California Housing Partnership
California's Experts on Affordable Housing Finance, Advocacy & Policy

SCANPH
Southern California Association of NonProfit Housing

2023 LA Affordable Housing Decarbonization Summit

February 16, 2023

This summit is made possible by a generous grant from the **Wells Fargo Foundation.**

Agenda

- Welcome
- Framing LA Affordable Housing Decarbonization
- Panel 1: Advancing All-Electric New Construction
  - Break (15 min)
- Panel 2: Demystifying Electrification Retrofits
  - Lunch 12:30-1:30 PM & Raffle Prize
- Panel 3: Policies for the Decarbonization of Los Angeles' Affordable Housing
- Closing & Announcement

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Framing: Decarbonizing Affordable Housing

2023 LA Affordable Housing Decarbonization Summit

Policy Trends: Moving Towards Decarbonization

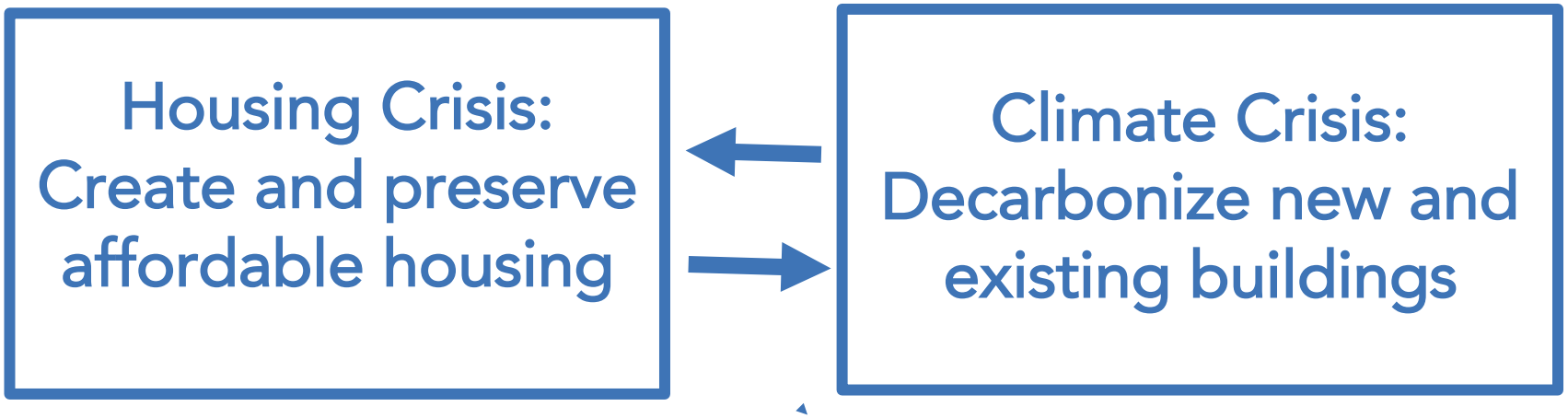
California

- SB 100, signed 2018, targets 100% zero-carbon electricity & achieving carbon neutrality by 2045
- 2022 California Building Code
  - All-electric "ready"
- 70+ cities statewide have adopted policies to reduce reliance on gas in buildings

LA City & LA County

- LA County: Decarbonization part of its 2019 regional sustainability plan
- LA City's All-Electric New Buildings Ordinance, 2022
  - Market-rate buildings- 4/1/23
  - Affordable housing buildings- 6/1/23
- LA City considering electrification requirements for existing buildings:
  - 2022 LAHD, CEMO & LADBS reports
- Mayor Karen Bass' Executive Directive on Homelessness Crisis

How Can We Achieve These Parallel Goals?



Challenges: Decarbonizing Affordable Housing

- Working within cost constraints and complex capital stacks
  - Retrofits: building conditions before electrifying
  - Existing Utility infrastructure (e.g. transformers, panel, etc.)
- Equity & justice concerns
  - Low-income communities most impacted by unhealthy environments
  - Electrification impact on tenants' energy bills
- Concerns about City readiness
  - Staff capacity, inter-departmental coordination
- Workforce concerns
  - Learning curve for new requirements
  - Availability of experience workforce

Opportunities: Available Clean Energy Programs

Statewide Programs

- Building Initiative for Low-Emissions Development (BUILD) **Program**
- Low Income Weatherization Program (**LIWP**)
- Technology and Equipment for Clean Housing (TECH)
- **Solar on Multifamily Affordable Housing (SOMAH)**

Federal Funding

- Inflation Reduction Act (**IRA**) of 2022
  - Investment Tax Credits
  - Rebate programs

Los Angeles City

LA Dept of Water & Power

- **Comprehensive Affordable Multifamily Retrofits Program (CAMR)**
- **Zero by Design**

LABBC

- **Retrofit Accelerator**
- **Advisory Services**

USGBC-LA

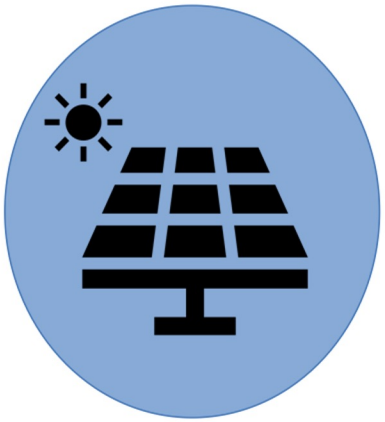
- **Green Affordable Housing Program**
- **Green Homes: Los Angeles**

Achieving Building Decarbonization

Building decarbonization is comprised of four components

Energy Efficiency

Electrification



Renewable Energy

Managed Energy Load

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Advancing All-Electric New Construction

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Panelists

Jesus Hernandez
Director of Housing Development
Community Corp. of Santa Monica

Tim Kohut
Director of Sustainable Design
National CORE

Panelists

Luca Costa
Senior Associate, Projects
Association for Energy Affordability

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Jesús Hernández

Community Corp. of SANTA MONICA
40 YEARS OF BUILDING COMMUNITY

Owner Perspective

- *Vista Ballona* - Mar Vista
- All-electric
- Importance of MEPs

Vista Ballona

50 units; 30-80% AMI

- Large family housing
- All-electric with centralized water heater
- CUAC
- Rooftop solar

Lessons learned

- Owner direction
- Standardize design
- Experienced MEPs
- Individual hot water heat pumps

Individual Water Heat Pump

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Tim Kohut

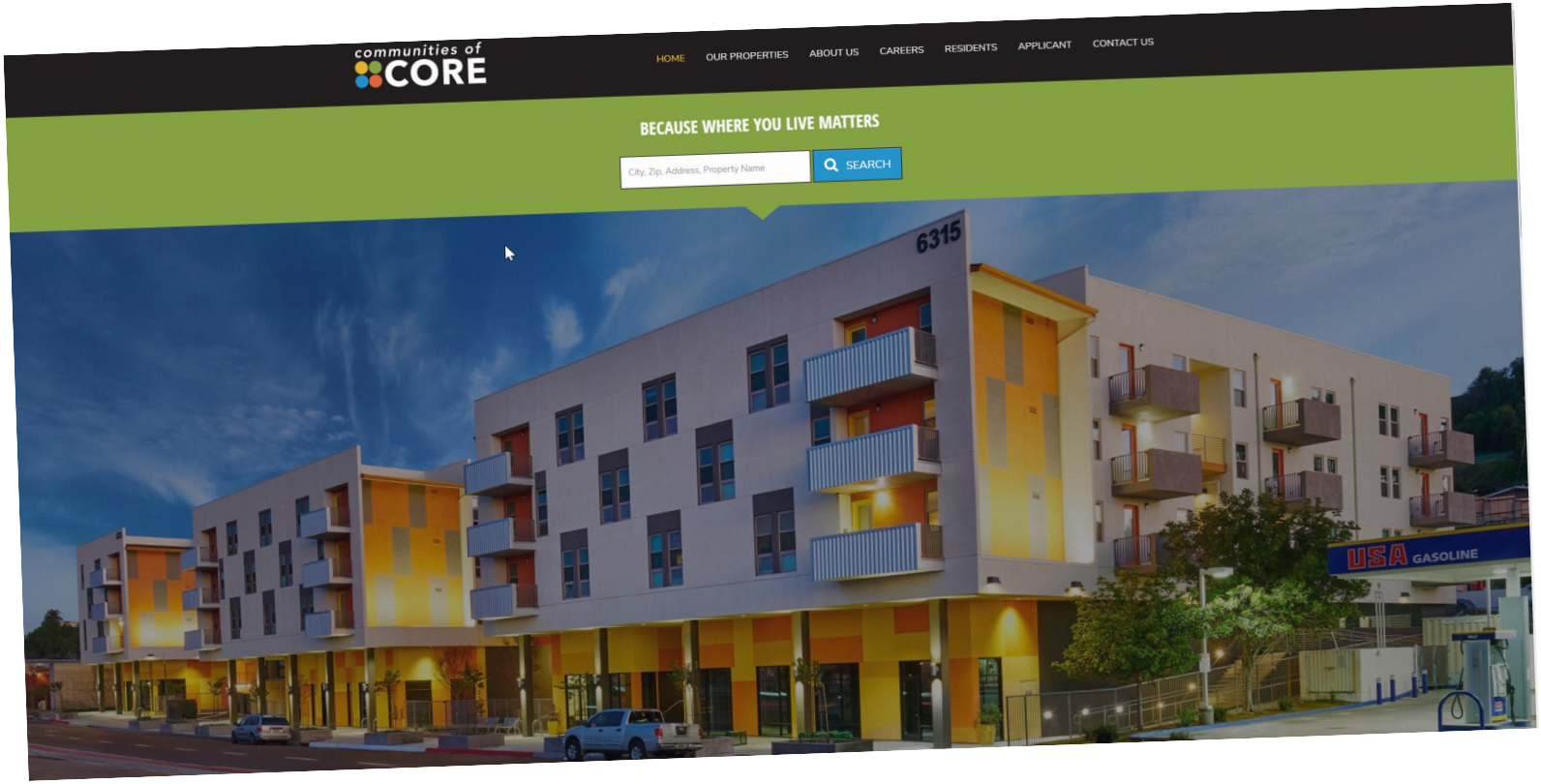
NATIONAL CORE

The Affordable Housing Playbook for the All-Electric Solution…

…economics, technology, budget...

Tim Kohut, AIA, CEA
Director of Sustainable Design
National Community Renaissance
tkohut@nationalcore.org

Why should economics drive the design process?


communities of
CORE
HOME
OUR PROPERTIES
ABOUT US
CAREERS
RESIDENTS
APPLICANT
CONTACT US
BECAUSE WHERE YOU LIVE MATTERS
City, Zip, Address, Property Name
SEARCH
6315
USA GASOLINE

Our Commitment to Sustainability…

National CORE awarded Power Builder distinction by U.S. Green Building Council's 2018 LEED Homes Awards

Jun 20, 2019

Annual awards honor prominent projects, developers, and builders in residential sustainability Rancho Cucamonga, Calif. – June 20, 2019 – National Community Renaissance (National CORE) has been named a Power Builder by the U.S. Green Building Council (USGBC) as a part...

read more

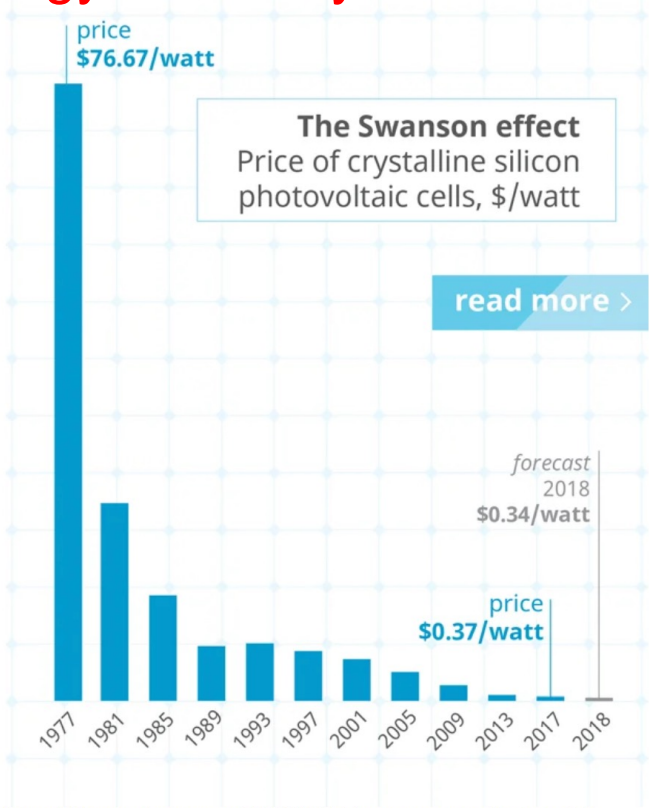
National Community Renaissance becomes first developer to sign onto AIA's 2030 Commitment

Apr 16, 2019

WASHINGTON – April 16, 2019 – The American Institute of Architects (AIA) is welcoming National Community Renaissance (National CORE), one of the nation's largest nonprofit developers of affordable housing, as the first developer to sign the AIA 2030 Commitment. AIA's...

read more

Energy Efficiency + Renewables – Why is this important now?



https://cleantechnica.com/2014/02/04/current-cost-solar-panels/

The Dropping Cost of PV

1. These are real savings
2. We see this playing out on every project.
3. Affordable housing developers must take advantage of this (there is too much at stake not to)
4. National CORE is way way ahead of the curve on this

The Dropping Cost of Rooftop Photovoltaics – this from 8/13/21

Source Solar, Inc
310 N Indian Hill Blvd #403
Claremont, CA 91711
Phone 714.715.5901
Email info@sourcesolarinc.com
Lic. 805496

August 13, 2021

Scott Bricker, Construction Manager
National Community Renaissance ®
9421 Haven Ave.
Rancho Cucamonga, CA 91730
909-477-9850 Direct

RE: Arrowhead Grove Solar

- 48.6kW DC carport-mounted solar photovoltaic system. $82,134.00 ($1.69/watt)
- 163.8kW DC Roof top mounted solar photovoltaic system. $324,324.00 ($1.98/watt)
- Combined annual output of 303.4 MWh.

