Carbondale Community Geothermal District Initiative

Project Initiation & Champion
DOE Contract Manager

CLEER

Funding:
Feasibility & Design Study Award

U.S. DEPARTMENT OF ENERGY | Office of ENERGY EFFICIENCY & RENEWABLE ENERGY
GEOTHERMAL TECHNOLOGIES OFFICE

Lead Partners & Coalition Members

Property Owners and Consultant Team

the GreyEdge group

THIRD STREET CENTER

TOWN OF CARBONDALE ESTABLISHED 1887

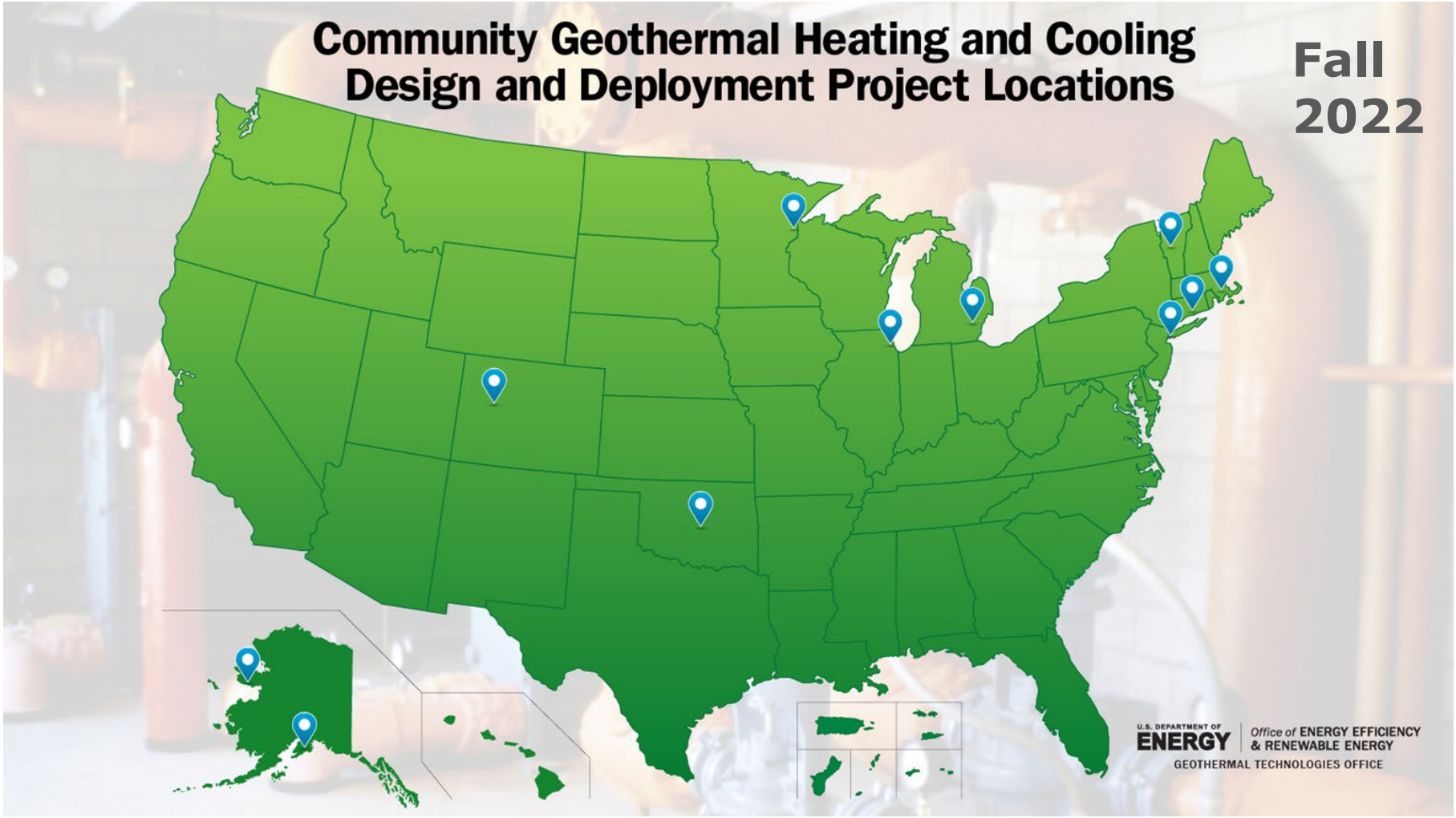
GARFIELD COUNTY LIBRARIES

NREL
NATIONAL RENEWABLE ENERGY LABORATORY

ROARING FORK SCHOOLS

