

February 14th Lunch and Learn – Energy

Speakers:

Emily Quinton (Sustainability Program Manager – Summit County | equinton@summitcounty.org)

Scott Dwire (Outreach Supervisor – Resource Innovations | sdwire@resource-innovation.com)

Peter Nelson (Sustainable Business Program Manager – Salt Lake City Corporation | peter.nelson@slcgov.com)

Max Becker (Senior Associate – Utah Clean Energy | max@utahcleanenergy.org)

Track your energy usage. Park City and Summit County have good plans for renewable electricity. Natural gas is what most buildings use for heating, usage is going up (and associated emissions), and prices are very volatile.

For general questions contact Evan Hodson | evan.hodson@parkcity.org

Emily: State of renewables

- Renewable energy is just a part of economic transition to a “fossil fuel-free and resilient future”
- Pursue efficiency first -> generate that energy with renewables -> electrification -> demand management
- Co-benefits of renewable energy
 - Environmental: reduced greenhouse gas emissions, less resource extraction
 - Economic: cheaper, more jobs
 - Health: less pollution
 - Social: environmental justice
- Focus on solar (all its various types)
- Best resources: [Utah Clean Energy](#) and [Department of Energy](#)
- Producing solar energy will affect your RMP contract
- What is Summit County doing?
 - Strong goals for powering County government facilities with solar
 - On-site (rooftop) and off-site (Elektron)
 - Community strategy = enabling access (make it more widely available)
 - Reducing barriers (solsmart)
 - Community Renewable Energy Program (Utah Renewable Communities)

Scott: energy efficiency incentives

- Rocky Mountain Power (RMP) and Dominion have a lot of incentive programs with money available for energy saving actions; Resource Innovations can help you access and take full advantage of them **FOR FREE!!!**

- They do a walk through to identify your low-hanging fruits for saving energy and money, as well as advice and referrals for larger or custom projects (also free and significant incentive funding available).
- They then advise on incentives and help find qualified contractors
- WattsMart (electricity) /Thermwise (natural gas) Incentives exist for:
 - Lighting (RMP)
 - HVAC (Both)
 - ARC – advanced rooftop controls
 - 25-60% energy savings
 - Fewer breakdowns and repairs
 - Remote monitoring
 - Enhanced indoor air quality
 - Case Study: Valley Fair Mall (Ben Scott | bscott@vestar.com)
 - \$244,400 WattsMart incentive
 - 1,448,706 kWh savings per year
 - \$56,350 Thermwise rebate
 - 4,114 Dth savings per year
 - Much better control and efficiency (competing units)
 - Very quick ROI
 - Retrofits, Replacement, Controls
 - New and Used Food Service (Both)
 - Retrofit and Major Renovation (Both)
 - Envelope
 - Roof and Wall insulation
 - Windows
 - New construction (Both)
 - Lots more incentives available. As always, ask any of us from the Green Business program for advice on these!!