Exclusions:

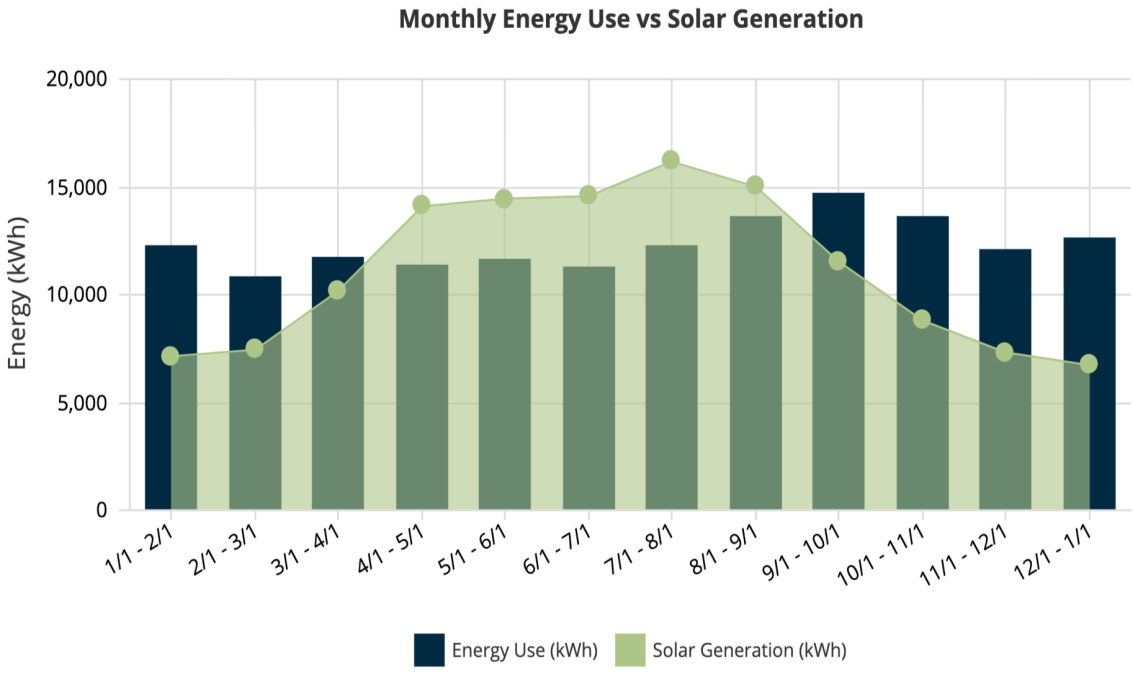
- Carport structures
- Trenching and conduit from electrical rooms to carports

New Construction – Leaning Towards ZNE- San Ysidro Senior Village

Looks like ZNE

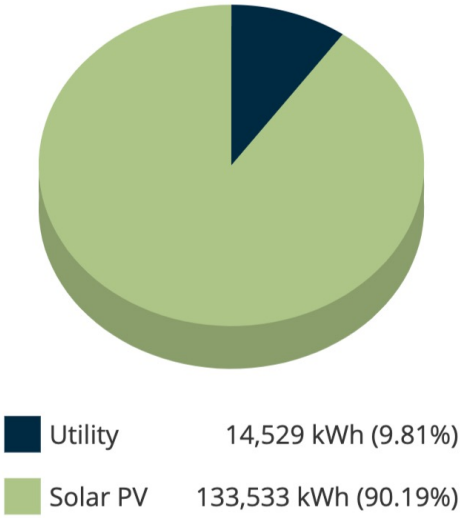
Master Metered, but this is building has a gas fired boiler

Utility Energy vs. Solar PV Energy



Solar PV System Rating
Power Rating: 91,000 W-DC
Power Rating: 79,266 W-AC-CEC

Energy Consumption Mix
Annual Energy Use: 148,062 kWh



Building Energy from IESVE (or CBECC-Com/Res) and Energy Toolbase

Add robust PV – New Electricity Budget

San Ysidro Senior Village

Master Metered SDG&E Bill No PV: $56,775

With full rooftop PV SDG&E Bill: $9,533

2.1.5 New Electric Bill

Rate Schedule: SDG&E - TOU-DR1

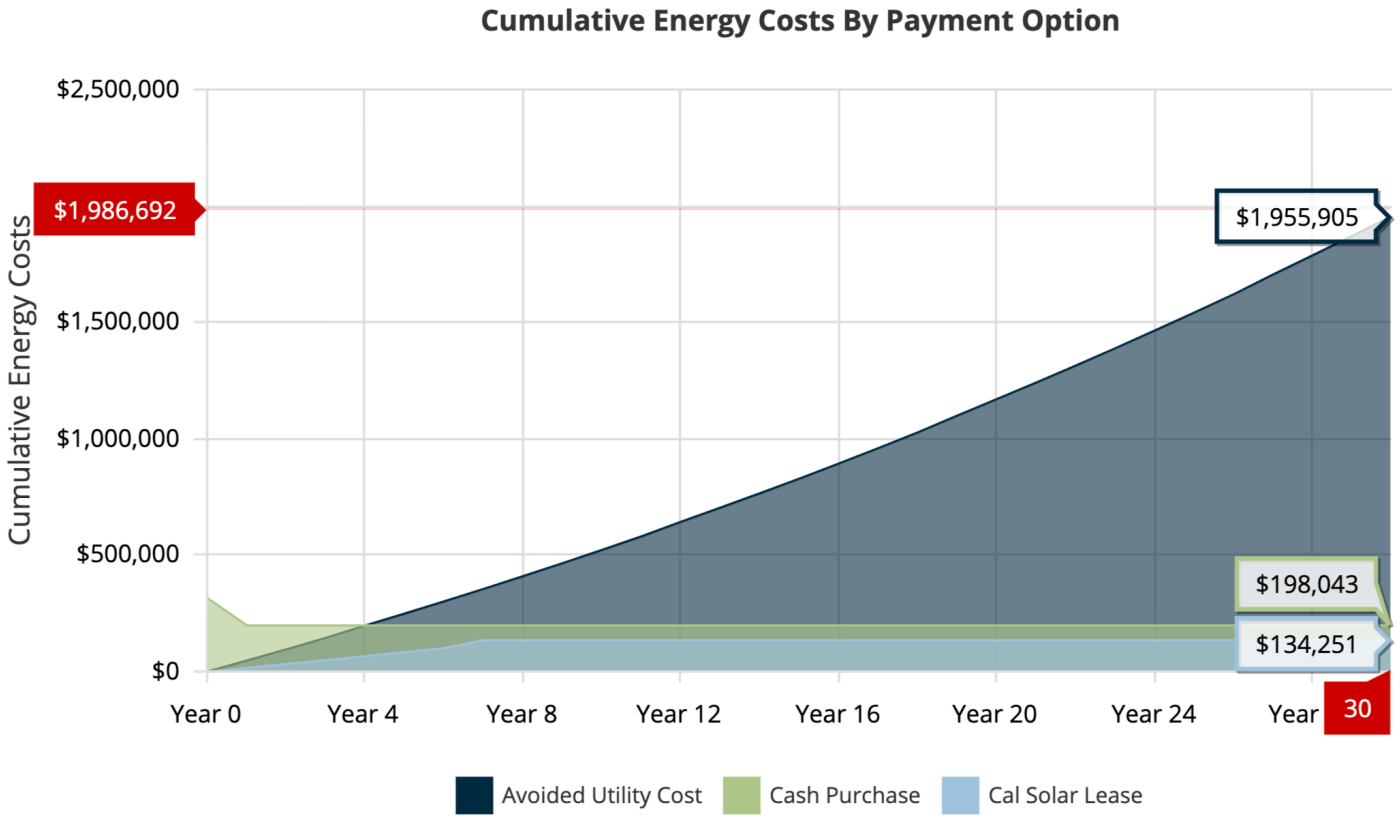
Time Periods	Energy Use (kWh)			Charges		
Bill Ranges & Seasons	On Peak	Off Peak	Super Off Peak	NBC	Energy	Total
1/1/2018 - 2/1/2018 W1	3,200	209	1,724	$211	$1,743	$1,954
2/1/2018 - 3/1/2018 W1	2,547	-883	1,710	$179	$1,137	$1,315
3/1/2018 - 4/1/2018 W2	2,077	504	-1,010	$186	$544	$729
4/1/2018 - 5/1/2018 W2	1,121	-824	-3,011	$168	$855	$686
5/1/2018 - 6/1/2018 W3	836	-4,720	1,029	$162	$952	$790
6/1/2018 - 7/1/2018 S1	585	-4,594	713	$156	$944	$788
7/1/2018 - 8/1/2018 S1	878	-5,307	535	$171	$1,059	$888
8/1/2018 - 9/1/2018 S1	2,145	-4,580	1,057	$203	$31	$234
9/1/2018 - 10/1/2018 S1	3,333	-1,641	1,449	$235	$1,703	$1,938
10/1/2018 - 11/1/2018 S1	3,419	-680	$233	$2,231	$2,464	
11/1/2018 - 12/1/2018 W1	3,440	-370	$211	$1,609	$1,820	
12/1/2018 - 1/1/2019 W1	3,460	605	$221	$2,010	$2,231	
Total	27,041	-22,281	$2,337	$7,197	$9,533	

Annual Electricity Savings: $47,242

If you remember one slide, remember this one…
What does $47,000 in annual utility savings look like over time?

San Village – 51 Units – Housing for the formerly homeless – project is master metered

$2M of operational savings in 30 years



New Construction – What ZNE Looks like - Day Creek Villas

2016 Energy Code Building (in advance of the ZNE Energy Code)

410kW DC PV System

New Construction – What ZNE Looks like - Day Creek Villas

ZNE Common Area + ZNE Residential Units (but still has natural gas boilers)

Residential Utility Allowances (using the CUAC) are less than $7/mo

Vista Verde – All Electric – ZNE – Carbon Neutral

AHSC Funded (Affordable Housing Sustainable Communities)

368kW DC PV system (Rooftop + Carports)

Includes infrastructure to install one future EV Charger for each residential unit (101 total)

Vista Verde – All Electric – ZNE – Carbon Neutral

Planchecked in the 2016 Energy Code

All Electric and ZNE Made Economic Sense (even before the 2019 Energy Code)

Vista Verde – All Electric – ZNE – Carbon Neutral

Well managed Roof for PV

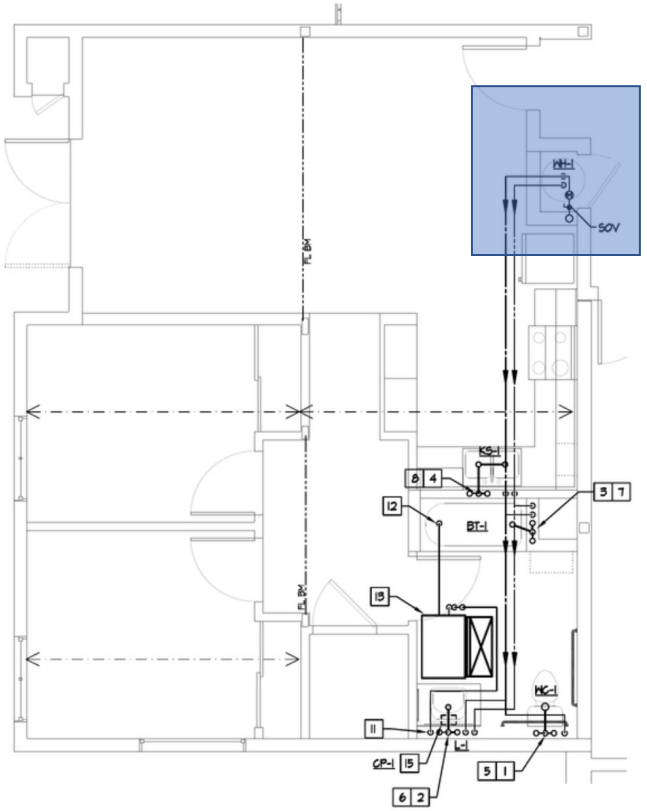
Ducted Minisplits – parapet mounted Condensers

Vista Verde – All Electric – ZNE – Carbon Neutral

Decentralized Hot Water Heating

Heat Pump Hot Water Heaters (Energy Factor = 3.55)

Cost parity with gas (gas 1/3 cost per unit of energy – HP 3.5 more efficient



How does this pay off for new construction?

