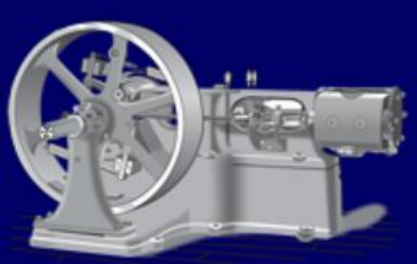


Minnesota Chief Engineers Guild

Established 1943

Annual Conference
September 9, 2021

179d Tax Benefit, and Other Finance Mechanisms, and *Why* State Facilities Folks Should Care!

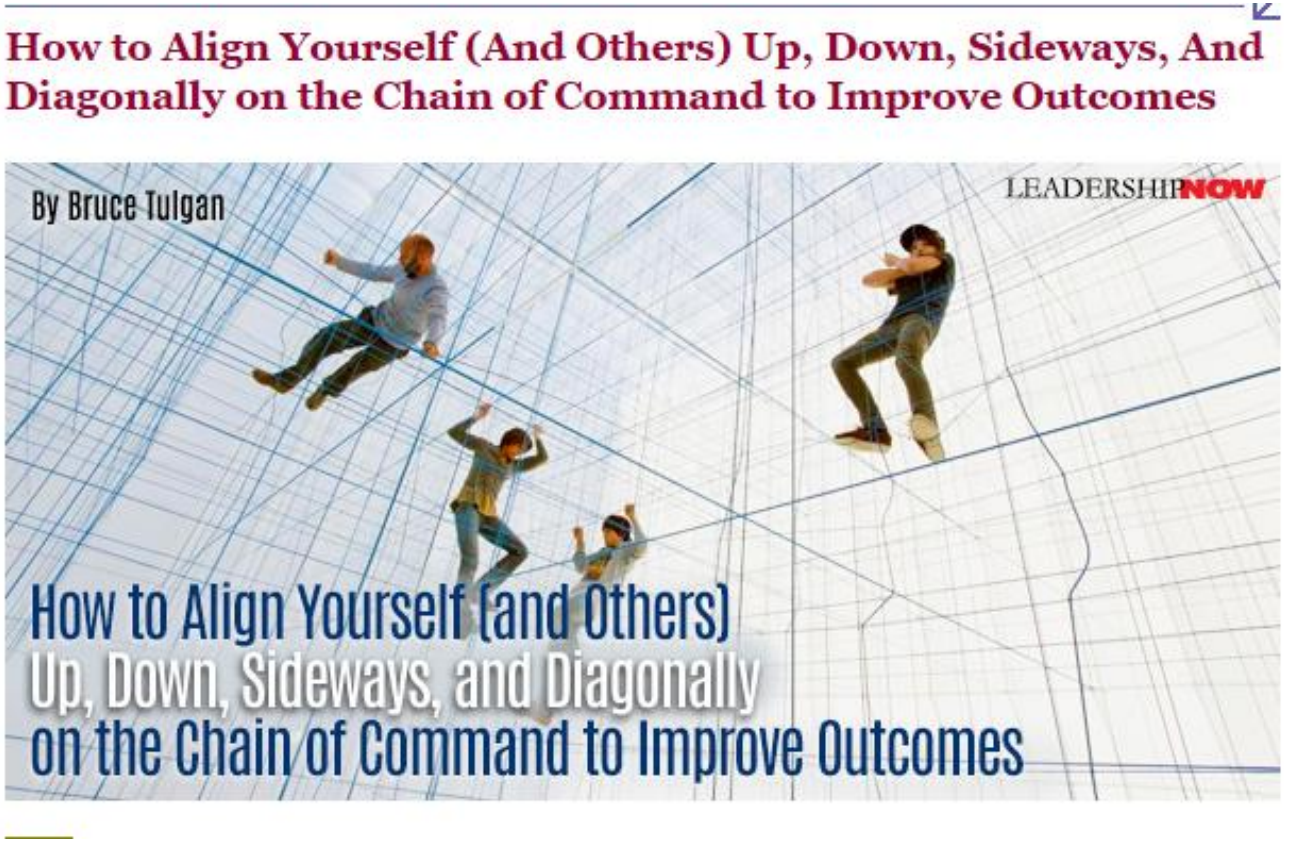
Sally Grans Korsh

FAIA Emeritus and LEED AP
Facilities and Environmental Policy Advisor
Minneapolis, Minnesota