Peter: SLC's Energy Benchmarking Policy

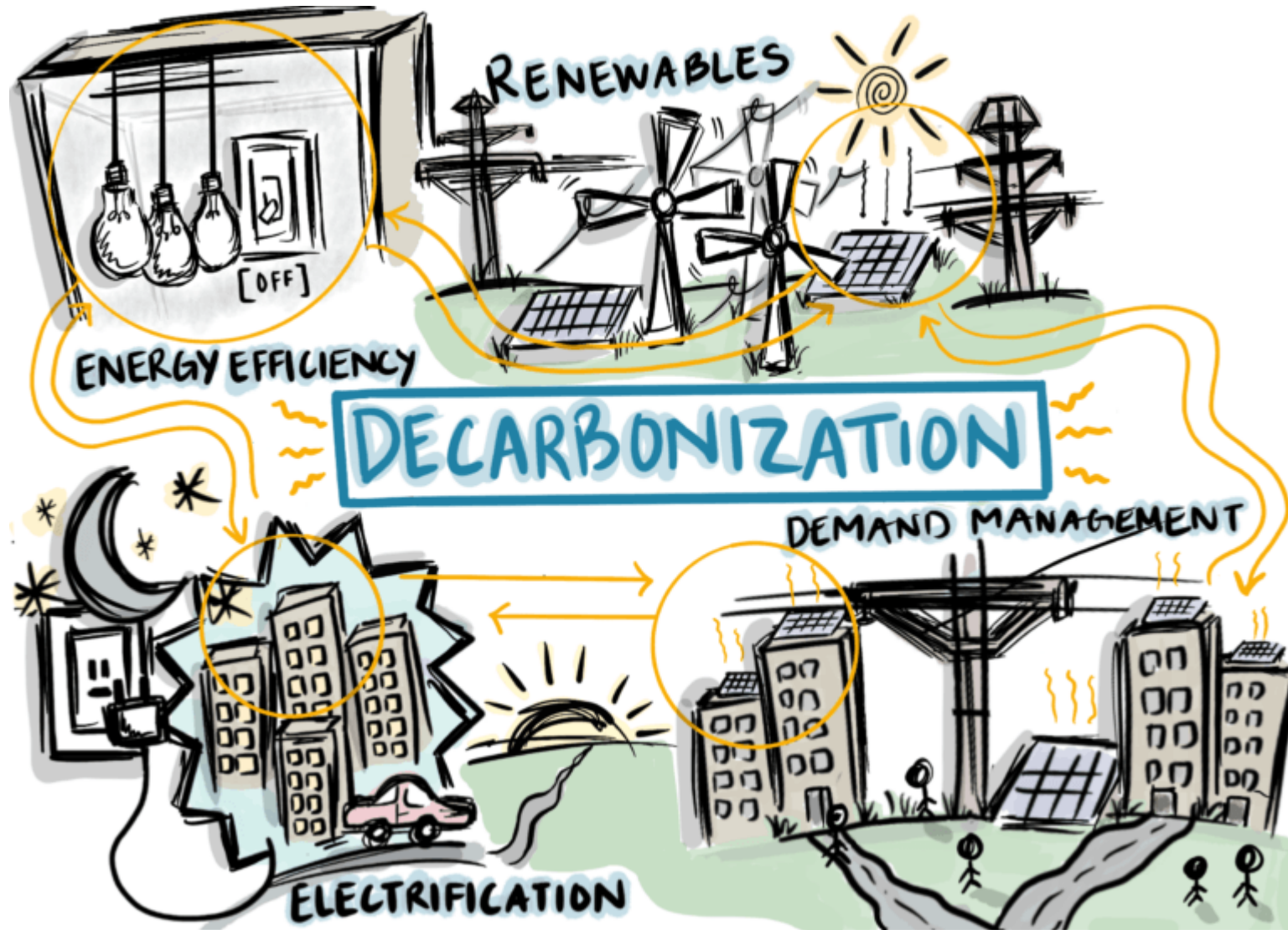
- This policy requires larger building owners to track how well a property performs in terms of energy efficiency
- EPA EnergyStar Portfolio Manager is industry standard.
 - Square footage
 - Year it was built
 - Type of activity
- Great for managing assets, identifying opportunities for energy retrofits for best return on investment
- Identify cost savings opportunities, leverage incentives, implement recommendations
- Case study: Key Bank Tower
 - Low hanging fruit (envelope upgrades)

- Air leaks
- Insulation
- 863% ROI
- Paid for itself in just 0.12 years
- Cost free pillar of sustainability, important for reporting, provides competitive edge (accreditation)

Max: tax deductions

- Inflation Reduction Act
- Can cover 30-70% of a project's cost
- Section 179D
 - Can receive up to \$1 tax reduction on taxable income per square foot of energy efficiency improvements
 - Up to \$500,000
 - Bonus deduction for business that meet "prevailing wage" and "apprenticeship" requirements (6% up to 30%)
- Section 45 (investments in on-site renewables)
- Clean Electricity Production Tax Credit
- Alternative Fuel Vehicle Refueling Property Credit (EV Chargers)
- C-PACE (Commercial Property Assessed Clean Energy)
 - Financing for retrofits, commercial projects, assessments, etc.
 - Net positive throughout the entire project timeline
- Sustain Energy Finance (Utah's first green bank) coming online soon (2024)
- Legislature
 - SB 189 – Net Metering (increase the credit rate for residential and small business rooftop solar: 50 -> 84%)
 - SB 170 – Clean Truck Incentive (new grant funding for zero-emissions medium- and heavy-duty vehicles)

Renewable energy is part of a larger vision for transitioning our economy to a fossil fuel-free and resilient future



- Reduce energy use through strategic building design, efficiency, and conservation
- Generate power with renewable energy sources
- Electrify your energy load to maximize the use of renewably-generated electricity and reduce indoor air pollution from gas appliances
- Manage load on the grid to optimize how much energy is being used and when for an efficiency system

Co-benefits reflect varied motivations for renewable energy

Environmental

Renewable energy produces less pollution and emissions than conventional sources.

Life cycle impacts are minimized when you don't have to mine the "fuel"

Economic

Potential savings on utility bills from generating a portion of your own power. Imagine what this could mean for folks struggling to afford their energy bills?

Health

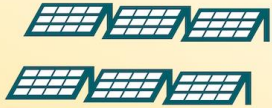
Thoughtful placement of renewable energy systems can maximize health benefits from cleaner air and water

Social

Frameworks like *just transition* and *climate justice* encourage equitable deployment of renewable energy to support traditionally marginalized communities and those economically dependent on the fossil fuel economy

Types of solar energy

The sun's energy can be harnessed on scales large and small, from passively heating a small home to providing utility-scale power to the electric grid.