Published Utility Allowance Schedule

Rent + Utilities Cannot Exceed 30% of Family Income

Published Utility Allowance Schedule (San Bernardino County)

Allowances for Tenant-Furnished Utilities and Other Services

U.S. Department of Housing and Urban Development
Office of Public and Indian Housing

Locality		Age	Unit Type		Date (mm/dd/yyyy)
San Bernardino County		mixed	**Apartment**		**10/1/2020**

Utility or Service		**Monthly Dollar Allowances**						
		0 BR	1 BR	2 BR	3 BR	4 BR	5 BR	6 BR
Heating	a. Natural Gas	19	22	24	26	29	31	33
	b. Bottle Gas	47	53	58	63	69	75	79
	c. Electric	21	26	34	41	48	54	61
Cooking	a. Natural Gas	3	4	5	7	8	10	11
	b. Bottle Gas	7	9	13	17	20	24	26
	c. Electric	9	10	15	21	28	34	39
Other Electric		32	38	53	68	84	101	115
Air Conditioning		17	21	32	45	54	64	85
Water Heating	a. Natural Gas	7	8	11	16	20	24	26
	b. Bottle Gas	16	19	28	38	48	58	62
	c. Electric	20	23	33	43	53	63	72
Water		44	46	60	81	102	123	140
Sewer		36	36	36	36	36	36	36
Trash Collection		25	25	25	25	25	25	25
Range/Microwave		5	5	5	5	5	5	5
Refrigerator		4	4	4	4	4	4	4
Other - specify		0	0	0	0	0	0	0
				$134	$175			

vs. the California Utility Allowance Calculator

California Utility Allowance Calculator (CUAC)

- California Utility Allowance Calculation – With PV
- $13.43 for a two bedroom
- $17.15 for a three bedroom
  - Total savings $159,648/yr (high efficiency building plus near ZNE CUAC)
  - Savings like this change organizational development goals for the long-term…
  - All of National CORE's projects now follow this model

STATE OF CALIFORNIA
CALIFORNIA ENERGY COMMISSION
UTILITY Allowance Calculation Tool
Annual Submittal Report

12/29/2020 12:03:47 AM
Page 2 of 3

Tool Version: 2.0.0 11/30/2020
Tables Version: 1.1.0 11/30/2020
Printed Timestamp: 12/29/2020 12:03:51 AM
Project Name: Vista Verde
Site Street Address: 110 North Virginia Avenue, Ontario, 91764
Site Contact: Zoe Kraneman
Electric Utility: SCE **Electric Territory:** 10 - Electric
Gas Utility: No Gas **Gas Territory:** All
Tariff Type: CARE **Affordable Housing:** Yes

Utility Allowance Calculator Results

	Monthly Usage ($/month)						
	Units						
Apartment Type	Affordable Housing	Market Rate	Electric	Gas	Water	Trash	Total
Two Bedroom	69	0	$13.43	$0.00	$0.00	$0.00	$13.43
Three Bedroom	32	0	$17.15	$0.00	$0.00	$0.00	$17.15

(For new Construction Only)

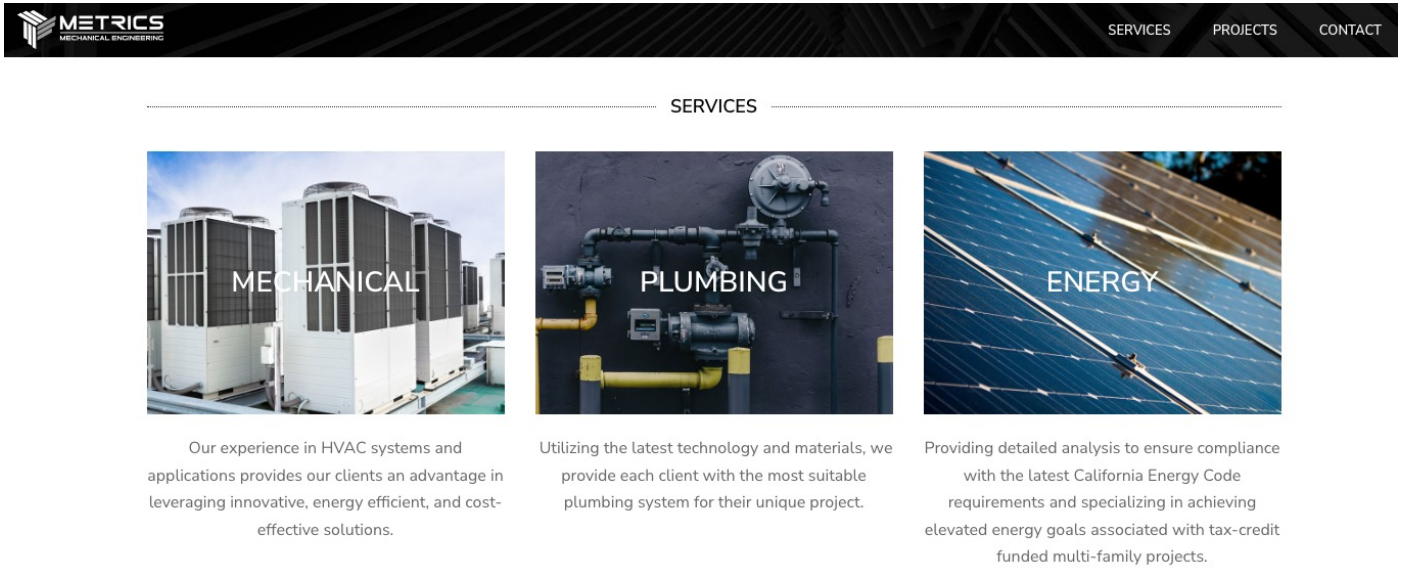
Now Open! Crestview Terrace, San Bernardino

AHSC Funded – 184 Affordable Family Units All-Electric – PV System Powers 1/3 of Site Energy

The 2022 Energy Code went into effect on January 1, 2023

…with increased emphasis on the "all-electric". Are you ready?

You’re going to need a progressive and creative mechanical engineer...



…how do you solve the all-electric riddle for affordable housing?

Mini Split HVAC

- Best choice for ZNE
- Brand Flexibility
- Built to fit into small spaces
- Up to 21 SEER

Ductless Mini-Split

-One fan coil per room
-Better zoning and better comfort
-No soffits or dropped ceiling
-Cost effective for 2 bedroom dwellings and smaller

Ducted Mini-Split

-Connect multiple rooms with ductwork
-Designed to fit in small spaces
-More cost effective for larger dwellings

Electric Hot Water Heating

The key to an all-electric building

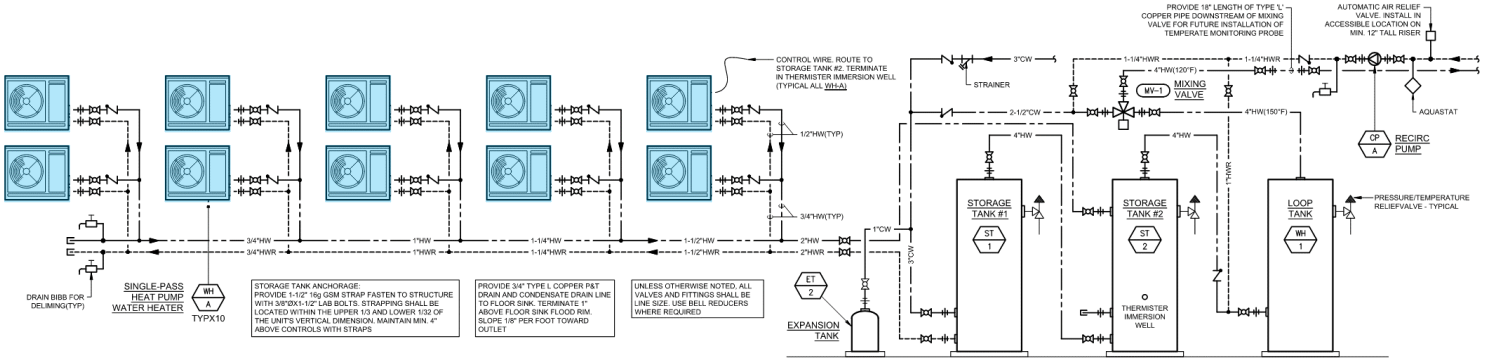
- Legacy “resistive” electric water heaters not efficient enough
  - Same efficiency as natural gas water heaters
  - Not Title 24 approved

Individual Tank

- Heat Pump is the only viable option
  - Refrigerant based
  - Up to 3.5X times more efficient than gas
  - Needs to be outside or vent to outside
  - Generally, less powerful than gas counterparts
  - More water storage required

Centralized Boiler

Split System

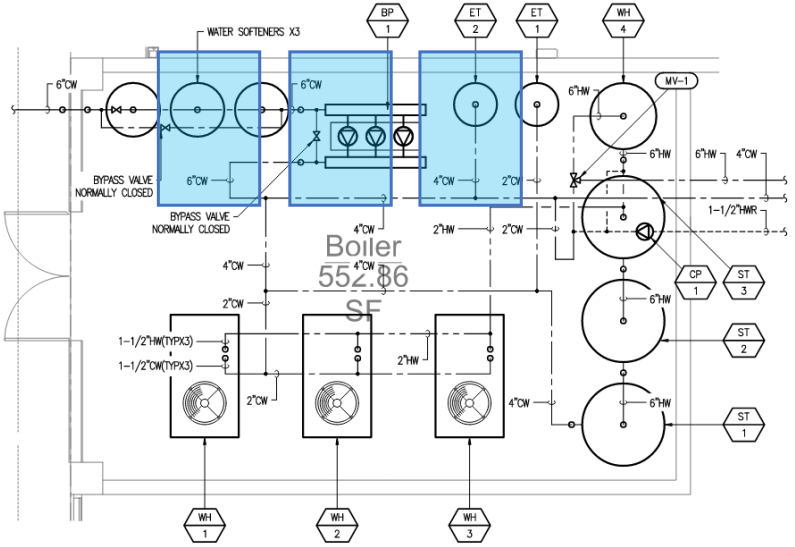


CENTRAL HOT WATER HEATING PIPING SCHEMATIC

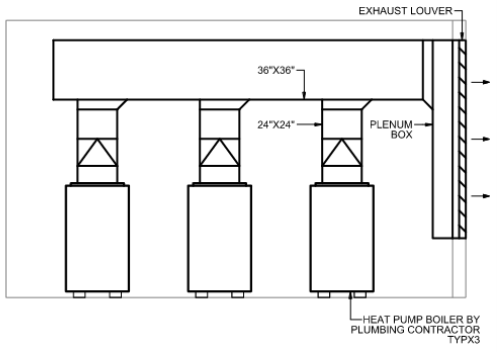
NO SCALE

Electric Boiler (Centralized)

- Large capacity 208-480v 3 Phase
- Reserved for larger projects
- Expensive
- Indoor installation possible but requires large ducting
- Most models struggle with colder climates



ENLARGED BOILER ROOM PLAN
1/4" = 1'-0"
D

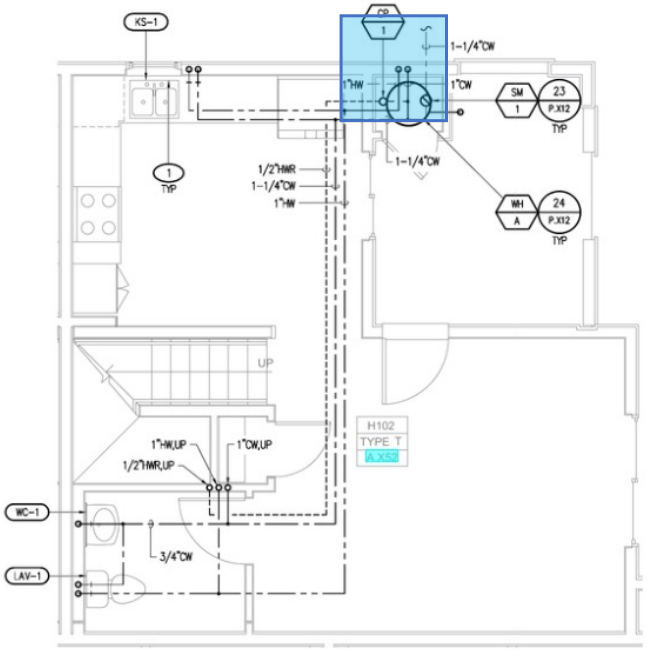


Split Water heater (Centralized)

- Requires recirculation pump
- Heat pump located outdoors or in parking garage
- Resilient
- Cost effective. CO2 based refrigerant is effective down to very low temperatures
- This is National CORE's preferred system for senior and special needs housing.