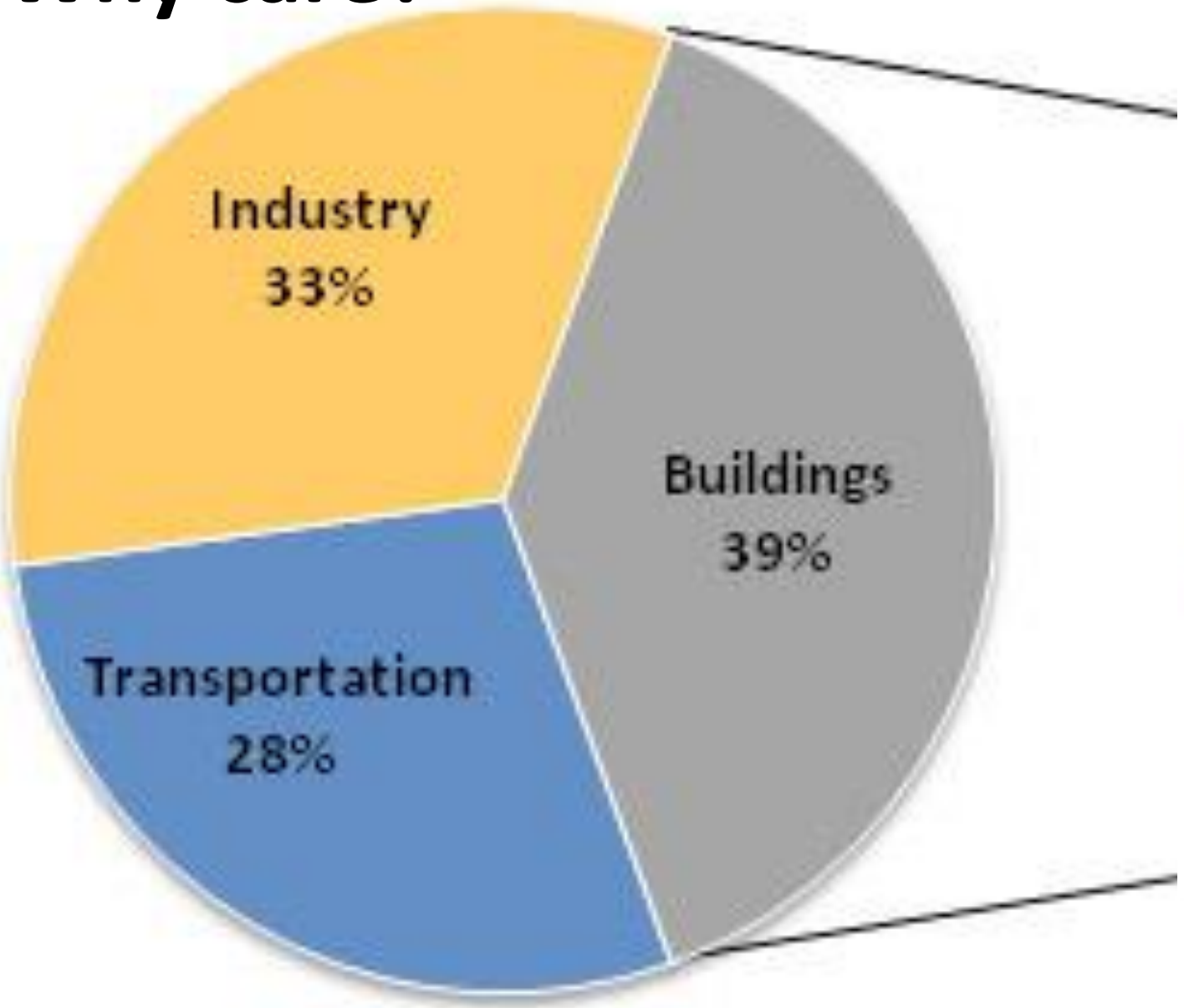
612-310-3881 sgranskorsh@gmail.com

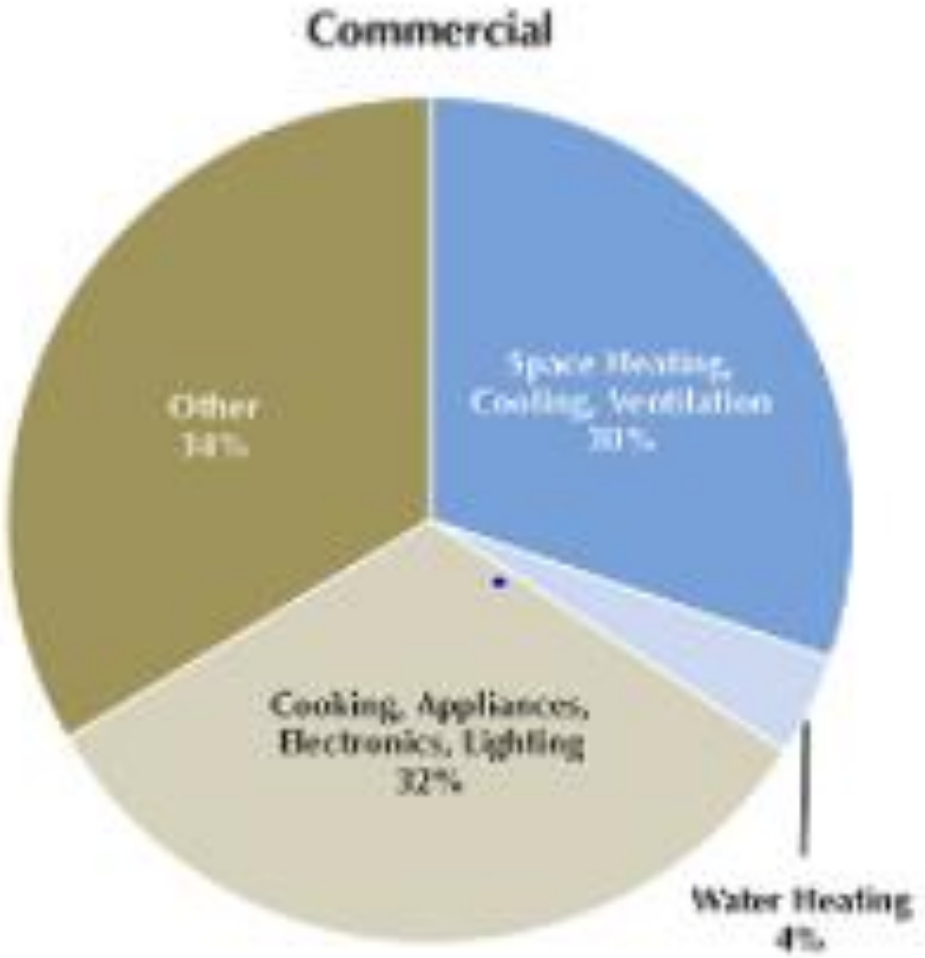
Agenda

- Communications
- 179d
- Community connections
- Power Purchase Agreement
- Public Private Partnerships
- Energy Savings Contracts



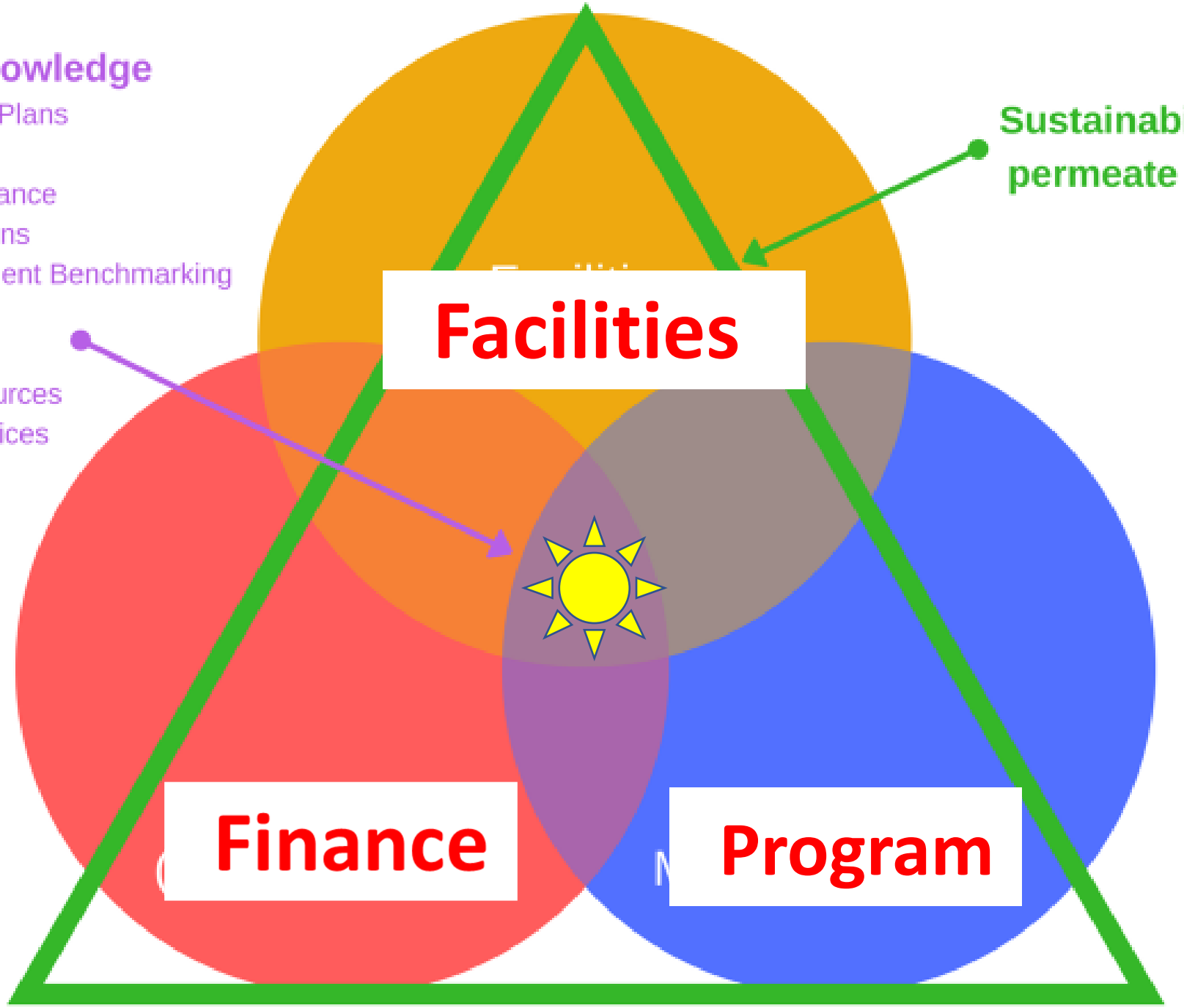
Why care?


Industry
33%
Buildings
39%
Transportation
28%


Commercial
Other
34%
Space Heating, Cooling, Ventilation
31%
Cooking, Appliances, Electronics, Lighting
32%
Water Heating
4%

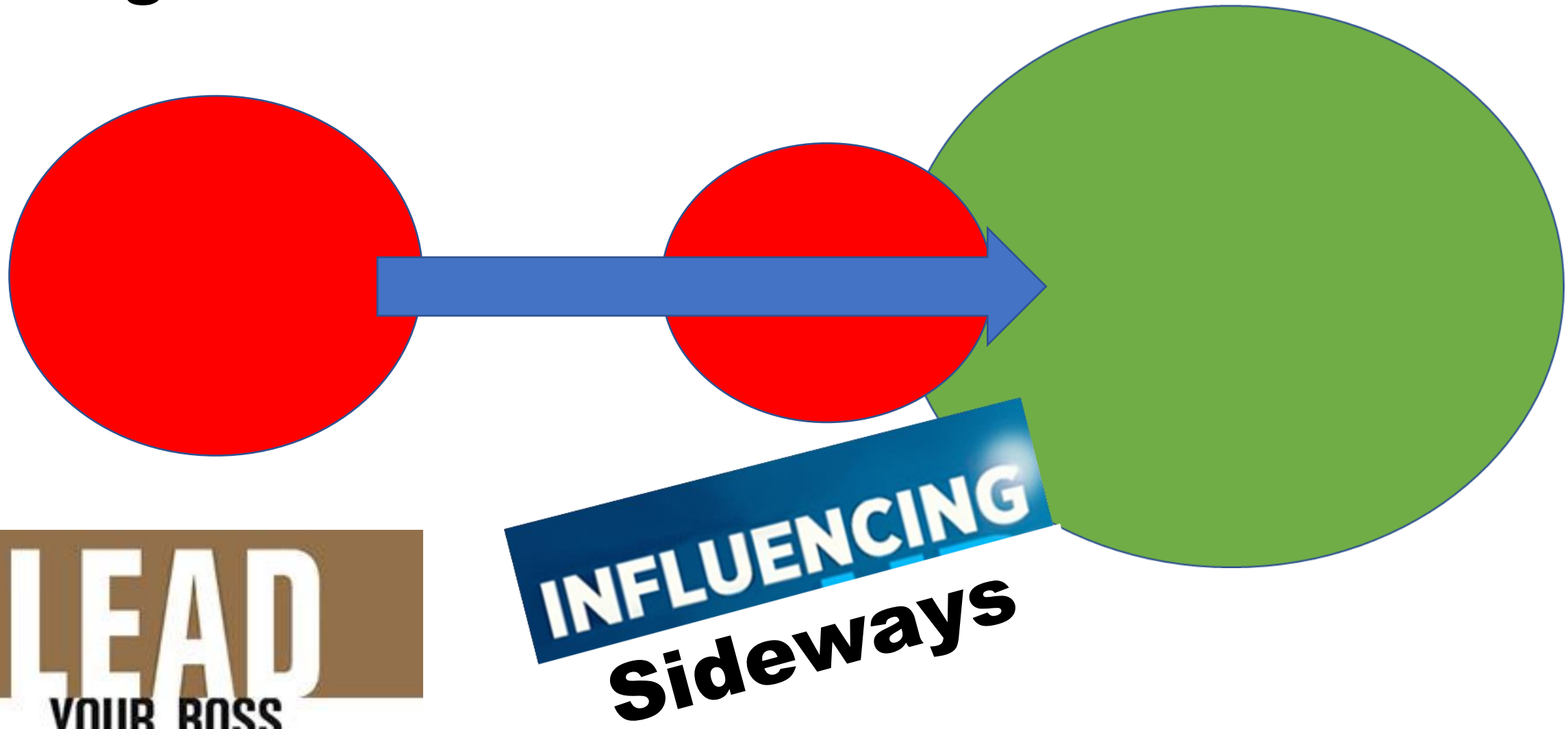
Intersecting Knowledge

- Short/Long Term Plans
- Space Use
- Deferred Maintenance
- Ongoing Operations
- Utilities Management Benchmarking
- Capital Funding
- Energy Efficiency
- Renewable Resources
- Sustainable Practices



Sustainability issues permeate all factors

Align – move the dial…….