Solar photovoltaics

By far the most common solar energy technology, photovoltaics are an “additive” energy source that can be used on a single home's rooftop or in a large farm producing thousands of megawatts of electricity—enough to power a midsize city.



Concentrating solar

Instead of turning sunlight directly into electricity, concentrating solar turns it into heat. Mirrors direct sunlight to a place—often a central “power tower”—where the concentrated heat boils a fluid. This boiling fluid can then turn a turbine and make electricity, just like in a conventional power plant.



Solar water heaters

Some homes use solar energy to heat their water. In warmer climates the sun can heat water directly, often with help from a panel; in colder climates, the sun warms a heat-transfer fluid that is pumped indoors to heat the home's central hot water tank.



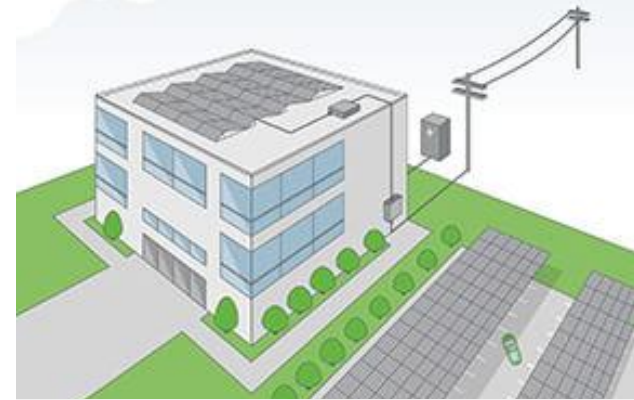
Passive solar heating

Clever building design can harness the sun's energy for heating. Large south-facing windows collect the sun's heat, while building materials like concrete and stone absorb it. The heat can then be distributed through the rest of the building, sometimes with help from fans.

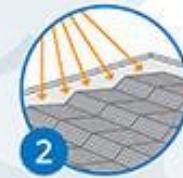
Some larger buildings also use a large, porous black panel on the south face to collect solar energy, heating air before it's drawn into the building's ventilation.

<https://climate.mit.edu/explainers/solar-energy>

How Solar Works



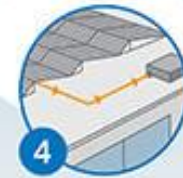
1 Light from the sun contains many tiny bits of energy called photons.



2 Some of these photons hit solar modules, which consist of many connected solar cells.



3 Photons hitting the top layer of a solar cell cause electrons to flow through the bottom layer.



4 This movement of electrons generates direct current (DC) electricity that flows to an inverter.



5 Inverters convert DC electricity into alternating current (AC) electricity.



6 AC electricity is used to power the building, reducing its electricity bills and carbon emissions.



7 This solar electricity can also charge an energy storage system or flow back into the grid to other buildings.

SUNPOWER®

<https://sunpower.maxeon.com/int/blog/solar-basics-how-do-solar-panels-work>

Resources

How to go solar:

- [9 Simple Steps to Rooftop Solar](#) from Utah Clean Energy
- [EnergySage for business](#) supported by Dept of Energy

Understanding how RMP accounts for your solar

- [Connecting Solar to the Grid and Export Credit Rates](#) from Utah Clean Energy
- [Customer Generation](#) info from RMP

What are the County and City doing?

Government operations strategy = direct deployment



Rooftop solar on government facilities



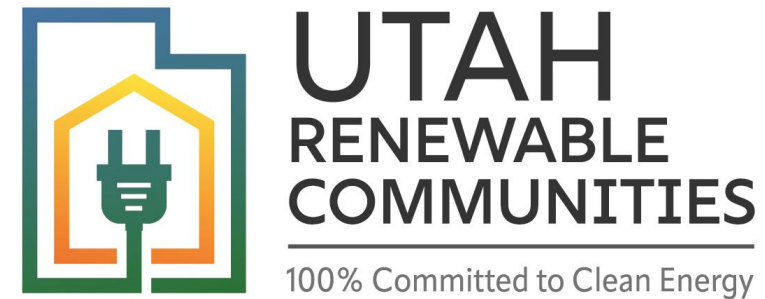
Utility-scale Elektron Solar

Community strategy = enabling access



NATIONALLY DISTINGUISHED. **LOCALLY POWERED.**

Reduce barriers to solar through land use and permitting



Create choice for all customers to be part of the
Community Renewable Energy Program

Energy Audit Programs for your Premises

- Natural Gas (heating)= Dominion
- Electric Utility= Rocky Mountain Power
- 3 providers for energy management programs
- Resource Innovations (Scott & Jessica)
 - Low hanging fruits
 - Basic walkthrough, can advise on Thermwise AND Wattsmart
- Evergreen Efficiency (Tom)
 - Lighting upgrades
- kW Engineering (AJ & Maria)
 - Managed AND Unmanaged customers
 - Custom projects, engineering focus