Individual Water heater (Decentralized)

- Hot water source is closer to fixtures – No pumps!
- Locate on Patio or Breezeway corridor
- Resilient
- Cost effective but requires Architecture to accommodate closets
- This is National CORE's preference for family housing

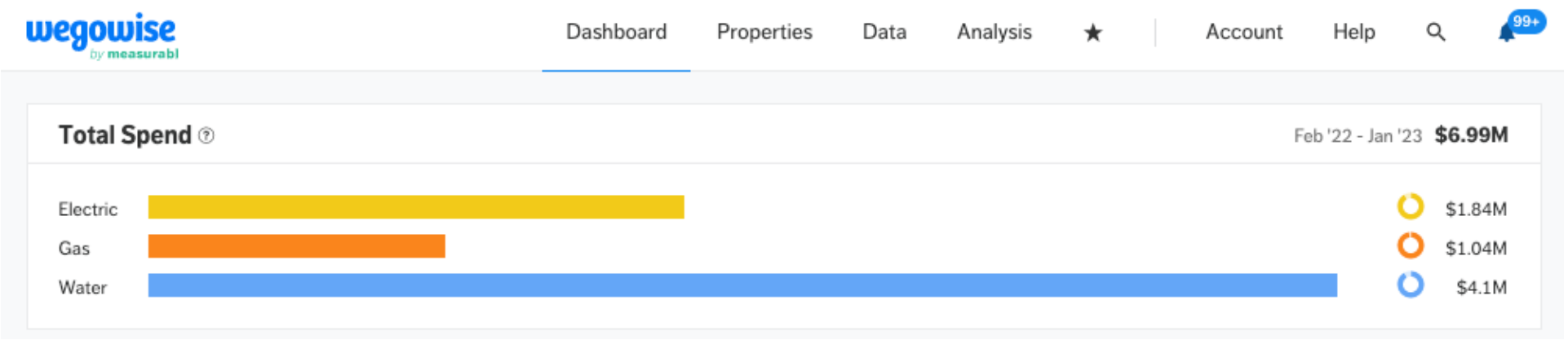


UNIT TYPE T (BUILDING H) - LEVEL 1 FLOOR PLAN H1

1/4" = 1'-0"

Existing Portfolio – Managing Energy, Optimizing Cash Flow

It's about understanding the data…



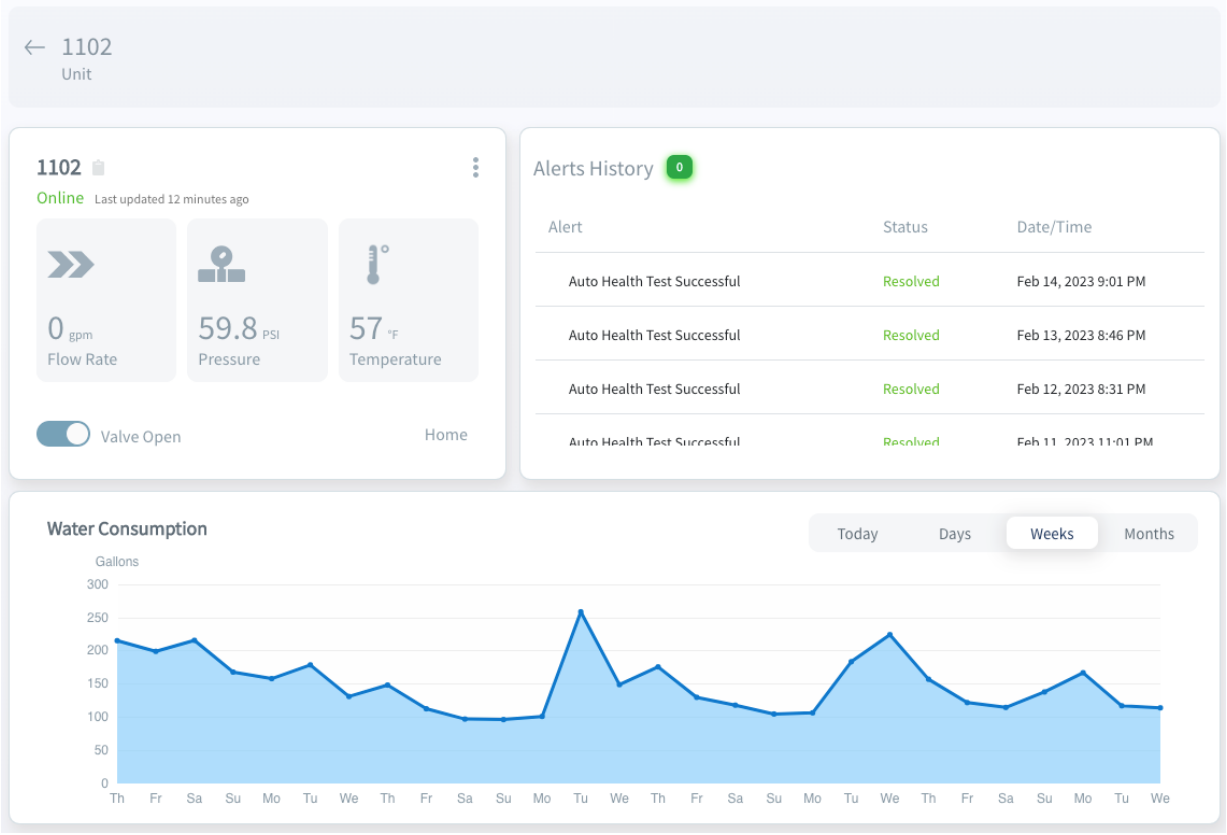
National CORE spends $4.1M/year on water – this is 100% of our projects' water. We are making progress on this

Monitoring and understanding water use at unit level is the Holy Grail….

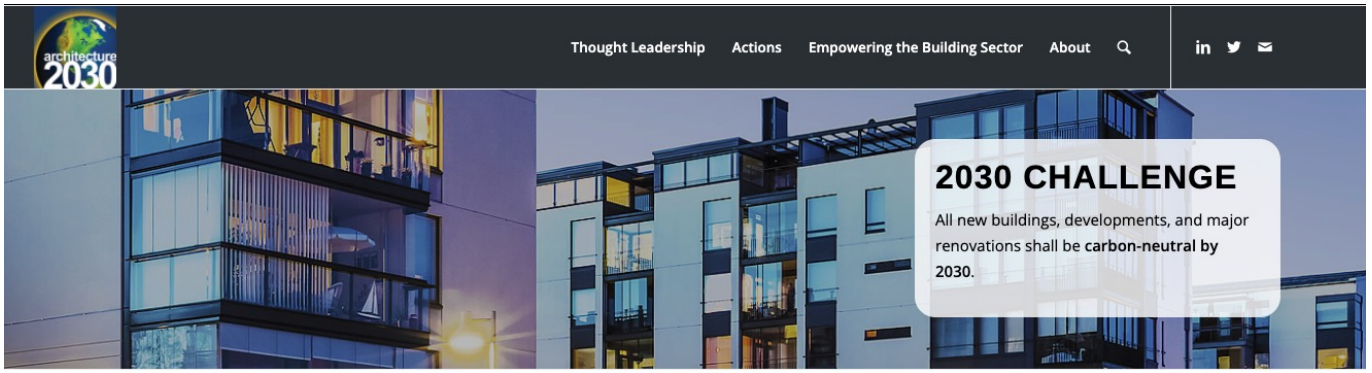
Decentralized HW Heater + Moen Flo

Decentralized HW Heater + Moen Flo

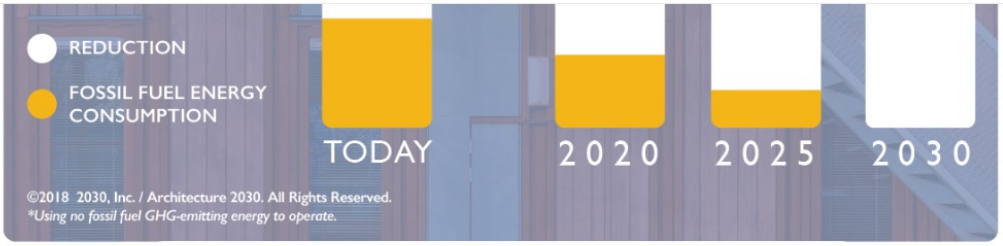
- Unit 1106 (2BR)
- Unit 1205 (2BR)
- Unit 1102 (3BR)



Beyond Code Compliance…



THE 2030 CHALLENGE:

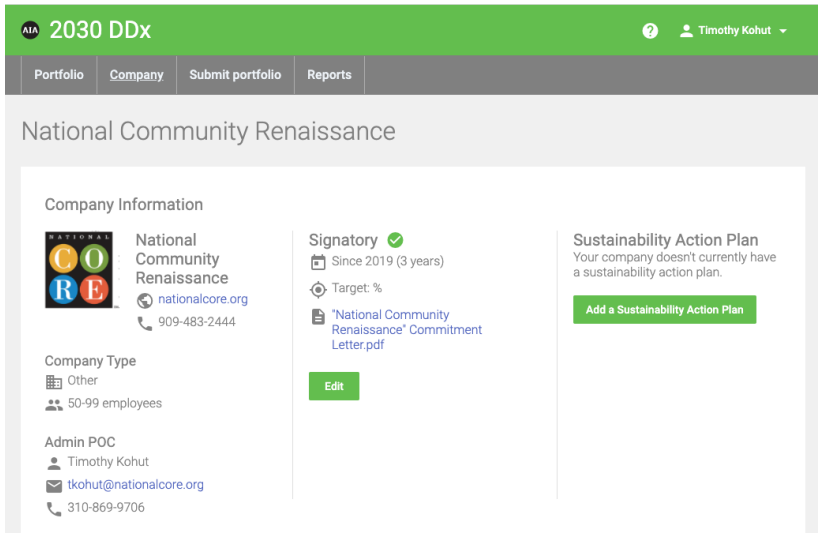


The **urban built environment** is responsible for **75% of annual global GHG emissions**: buildings alone account for 39%. Eliminating these emissions is the key to addressing climate change and meeting Paris Climate Agreement targets.

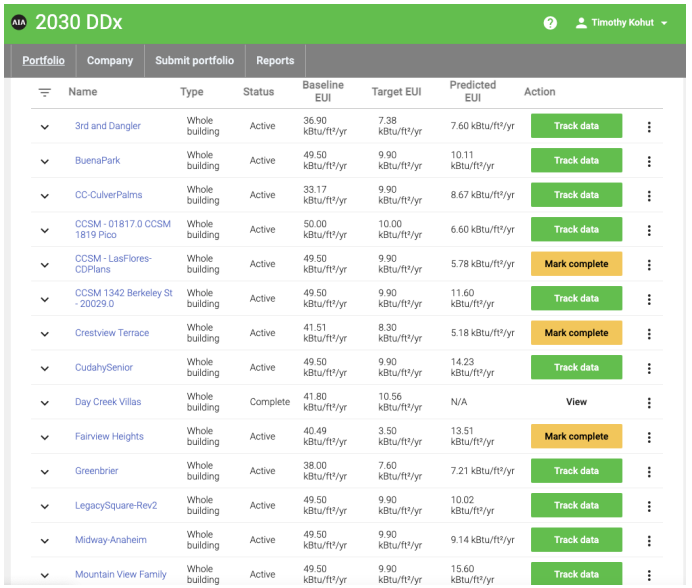
…this is about carbon neutrality, right?

