THE FIRST STEPS TOWARD RENEWABLE ENERGY

CHRIS SEITZ– FOCUS ON ENERGY®

MARCH 4, 2021

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Partnering with Wisconsin utilities

Introduction

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- Chris Seitz, Energy Advisor
- Certified Energy Auditor
- Certified Energy Manager
- Areas of expertise
  - K-12 school facilities
  - Energy analysis and project payback
  - Customer relationship management

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What does Focus on Energy do?

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- Assists Wisconsin residents and businesses in identifying and implementing energy efficiency projects
- Offers unbiased third-party information and technical assistance to participating utilities' electric and/or natural gas customers
- Provides financial incentives for energy-saving projects that would not otherwise occur

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Benefits of Focus on Energy

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Expert Energy Advisor support

Energy team coordination

Training facility staff

Improving return on investment

Supporting student/ consumer energy education

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Economic impact

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- For every $1.00 invested, Focus on Energy creates more than $5.00 in benefits for the state of Wisconsin
- A study of statewide energy efficiency programs by the Berkeley Lab found Focus on Energy runs the most-cost-effective in the nation
- Visit **focusonenergy.com/evaluation-reports** to view the full report

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Agenda

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- Benefits of solar power in schools
- Preparing for renewable energy
- Solar PV starting steps
- Success stories: Merton Community School District
- Potential energy-saving opportunities
- Resources and technical assistance

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Benefits of solar power in schools

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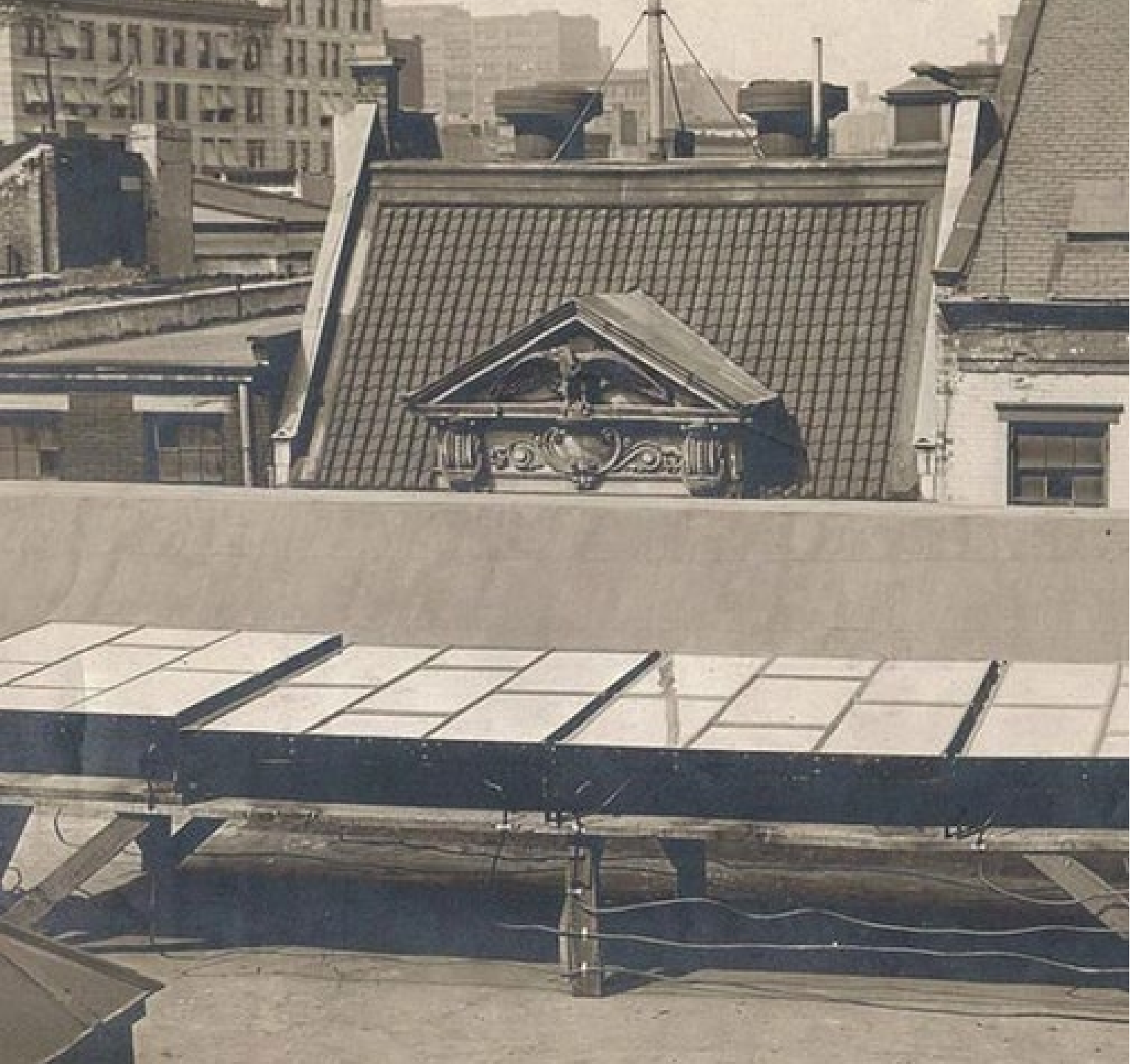

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First U.S. solar panel to produce energy