Energy Benchmarking

A Building Management Best-Practice



**SUSTAINABILITY
DEPARTMENT**

Managing Assets

The screenshot displays the Energy Star Portfolio Manager interface. At the top, the logo and navigation links are visible. The main content area is divided into several sections:

- Properties (81):** A section with an "Add a Property" button.
- Weather Normalized Source EUI Trend (kBtu/ft²):** A line chart showing energy usage from 2013 to 2023. The y-axis ranges from 0 to 300. The x-axis shows years from 2013 to 2023. A "Refresh Chart" button is located below the chart.
- Dashboard:** A central section titled "Dashboard (Metrics current as of 01/03/2024 09:27 AM EST)". It includes a search bar, a "Refresh Metrics" button, and a table of properties.
- Manage Portfolio:** A section at the bottom with a "Transfer ownership" link and a brief description.

Name	Energy Current Date	Last Modified Date - Electric Meters	Last Modified Date - Gas Meters
Bonneville Golf Course 5243713	10/31/2023	12/31/2023 06:49 AM EST	12/15/2023 10:00 AM EST
Central Plant 5839053	02/28/2023	12/31/2023 06:53 AM EST	09/12/2023 03:05 PM EDT
Compliance / Youth & Family 1269099	10/31/2023	12/31/2023 06:53 AM EST	12/13/2023 10:00 AM EST
Facilities 955 Shop - Old Brine Shrimp Warehouse 4134736	08/31/2023	12/04/2023 01:34 PM EST	12/11/2023 10:00 AM EST
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Fire Training Center 4355586	10/31/2023	11/14/2023 11:33 AM EST	12/08/2023 10:00 AM EST
Forest Dale Golf Course 5243733	10/31/2023	12/31/2023 06:50 AM EST	12/18/2023 10:00 AM EST
Glendale Golf Course Clubhouse 5241431	10/31/2023	12/31/2023 06:52 AM EST	12/08/2023 10:00 AM EST

- Monitor Portfolio
- Prioritize Action
- Guide Strategy

Public Services Submissions

Plaza 349 Security & HVAC Improvements - Phase I



Cameron Scott

Bottom Line

- Identify Cost Savings Opportunities
- Leverage Incentives
- Implement Recommendations

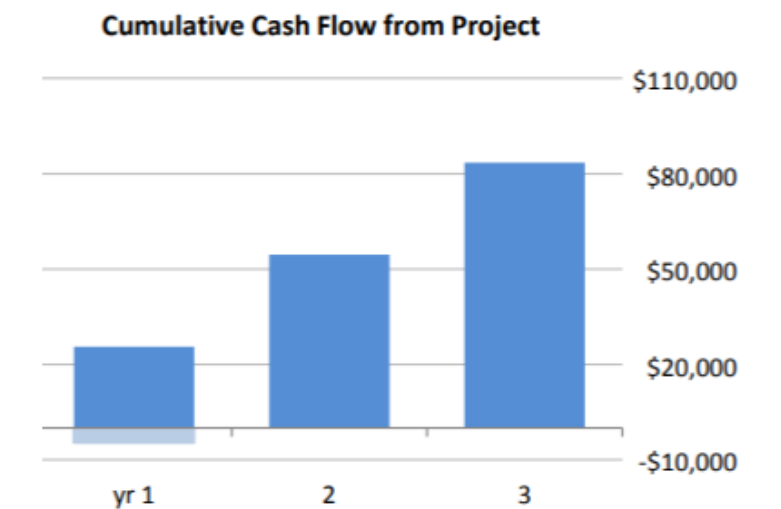


wattsmart® Business

Savings & Incentive Report Energy Management

EXECUTIVE SUMMARY

Energy savings estimate	235,389
Annual energy cost savings	\$ 28,922
Estimated total cost of upgrade	\$ 8,058
watt smart incentive estimate	\$ 4,708
Net cost after incentive	\$ 3,351
Simple payback	0.12
Return On Investment (ROI)	863%



SLC e2 BUSINESS

Harmons

"We, at Harmons, are committed to reducing our environmental impact through responsible practices and by working to create a more sustainable future. We are part of the fabric of our local communities. We see protecting the environment as a way to protect and safeguard the health of our local communities, customers, and associates."