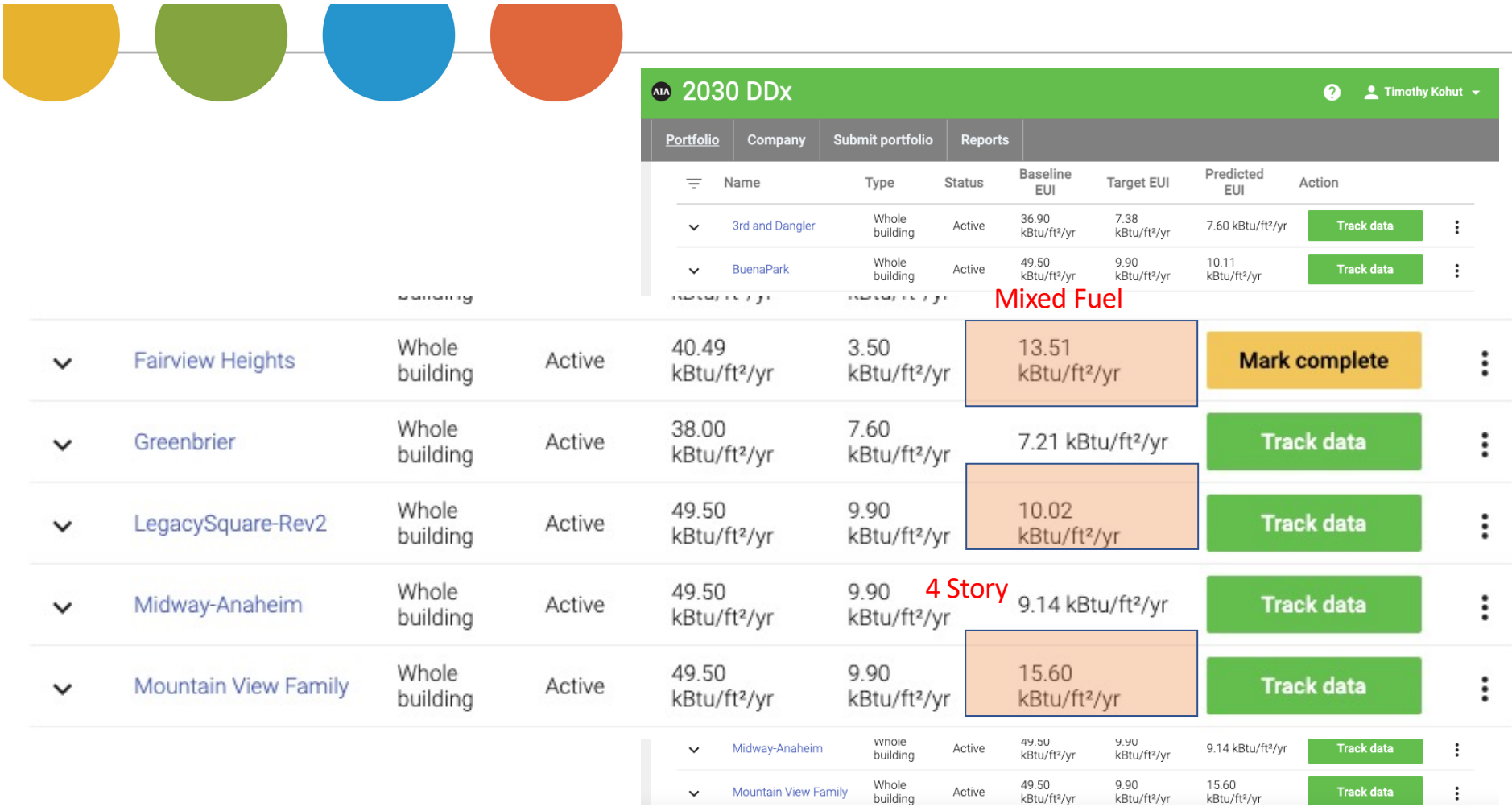
National CORE – AIA 2030 Commitment

AIA 2030 Commitment



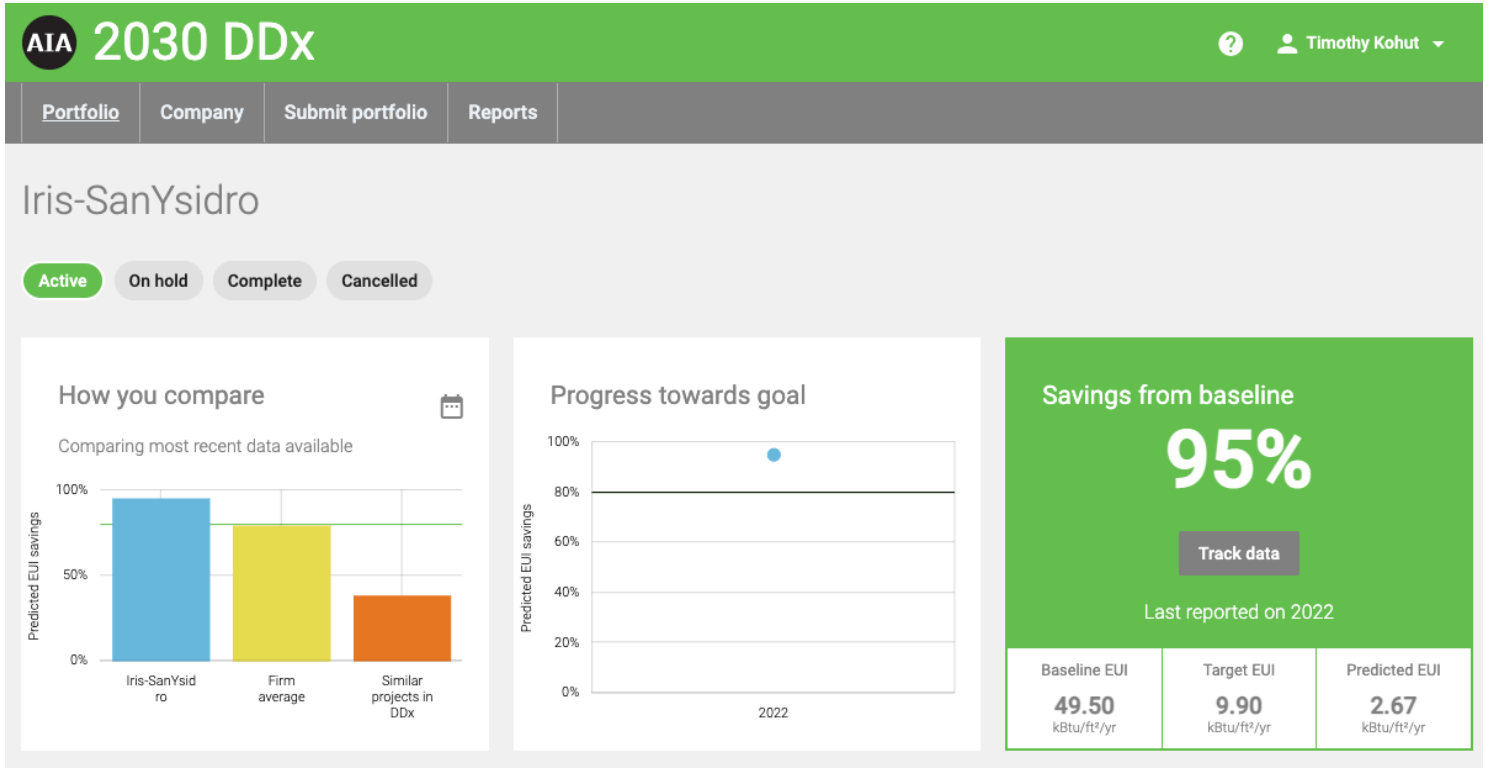
Progress to Date…




2030 DDx
Timothy Kohut
Portfolio
Company
Submit portfolio
Reports
Name
Type
Status
Baseline EUI
Target EUI
Predicted EUI
Action
3rd and Dangler
Whole building
Active
36.90 kBtu/ft²/yr
7.38 kBtu/ft²/yr
7.60 kBtu/ft²/yr
Track data
BuenaPark
Whole building
Active
49.50 kBtu/ft²/yr
9.90 kBtu/ft²/yr
10.11 kBtu/ft²/yr
Track data
Mixed Fuel
Fairview Heights
Whole building
Active
40.49 kBtu/ft²/yr
3.50 kBtu/ft²/yr
13.51 kBtu/ft²/yr
Mark complete
Greenbrier
Whole building
Active
38.00 kBtu/ft²/yr
7.60 kBtu/ft²/yr
7.21 kBtu/ft²/yr
Track data
LegacySquare-Rev2
Whole building
Active
49.50 kBtu/ft²/yr
9.90 kBtu/ft²/yr
10.02 kBtu/ft²/yr
Track data
Midway-Anaheim
Whole building
Active
49.50 kBtu/ft²/yr
9.90 kBtu/ft²/yr
4 Story
9.14 kBtu/ft²/yr
Track data
Mountain View Family
Whole building
Active
49.50 kBtu/ft²/yr
9.90 kBtu/ft²/yr
15.60 kBtu/ft²/yr
Track data
Midway-Anaheim
Whole building
Active
49.50 kBtu/ft²/yr
9.90 kBtu/ft²/yr
9.14 kBtu/ft²/yr
Track data
Mountain View Family
Whole building
Active
49.50 kBtu/ft²/yr
9.90 kBtu/ft²/yr
15.60 kBtu/ft²/yr
Track data

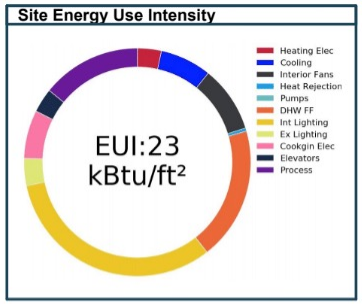
How should economics drive the design process?

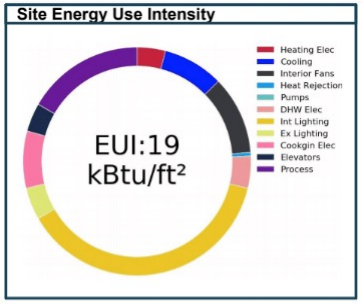
The Iris at San Ysidro

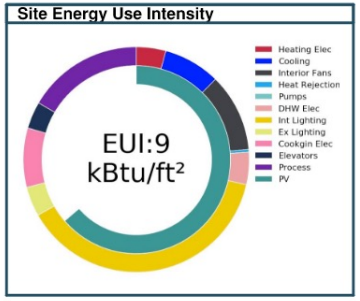


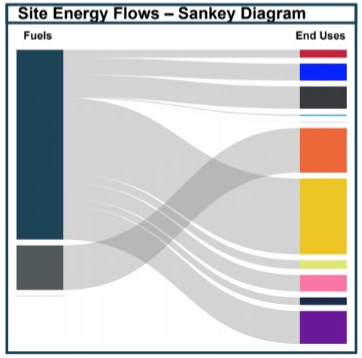
How about a different approach on day 1?

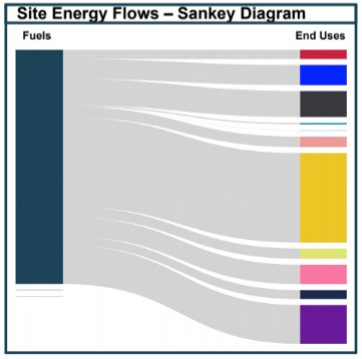
Analytics, especially for DHW and Renewables is critical

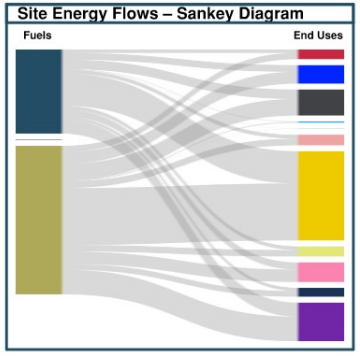










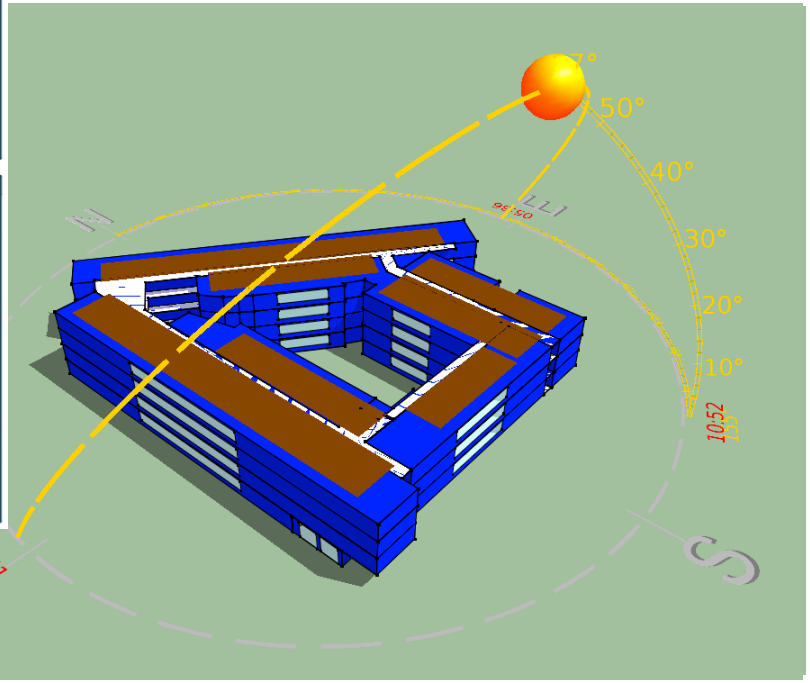


97% NG Boiler

Heat Pump Boiler (Energy Factor = 3.5)

HP Boiler + PV

Iris at San Ysidro – 100 units-family



Energy Toolbase – Run the Report…

Economic Analysis for the Iris

Iris at San Ysidro - DHW PV Analysis

Prepared For
Ashley Wright
National Community Renaissance
(909)483-2444
awright@nationalcore.org

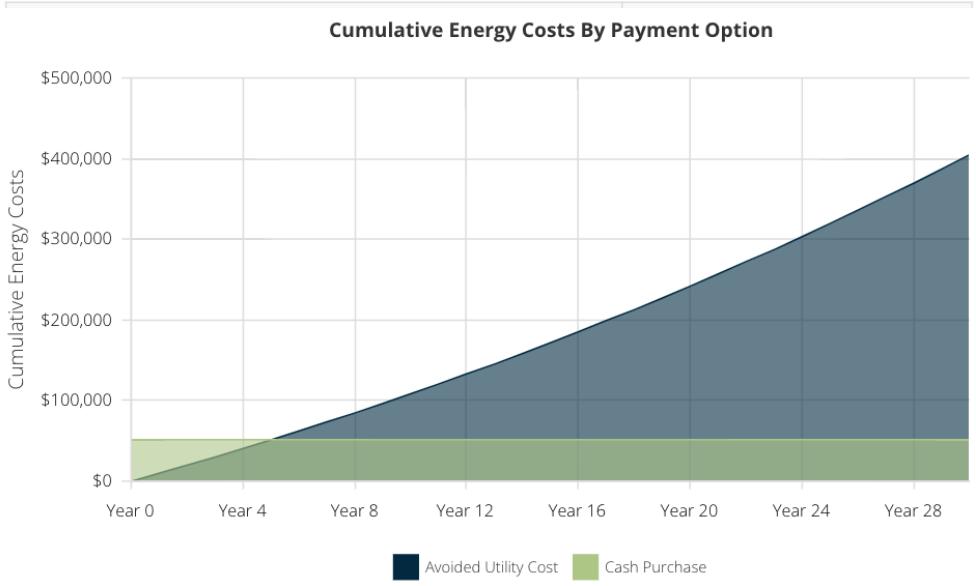
Prepared By
Tim Kohut, AIA, CEA
(310)869-9706
tkohut@nationalcore.org

