



PICK UP THE PACE.  
IT'S POSSIBLE. AND PROFITABLE.

# ACCELERATED SUSTAINABILITY ACTION PLAN

*for the*  
**City of Carbondale**

March 12, 2023

FOR MORE ON OUR INTELLIGENT NETWORKS  
FOR THE ENERGY AND CARBON TRANSITION:

[WWW.TERRANEXUM.COM](http://WWW.TERRANEXUM.COM)



# OUR GOAL. CLEAN. AND SIMPLE.



TERRANEXUM  
EARTH NETWORK

TerraNexum's goal is to develop and help implement accelerated plans for renewable energy and energy storage deployment to achieve profitable emissions reduction at city and county levels - at the scale of multiple megatons of CO<sub>2</sub> emissions reductions.

Our ASAPs outline goals and strategies for achieving a complete shift to renewable energy on an accelerated timeline. At this time, we are presenting facts and figures for decarbonizing just electricity consumption through the use of new renewable energy production and energy storage systems.

# CLIMBING HIGHER.

YOUR ELECTRICITY RATES,  
THAT IS. NOT YOUR PROFITS.

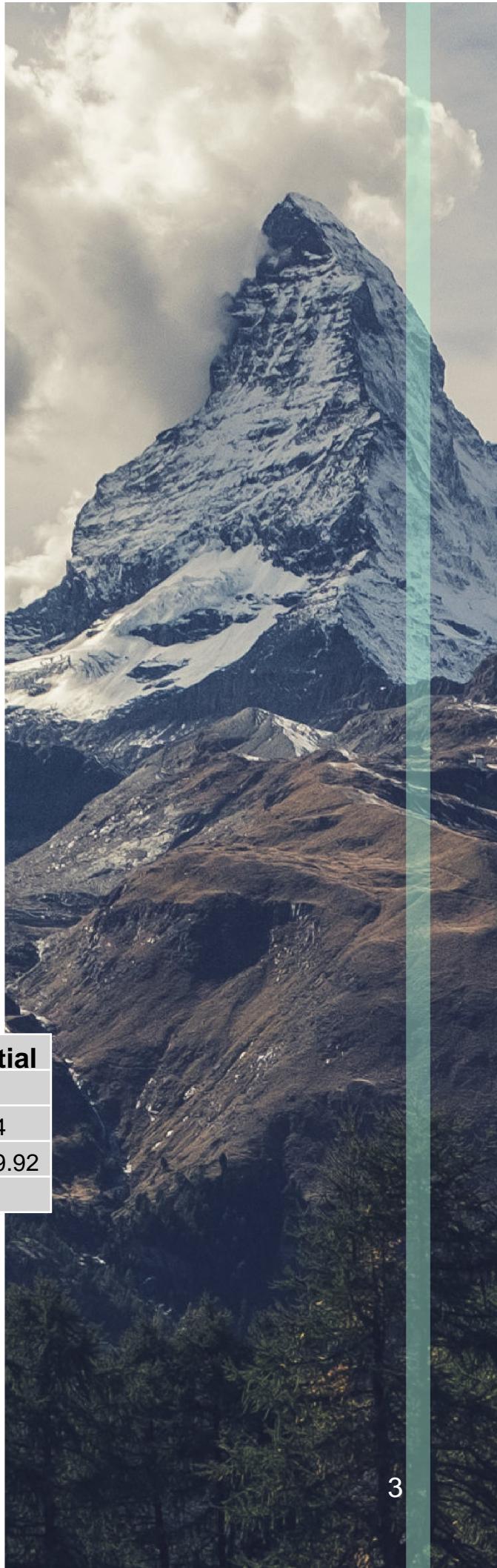
The numbers below were supplied from the 2021 Community Energy Report for the City of Carbondale, published by Xcel Energy and freely available on its website. A copy of this report is also available in our same GitHub repository folder where this ASAP was published.

The potential is high for City of Carbondale to achieve rapid emissions reductions.

	Commercial	Residential
Number of Customers	616	2,282
Total kWh Consumed	15,375,349	17,434,504
Total Cost of Electricity	\$1,757,724.74	\$2,091,359.92
Total CO2 Emissions	7,334	8,316

LET'S GET THAT CORRECTED.

