

ADVANCING ENERGY EQUITY & JUSTICE WITH COMMUNITY LEADERS

Les Rubin, Picuris Pueblo

Abel Thompson, Together New Orleans

Jonathan Lewis, Klickitat Valley Health

Jennifer Yoshimura, PNNL (moderator)

2023 DOE Office of Electricity Peer Review

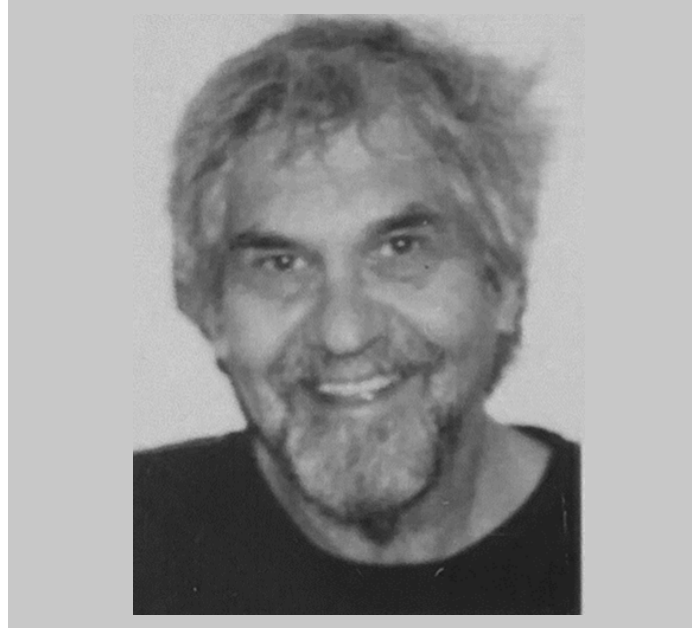
October 24, 2023

U.S. DEPARTMENT OF
ENERGY


Pacific Northwest
NATIONAL LABORATORY

 **Sandia**
National
Laboratories





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Finance Director,
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Les Rubins, Picuris Pueblo