April 4, 2020

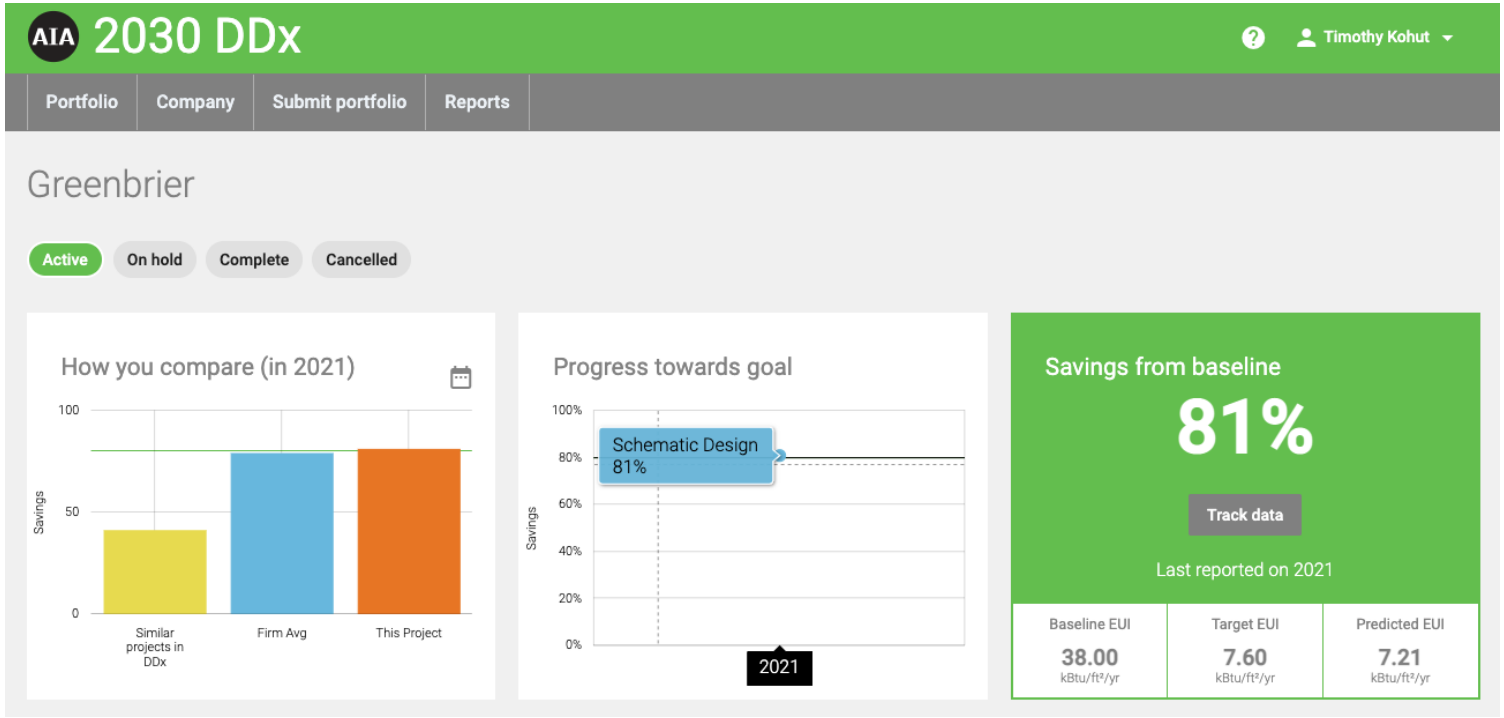
The Energy Toolbase provides comprehensive cost analysis for commercial, municipal, and residential renewable energy projects. We provide the tools that professionals need to compete in the fast paced renewable energy market by leveraging our first hand experience developing energy

Important Economic Info

1 Project Summary

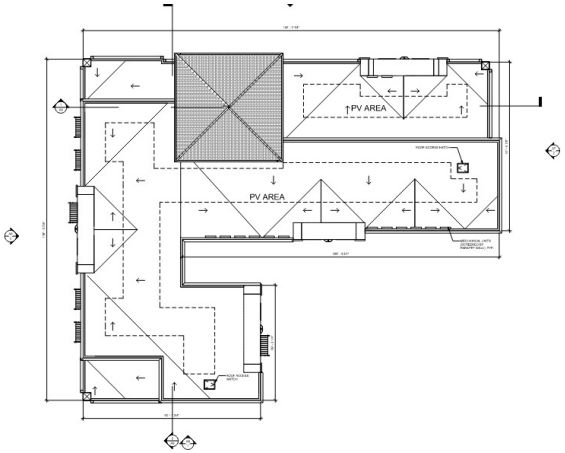


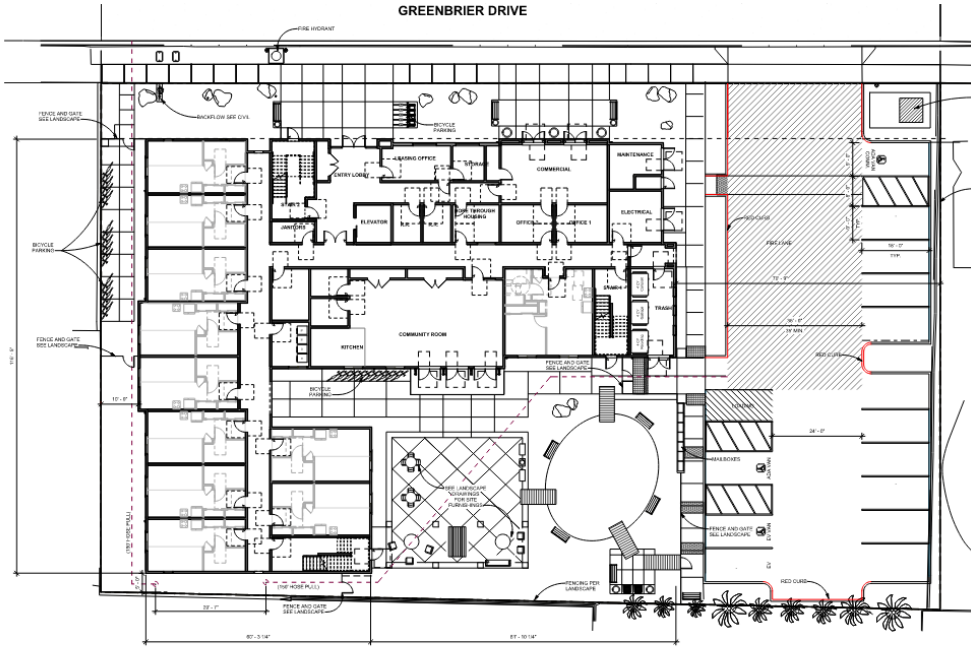
Greenbrier Village

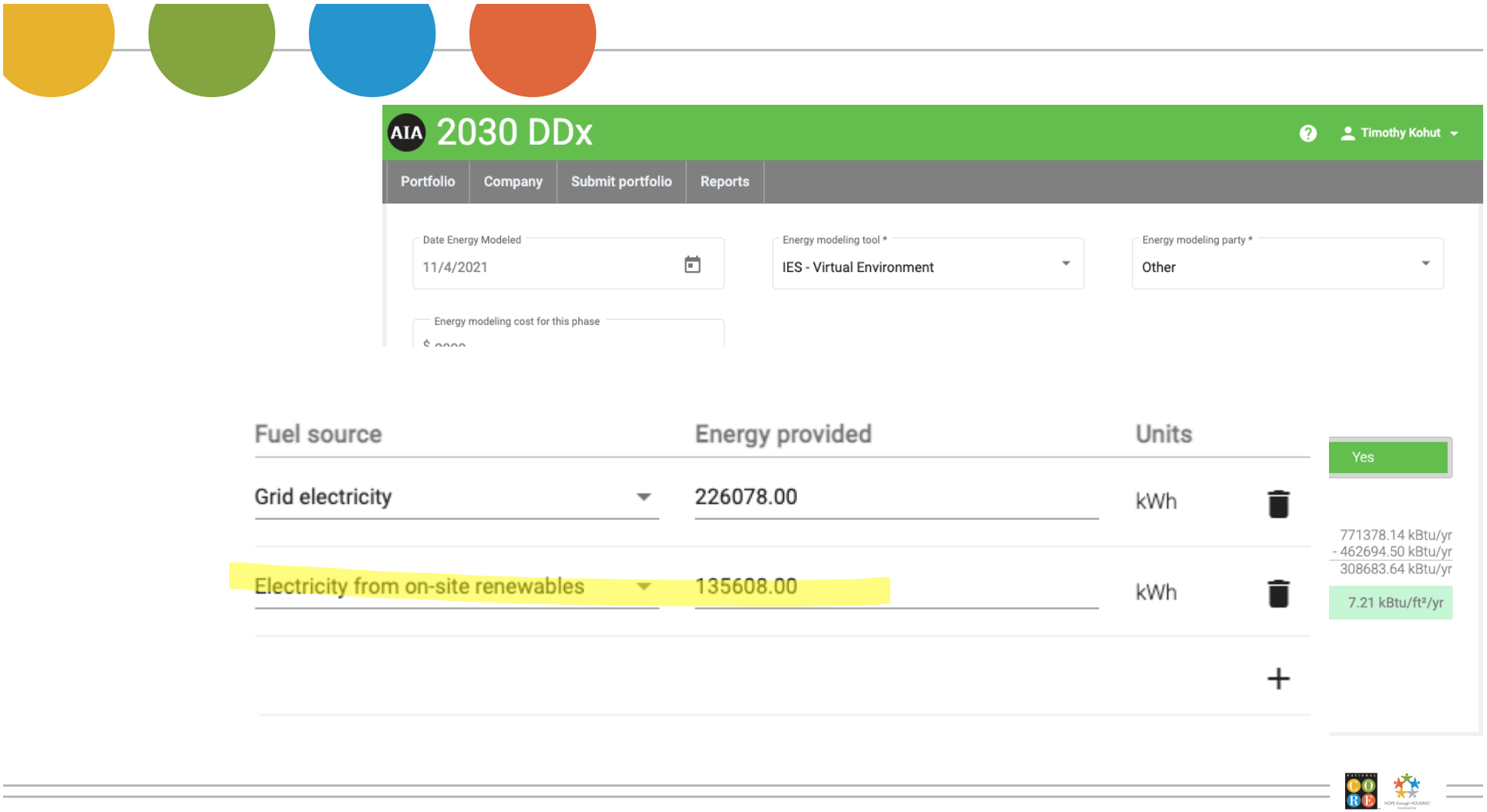


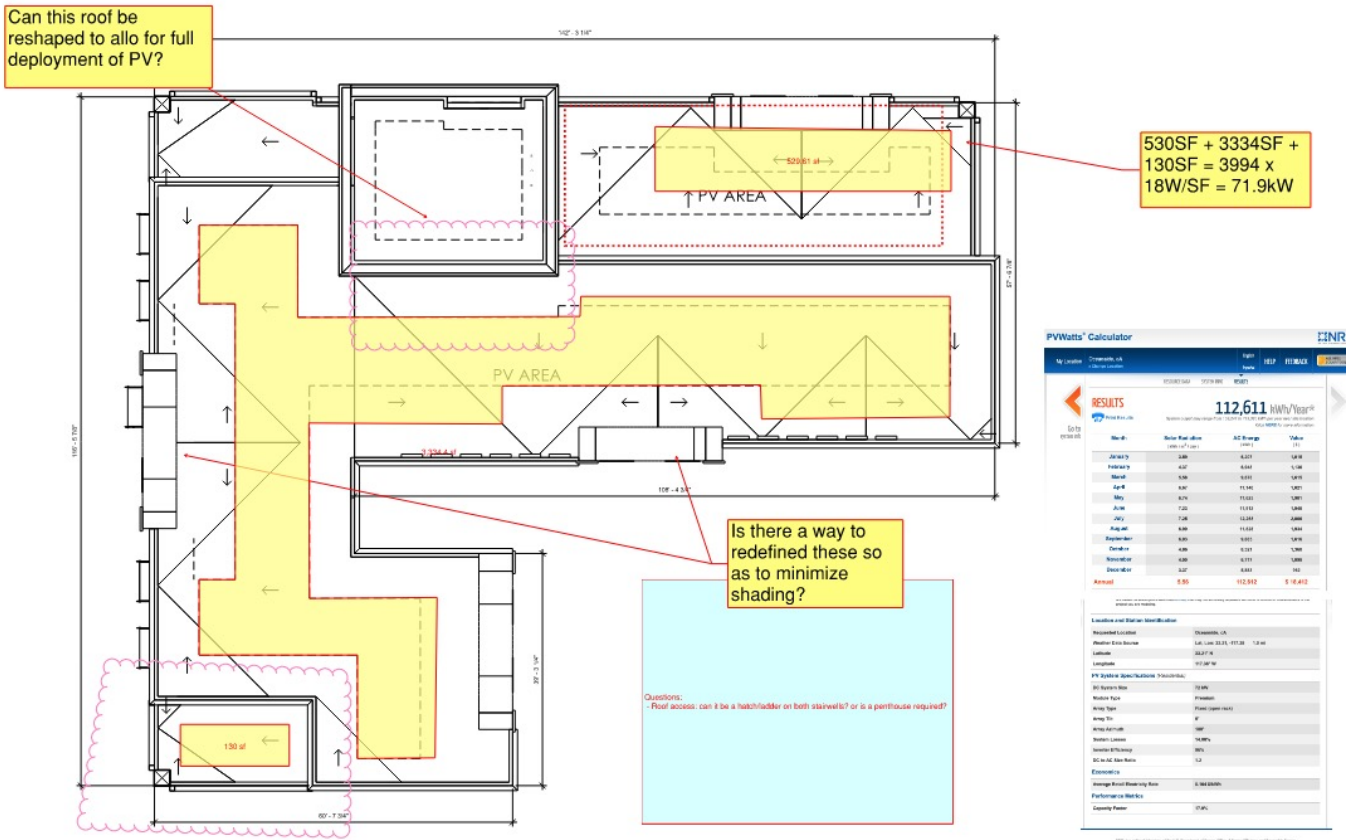
GREENBRIER VILLAGE

563 GREENBRIER DRIVE, OCEANSIDE CA 92054






AIA 2030 DDx
Timothy Kohut
Portfolio
Company
Submit portfolio
Reports
Date Energy Modeled
11/4/2021
Energy modeling tool *
IES - Virtual Environment
Energy modeling party *
Other
Energy modeling cost for this phase
Fuel source
Energy provided
Units
Grid electricity
226078.00
kWh
Electricity from on-site renewables
135608.00
kWh
Yes
771378.14 kBtu/yr
- 462694.50 kBtu/yr
308683.64 kBtu/yr
7.21 kBtu/ft²/yr


Can this roof be reshaped to allo for full deployment of PV?
530SF + 3334SF + 130SF = 3994 x 18W/SF = 71.9kW
PV AREA
PV AREA
Is there a way to redefined these so as to minimize shading?
Questions:
- Roof access: can it be a hatch/ladder on both stairwells? or is a penthouse required?
130 sf

PVWatts® Calculator
RESULTS
112,611 kWh/Year*

are based on assumptions described in Help that may not accurately represent technical or economic characteristics of the project you are modeling.