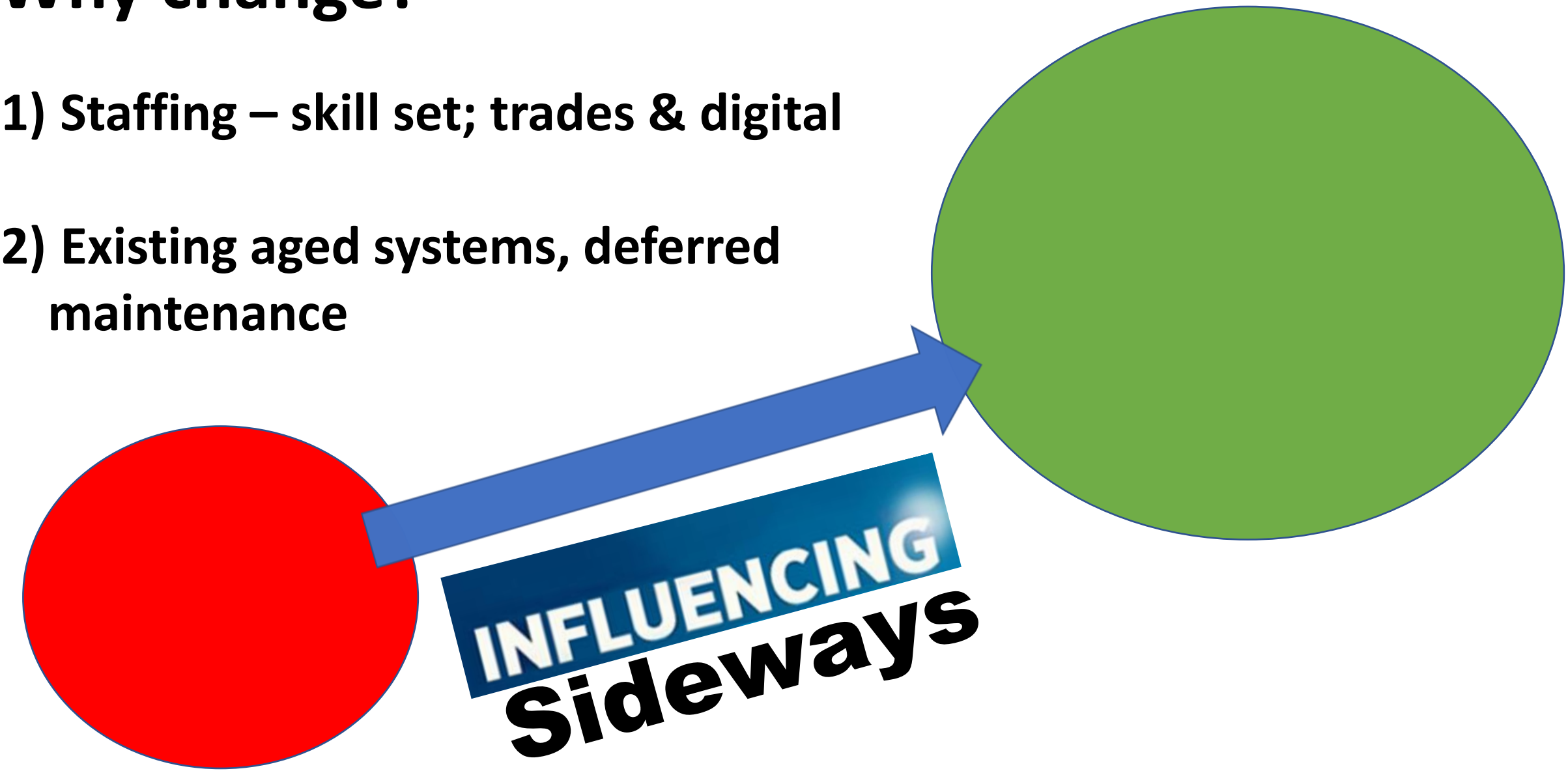
LEAD
YOUR BOSS
The Subtle Art of Leading Up

LEADINGBLOG

Why change?

1) Staffing – skill set; trades & digital

2) Existing aged systems, deferred maintenance



§179D Energy Efficient Building Tax Deduction

- One-time deduction during year placed in service
- Applicable to <u>both</u> retrofit & new construction
- Includes : Interior Lighting System
  HVAC & Hot Water System
  Building Envelope/Roof
- **100% of Project Cost UP TO $1.80/sq.ft.**
  - **$.60/sq.ft. Per Lighting, HVAC, Envelope System**

- <u>Certified by Independent 'Qualified Individual'</u>
  - 3rd Party Contractor/Engineer Licensed in locale of Project
  - DOE-Approved Software

Special Rule for Government - Owned Buildings

- Assignable by **Governmental Entity** to Designer of Qualified Project
- Architect, Engineer, Contractor, Environmental Consultant or Energy Services Company (ESCO)
- **3rd Party Validation & Valuation Required**

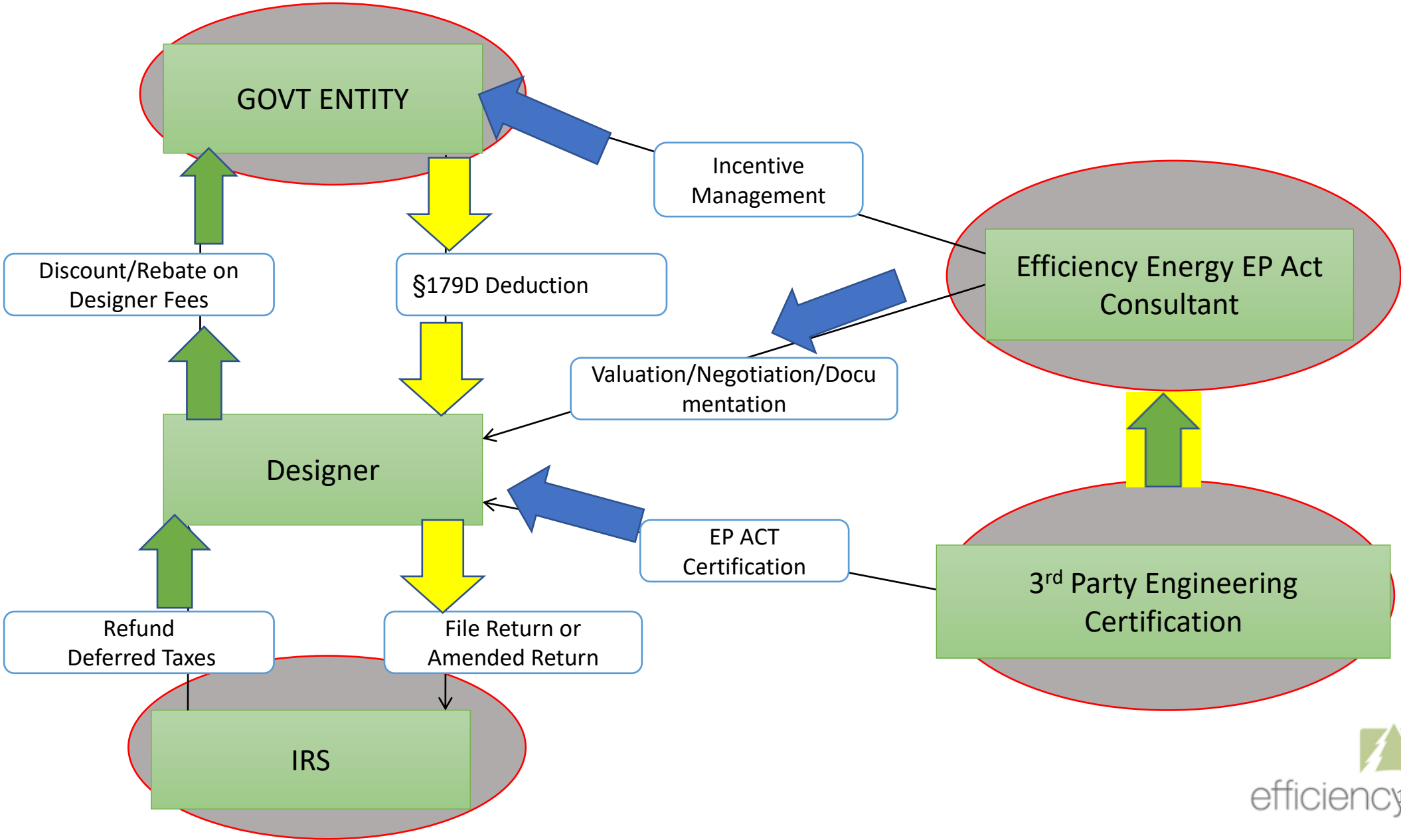
179D Requirements

- Three year IRS retroactive opportunity
- ***2018-2020 Completions***
- Combined 50% Savings vs. ASHRAE 90.1-2007
  - 25% Lighting, 15% HVAC, 10% Envelope