Photo: Smithsonian Magazine

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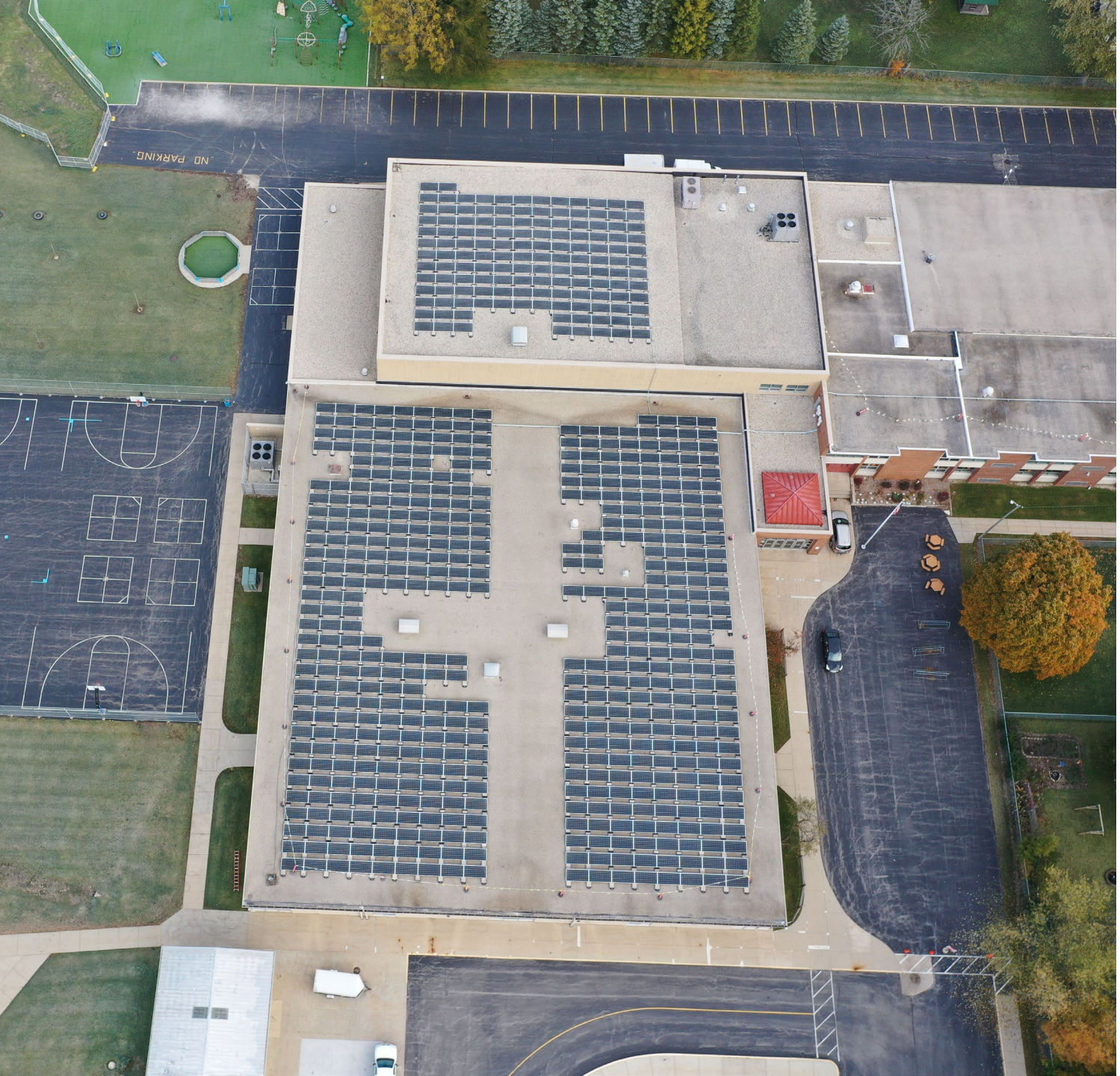

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School district solar PV installation

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Offset energy bills

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- Over **7,300 schools in the U.S.** have solar installations
  - Wisconsin ranks **#12** in the nation with 148 schools with solar (The Solar Foundation)
- Dramatic decline in costs make solar options widely accessible
  - Average cost of solar panels per watt in Wisconsin is **$2.83/watt** (Solar-Estimate)

Photo: WPR

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School energy use

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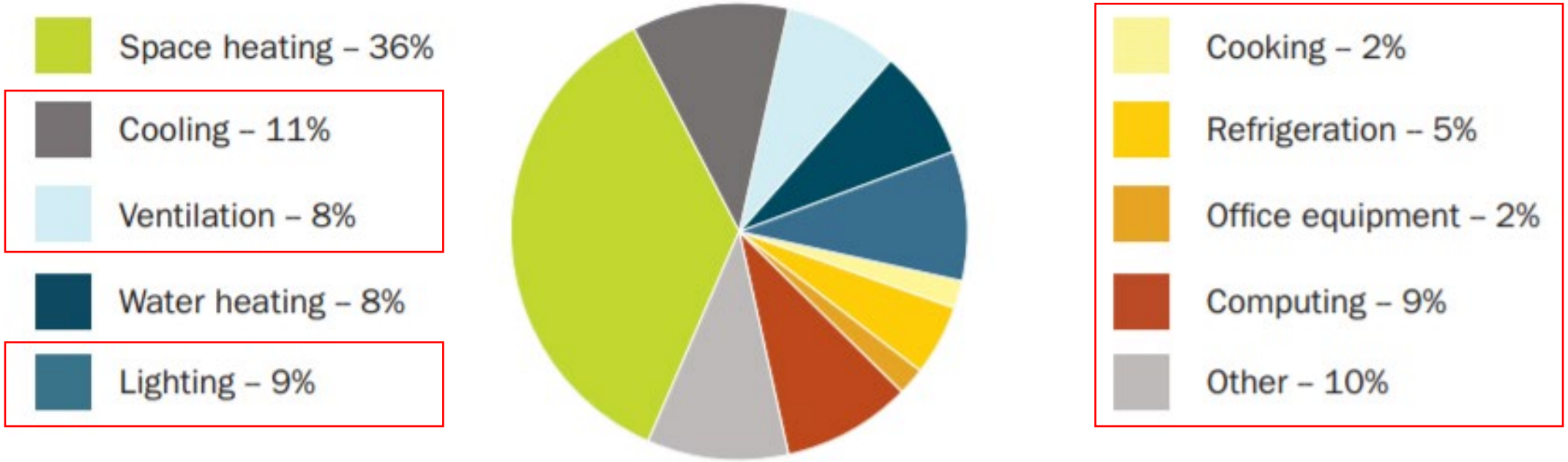

Commercial Buildings Energy Consumption Survey (CBECS), 2016

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Ideal candidate

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- Schools include underutilized spaces
  - Facility structures offer a large, flat area ideal for solar rooftop systems
  - Parking lots have space for photovoltaic canopies to capture the sun
  - Vacant land provides an opportunity for a solar farm to maximize energy output

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Types of solar options

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- Roof-mount
  - Common option requiring minimal maintenance
- Pole-mount
  - Option when roof space is limited
  - Requires adequate land space
- Ground-mount
  - Large areas of land with ample sun exposure
  - Generate more power than roof system

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Enhance educational opportunities

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- Provides an on-site learning experience
- Allows students to learn about real-world energy issues
- Gives students the ability to track data through monitoring systems
- Motivate students to explore careers in energy conservation and sustainability

Photo: Macsteller-Energy

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Preparing for renewable energy