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RECENT MILESTONES



Diverted 56.5% of waste from landfill



87% of vehicles meet EPA 2017 GHG standards



LED lighting upgrade across all SLC stores

ONGOING SUSTAINABILITY EFFORTS



Implementing annual carbon footprint analysis since 2021



Replaced refrigerants with non-ozone depleting alternatives across all SLC stores



Introducing new sustainable packaging effort to minimize plastics, ensure materials are compostable or recyclable, and educate customers on proper disposal

Pillar of a Sustainability Framework

- Foundational Measure
- Cost-Free & Accessible
- Demonstration of Progress



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SLCgreen

Department of Sustainability
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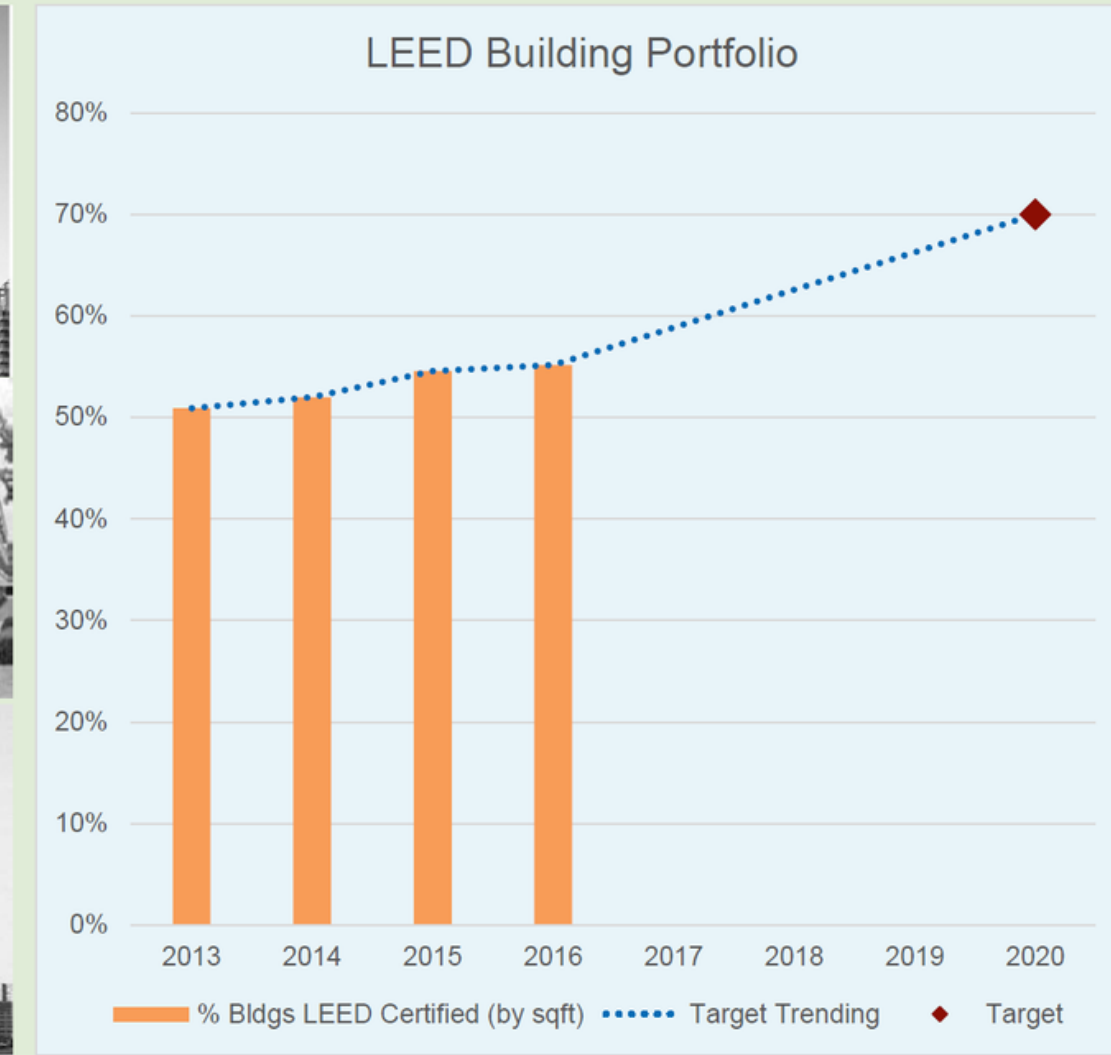
A Competitive Strategy



Green Buildings / Certified Management Progress Towards 2020



Environmental Policy Framework Goal: **70%** green portfolio







Utility Energy Efficiency Incentives

February 26, 2024



WATTSMART[®]
BUSINESS

 **ROCKY MOUNTAIN
POWER**
POWERING YOUR GREATNESS



“I love my job; I get to play hide and seek the whole day!”