Legislative Update
- 179d made Permanent 2021 and beyond

- $1.80/sqft will increase indexed to inflation
- ASHRAE Reference Standard
  - 2 years prior to start of construction
- Importance of RFP/Contract Language
  - Preserve/Protect state building interests

179D Transfer Monetization



Document Chain & Timelines

- Draft Allocation Agreement, Estimated Term Sheet
  - 4-8 weeks
- Certification Package
  - 6-8 weeks
- Final Term Sheet
- Allocation Form
  - 30-60 days
- IRS Response and Payment to University
  - 3-12 Months

Case Study: 42% Owner - 58% split: $1.20/sq ft
Univ of Ca San Diego New Medical Building

Area Affected:						313,019	sqft
179D Allocation				x	$	1.20	/sqft
Commercial Building Tax Deduction					$	375,622.80	*
Designer Tax Rate				x		21%	Fed + State
Tax Benefit Value					$	78,880.79	**
% Split to GOVT		41.65%		% Split to DESIGNER		58.35%	
Rebate to GOVT	**$**	**32,854**		Value to DESIGNER	$	46,027	
Less:				Less:			
EP Act Coord Fee	$	(4,928)		Cert/Legal/Accounting Fees	$	(25,000)	
				Add: Rebate Deductibility	$	6,899	***
Net Value to GOVT	$	27,926		Net Value to DESIGNER	$	27,926	

efficiencyenergy

Case Study: Student Housing 51% to Owner 59% split – New $1.80/sq ft Univ of Ca San Francisco

Area Affected:						358,639	sqft
179D Allocation				x	$	1.80	/sqft
Commercial Building Tax Deduction					$	645,550	
Designer Tax Rate				x		25%	Fed + State
Tax Benefit Value					$	161,388	
% Split to GOVT		51.27%		% Split to DESIGNER		48.73%	
Rebate to GOVT	**$**	**82,742**		Value to DESIGNER	$	78,646	
Less:				Less:			
EP Act Coord Fee	$	(12,411)		Third Party Certification Fees	$	(29,000)	
				Add: Rebate Deductibility	$	20,685	
Net Value to GOVT	$	70,331		Net Value to DESIGNER	$	70,331	

Los Angeles Unified Schools

- 458 projects evaluated
- 49 Designers contacted
- Utilization rate of 10-15% - enabled to use when and if it Can be used – some designers/contractors cannot use it
- $223,718 to date to owner, $44,540 receivable

efficiencyenergy

Chicago Public Schools

- 1,200+ Projects reviewed for 179D Savings
- 32 Designers contacted
- $974,032 Rebates received to date

efficiencyenergy

179D and District Energy

- Large Area (sq ft) affected
- Multiple Buildings, Multiple Owners, Systems affected
- HVAC hot water, lighting, envelope
- Campus-wide CHP, Thermal Storage, Chillers Boilers etc.
- Buildings > optimum with 75,000 sq ft vs. ASHRAE
  Note – projects any size but with consultant should be above 40,000 sq ft

efficiencyenergy

LACCD Central Plants and Parking Garages

- Parking Garage LED retrofits
  - 2,523,704 SQFT x $0.56/sq ft =$1,418,237

- Central Plant retrofits
  - 743,528 SQFT x $0.97/sq ft = $3,704,160

- Net equal at @34% tax rate (designer/contractor)
  - **$537,852 Rebate to LACCD**

efficiencyenergy

Case Study: Los Angeles Community College District Parking Garages & Central Plants

2,523,704 sq ft of Garage Lighting @$.56/sq ft

3,816,909 sq ft served by HVAC@ $0.97.sq ft

X Designer/Contractor Tax Rate 35%

= $1,792,839 Tax Benefit

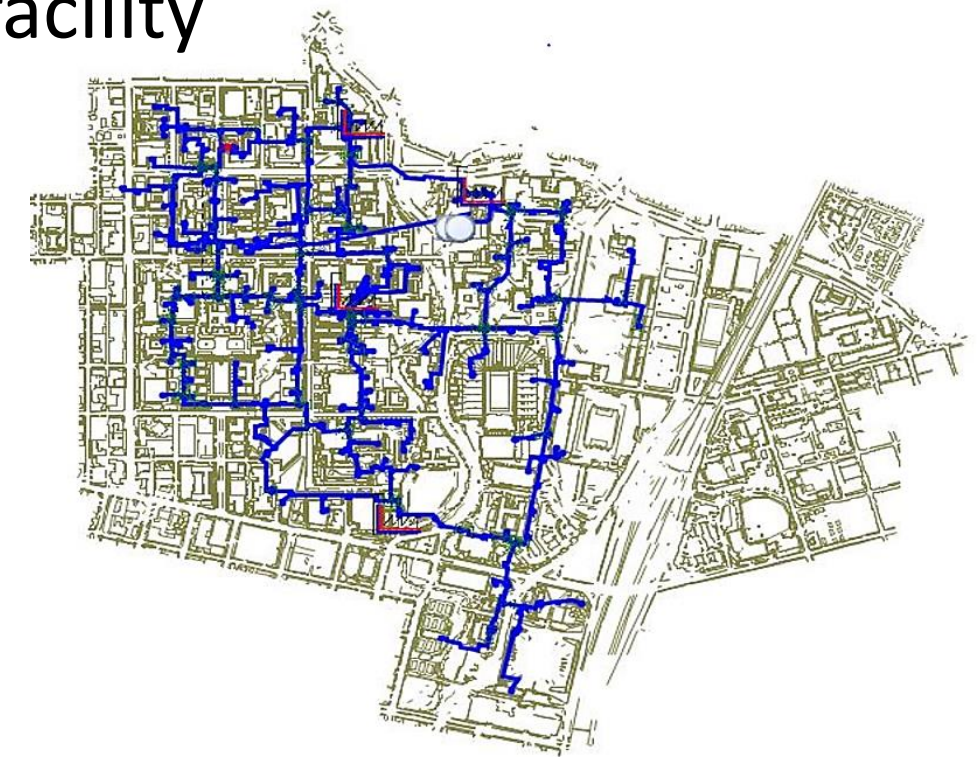
30% Upfront Rebate

= $537,852 savings to LACCD

efficiencyenergy

Case Study: Univ of Texas Austin District Energy Chilled Water

- Thermal Energy Storage
  4-Million-gallon Thermal Energy Storage facility
- 17 Million sq ft of 150 buildings affected
- 30,000 ton-hours capacity
- $1.1 Million equal to designer and to Univ of Texas Austin, Ray Gonzalez, Assistant Director, Facilities



Univ of Texas Austin
Designer Thermal Storage

Commercial Building Tax Deduction	$ 7,692,056
Designer Tax Rate	31.85% Fed
Tax Benefit Value	$ 2,449,920

Rebate to Government Entity	**$ 1,377,682**	Value to DESIGNER	$ 1,072,238
Less:		Less:	
EP Act Coord Fee	$ (206,652)	Certification, Legal, Accounting Fees	$ (365,000)
UT Austin Documentation Fee	$ (25,000)	Add:	
		Rebate Deductibility	$ 438,792
Net Value to GOVT	$ 1,146,030	Net Value to DESIGNER	$ 1,146,030

179D Contract Language

- Account for value conferred, associated costs
- Provide net savings to government owner at predetermined/negotiable % of net savings
- Value becomes ascertainable post certification after assets placed in service
- Savings provided upon Designer/Contractor receipt
- Form: rebate, additional scope, invoice credit

179D Bottom Line

- Underutilized Tax Benefits to be Managed
- Provide Unanticipated Savings/Revenues from previous and planned investments in energy efficient buildings.
- Via rebates & reduced upfront cost on energy efficient lighting, HVAC, envelope retrofits, renovation and new construction.
- Funds can be spent on deferred maintenance or on new energy savings projects!