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Benchmarking

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- Monitor your energy usage by benchmarking electricity and natural gas using ENERGY STAR®
- What is your energy profile?
  - Spring
  - Summer
  - Fall

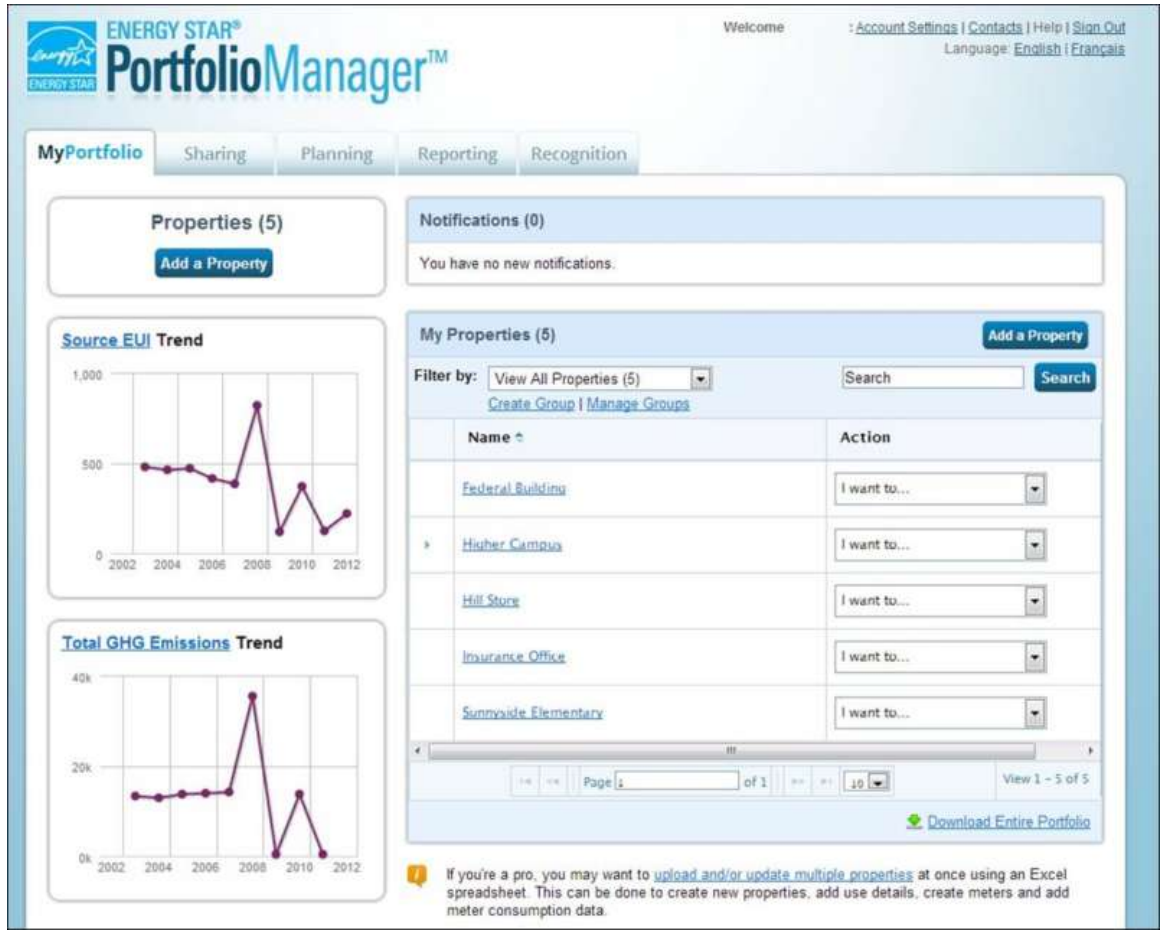

Photo: ENERGY STAR®

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Submetering

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- Start with metering main utility meters
  - Electric meter pulses provide 15-minute demand data
  - When are peaks happening?
- What should be submetered?
  - Chillers
  - Cooling equipment for large spaces like gymnasiums
  - Kitchen equipment

Photo: Setra Systems

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Pursue energy efficiency upgrades first

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- Upgrade facilities to be energy efficient to reduce the size of the renewable energy system
- Improve new and existing buildings in three primary areas
  - Lighting systems and controls
  - Mechanical systems (heating, cooling, ventilating and water heating equipment) including operation and maintenance
  - Building envelope (walls, floor and roof)

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Utilize your Energy Advisor

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- Invite your Energy Advisor to facility planning meetings
  - Provide expertise and advice
  - Strategize and brainstorm solutions
  - Assess building needs

Photo: Freepik

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Solar PV starting steps

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Seek solar energy consulting

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- Explore solar energy options with a trained professional
- Evaluate
  - Utility rate structure
  - Net-metering agreements
  - Interconnection requirements
- Utilize this information to determine the size of your renewable energy system
  - Cost/benefit analysis
  - Additional ROI calculations

Photo: Proche

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Realize available funding mechanisms

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- Contact your local utility for renewable energy programs and incentives they offer
- Research available incentive funding from Focus on Energy and State Energy Office Funds
- Explore fundraising opportunities and private donations