- Harry, 47, Customer consultant at a home improvement store

Customer Outreach

- Many customers don't know about the energy efficiency incentive programs or how to participate
- The Wattsmart Business Customer Outreach Team is your resource for energy efficiency incentives
"Who you gonna call?"
- The Wattsmart and ThermWise Business Energy Efficiency Programs are team sports because...
 - You bring your projects
 - Utility Efficiency Incentive programs
 - WBVN (Wattsmart Business Vendor Network) contractors that have program experience





Types of Incentives – Wattsmart/Thermwise

- Lighting (RMP only)
- HVAC (Both)
 - ARC - Advanced Rooftop Controls (Both)
 - Retrofits, Replacement, Controls (Both)
- New and Used Food Service (Both)
- Retrofit and Major Renovation
 - Envelope – (Both)
 - Roof and Wall Insulation
 - Windows
 - New Construction (Both)



Easy Money

When you are considering a retrofit or new construction project, let us know.

- We can help you find funding and incentives
- Direct you to our list of qualified contractors who are familiar with the programs (WBVN)
- If you don't know where to start, we have energy audits, HVAC Check-up, and custom analysis



Why would any company incentivize their customers to buy less of its product?

Cost of building electric power plants

(levelized cost of electricity (LCOE) in US dollars per kilowatt hour)



FREEING
ENERGY

Calculated by Freeing Energy from sources including EIA, NREL, LBL, GTM/MacWood, Lazard, BNEF \ <http://fep.link/g108>

- **Least cost resource**
- **Motivate energy efficient choices**
- **Manage energy load**
- **Customer satisfaction**

Advanced Rooftop Controls - (ARC)

PROFIT

- Save money on utilities
 - 25% - 60% in energy savings
- Fewer breakdowns and repairs
 - Better for motors
 - Economizer optimization
- Remote monitoring
 - Adjust system remotely
 - System monitoring and diagnostic alerts
- Enhanced Indoor Air Quality
 - Better CO₂ level control
 - Better ventilation control
- Incentives and Rebates



Sick Staff



Chronic Fatigue



Absenteeism





Valley Fair Mall ARC Project

Rocky Mountain Power

Wattsmart Incentive

\$244,400.00

Total kWh Savings/Year

1,448,706

Dominion Energy

ThermWise Rebate

\$56,350.00

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4,114

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- Table of Properties:** A table listing various properties with their names, energy current dates, and last modified dates for electric and gas meters.
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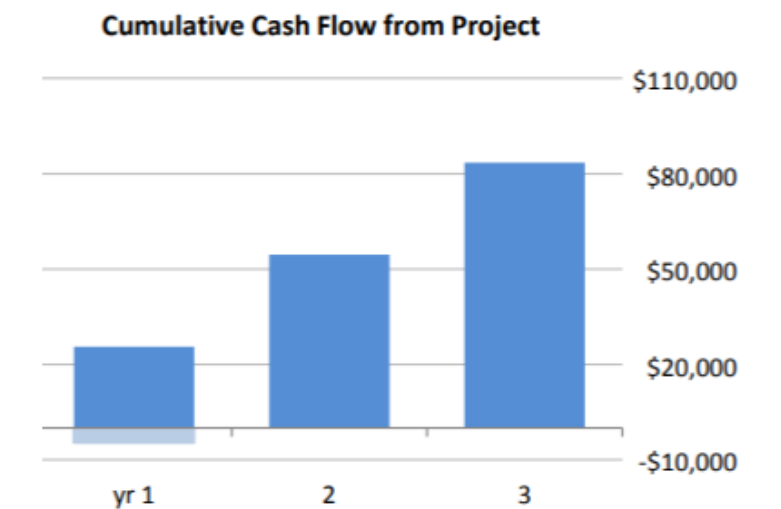