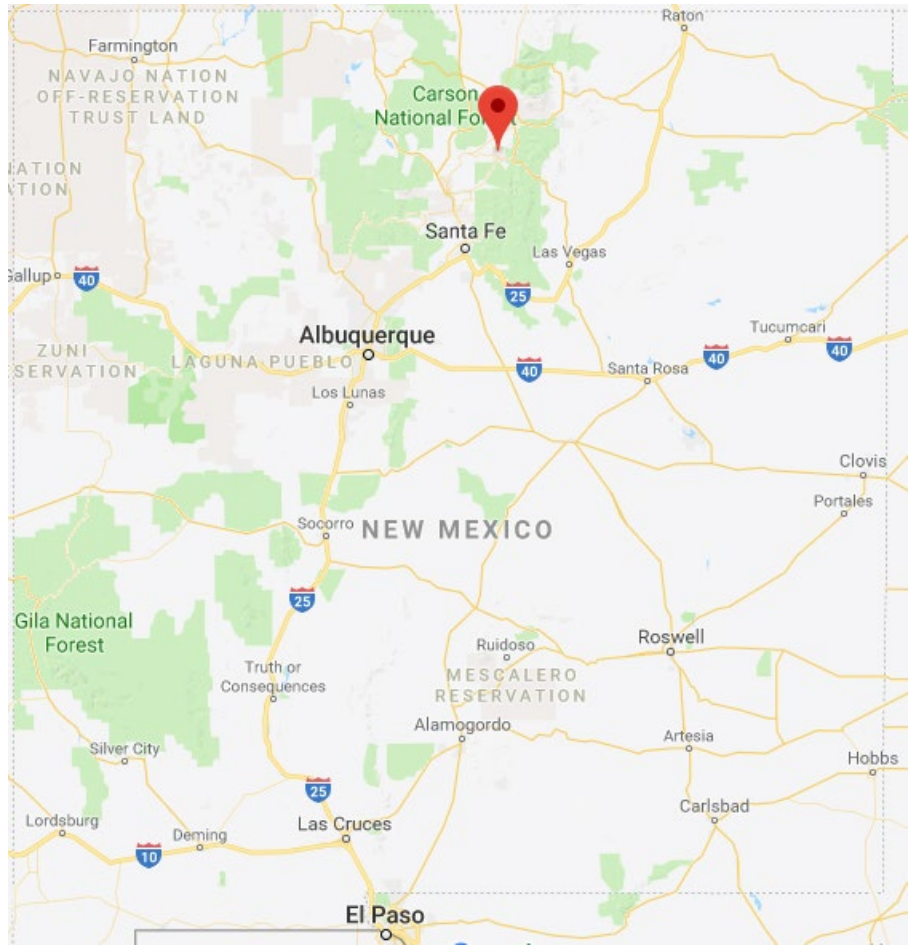


About Picuris Pueblo

Picuris Pueblo currently has 306 members and 86 homes. Our traditional way of life starts with respect of the land and nature and our natural resources. Our everyday life consist of farming, hunting, providing for our families and honoring our culture by practicing traditions and beliefs as our ancestors did before us. The current Governor is Craig Quanchello and the Lt. Governor is TJ Knitter along with six (6) other tribal councilmen.

Picuris pueblo is nestled in a setting of serene beauty in what is known as the "hidden valley" of the Sangre de Cristo Mountains in Northern New Mexico. It is located 60 miles north of Santa Fe, and 24 miles southeast of Taos on scenic Highways 75 & 76.

Our village rests along the banks of the Rio Pueblo which nourishes the evergreens, cottonwoods, aspens, grasses and flowers that blanket our valley and surrounding mountains. The scenic beauty is unsurpassed in New Mexico, The Land of Enchantment.



Tribal Considerations

- Traditional Values of the Tribe and its relationship to Mother Earth
- Self determination
- Remove its dependency on third party energy infrastructure
- Protect itself from external threats:
 - Wildfires that may impact utility Grid
 - Cybersecurity concerns
 - Terrorism
- Decrease the overall cost of electricity

Community Solar Phase I Completed 2017

The first phase of the Picuris Community Solar commenced commercial operation in January 2018. The 1 MW project utilized a combination of funds from a Department of Energy (DOE) Grant and a conventional loan and all the energy produced goes directly into the Kit Carson Electric Cooperative grid.

The tribe receives its revenue from a power purchase agreement with Kit Carson Coop which pays for each KW generated. The tribal buildings, tribal member homes and economic development buildings are billed by Kit Carson as any other consumer subject to the PRC approved rates.

The surplus generated by the difference of the monthly revenue received and the monthly loan payments has allowed for a \$ 75 subsidy per household for the four winter months and \$ 50 subsidy per household for the remaining eight months.

Community Solar Phase II ***(Under Construction)***

The Pueblo has secured another DOE grant for a Solar Microgrid project that would provide electricity directly into the tribal buildings, tribal member homes and economic development buildings that would include the new travel center complex. The matching requirements for the tribe has been reached from funds from Wells Fargo and from 11th Hour Project Foundation.

The microgrid design includes energy storage that would support the electricity needs when the solar array is not generating and would be available for backup if the utility grid is off line. The tribe is partnering with Sandia National Labs to provide an energy analysis that would be used as the basis for requesting Grant funds from the DOE Office of Electricity Energy Storage Program.