Photo: Freepik

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Find a solar PV contractor

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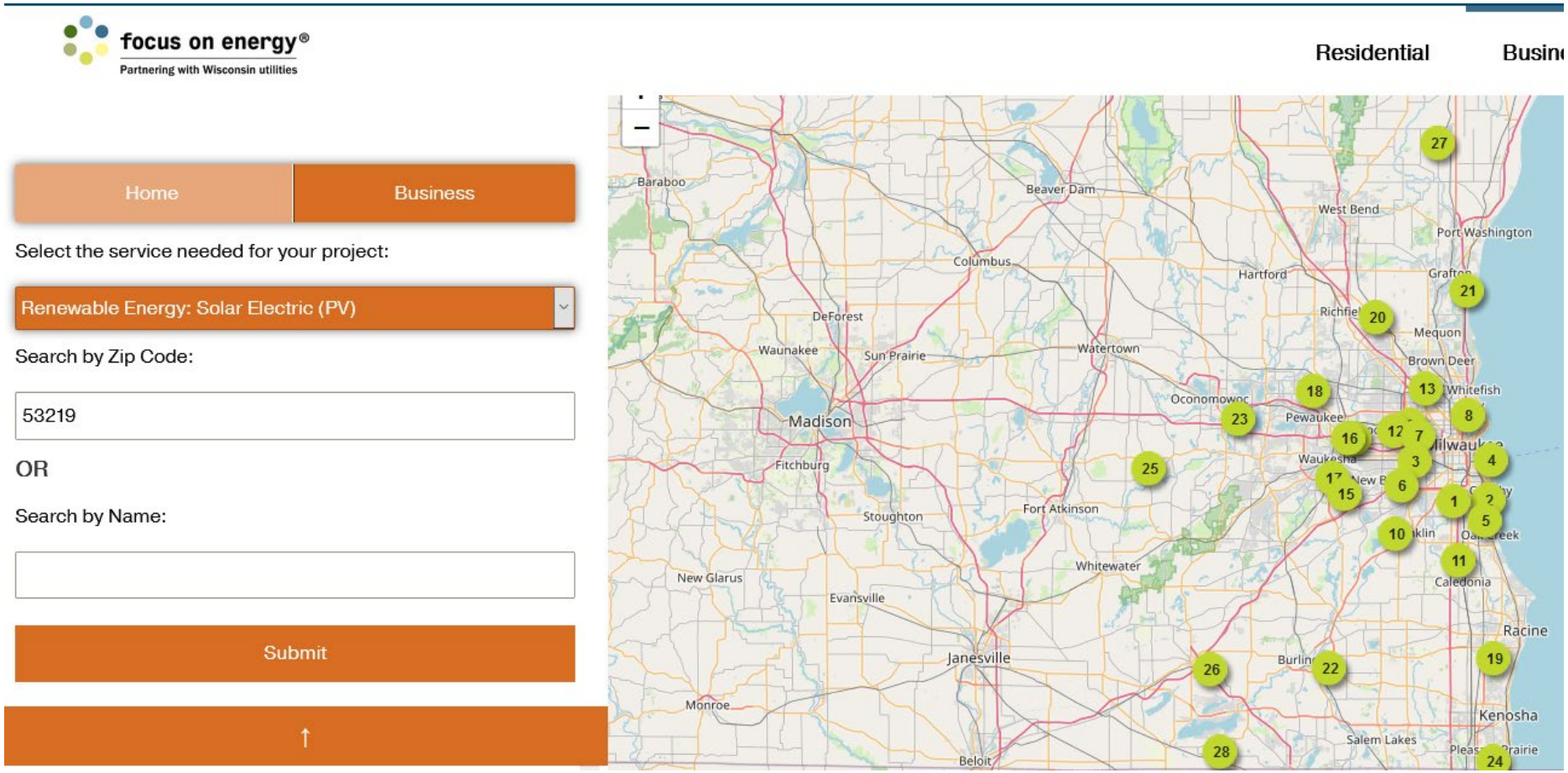

- Visit **focusonenergy.com/trade-ally/find**

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Pro tips

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- Large scale battery storage is available but expensive
  - Prices will go down
- Systems can be sized to sell energy back to the utility
- Determine buyback rate for your utility
  - Utility buyback rates can be low
  - Average commercial rate in Wisconsin is **$0.11/kWh**

Photo: Energy Central

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Solar PV cost per watt history

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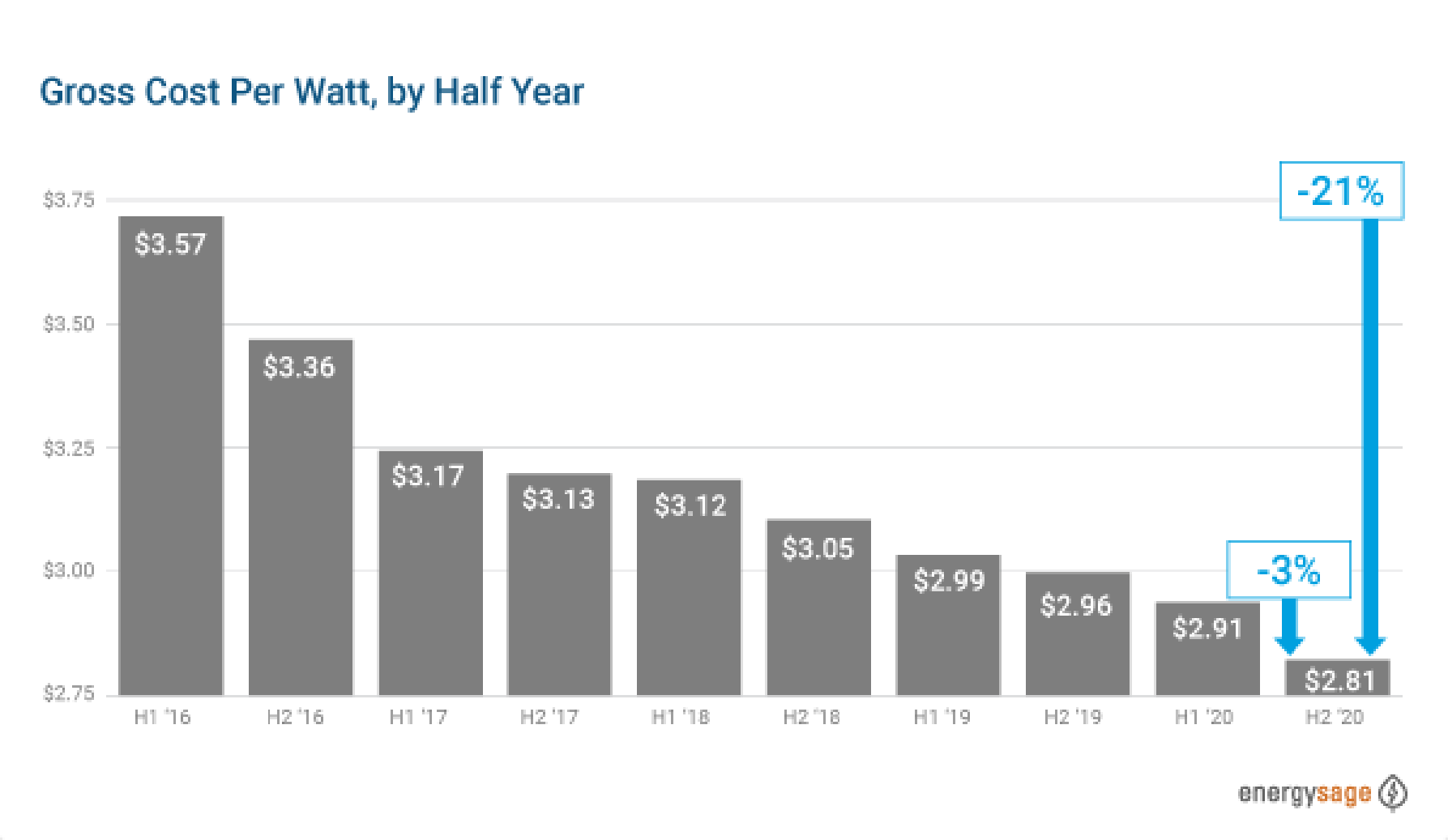