Location and Station Identification

Requested Location	Oceanside, cA
Weather Data Source	Lat, Lon: 33.21, -117.38 1.0 mi
Latitude	33.21° N
Longitude	117.38° W

PV System Specifications *(Residential)*

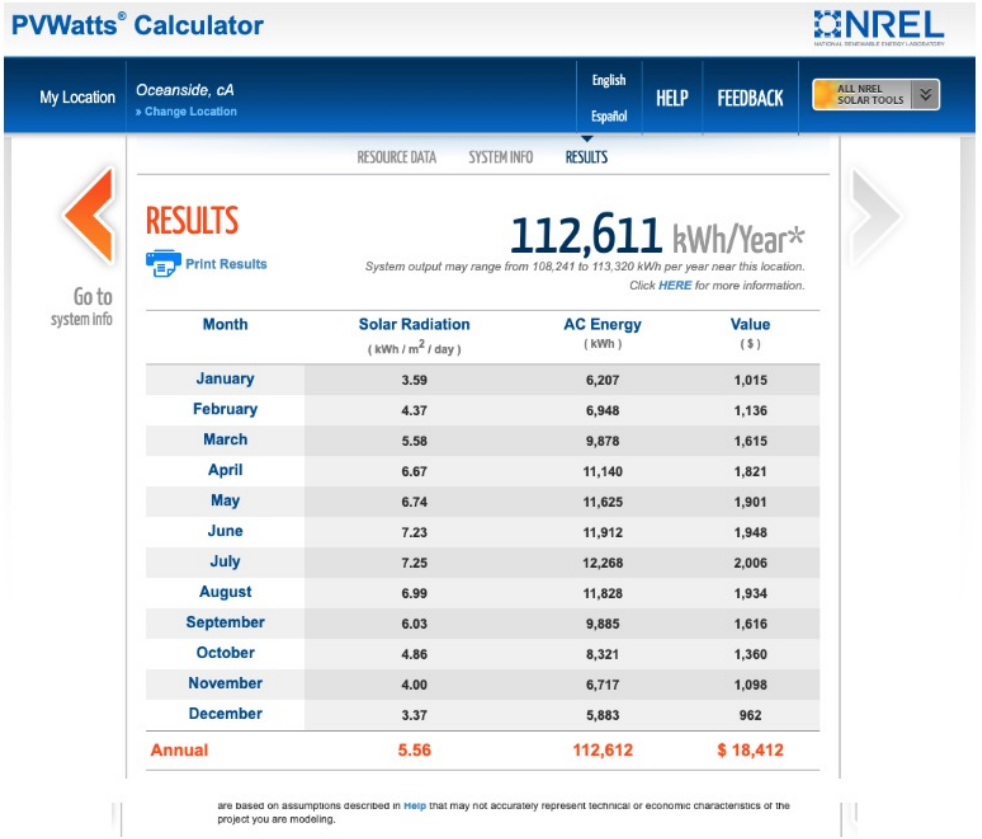
DC System Size	72 kW
Module Type	Premium
Array Type	Fixed (open rack)
Array Tilt	5°
Array Azimuth	180°
System Losses	14.08%
Inverter Efficiency	96%
DC to AC Size Ratio	1.2

Economics

Average Retail Electricity Rate	0.164 $/kWh

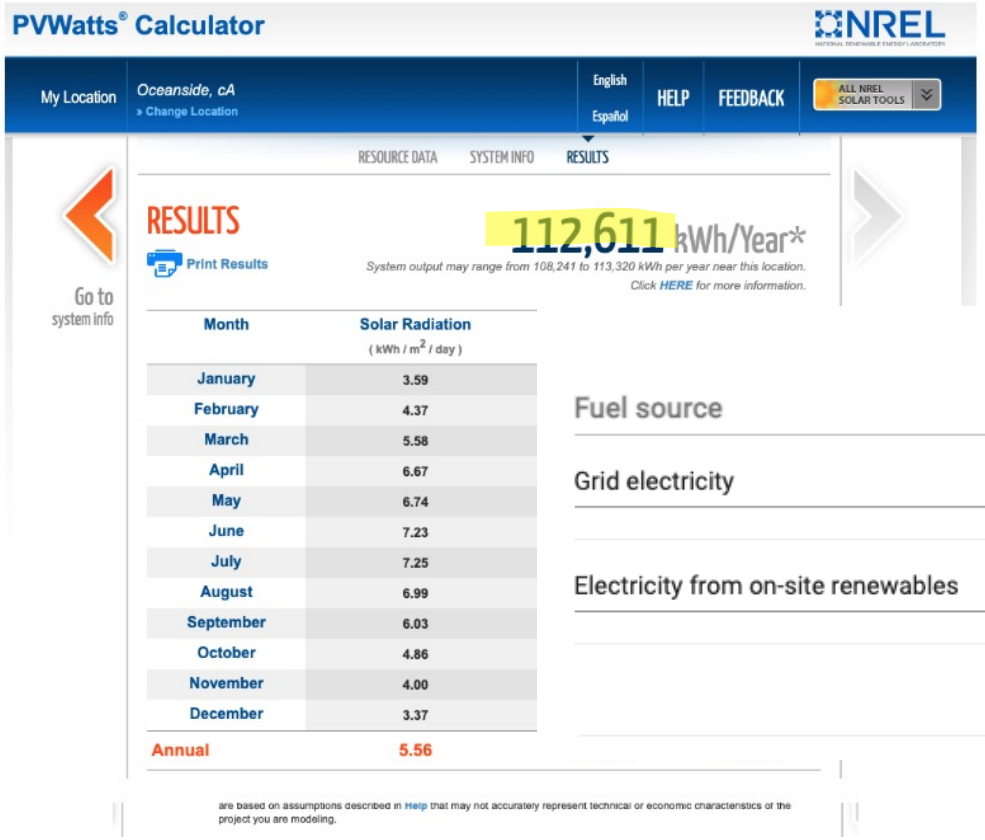
Performance Metrics

Capacity Factor	17.9%



Month	Solar Radiation (kWh / m² / day)	AC Energy (kWh)	Value ($)
January	3.59	6,207	1,015
February	4.37	6,948	1,136
March	5.58	9,878	1,615
April	6.67	11,140	1,821
May	6.74	11,625	1,901
June	7.23	11,912	1,948
July	7.25	12,268	2,006
August	6.99	11,828	1,934
September	6.03	9,885	1,616
October	4.86	8,321	1,360
November	4.00	6,717	1,098
December	3.37	5,883	962
Annual	5.56	112,612	$ 18,412

are based on assumptions described in Help that may not accurately represent technical or economic characteristics of the project you are modeling.



PVWatts® Calculator

NREL

My Location | Oceanside, cA » Change Location | English | Español | HELP | FEEDBACK | ALL NREL SOLAR TOOLS

RESOURCE DATA | SYSTEM INFO | RESULTS

Go to system info

RESULTS

Print Results

112,611 kWh/Year*

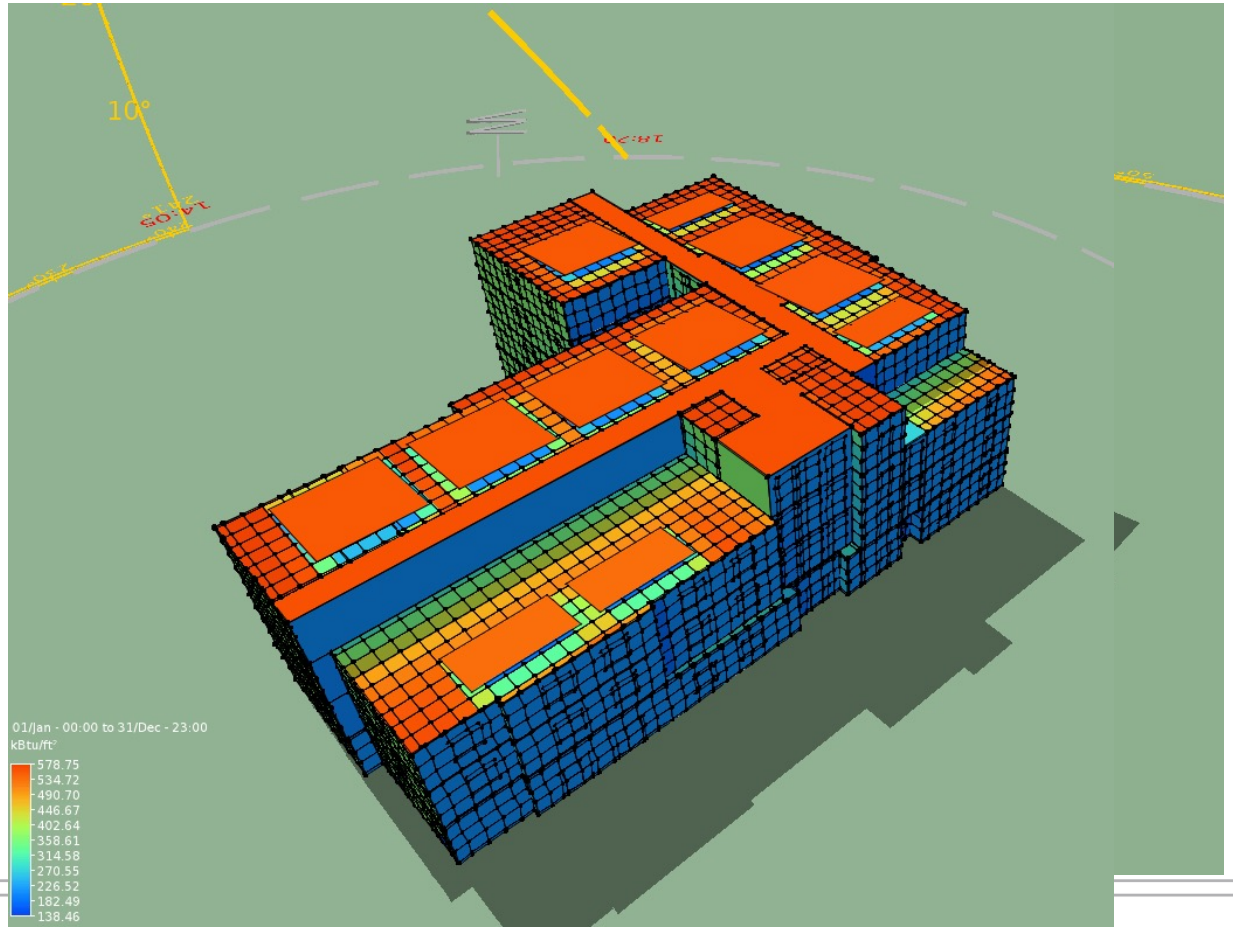
System output may range from 108,241 to 113,320 kWh per year near this location.
Click HERE for more information.

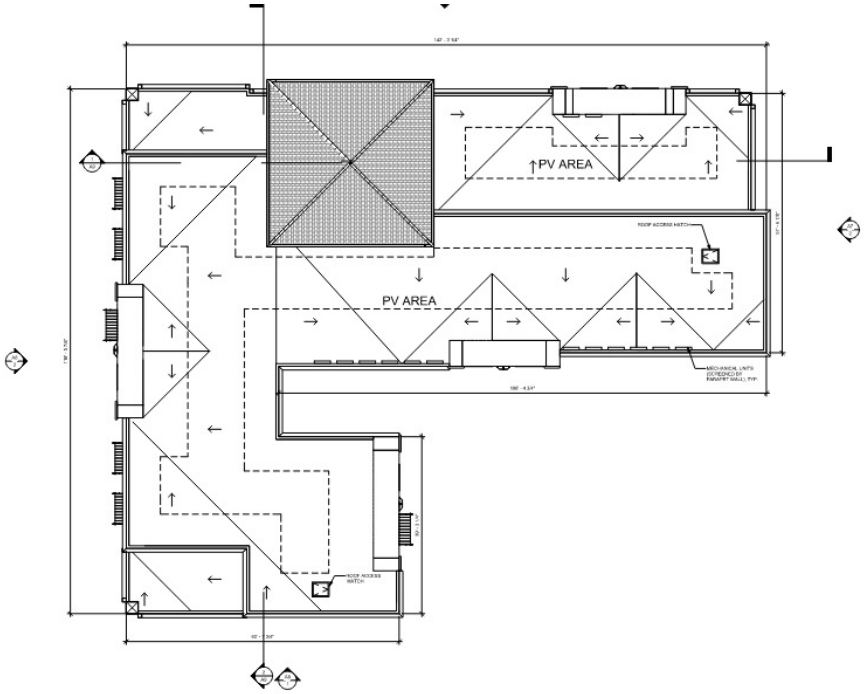
Month	Solar Radiation (kWh / m² / day)
January	3.59
February	4.37
March	5.58
April	6.67
May	6.74
June	7.23
July	7.25
August	6.99
September	6.03
October	4.86
November	4.00
December	3.37
Annual	5.56

are based on assumptions described in Help that may not accurately represent technical or economic characteristics of the project you are modeling.