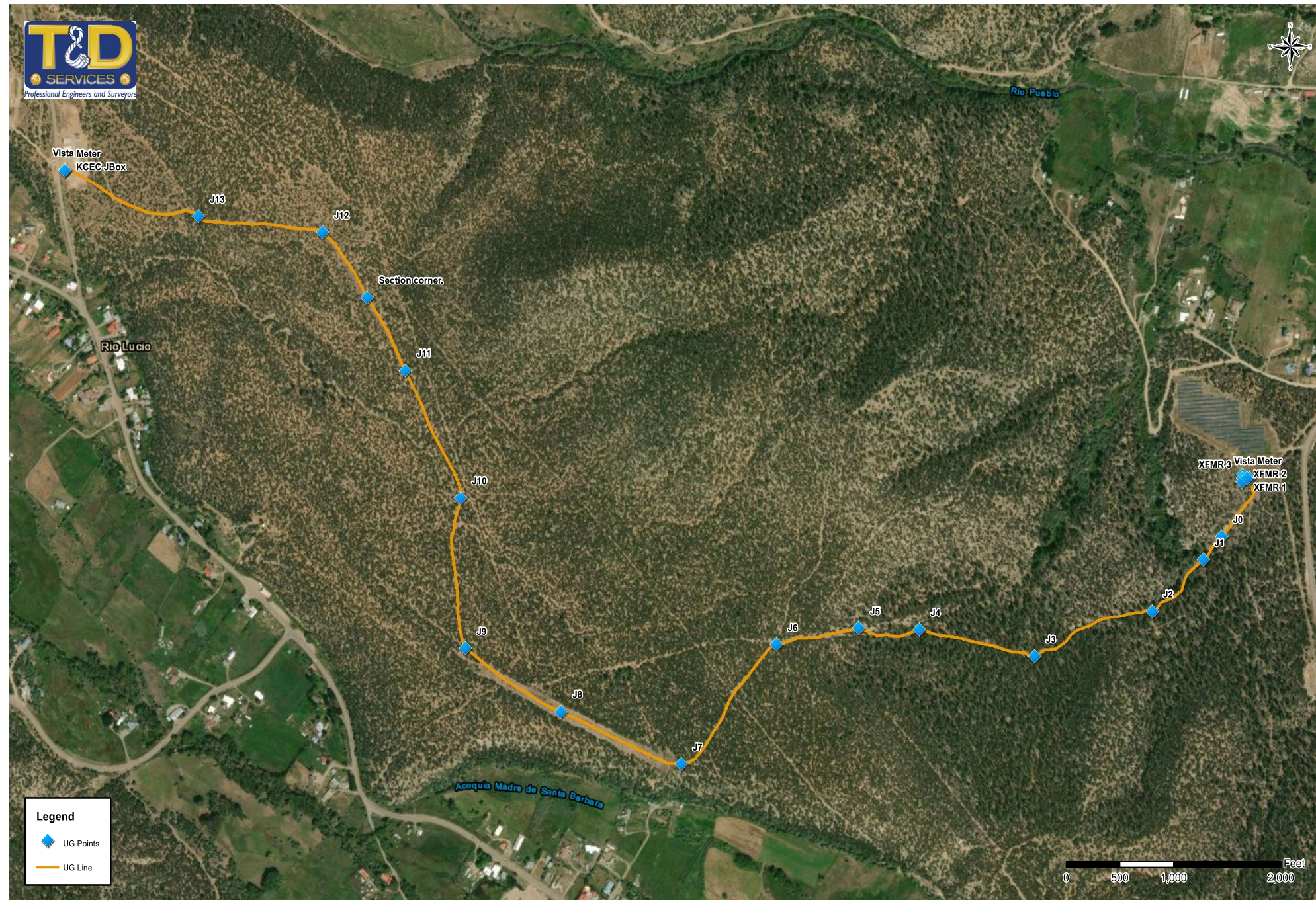
The microgrid will reduce the cost of electricity and will be significantly less than the present cost that uses the Kit Carson Coop system. The goal is that with both solar projects, the tribal household members would have their electric bills completely subsidized.

Phases IIa and IIb Solar Array



1 MW (750kW+250 kW) with 1,800 solar panels; 8 inverters
Annual Energy Production is 1.89 GWh

Route of Dedicated Feeder from solar array to Pueblo (on Pueblo lands)



Phased Approach for Microgrid

Phase I – 1 MW Solar Array – Completed 2018

Phase IIa – 750 kW Solar Array – Groundbreaking today

Phase IIb – 250 kW Solar Array (extension of Phase IIa)

Phase III – 1 MW/4 hour Energy Storage: 2024

Phase IV – Microgrid with Solar, energy storage
with natural gas generators (as needed for ride through): 2024/2025