Photo: EnergySage

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Prescriptive incentives

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- Incentives available as of February 3, 2021
- Steps to participate
  1. Verify your utility participates
  2. Check status of available incentives
  3. Find a Trade Ally and ensure solar system meets requirements
  4. Complete online reservation application
  5. Complete installation
  6. Fill out incentive application

Multifamily and non-Residential Incentives – 0 to 100 kW	
Total Budget	$1,000,000
Paid/Entered/Reserved	$290,436
Remaining	$709,564

Multifamily and non-Residential Incentives – 100 to 300 kW	
Total Budget	$1,000,000
Paid/Entered/Reserved	$507,297
Remaining	$492,703

Multifamily and non-Residential Incentives – 300+ kW	
Total Budget	$1,000,000
Paid/Entered/Reserved	$233,121
Remaining	$766,879

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Success stories:
Merton Community School District

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HVAC control system upgrade

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Background

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- In 2015 Merton Community SD wanted to determine the energy savings associated with updating its HVAC controls system
- Existing constant volume system was operating 24/7
- New system provided heating and cooling control strategies to optimize scheduling

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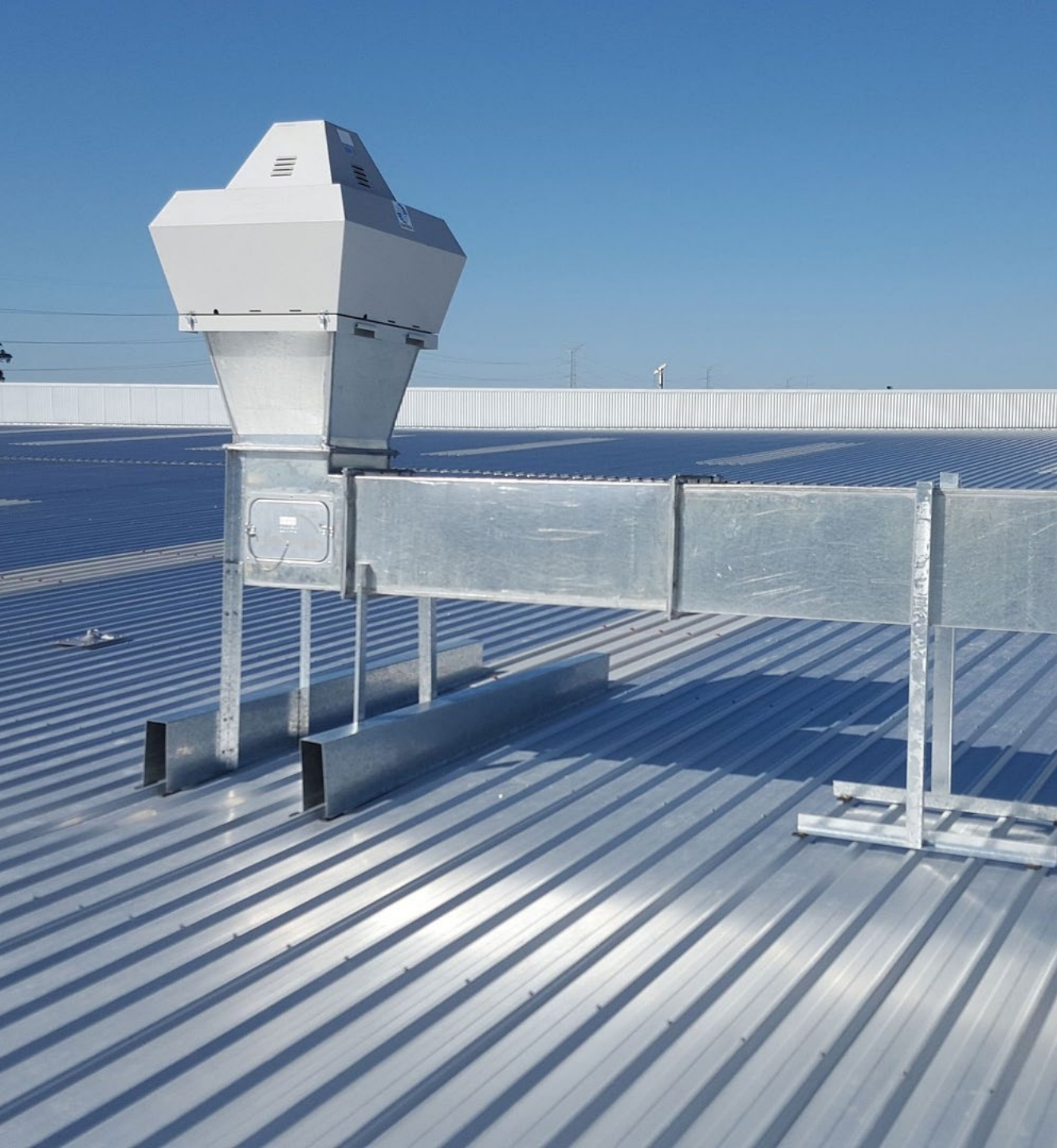

Energy savings

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- Annual kWh savings
  - 186,848 kWh
- Annual therm savings
  - 7,766 therms
- Annual utility bill savings
  - $28,179 per year
- Focus on Energy incentive
  - $17,777

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Solar panels upgrade

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Background

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- In 2019 Merton Community SD was interested in installing solar PV to offset energy use
- Worked with their Trade Ally contractor and Focus on Energy to obtain a financial incentive
- Financial incentives covered **12% of project costs**

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Project scope

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- Merton installed solar panels on two schools
  - Elementary school
  - Intermediate school
- Installed **1,097 panels** at **355 watts** each
- Total system production of **390 kW**

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Energy savings

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- PV watts calculator estimated annual energy produced
  - **467,347 kWh**
  - Almost 2/3 of both school's energy requirement
- Annual utility bill savings
  - **$56,000 per year**
- Estimated payback
  - **9 years**
- Staff, students and community can view energy data in real time online

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Potential energy-saving opportunities

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Prescriptive incentive projects