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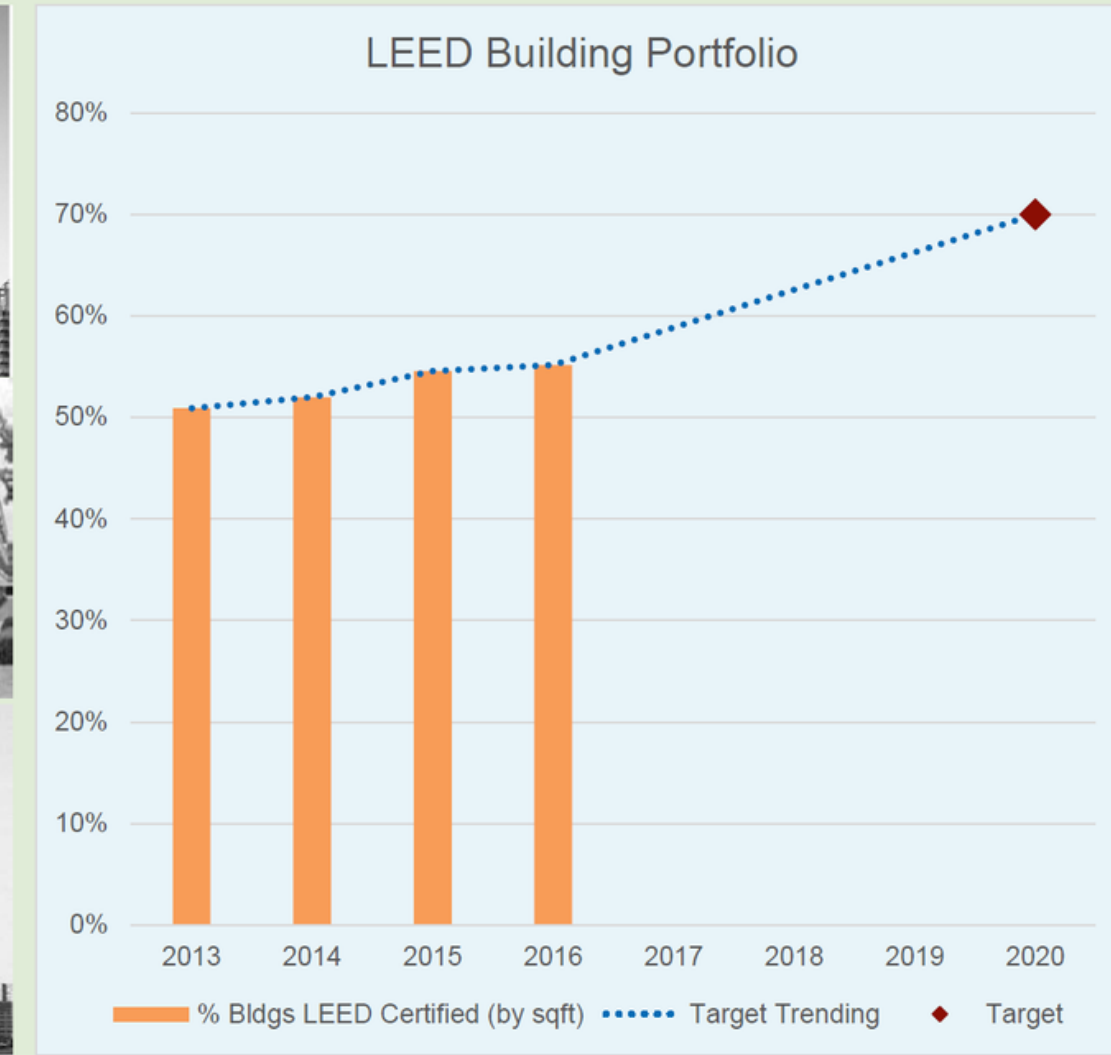
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**Energy
Efficient
Commercial
Building
Tax Deduction
(Section 179D)**



Energy Efficient Commercial Building Tax Deduction (Section 179D)

- Permanent Tax Deduction – reduces *taxable income*
- Changes effective January 1, 2023
- Tax Deduction based on \$/square foot for energy efficiency levels that exceed ASHRAE 90.1 Standard by a certain percent
- Applies to new and existing commercial, institutional buildings, and multi-family buildings that are 4 stories and taller

Key terms: “ASHRAE” / “ASHRAE 90.1”

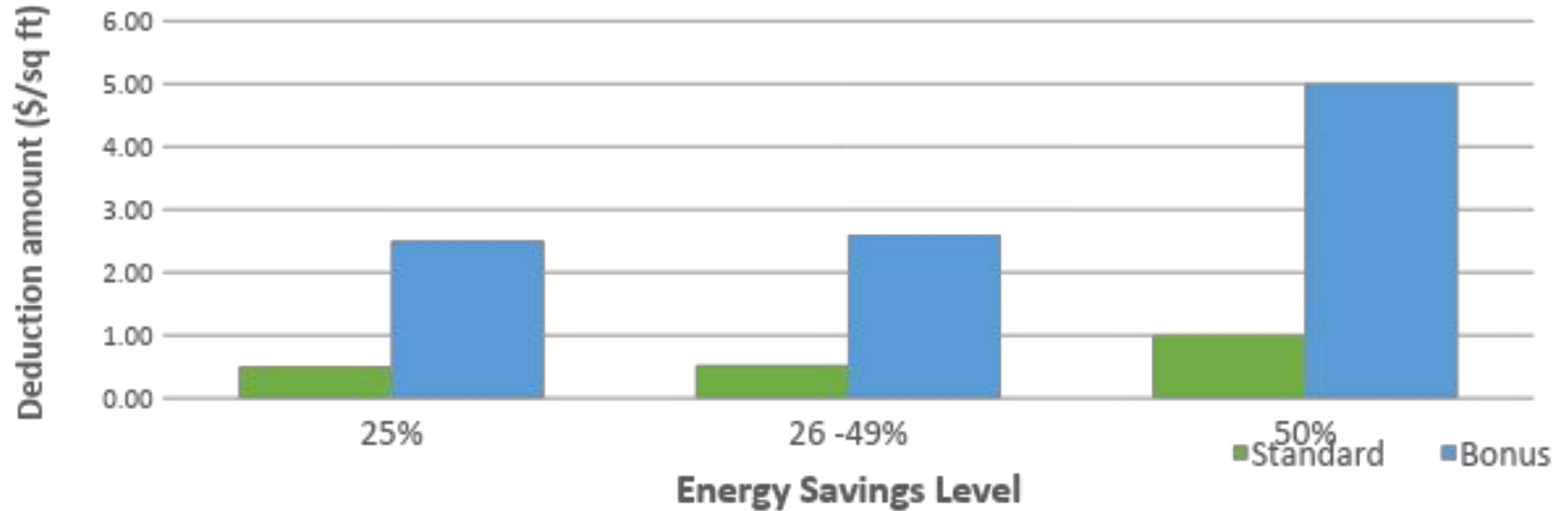
Energy Efficient Commercial Building Tax Deduction (Section 179D)