Community Geothermal Heating and Cooling Design and Deployment Project Locations

Fall 2022



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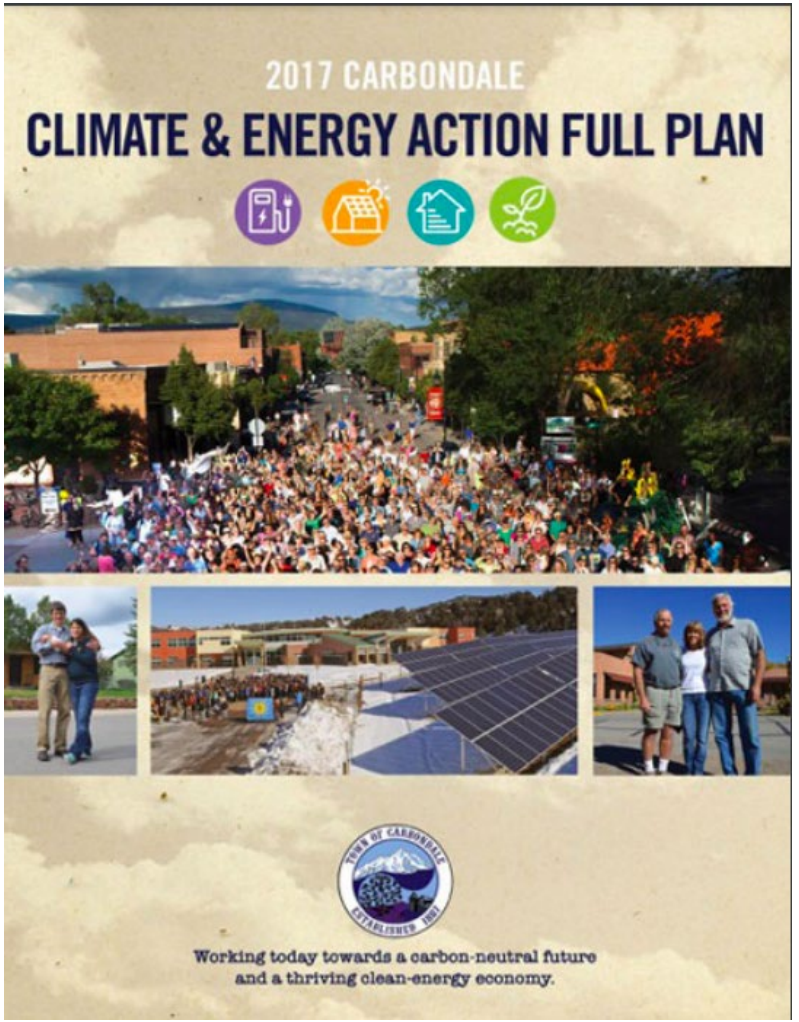
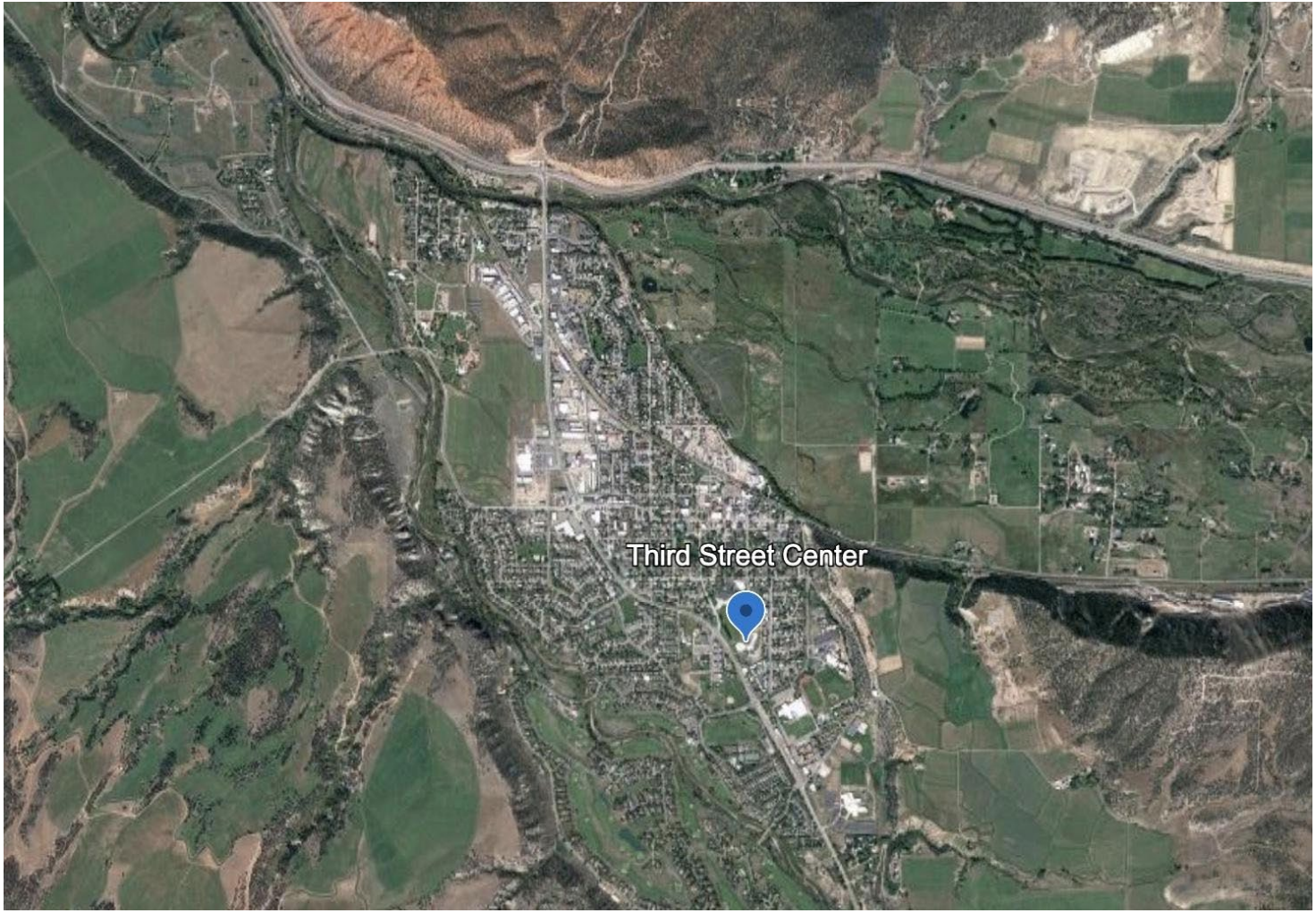
GEOTHERMAL TECHNOLOGIES OFFICE