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- Specific dollar amounts for installing qualifying energy-efficiency equipment
- One-for-one replacement for commonly installed equipment
- Visit **focusonenergy.com/applications** to view current Incentive Catalogs
- Customer has **60 days** after project installation to submit application and invoice(s)

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Custom incentive projects

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- Eligible for non-standard technologies or projects that are not a one-for-one replacement
- Incentive based on estimated first year energy savings associated with a project or technology
- Work with your Energy Advisor to receive pre-approval prior to starting project

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Comprehensive Lighting Solutions (CLS)

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- Transform your facility by optimizing your interior lighting system
- Offers two ways to save
  1. Fixture or retrofit kit upgrades
     - $0.25/Watt Reduced
  2. Fixture or retrofit kit/lamp upgrades **with** connected controls
     - $0.45/Watt Reduced
- Contact your Energy Advisor or Trade Ally to review your facility's lighting requirements

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Fixture or retrofit kit upgrades

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- Used when redesigning a space
- Number of fixtures per room must change
  - One-for-one fixture/retrofit kit replacements are **NOT eligible**
- Utilize Focus on Energy's CLS workbook available at **focusonenergy.com/CLS**
- Fixtures and/or retrofit kits must be DLC listed
- **Must be pre-approved**
- Complete project incentive documentation and submit within **60 days** of project completion

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Fixture or retrofit kit/lamp upgrades with connected controls

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- Utilize Focus on Energy's CLS workbook available at **focusonenergy.com/CLS**
- Fixtures, retrofits kits/lamps and controls must be DLC listed
- **Must be pre-approved**
- Complete project incentive documentation and submit within **60 days** of project completion

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Connected controls

- Systems must have these features in order to receive a financial incentive
  - Individually addressable
  - Zoning
  - Occupancy sensing