TAX DEDUCTION PROVISION	INCENTIVE AMOUNT	ENERGY SAVINGS LEVEL	NOTES
Expired deduction	<ul style="list-style-type: none"> • \$1.80/SF 	for 50%+ energy savings	ASHRAE 90.1-2007 is baseline energy standard.
New “Standard” deduction	<ul style="list-style-type: none"> • \$0.50/SF 	for 25% energy savings	Prevailing wage and apprenticeship requirements do not apply.
	<ul style="list-style-type: none"> • An additional \$0.02/SF 	for every 1% energy savings above 25%	
	<ul style="list-style-type: none"> • Up to \$1.00/SF 	for 50%+ energy savings	
New “Bonus” deduction	<ul style="list-style-type: none"> • \$2.50/SF 	for 25% energy savings	Bonus level deductions require that the project meet prevailing wage and apprenticeship requirements.
	<ul style="list-style-type: none"> • An additional \$0.10/SF 	for every 1% of energy savings above 25%	
	<ul style="list-style-type: none"> • Up to \$5.00/SF 	for 50%+ energy savings	

An alternative EUI-based pathway is under development.

Energy Efficient Commercial Building Tax Deduction (Section 179D)

Comparison of Standard and Bonus Deduction in
Expanded 179D



Energy Efficient Commercial Building Tax Deduction (Section 179D)

DATE PLACED IN SERVICE	APPLICABLE REFERENCE STANDARD 90.1
Before 1/1/2015	Reference Standard 90.1-2001
After 12/31/2014 and before 1/1/2027*	Reference Standard 90.1-2007
After 12/31/2026*	Reference Standard 90.1-2019

* Taxpayers who begin construction before 1/1/2023 may apply Reference Standard 90.1-2007 regardless of when the building is placed in service.

Example 100,000 SF Building

Prevailing wage/apprenticeship requirements are NOT met:

- **30%** more efficient than ASHRAE: $(\$0.50/\text{SF}) * 100,000 =$
\$60,000 [Note: $(\$0.50 + \$0.10)/\text{SF}$]
- **60%** more efficient than ASHRAE: $(\$1.00/\text{SF}) * 100,000 =$
\$100,000 [Note: $(\$0.50 + \$0.50)/\text{SF}$]

Prevailing wage/apprenticeship requirements ARE met:

- **30%** more efficient than ASHRAE: $(\$3.00/\text{SF}) * 100,000 =$
\$300,000 [Note: $(\$2.50 + \$0.50)/\text{SF}$]
- **60%** more efficient than ASHRAE: $(\$5.00/\text{SF}) * 100,000 =$
\$500,000 [Note: $(\$2.50 + \$2.50)/\text{SF}$]

Prevailing Wage & Apprenticeship Requirements for 179D “Bonus Deduction”

- **Prevailing Wage:**

- Any laborer or mechanic involved in "construction or maintenance of facility" must satisfy federal prevailing wage requirement beginning 1/30/2023. See <https://www.dol.gov/agencies/whd/IRA>

- **Apprenticeship:**

- At least 10% total labor hours by apprentices before 12/31/22*
- At least 12.5% total labor hours by apprentices from 1/1/23 - 12/31/23*
- At least 15% total labor hours by apprentices after 12/31/23*
- Good Faith Effort Exemption
- All contractors/subcontractors who hire 4 or more people must include at least one apprentice.

* Project start date

Energy Efficient Commercial Building Tax Deduction (Section 179D)

Non-taxable entities are eligible

- Non-profits, schools, tribal governments & churches
- Assign deduction to “building designers”
- Examples: architects, engineers, design build contractors, energy service companies (not contractors)

The same building can recertify as new improvements are made

- Every 3 years (private buildings)
- Every 4 years (government/tax-exempt)