Project Partners and Sponsors

US Dept of Energy- Office of Indian Energy

UD DOE- Office of Electricity Energy Storage Program

11th Hour Project Foundation/Wells Fargo Bank

Southern Methodist University/Columbia University

Sandia National Laboratories

Electric Power Research Institute (EPRI)

Kit Carson Electric Cooperative

Sol Luna Solar



Abel Thompson, Together New Orleans



AN INTRODUCTION TO
**community
lighthouse**



NEIGHBORHOOD RESILIENCY CENTERS
WITH SOLAR + STORAGE

DOE PEER REVIEW- ES4SE | TUESDAY, OCTOBER 24

TOGETHER
NEW ORLEANS



CrescentCare
Health Center



Broadmoor Community
Church



Household of Faith

CONSTRUCTION COMPLETE AT 7 LOCATIONS



Community Church
Unitarian



Trinity Christian
Community



New Wine Christian
Fellowship



Bethlehem Lutheran

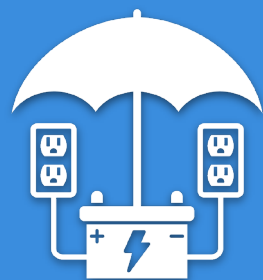


community
lighthouse

How the pieces fit together

RESILIENCE HUBS

with microgrid power in every neighborhood



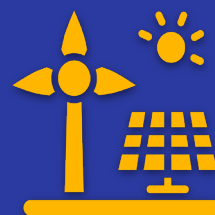
RESPONSE TEAMS

train, canvass & respond when disaster strikes



COMMUNITY CONTROL