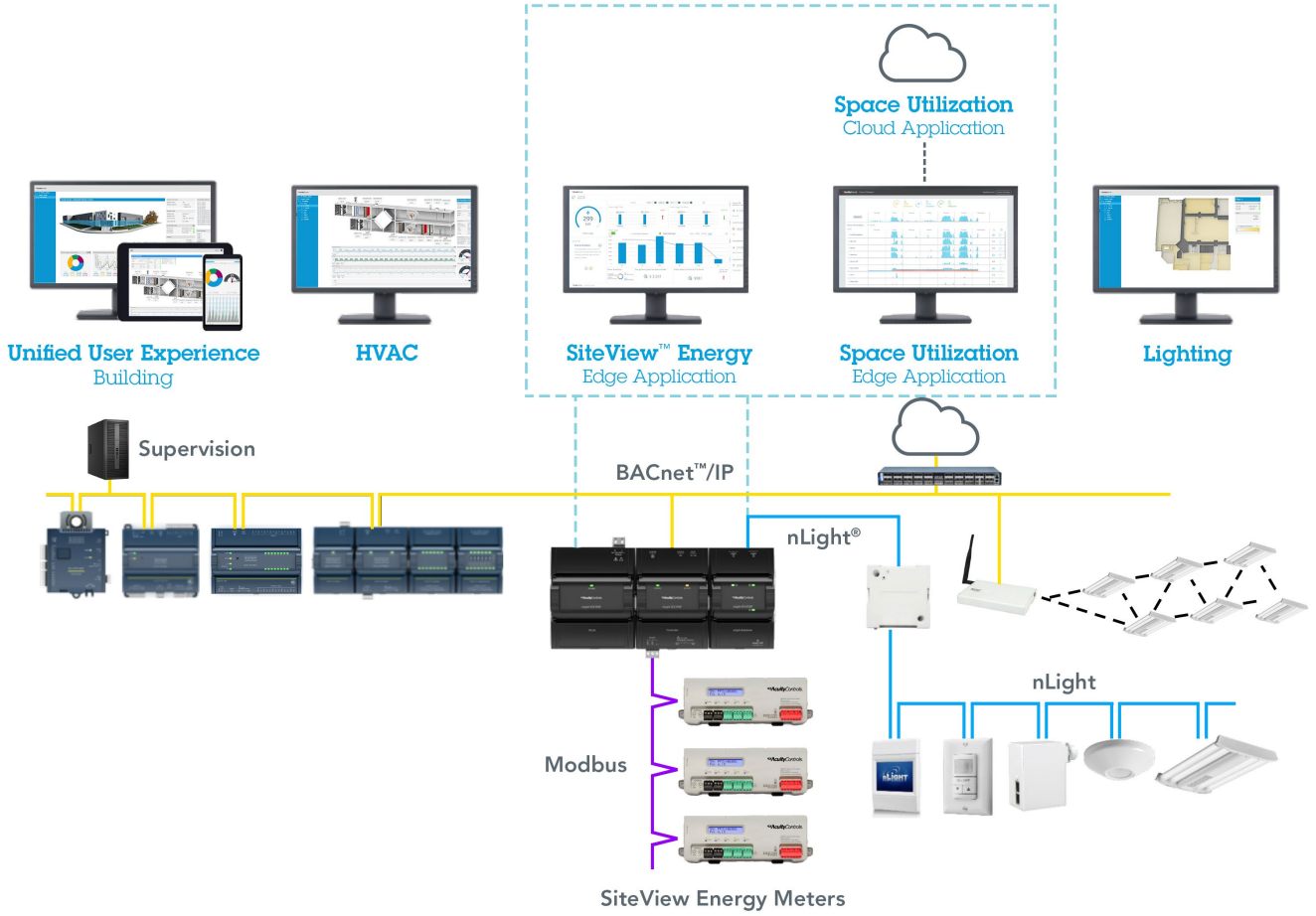

Photo: LEDinside

Real-time energy monitoring competition

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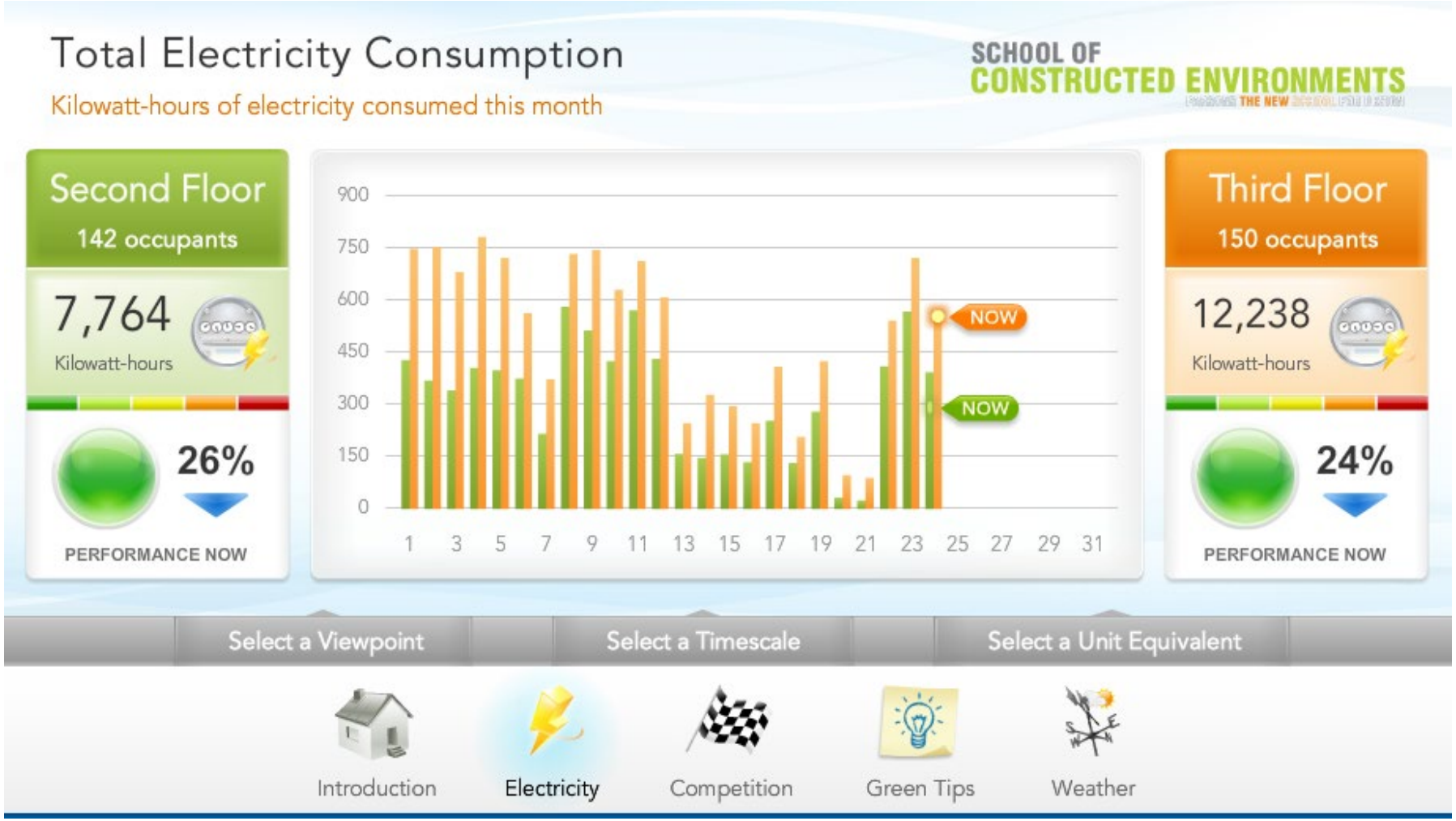

Photo: School of Constructed Environments

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Retrocommissioning (RCx)

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- Improves the performance and energy efficiency of existing building systems, equipment and operations
- Save up to 16% each year on energy bills using RCx to implement system and operational changes
- NEW in 2021
  - Complete the audit and reduce energy use intensity (EUI) to receive a minimum base incentive of **$0.10/ft²**
  - Additional incentives **up to $0.10/ft²** are available for achieving higher than a **5% reduction in EUI**

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Energy recovery ventilation (ERV) systems

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- Provide energy savings in mechanical ventilation systems
- Recycle energy from exhaust air to pretreat the incoming outside air/ventilation air
- Reduce the HVAC load while lowering the required capacity of the mechanical equipment
- Offer a cost-effective means to reduce energy consumption without reducing indoor environmental quality

Photo: Fanning Howey

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NEW! Direct fired make-up air units

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- Available for replacing indirect fired make-up air units or new installations
- Financial incentives
  - Equipment upgrades/retrofits - **$0.20/CFM**
  - New construction/major renovations - **$0.15/CFM**

Photo: Ventilation Direct

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Resources and technical assistance

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2021 Energy Advisor Map

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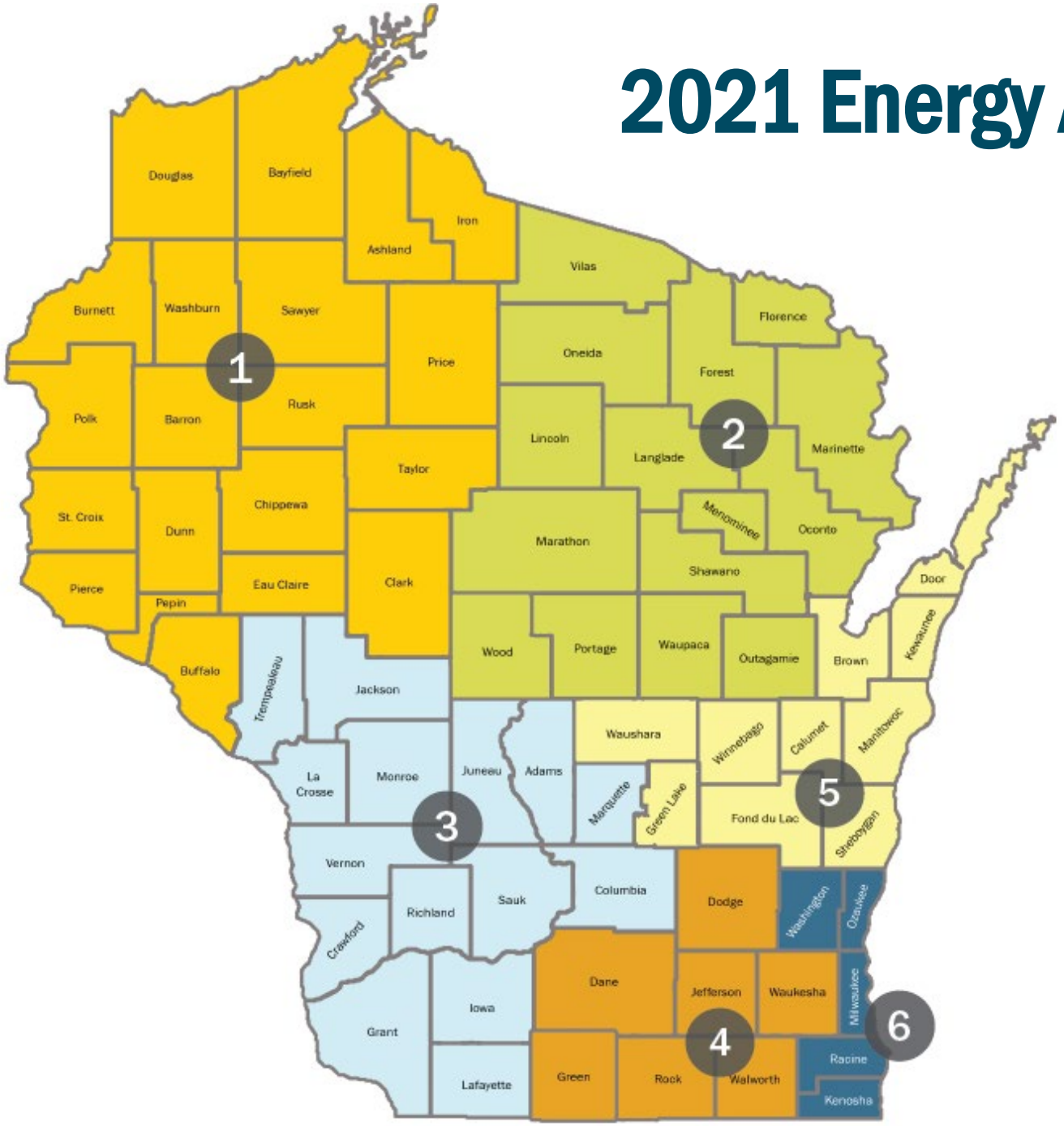

