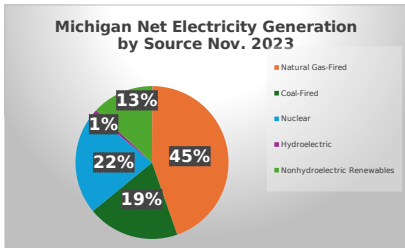
Includes:

- renewable energy and nuclear
- natural gas with carbon capture (90% effective)
- energy storage (battery)

**MMA OPS**  
CONFERENCE **Clean Energy Mandate**

- Shifted Zoning Authority to the Public Service Commission

MMA Opposed



Q&A