Action Item: 179D Project List

- Placed in Service 2018-2020, 2021+
- New Construction, Lighting, HVAC, Envelope, District Energy, Energy Performance Contracts
- Info Needed:
  - Area (sqft)
  - Scope, Dates
  - Designer(s): Architect, Engineers, Contractor(s) ESCO, Consultant etc.

efficiencyenergy

179D Project List for 2021

- Placed in Service 2018-2020
- New Construction, Lighting, HVAC, Envelope, District Energy, Energy Performance Contracts
- Info Needed:
  - Area (sqft)
  - Scope, Dates
  - Designer(s): Architect, Engineers, Contractor(s), ESCO, Consultant etc.

Community Connections

- Working with the community, AND/OR other agencies, energy and engineering management firms, for energy efficient reductions and decarbonization.

- Who can you collaborate with? Finding the champion. Not easy – but worth it!

- Alignment already can occur in purchasing – so reach out for bigger facilities and infrastructure savings.

- Third party evaluation or the “cold eye review”.

FYI – These posters are all located at www.nacubo.org/campusposters

Carleton

Leading the Way to a Cleaner Energy Future

2017-2022

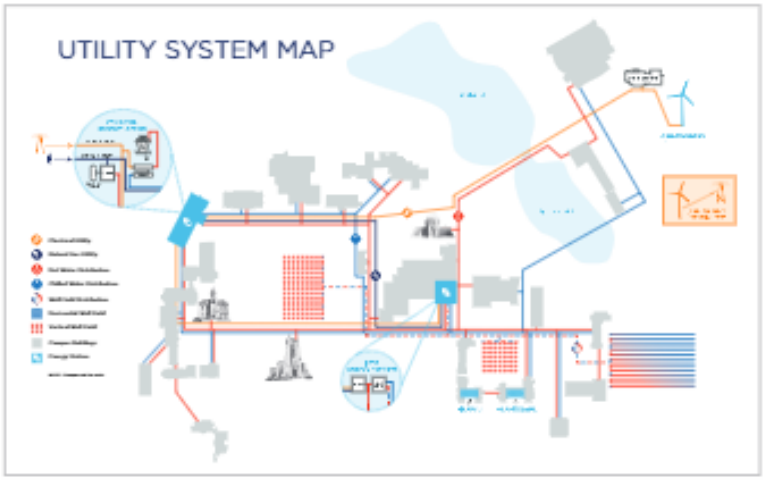
A MORE RESILIENT FUTURE

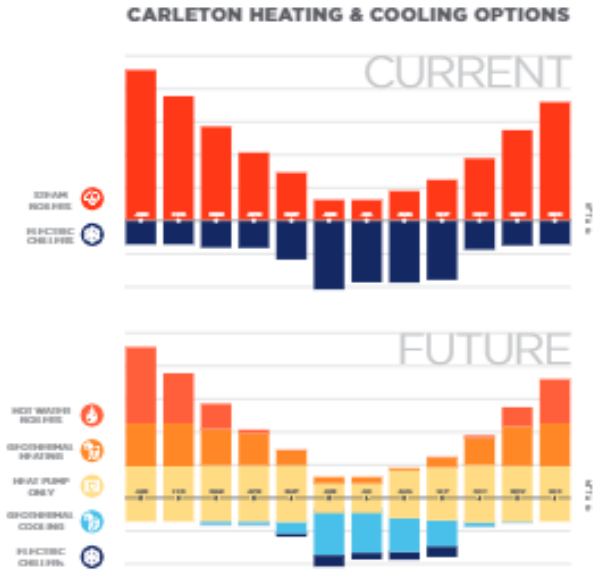
Carleton's utility master plan is building the foundation for more diverse and resilient energy options while furthering our carbon emissions reduction goals.

1st college campus in Minnesota installing a geothermal-based district energy system

college campus to install a commercial-size wind turbine (now two)

1 OF 3 campus-scale geothermal projects in the Midwest





304 geothermal wells

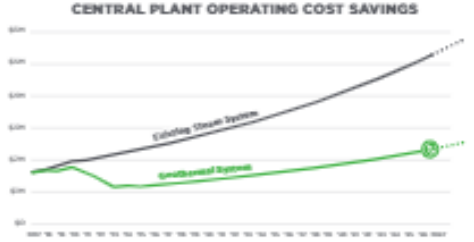
HORIZONTAL GEOTHERMAL WELLS 94 in Bell Field

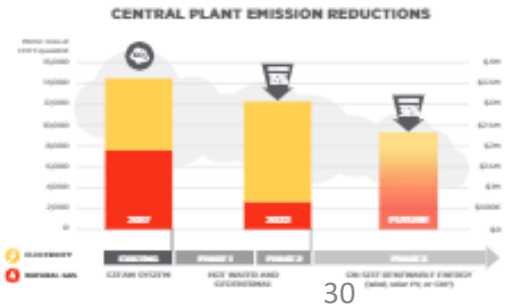
VERTICAL GEOTHERMAL WELLS 133 in the Bald Spot

77 in the Mini Bald Spot

60 miles OF PIPING WILL BE INSTALLED

over the next 30 years





UNIVERSITY OF MINNESOTA MORRIS

COMMUNITY-UNIVERSITY PARTNERSHIP

Morris Model Partnership For Progress

STEVENS COUNTY POPULATION
9,634

MORRIS POPULATION
5,297

WHAT IS THE MORRIS MODEL?

The Morris Model is a loosely-knit group of organizations and stakeholders in the Morris and Stevens County community. The purpose of the Morris Model team is to grow our shared sustainability aspirations.

We are focused on energy conservation, clean energy, community resilience, cultural exchange, and celebration.

We believe Morris is a model community in Minnesota and the world and that we can continue to grow this leadership.

As leader in this project, we have made great strides this year.

GOALS

In October 2018 the Morris Model team held a planning retreat to develop long-range strategic goals for the city, county, schools, and businesses

THE BIG THREE

80% Produce 80% of the energy consumed in the county by 2030

30% Reduce energy consumption in the county 30% by 2030

0 No land-filling of waste generated within the county by 2025

Entities created goals that connected to the three main goals.

CLIMATE SMART MUNICIPALITIES

A collaboration between six cities in Minnesota and six cities in North Rhine-Westphalia, Germany

Morris has been a member since 2015. A delegation from Særbeck, Germany, our technical partner, visited on two occasions this year. A delegation from Morris visited Germany as well.

100 PROJECTS

The Morris Model team originally created a list of 100 projects in 2017.

- 22 of the 100 have been completed.
- At the October 2018 planning retreat we re-evaluated and created a new list of 100 projects.

COMMUNITY MEETING

Held a community meeting with our partners from Germany

Regular community-wide updates increase buy-in, instill community pride, and strengthen the Morris Model team.

- More than 75 people attended.
- Electric vehicle show with 11 vehicles from the community

FYI – These posters are all located at www.nacubo.org/campusposters

FYI – These posters are all located at www.nacubo.org/campusposters

University of Minnesota MORRIS

THE MORRIS MODEL

MORRIS

morrismodel.org

PURPOSE

The purpose of the Morris Model team is to grow our shared sustainability aspirations. We are focused on energy conservation, clean energy, community resilience, cultural exchange, and celebration. We believe Morris is a model community in Minnesota and the world and that we can continue to grow this leadership.

PLACE

PREPARATION

As a comprehensive campus-community partnership, the Morris Model strives to improve our coordinated efforts to prepare our community for Minnesota's changing weather. As our weather changes, it is necessary to modify our emergency preparations to the realities of more severe tornadoes, floods, lightning storms, and blizzards.

ENERGY CONSERVATION

- City lights from City Hall to Main Street have been converted to LED lighting.
- UMM lighting across campus is being converted to LEDs.

20kW PRODUCED

- The Green Prairie Community solar panels make 20 kW at maximum production.

22kW REDUCED

- By switching to LED lighting in Oyate Hall, the competition pool, Camden Hall, and the Science Auditorium, we have reduced more than 22 kW! These improvements generate thousands of dollars in savings annually.

$$$$ SAVED

CLEAN ENERGY

Two 1.65 MW wind turbines

3kW solar PV array near Science Building

20kW solar PV array near Green Prairie Community Residence Hall

Solar thermal system at Regional Fitness Center heats recreational pool

Biomass gasification combined heat and power plant

COMMUNITY RESILIENCE

The goal of the Morris Model is to ensure a safe, clean, and healthy future. Our goals for resilience include:

THE NINE MORRIS MODEL GOAL AREAS

- Extreme Weather Planning
- Energy Efficiency Practices
- Resilient Infrastructure
- Climate Education
- Community Garden
- Rain Gardens
- Expanding Renewable Energy
- Alternative Transportation
- Healthy Tree Canopy

CULTURAL EXCHANGE

Morris signed a climate protection and sister-city agreement with the city of Saerbeck, Germany. The goal is to exchange sustainability-related knowledge, including clean energy solutions and adaptation to climate change.

The city of Saerbeck is known for its renewable energy park—built on the grounds of a former German ammunition storage facility. The park combines wind, solar, and biomass energy production and can produce 250 percent of the energy needed to power Saerbeck.