with rebates & surplus reinvested in future Lighthouses



CARBON-ZERO ELECTRICITY

at 500 faith & civic institutions
Solar + Storage + Efficiency



UNION JOBS

training, apprenticeships, & living wages

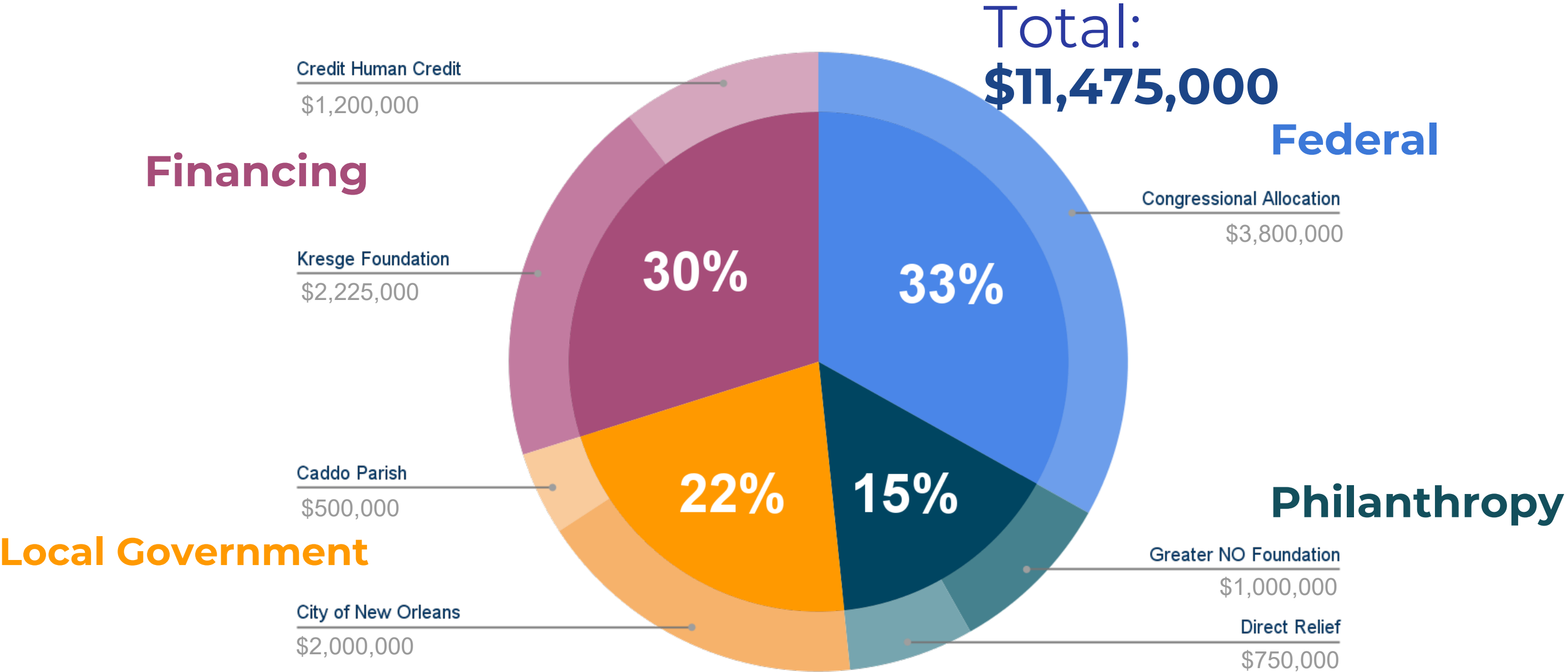


ACCOUNTABILITY DASHBOARD

tracks benchmarks for resilience, clean energy, workforce, utility savings.

TOGETHER
NEW ORLEANS

Pilot Phase funding sources





Jonathan Lewis, Klickitat Valley Health

KVH Energy Projects

Goldendale Energy Exchange for Rural Energy
Solutions





Klickitat Valley
— HEALTH —





From Denmark to Goldendale...



Original Sound: On Recording...



Logan Cullums (WSDOT)

Julie Fonseca de Borges (S...



Despina.Chymeftos

USDA Ambrea Cormier

MacBook Air



**Pacific
Northwest**
NATIONAL LABORATORY





Executive Summary

Goal: Concept microgrid connected to the Klickitat Valley Health and Goldendale School District buildings to provide resiliency to the city of Goldendale and Klickitat PUD.

Key Benefits:



PV and battery reduce peak power on grid



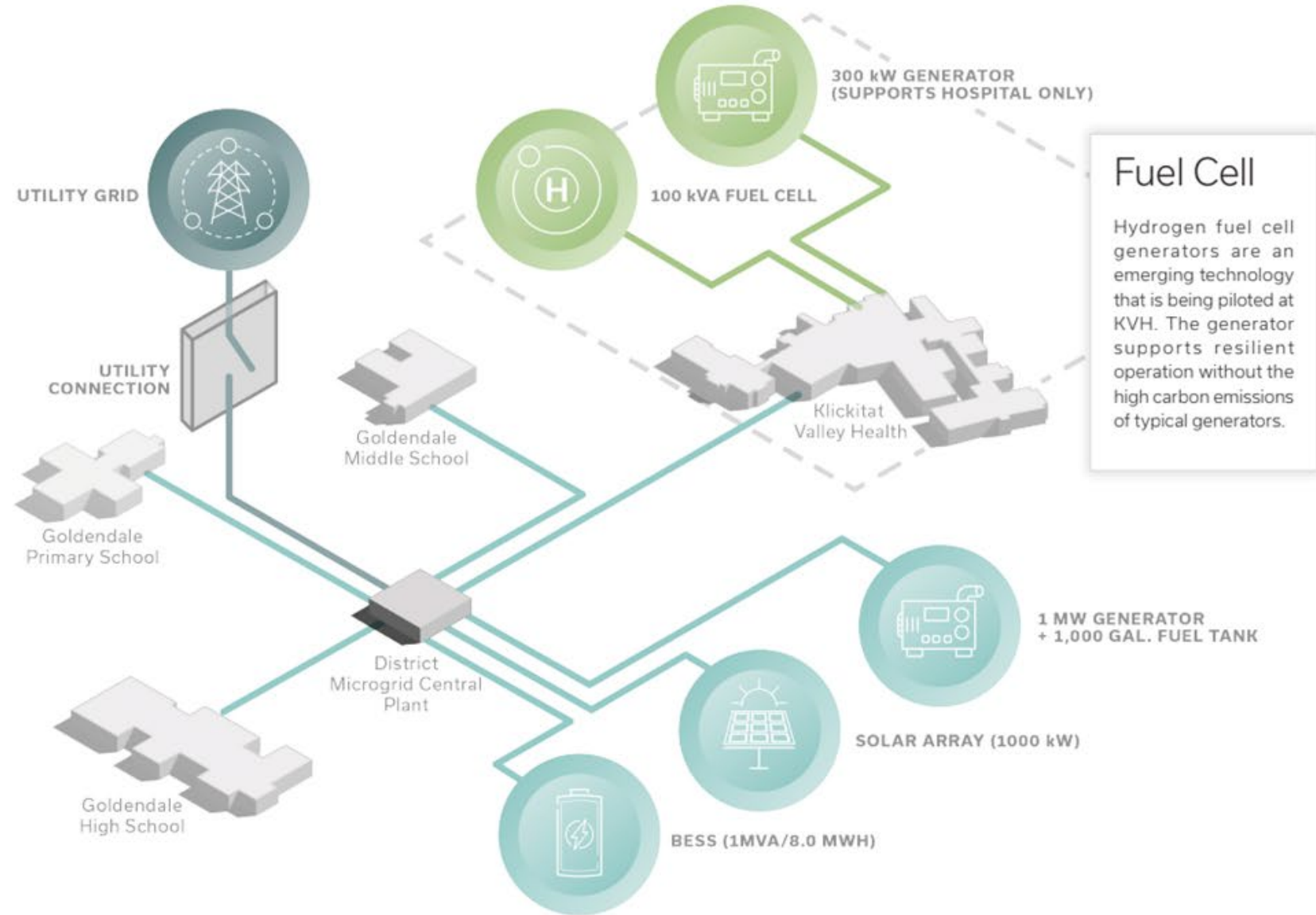
On-site PV reduces electricity consumption on grid