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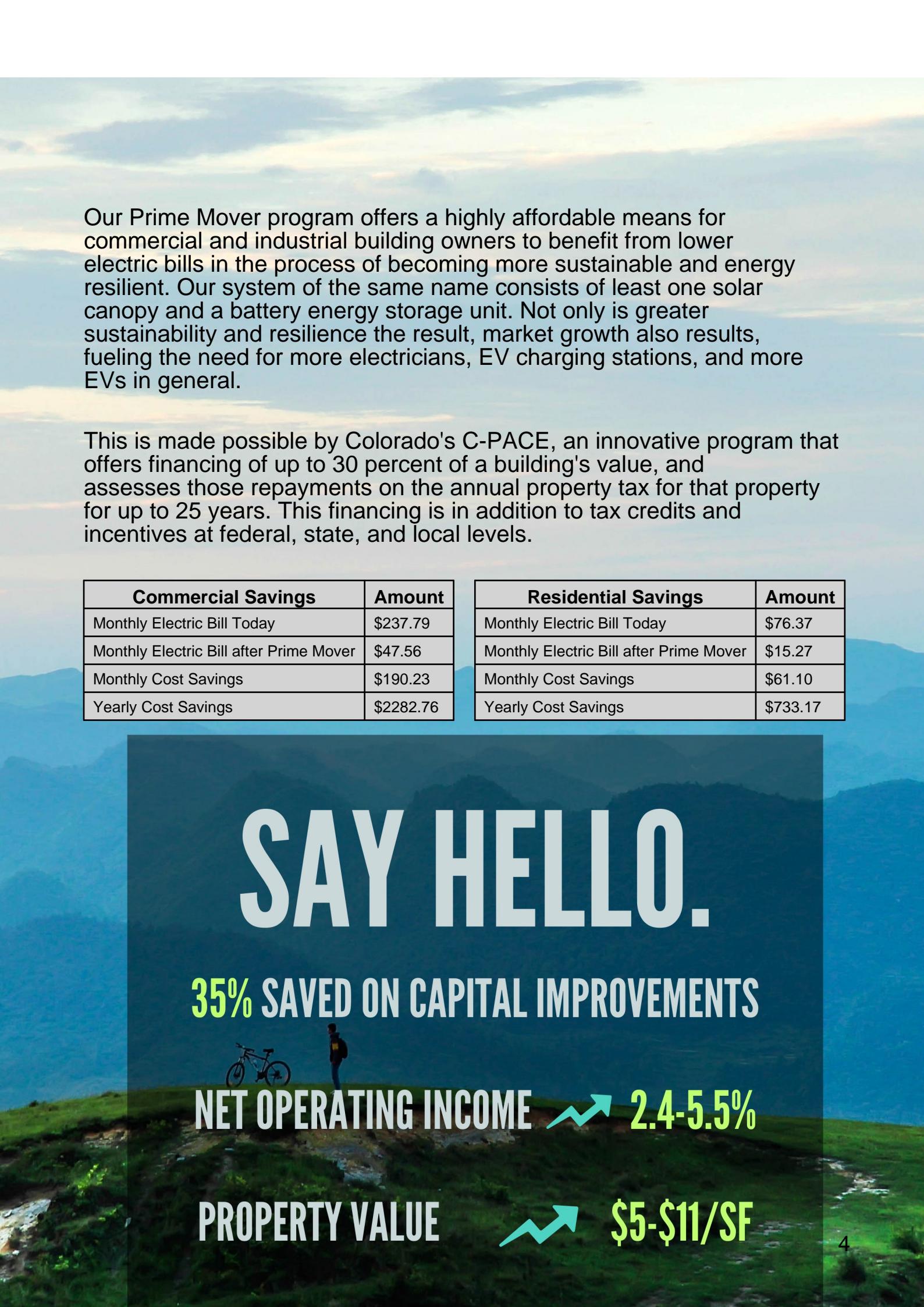


Our Prime Mover program offers a highly affordable means for commercial and industrial building owners to benefit from lower electric bills in the process of becoming more sustainable and energy resilient. Our system of the same name consists of least one solar canopy and a battery energy storage unit. Not only is greater sustainability and resilience the result, market growth also results, fueling the need for more electricians, EV charging stations, and more EVs in general.

This is made possible by Colorado's C-PACE, an innovative program that offers financing of up to 30 percent of a building's value, and assesses those repayments on the annual property tax for that property for up to 25 years. This financing is in addition to tax credits and incentives at federal, state, and local levels.