Morris is one of five cities in Minnesota to participate in the Climate Smart Municipalities program, which pairs Minnesota municipalities with award-winning climate-smart communities in Germany to accelerate progress toward a cleaner and more-efficient energy footprint.

CELEBRATION

UMM and partners earned the Environmental Initiative Award for Community Action in 2015.

The City of Morris, in partnership with UMM, earned the Clean Energy Community Award in 2016.

UMM earned the Minnesota Climate Adaptation Award for institutions in 2017.

The City of Morris earned GreenStep City 7 certification in 2017.

PARTNERS

University of Minnesota, Morris · Stevens County · University of Minnesota West Central Research and Outreach Center · Morris Area Schools · Jefferson Center · City of Morris · Southwest Regional Sustainable Development Partnership · Horizon Public Health · Minnesota Pollution Control Agency · Institute for Agriculture and Trade Policy

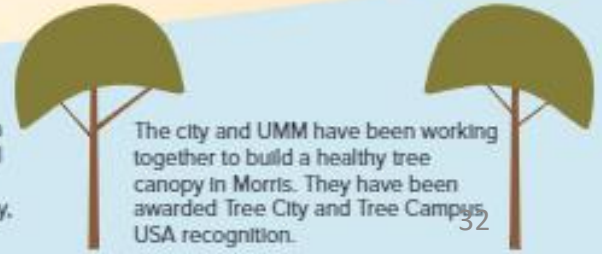
PROGRESS

LED streetlights have been implemented along Morris's Main Street.

UMM composts 40 tons of organics each year in its on-site composting program.

70% of UMM's electricity is generated by wind power.

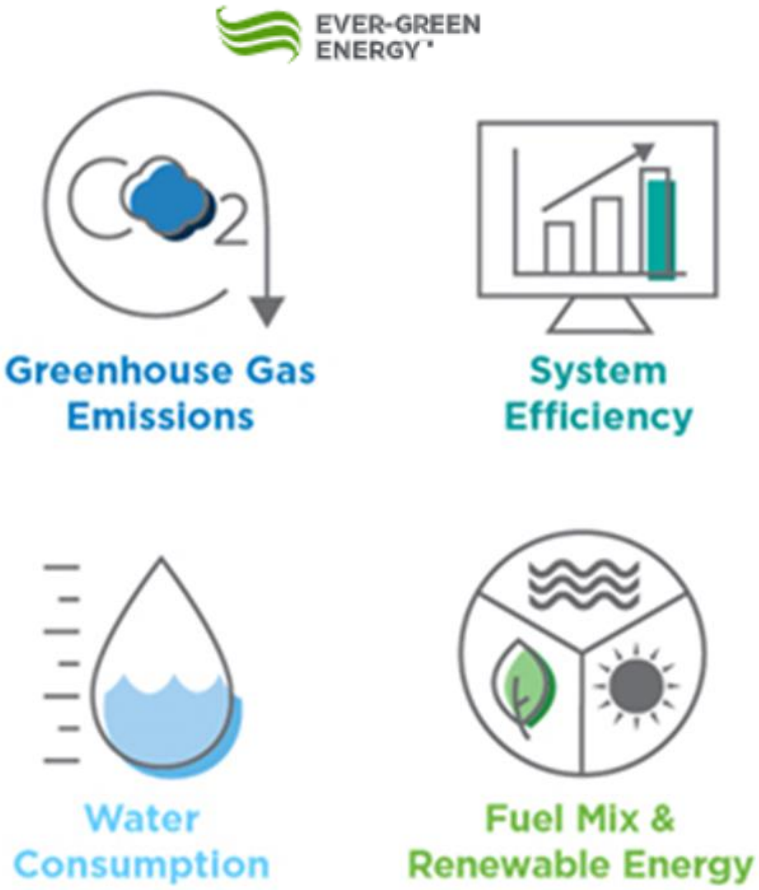
UMM and the Morris Area Schools have educational gardens that promote healthy eating, community, and outdoor activity.



The city and UMM have been working together to build a healthy tree canopy in Morris. They have been awarded Tree City and Tree Campus USA recognition.

Community Connections

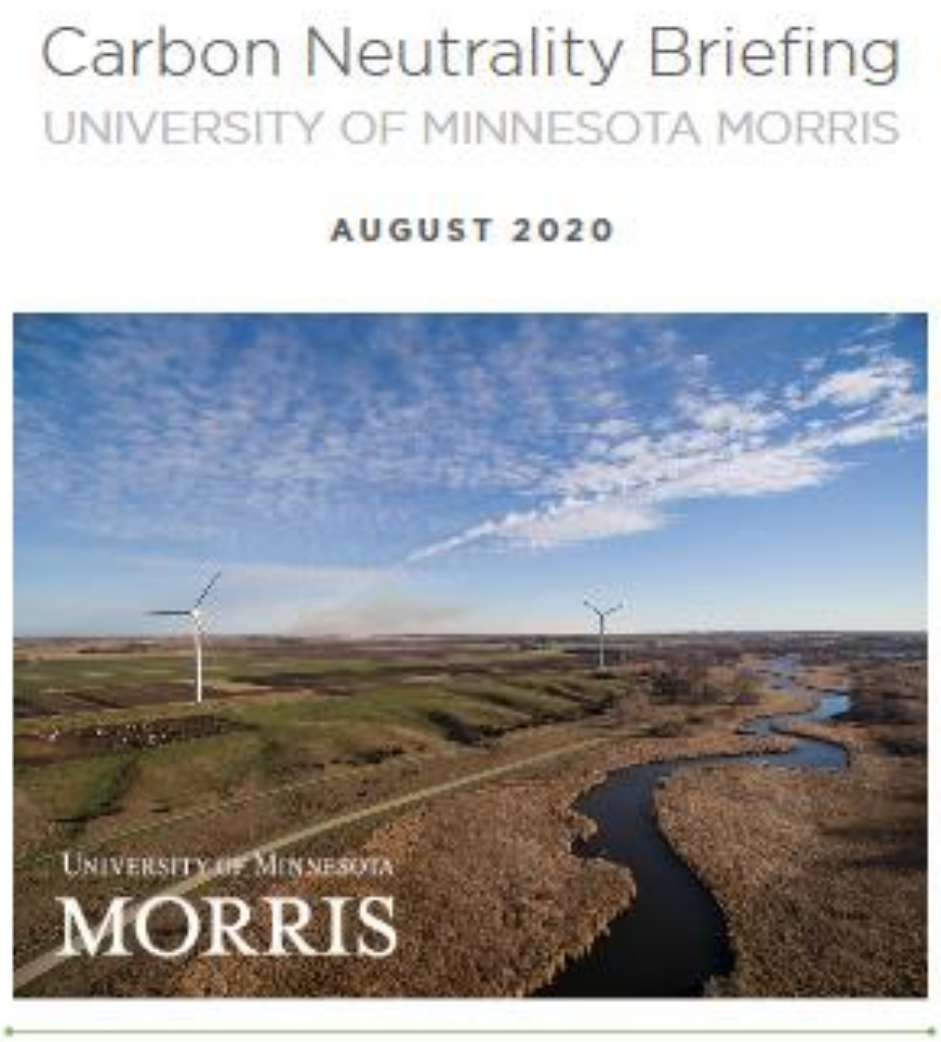
- Example from "*Ever-Green's Roadmap to Carbon Neutrality" a planning process that examines history and proposed projects as to what could be implemented to get to the goal – energy efficiency, reduce costs, advance staffing, carbon neutrality*



- 2 Campuses selected in October 2020
  - Slippery Rock University, PA., and Macalester College
- 3 Campuses selected in February 2019
  - University of Mn Morris
  - College of St Benedict and University of Minnesota

U of M Morris

- Examined *existing* building: heating, cooling, electrical loads
- Evaluated existing and future thermal, biomass, wind, solar
- Capitol costs/Financial modeling/Schedule
- Planning process yielding a *menu of potential projects*
- Opportunities for carbon neutrality



- https://www.ever-greenenergy.com/wp-content/uploads/University-of-Minnesota-Morris-Carbon-Neutrality-Brief-08.26.20.pdf

Community Connections:
Big Picture - Big Challenge - Big Results

- City of Duluth; Superior St. a 3-year project
- Opportunity to advance infrastructure, energy efficiency, and reduce carbon
- Transition from steam to hot water, coal to natural gas, closed loop distribution
- Position system for renewable integration
- ***IMPACT:*** 80% reduced coal use
  20% reduced greenhouse gas
  20 million gallons of Lake Superior water saved annually
  26% average hot water customers saved on energy

Power Purchase Agreement (PPA)

Contract between two parties:

- one which generates electricity (the seller)