Background

- **2006** Carbondale Climate & Energy Action Plan
- **2010** Creation of Third Street Center as a solar powered community center 100%
- **2017** Update Carbondale Climate & Energy Action Plan our community's roadmap for the next decade. We strive to become 100% renewable for electricity by 2030 and a net-zero community by 2050.
- **2017** Town asked CLEER to conduct analysis of Net-Zero Energy District around Third Street Center.

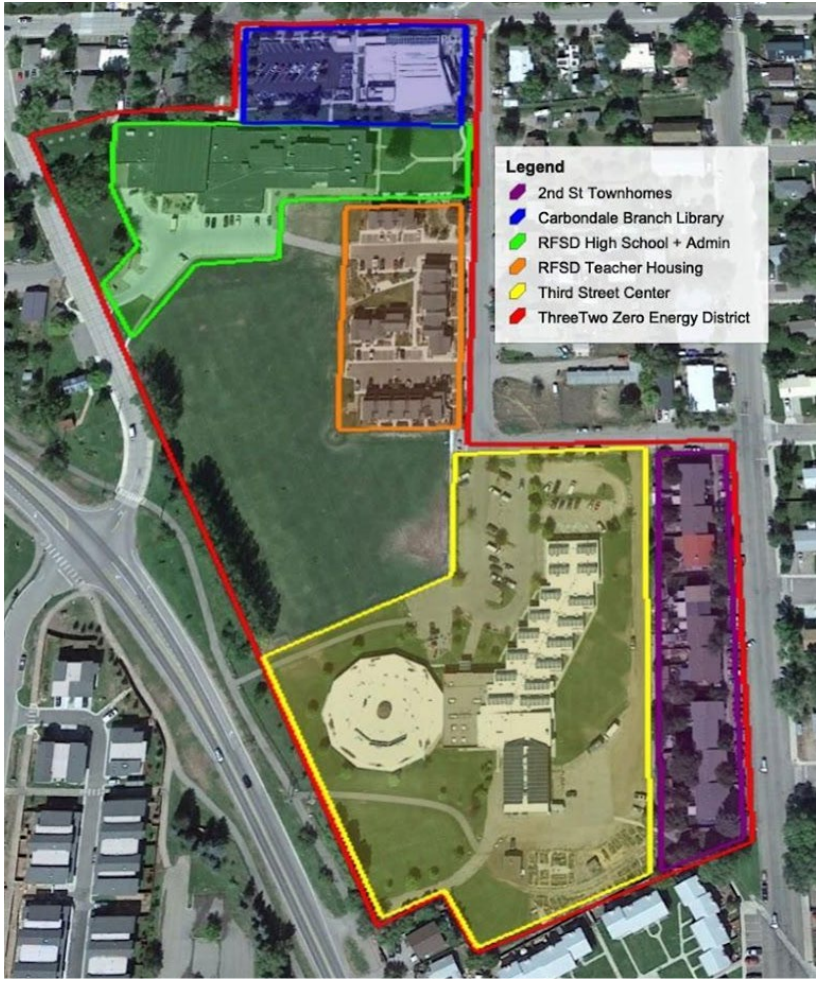



Third Street Center


Carbondale, CO, USA
Legend
2nd St Townhomes
Carbondale Branch Library
RFSD High School + Admin
RFSD Teacher Housing
Third Street Center
ThreeTwo Zero Energy District
N
400 ft
Google Earth

Net Zero Energy District

- Third Street Center (1961/2010)
- Carbondale Library (2013)
- Bridges High School / Roaring Fork School District Admin (renovated 2017)
- 20 Unit RFSD Teaching Housing (2018)
- 2nd Street Townhomes (20 units/1970s)



THE COLORADO SUN

NEWS: ENERGY

Colorado's governor goes deep on geothermal energy grants to boost private renewables market