Commercial Savings	Amount
Monthly Electric Bill Today	\$237.79
Monthly Electric Bill after Prime Mover	\$47.56
Monthly Cost Savings	\$190.23
Yearly Cost Savings	\$2282.76

Residential Savings	Amount
Monthly Electric Bill Today	\$76.37
Monthly Electric Bill after Prime Mover	\$15.27
Monthly Cost Savings	\$61.10
Yearly Cost Savings	\$733.17



# SAY HELLO.

**35% SAVED ON CAPITAL IMPROVEMENTS**

**NET OPERATING INCOME**  **2.4-5.5%**

**PROPERTY VALUE**  **\$5-\$11/SF**



A single Prime Mover system costs \$49,728.40. To transition to 100 percent renewable energy, it would require 4,495 Prime Mover systems to provide enough electricity for all residential and commercial customers in the City of Carbondale. This would cost \$223,529,158.00 to implement.

With the energy savings Prime Mover owners would see by generating and storing their own electricity, which is \$3,015.93 per year per system and thus \$13,556,590.84 per year across all systems within the City of Carbondale, the Prime Mover systems could pay for themselves in 16.49 years.

This is, of course, too long for businesses to wait to be cash flow positive.

For energy saving projects to be cash flow positive on day one with repayment periods of up to 25 years - it seems like this could change the game.

It already has. Within Colorado alone, 118 such projects have been financed through C-PACE, resulting in 781,603 tons of lifetime GHG emissions reduction and \$77.9M of lifetime cost savings. Projects have been as small as \$53K to as large as \$55.5M.

# TRANSITION TO 100% CLEAN.



more info @  
[terranexum.com](http://terranexum.com)

# C-PACE.

**PRIVATE CAPITAL. TO HELP US  
PICK UP THE PACE.**

C-PACE (Colorado Property Assessed Clean Energy) is an innovative financing program for projects in renewable energy, energy efficiency, and water conservation, to include both retrofits as well as new construction. Projects are financed through private capital and the program was designed to be self-sustaining.

The Rocky Mountain Institute (RMI) in February 2020 reported that financed projects offered a 15 percent or greater savings with bundled low and no cost improvements, a 35 percent savings with capital improvements, NOI (net operating income) increases between 2.4 and 5.6%, and property value increases between \$5 and \$11 per SF. Thus, for a 50,000 SF building, a building owner could see \$250,000 to \$550,000 in increased value.

The benefits: 1) 100 percent financing - no out-of-pocket expenses, 2) is long-term, up to 25 years at a fixed interest rate, and 3) financing is done through a special purpose tax assessment on a property, such that C-PACE payments get paid annually through the property tax bill. The repayment obligation is transferrable to new building owners upon sale of the property, and no personal guarantees or positive cash flow are required to secure this financing. If you have tenants or hotel guests, the tax assessment can be passed through to them.

The goal of C-PACE is for energy savings to be greater than the PACE payments, enabling cash flow positive projects from day one.

**DELAY NO MORE.**

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# OUR BENEFITS.



Our name, TerraNexum, means 'earth network.' We work to accelerate the energy and carbon transition by designing intelligent networks of systems able to advance sustainability and resilience. We develop these systems through applying our extensive knowledge in managing energy, carbon, and other resources, and we design optimized networks to aid in energy, resource, and information flows using the tools of quantum optimization, geospatial and subsurface analytics, and cloud computing.

Our energy and carbon management partners are in all major stakeholder areas, from renewable energy production and storage to electric utilities, companies who wish to remove carbon from the atmosphere, even companies wishing to renovate old oil/gas reservoirs to provide clean, large-scale utility storage of renewable energy. Wherever energy and carbon intersect, there is a point on our network to integrate that work.

Our technology partners include businesses within cloud computing and quantum computing. We are participants within NVIDIA's Inception Program, Microsoft's Startups Hub, and AWS Activate.

Our community partners include universities and groups able to benefit from the free and open-source, open-hardware work we do and seek to continue to do. We are seeking to help local universities within Colorado raise \$30M for both quantum and sustainability R&D and workforce development.

Our next step, with the data and results provided in this report, is to create a detailed geospatial visualization of how City of Carbondale can be serviced over time to reach 100 percent renewable energy over various timeframes. Watch how the energy transition could unfold, through monthly snapshots into the future.

For additional information on any of the above and for references for your further outreach, please reach out.



## GROW MORE THAN PROFITS.



# TODAY

*is the day*

TO MAKE IT HAPPEN.

YOU'VE BEEN WAITING LONG ENOUGH.

For Prime Mover Program inquiries,  
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