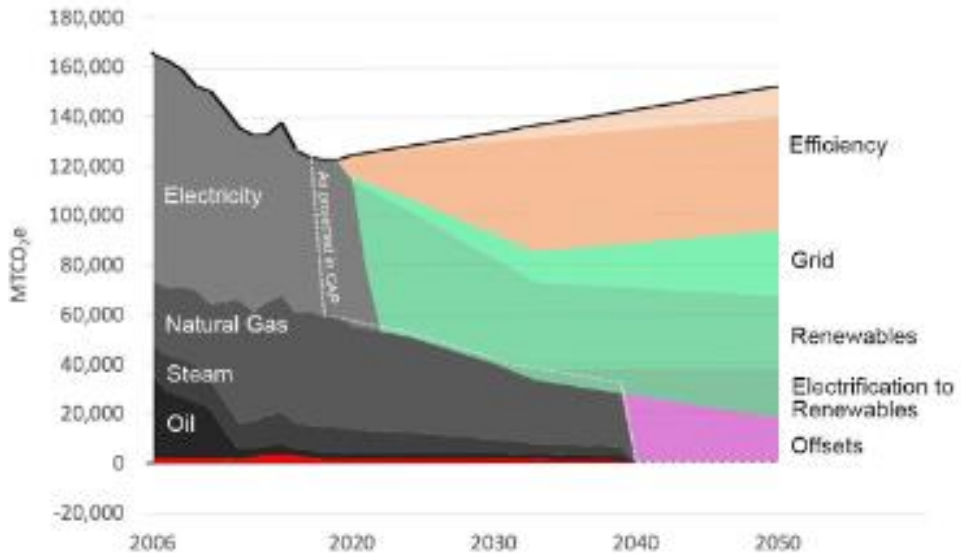
- and one which is looking to purchase electricity

- General contract is between 5 and 20 years.
  Assures lower rate due to agreement to pay.
  Often used to develop new sources of renewable energy.

Net-Zero Direct Emissions

The Climate Action Plan set a goal to be net carbon neutral by 2040. To accomplish this, four emissions reduction strategies are needed in the near term. These include:

1. Reducing energy demand by 31% by 2032
2. Shifting away from fossil fuel use to electricity for heating and cooling in order to enable a transition to renewables
3. Sourcing renewable energy to match 100% of the University's electricity consumption, and
4. Beginning the transition of BU's fleet of vehicles to electric



$MTCO_2e$: metric tons of carbon dioxide equivalent

Closeup of a BU Wind turbine.
Photo courtesy of ENGIE North America.

Boston University PPA Wind Farm in So Dakota

- Master plan determined to reduce load, energy efficiency, and embrace renewables

- PPA agreed to purchase in a 15-year contract with Edison Energy 100% of university electrical of 205 Million KWh/year

- New So Dakota wind farm will realize 2-3 times greater avoided emissions than a project in the New England region due to larger percentage of green power already in that region

Power Purchase Agreement

2016 – Community College of Baltimore County

- Negotiated PPA for 27% of its annual electrical
- Flat rate between $4 – $6 million - lower than local utility

2014 George Washington University /American University and Medstar Hospital: two universities and a hospital

- Largest non-utility solar PV in US with over 243,000 solar panels on 450 acres generating 52 megawatts with a 20-term contract

Guaranteed Energy Savings Program

Information on the Guaranteed Energy Savings Program. The main goal of the program is to provide technical and financial assistance to state agencies, local government units, school districts, and institutions of higher learning.

Governor Dayton signed Executive Order 11-12 in April 2011 titled "Providing for Job Creation through Energy Efficiency and Renewable Energy Programs for Minnesota's Public Buildings." EO 11-12 established the Office of Guaranteed Energy Savings Program, within the Department of Commerce, Division of Energy Resources. We provide technical, contractual and financial assistance to state agencies, local government units, school districts, and institutions of higher learning that elect to implement energy efficiency and renewable energy improvements through Guaranteed Energy Savings Contracts.

The intent of this program is to maximize job creation and operational cost savings through investment in public facilities with the goal of reducing aggregate energy consumption by 20 percent throughout all state agencies.

RESOURCES

Forms & Documents

Fact Sheet

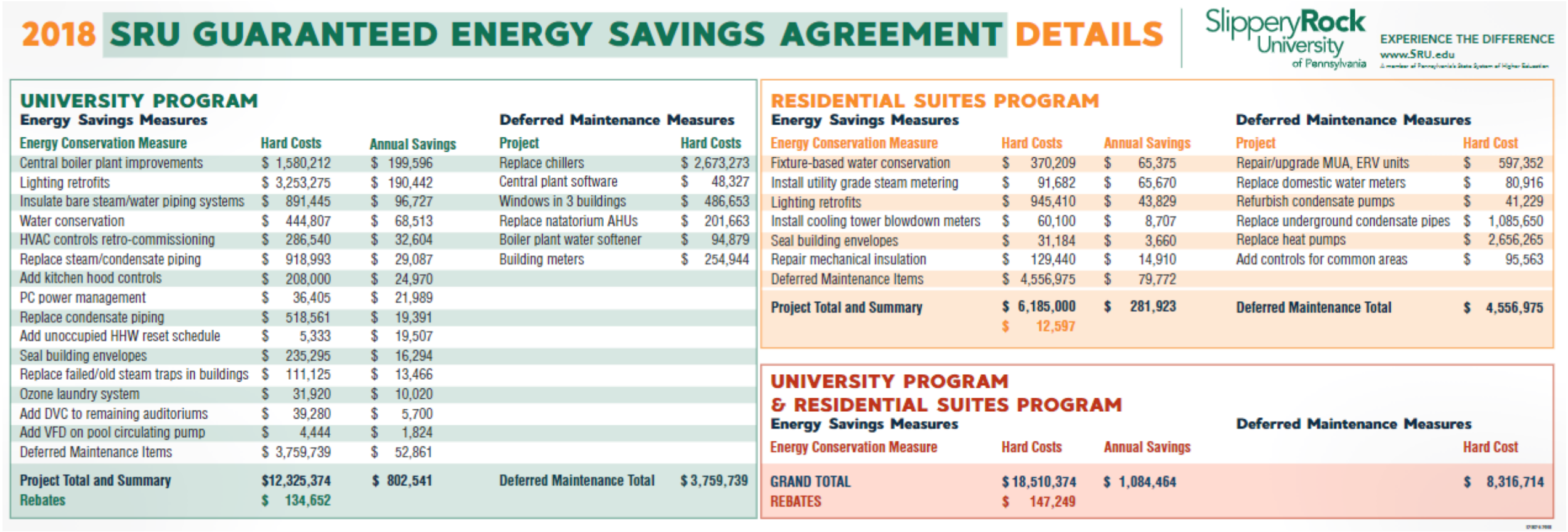
Case Studies

QUESTIONS?

Email: energysavings.programs@state.mn.us
Local: 651-539-1886
Greater MN only: 1-800-657-3710

- https://mn.gov/commerce/industries/energy/technical-assistance/gesp/

Energy Savings Contracts



2018 SRU GUARANTEED ENERGY SAVINGS AGREEMENT DETAILS

SlipperyRock University of Pennsylvania
EXPERIENCE THE DIFFERENCE
www.SRU.edu

UNIVERSITY PROGRAM

Energy Savings Measures

Energy Conservation Measure	Hard Costs	Annual Savings
Central boiler plant improvements	$ 1,580,212	$ 199,596
Lighting retrofits	$ 3,253,275	$ 190,442
Insulate bare steam/water piping systems	$ 891,445	$ 96,727
Water conservation	$ 444,807	$ 68,513
HVAC controls retro-commissioning	$ 286,540	$ 32,604
Replace steam/condensate piping	$ 918,993	$ 29,087
Add kitchen hood controls	$ 208,000	$ 24,970
PC power management	$ 36,405	$ 21,989
Replace condensate piping	$ 518,561	$ 19,391
Add unoccupied HHW reset schedule	$ 5,333	$ 19,507
Seal building envelopes	$ 235,295	$ 16,294
Replace failed/old steam traps in buildings	$ 111,125	$ 13,466
Ozone laundry system	$ 31,920	$ 10,020
Add DVC to remaining auditoriums	$ 39,280	$ 5,700
Add VFD on pool circulating pump	$ 4,444	$ 1,824
Deferred Maintenance Items	$ 3,759,739	$ 52,861
Project Total and Summary	**$12,325,374**	**$ 802,541**
Rebates	**$ 134,652**	

Deferred Maintenance Measures

Project	Hard Costs
Replace chillers	$ 2,673,273
Central plant software	$ 48,327
Windows in 3 buildings	$ 486,653
Replace natatorium AHUs	$ 201,663
Boiler plant water softener	$ 94,879
Building meters	$ 254,944
Deferred Maintenance Total	**$ 3,759,739**

RESIDENTIAL SUITES PROGRAM

Energy Savings Measures

Energy Conservation Measure	Hard Costs	Annual Savings
Fixture-based water conservation	$ 370,209	$ 65,375
Install utility grade steam metering	$ 91,682	$ 65,670
Lighting retrofits	$ 945,410	$ 43,829
Install cooling tower blowdown meters	$ 60,100	$ 8,707
Seal building envelopes	$ 31,184	$ 3,660
Repair mechanical insulation	$ 129,440	$ 14,910
Deferred Maintenance Items	$ 4,556,975	$ 79,772
Project Total and Summary	**$ 6,185,000**	**$ 281,923**
	$ 12,597	