During sunnier months, PV can power buildings beyond three days



Islanded buildings continue to function during outage



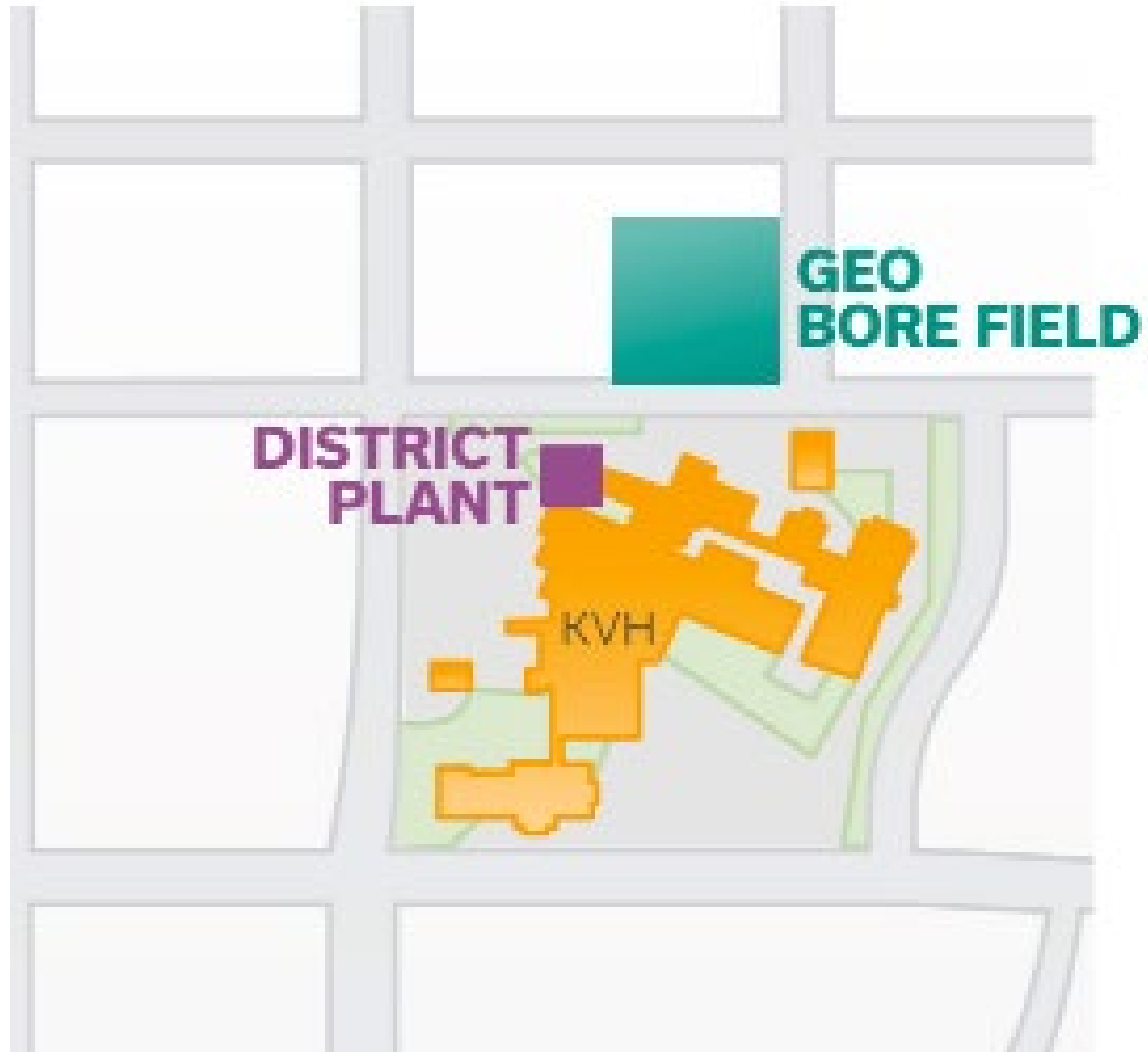
Fuel Cell
Hydrogen fuel cell generators are an emerging technology that is being piloted at KVH. The generator supports resilient operation without the high carbon emissions of typical generators.