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Training and education

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- Focus on Energy offers a variety of courses to meet energy efficiency educational needs
- Check out a full list of sessions at **focusonenergy.com/training**
- Upcoming classes
  - **March 18:** Energy Saving Opportunities for Schools
  - **May 6:** Save Energy with Heat Recovery
  - **May 18:** Energy Management & Technology: Fundamentals and Beyond
  - **June 3:** Get More Boiler for Your Buck with Controls

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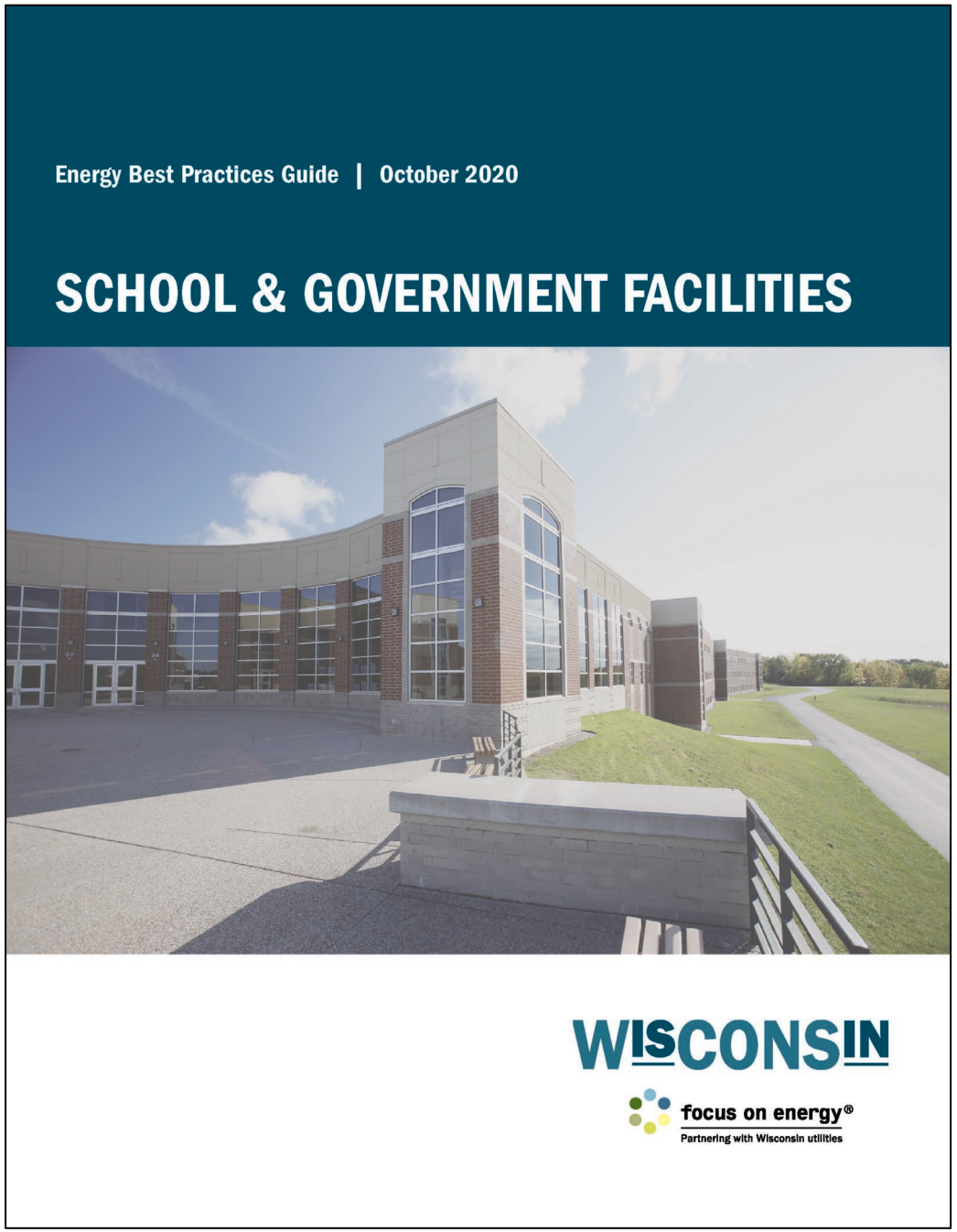

Energy best practices guide

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- Outlines the basic steps in building an energy management program for school and government facilities
- Provides general best practices and recommendations
- Download a free copy at **focusonenergy.com/ guidebooks**

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FREE energy-efficient packs

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- Save energy and money while improving your home comfort this winter
- Each pack contains a variety of product, such as:
  - LED light bulbs
  - High-efficiency showerhead
  - Water-saving bathroom faucet aerators
  - Pipe insulation
- Must be a customer of a participating Wisconsin utility company
- Complete your order online at **focusonenergymarketplace.com/free**

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Questions

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Contact us

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Call: 888.623.2146

Visit: www.focusonenergy.com

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