Deferred Maintenance Measures

Project	Hard Cost
Repair/upgrade MUA, ERV units	$ 597,352
Replace domestic water meters	$ 80,916
Refurbish condensate pumps	$ 41,229
Replace underground condensate pipes	$ 1,085,650
Replace heat pumps	$ 2,656,265
Add controls for common areas	$ 95,563
Deferred Maintenance Total	**$ 4,556,975**

UNIVERSITY PROGRAM & RESIDENTIAL SUITES PROGRAM

Energy Savings Measures

Energy Conservation Measure	Hard Costs	Annual Savings
GRAND TOTAL	$ 18,510,374	$ 1,084,464
REBATES	$ 147,249	

Deferred Maintenance Measures

Hard Cost
$ 8,316,714

FYI – These posters are all located www.nacubo.org/campusposters

Energy Savings Contracts

Delaware State University
Making our mark on the world

Luna I. Mishoe Science Center South
Energy Performance Contract

Energy Savings Performance Contract Goals:

- $11,265,000 energy efficiency project
- 25% utility reduction in greenhouse gas emissi
- $24,611,552 in total guaranteed energy savings
- $5,266,607 net revenue to Delaware State Univ
- 1.3 million square feet and 26 buildings upgrad
- efficient technology
- Positively impact the students' educational and living environment
- engaging them with green kiosks
- Local job creation

Energy Conservation Measures Throughout the Campus:

- Lighting System Upgrades
- Infiltration Reduction
- Boiler Replacement
- Variable Frequency Drives
- HVAC Unit Replacement
- Boiler Control Upgrade
- Greenhouse Gas Software
- Lighting Occupancy Controls
- Demand Control Ventilation
- Water Fixture Upgrade
- Energy Efficient Electric Motor Upgrade
- Summer Domestic Hot Water Heater
- Computer Power Management
- Energy Recovery Loop
- Vending Machine Controls
- Controls Upgrades
- Kitchen Hood Controls
- Chiller/Cooling Tower Replacement
- Roof Replacement
- Ductless Split AC
- Multizone to VAV Conversation

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KUTZTOWN UNIVERSITY

Provided by: NORESCO

Energy Savings Performance Contract

First established as a teacher's college in 1866, Kutztown University enjoys a long and proud history. In recent years, the University has added and renovate facilities to better serve its

NORESCO presented a solution with an energy savings performance contract, which provided Kutztown University with the needed upgrades and improvements while simultaneously addressing

After the success of the first project, Kutztown and NORESCO added two additional contract amendments. Amendment 1 involved several energy conservation measures, including window screens and the

Amendment 2 included a metering project which involved the installation of electric, steam, water, and gas utility meters. These meters were integrated with both the existing direct digital control system and with the EnergyCAP® utility monitoring system.

Guaranteed Energy Savings Program

Information on the Guaranteed Energy Savings Program. The main goal of the program is to provide technical and financial assistance to state agencies, local government units, school districts, and institutions of higher learning.

Governor Dayton signed Executive Order 11-12 in April 2011 titled "Providing for Job Creation through Energy Efficiency and Renewable Energy Programs for Minnesota's Public Buildings." EO 11-12 established the Office of Guaranteed Energy Savings Program, within the Department of Commerce, Division of Energy Resources. We provide technical, contractual and financial assistance to state agencies, local government units, school districts, and institutions of higher learning that elect to implement energy efficiency and renewable energy improvements through Guaranteed Energy Savings Contracts.

The intent of this program is to maximize job creation and operational cost savings through investment in public facilities with the goal of reducing aggregate energy consumption by 20 percent throughout all state agencies.

RESOURCES

- Forms & Documents
- Fact Sheet
- Case Studies

QUESTIONS?

Email: energysavings.programs@state.mn.us
Local: 651-539-1886
Greater MN only: 1-800-657-3710

Trap Maintenance and Repair
Savings $43,652

te Steam Piping
Savings $10,213

ooofing
Savings $12,627

ter Project
Annual Savings $12,627

4 – Window Replacements
Annual Savings $46,396

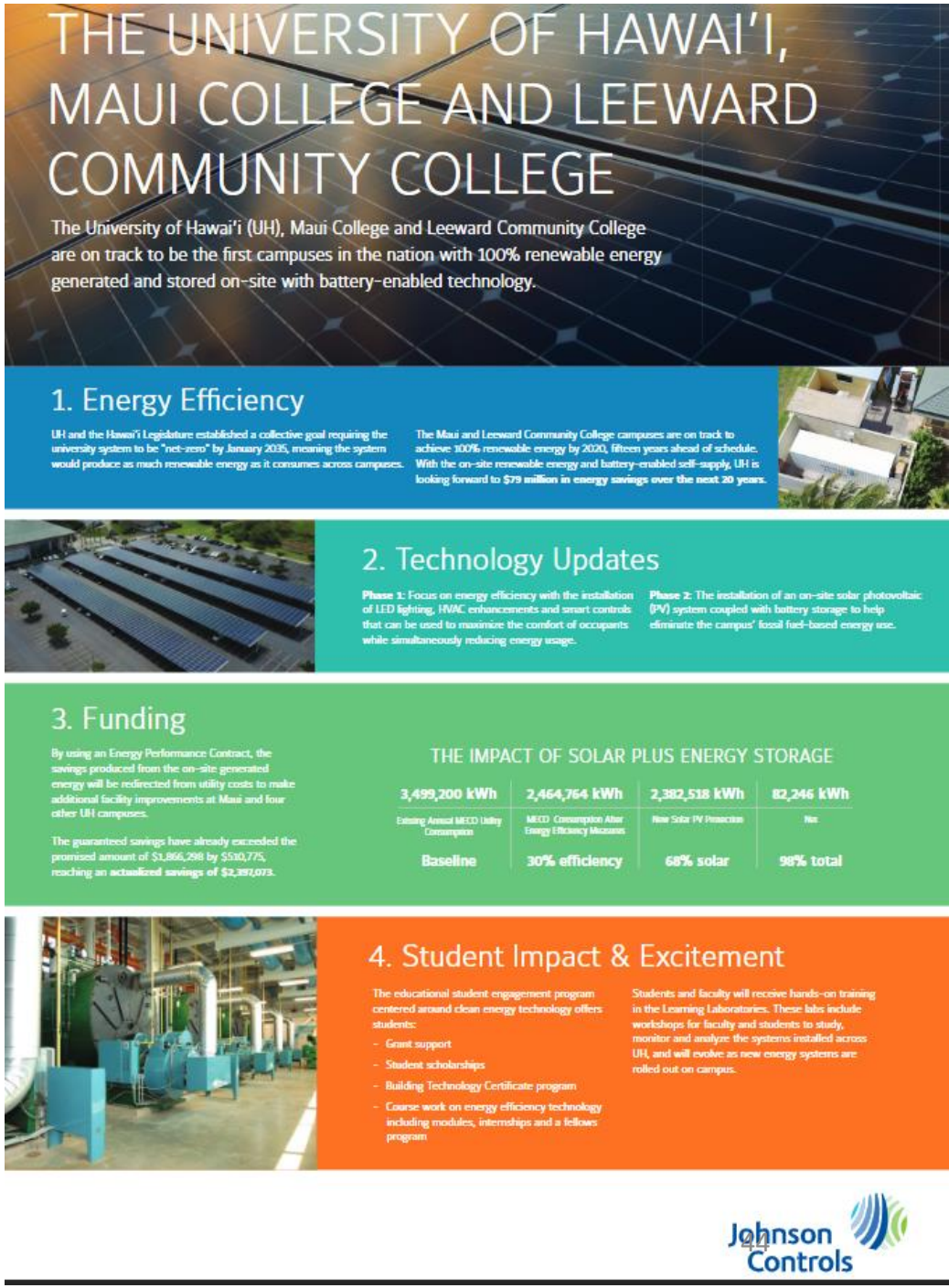
5 – Kitchen Hood VFD Controls
Annual Savings $29,922

Annual Savings $2,133

11 – Loading Dock Infiltration Control
Annual Savings $3,125

18 – Energy Conservation Through Behavior Change®
Annual Savings $86,000

Energy Savings Contracts Renovation plus Renewables



2. Technology Updates

Phase 1: Focus on energy efficiency with the installation of LED lighting, HVAC enhancements and smart controls that can be used to maximize the comfort of occupants while simultaneously reducing energy usage.

Phase 2: The installation of an on-site solar photovoltaic (PV) system coupled with battery storage to help eliminate the campus' fossil fuel-based energy use.

3. Funding

By using an Energy Performance Contract, the savings produced from the on-site generated energy will be redirected from utility costs to make additional facility improvements at Maui and four other UH campuses.

The guaranteed savings have already exceeded the promised amount of $1,866,298 by $510,775, reaching an **actualized savings of $2,397,073**.

THE IMPACT OF SOLAR PLUS ENERGY STORAGE

3,499,200 kWh	2,464,764 kWh	2,382,518 kWh	82,246 kWh
Existing Annual MECO Utility Consumption	MECO Consumption After Energy Efficiency Measures	New Solar PV Protection	Net
Baseline	**30% efficiency**	**68% solar**	**98% total**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