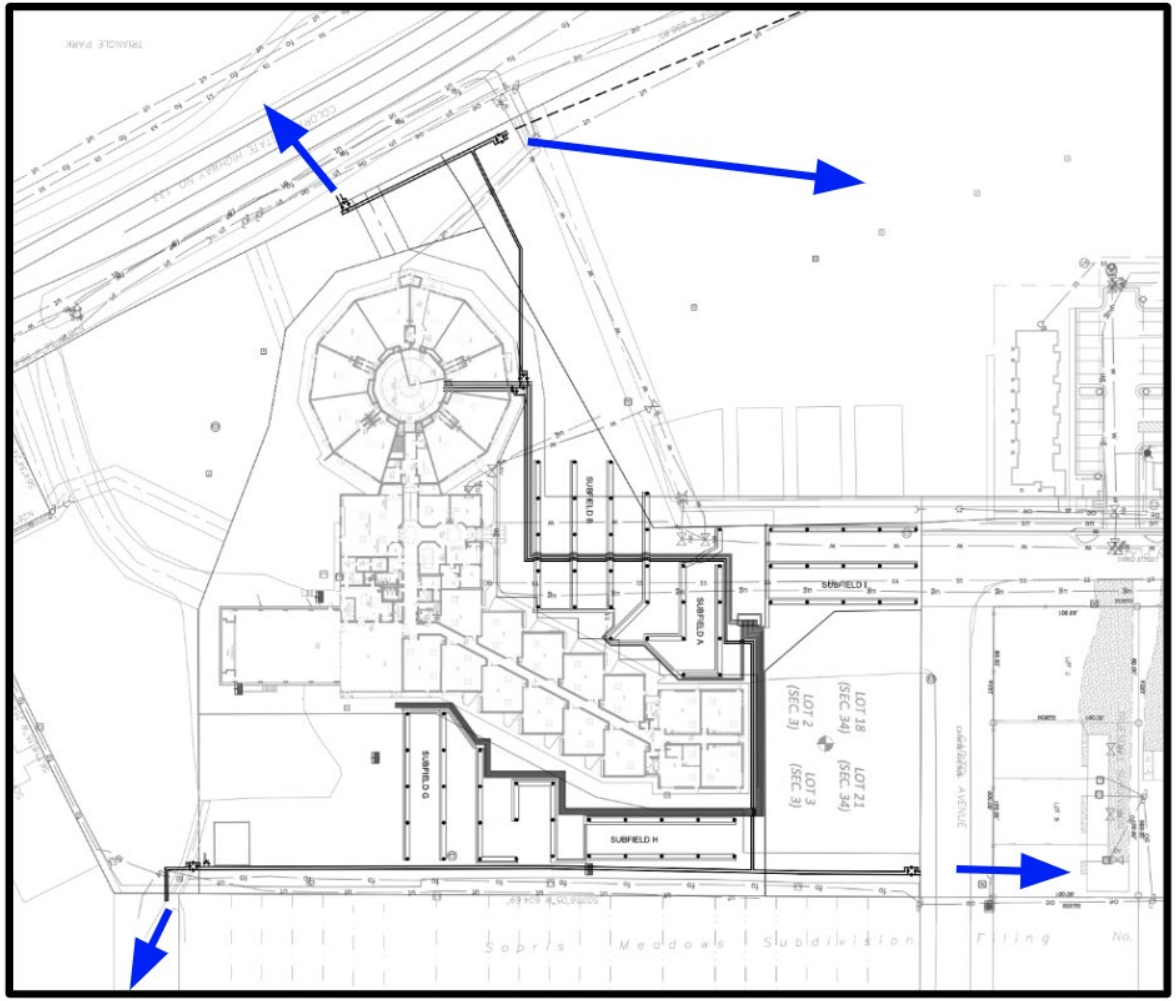
Colorado needs the new technology to fill in solar and wind gaps and round out its energy portfolio, governor says

Michael Booth 12:30 PM MDT on May 24, 2024

Share

A 500-foot drill site, on the right side of the Third Street Center, is part of the Clean Energy Economy for the Region's project, Nov. 29, 2023, in Carbondale. (Hugh Carey, The Colorado Sun)

System designed to serve district and more



Innovation: Expanded Solar Thermal reduces # of boreholes

What did we learn?

- The potential for thermal energy networks to decarbonize our communities is significant and several orders of magnitude more efficient that electrification alone. TENS are crucial to achieve local and state climate goals.

- TENS work best at scale. The initial investment is substantial. Think of a water treatment plant serving one building. The financial model makes sense for operations but long-term investment is needed to get started.

- TENS is a more useful term than geothermal. People have an “ah ha” moment when they realize you don’t need a hot spring to make it work.

- TENS can’t happen overnight. Coordination and funding commitments between local governments, utilities, state and federal government is crucial for implementation. Our collective capacity needs ongoing support.

- Partnerships between municipalities and rural co-ops could be the main drivers of action on TENs. Nonprofits can fill a huge gap in pre-development, stakeholder engagement, and policy work to get them off the ground.

Next steps:

- CLEER and Third Street Center are working to implement a smaller TENS to heat and cool parts of the building.

- Town may consider code changes to encourage TENS in large new developments, but there are a number of questions.

- Need help from State to guide agreements for TENS. In a community like Carbondale, where electric utilities split the town and third provides gas, should the municipality own and operate the TENS with power from the respective electric utilities? Do we have to have two or three different TENS? How can a small community best implement TENS to meet their climate goals?


Thank You