Normal Operation CONNECTED TO GRID

During normal operation, the system will help reduce operating costs for the connected buildings and local power company. Operating cost savings are achieved from reduced consumption (PV array) and reduced demand charges. Annual operational savings is projected to be \$95,000.

Resilient Operation DISCONNECTED FROM GRID

During a disruption the microgrid is designed to power the connected buildings for 3 days. The buildings can act as a resilient district, providing shelter and a staging location for the region.



Energy (MWh)

Ground Source Heat Pump System:

69% Reduction in Energy Use

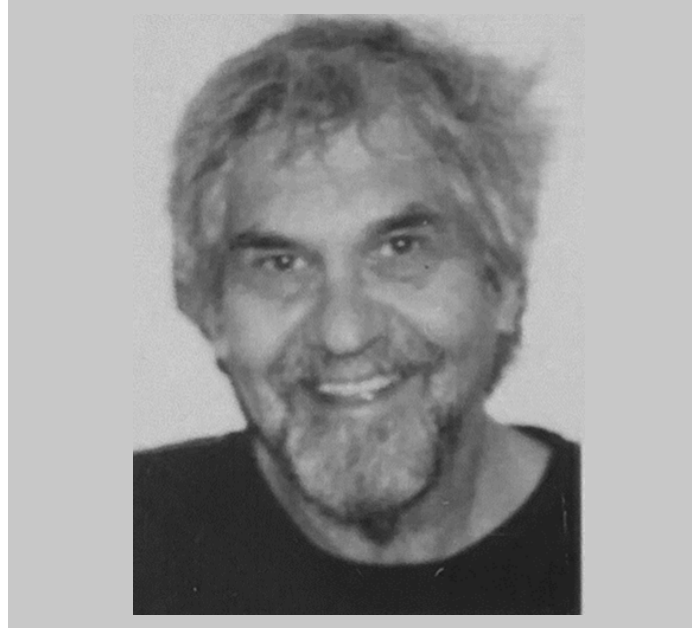
60% Reduction in Utility Cost

93% Reduction in CARBON EMISSIONS





Thank You!



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THANK YOU

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