Fuel source	Energy provided	Units
Grid electricity	226078.00	kWh
Electricity from on-site renewables	135608.00	kWh

Not enough room on the roof for PV. We need more space (1200 SF or so would do it!)


01/Jan - 00:00 to 31/Dec - 23:00
kBtu/ft²
578.75
534.72
490.70
446.67
402.64
358.61
314.58
270.55
226.52
182.49
138.46



GREENBRIER VILLAGE

563 GREENBRIER DRIVE, OCEANSIDE CA 92054

ROOF PLAN A6

DATE: 10.29.2021

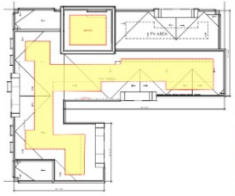
Energy Toolbase – Run the Report…

Economic Analysis for Greenbrier

Important Economic Info

ENERGY TOOLBASE™

Prepared For
Randy Slabers, NCORE
909-244-3444
rslabers@nationalcore.org

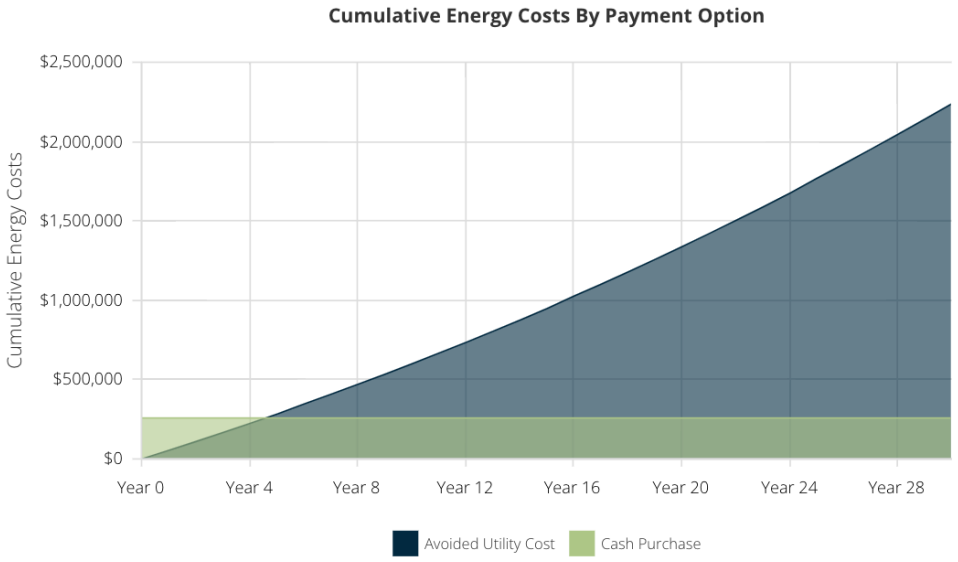


The Energy Toolbase provides comprehensive cost analysis for commercial, municipal, and residential renewable energy projects. We provide the tools that professionals need to compete in the fast paced renewable energy market by leveraging our first

Greenbrier Village - Rooftop PV

Prepared By
Tim Kohut, AIA, CEA
310-869-9706
tkohut@nationalcore.org

1/6/22



Measure twice (or more), then cut once.

The Climate Crisis is real, and architects need to lead the way to a clean energy future, but…

Economics carry the day when it comes to high performance.

The Affordable Housing Playbook for the All-Electric Solution…

…economics, technology, budget...

Tim Kohut, AIA, CEA
Director of Sustainable Design
National Community Renaissance
tkohut@nationalcore.org

California Housing Partnership
California's Experts on Affordable Housing Finance, Advocacy & Policy

SCANPH
Southern California Association of NonProfit Housing

2023 LA Affordable Housing Decarbonization Summit

Luca Costa

Association for Energy Affordability, Inc.

BUILD

Building Initiative for Low-Emissions Development Program

LA Affordable Housing
Decarbonization Summit
Feb 16, 2023

Presented by:
Luca Costa

BUILD: Your Resource for New All-Electric Low-Income Development

Presenter

Luca Costa

Senior Associate, Projects

Association for Energy Affordability

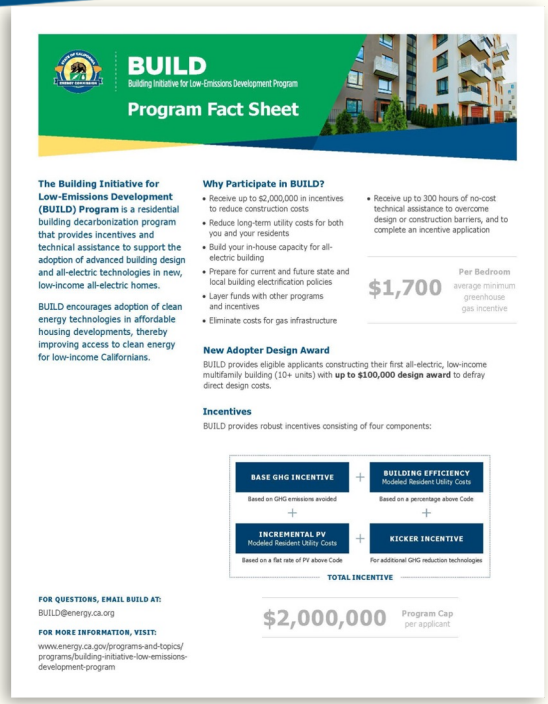
BUILD

The Building Initiative for Low-Emissions Development (BUILD) Program

BUILD is a residential building decarbonization program that provides incentives and technical assistance to support the adoption of advanced building design and **all-electric** technologies in new, low-income homes.

BUILD makes **clean energy technologies** accessible to affordable housing developments to benefit low-income Californians.

Developer Benefits of BUILD Participation



BUILD
Building Initiative for Low-Emissions Development Program
Program Fact Sheet

The Building Initiative for Low-Emissions Development (BUILD) Program is a residential building decarbonization program that provides incentives and technical assistance to support the adoption of advanced building design and all-electric technologies in new, low-income all-electric homes.

BUILD encourages adoption of clean energy technologies in affordable housing developments, thereby improving access to clean energy for low-income Californians.

Why Participate in BUILD?

- Receive up to $2,000,000 in incentives to reduce construction costs
- Reduce long-term utility costs for both you and your residents
- Build your in-house capacity for all-electric building
- Prepare for current and future state and local building electrification policies
- Layer funds with other programs and incentives
- Eliminate costs for gas infrastructure
- Receive up to 300 hours of no-cost technical assistance to overcome design or construction barriers, and to complete an incentive application

$1,700 Per Bedroom average minimum greenhouse gas incentive

New Adopter Design Award

BUILD provides eligible applicants constructing their first all-electric, low-income multifamily building (10+ units) with **up to $100,000 design award** to defray direct design costs.

Incentives

BUILD provides robust incentives consisting of four components:

BASE GHG INCENTIVE (Based on GHG emissions avoided) + BUILDING EFFICIENCY Modeled Resident Utility Costs (Based on a percentage above Code) + INCREMENTAL PV Modeled Resident Utility Costs (Based on a flat rate of PV above Code) + KICKER INCENTIVE (For additional GHG reduction technologies)

TOTAL INCENTIVE

$2,000,000 Program Cap per applicant

FOR QUESTIONS, EMAIL BUILD AT:
BUILD@energy.ca.org

FOR MORE INFORMATION, VISIT:
www.energy.ca.gov/programs-and-topics/programs/building-initiative-low-emissions-development-program

BUILD Program Fact Sheet

Free Technical Assistance

- 300 hours of no-cost technical assistance
- Build in-house capacity for all-electric building

Incentives

- Up to $2,000,000 in incentives
- A special New Adopter incentive (up to $100,000)
- Layer funds with other programs and incentives
- Reduction in long-term utility costs & elimination of gas infrastructure costs

Technical Assistance

BUILD Technical Assistance Team

Free Technical Assistance Services

- Up to 300 hours of no-cost technical assistance
- Support throughout all development phases (including building design, construction, installing near-zero emission technologies) and information on local building permits
- Assistance with submission of BUILD Incentive Application package and participation support
- Educational resources on all-electric building design and technologies

The Technical Assistance team is here to support your project.

Some Common Issues Addressed in Technical Assistance

- **Heat pump water heating** considerations
  - Equipment selection
  - Location – where to put equipment to balance space, efficiency, and sound considerations
  - Sizing of heat pumps and storage tanks for efficiency, resilience, cost savings
- **Heating & cooling** equipment design optimization
- **Envelope** improvements
- Or **whatever design challenge** your project is facing!

Electric-Ready Mixed Fuel vs. All-Electric

Item	Electric-Ready (w/ Gas)	All-Electric
Gas Service	Gas connection & meter	No gas connection or meter
Electric Service & Wiring	Service & wiring for all-electric	Service & wiring for all-electric
Electric Utility Infrastructure	Project may incur utility transformer impacts	Project may incur utility transformer impacts
Water Heaters	Condensing gas water heaters	Heat pump water heaters
HVAC	Gas furnace	Heat pump (ducted, ductless, PTHP)
Stoves	Gas stove + higher capacity range hood	Electric/induction stove + lower capacity range hood
Clothes Dryers	Gas dryers	Electric dryers: resistance or heat pump
Renewables	Photovoltaic (PV) + Thermal	PV only
Outdoor Grills	Gas grills	Charcoal or propane tank grills

Incentives

Incentive Types & Eligibility

4 Robust Incentives Components:

BASE GHG INCENTIVE
Based on GHG emissions avoided

+

BUILDING EFFICIENCY
Modeled Resident Utility Costs
Based on a percentage above Code

+

INCREMENTAL PV
Modeled Resident Utility Costs
Based on a flat rate of PV above Code

+

KICKER INCENTIVE
For additional GHG reduction technologies

TOTAL INCENTIVE

$2,000,000
Program Cap
per applicant

$1,700
Per Bedroom
average minimum
greenhouse gas incentive

Developer & Project Eligibility:

- New construction, significant refurbish, or repurposed low-income housing unit(s) with income restrictions
- All-electric, no distribution level gas hookups, located in an IOU gas service territory
- Demonstrated modeled resident utility cost savings
- Developers with low-income residential project experience in California

How Incentives are Calculated

BASE GHG INCENTIVE =

A flat rate of $150/metric ton (MT) of total annual avoided GHG emissions, multiplied by the 30-year effective life of the building.

BUILDING EFFICIENCY
Modeled Resident Utility Costs =

Eligible for up to $1,000 per bedroom. Based on a sliding scale of the compliance margin from 0% to 10%.

INCREMENTAL PV
Modeled Resident Utility Costs =

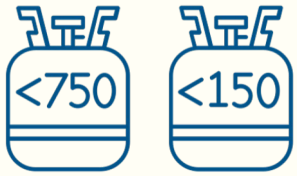
$1.30/watt (W) for single-family and low-rise multifamily* $3.00/watt (W) for mid-rise and high-rise multifamily*

* The program will not offer incentives for PV required by the Energy Code, or for PV installation beyond what is needed to address the modeled resident utility costs requirement for the project.

Kicker Incentives

KICKER INCENTIVES =

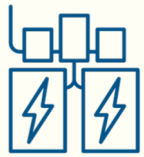
GRID FLEXIBILITY:
Smart Thermostats &
JA-13 HP Water Heaters



LOW GWP
REFRIGERANTS

INDUCTION COOKTOPS

HEAT PUMP
CLOTHES DRYER



ON-SITE BATTERY
STORAGE

ELECTRIC VEHICLE
CHARGERS

New Adopter Design Award

The BUILD program provides a design award up to $100,000 to defray direct design costs to eligible applicants who are constructing their first:

- all-electric,
- low-income, and
- multifamily building (10+ units)

$100,000

Design Award

per applicant

to defray direct design costs

Apply for Technical Assistance and Incentives

Technical Assistance Application
https://www.tfaforms.com/4945354

Program Guidelines, Incentive Application and More Information
https://www.energy.ca.gov/programs-and-topics/programs/building-initiative-low-emissions-development-program

BUILD is administered by the California Energy Commission in collaboration with the California Public Utilities Commission. It is authorized by Senate Bill 1477 (2018, Stern) and funded by the four California gas corporations apportioned according to each gas corporation's percentage share of allocated Cap-and-Trade Program allowances. Reservations are approved on a first come, first served basis, and regional funding availability is based on the utilities' contribution to the program.

Thank you!

BUILD

Building Initiative for Low-Emissions Development Program

California Housing Partnership

California's Experts on Affordable Housing Finance, Advocacy & Policy

SCANPH

Southern California Association of NonProfit Housing

QUESTIONS?

California Housing Partnership
California's Experts on Affordable Housing Finance, Advocacy & Policy

SCANPH
Southern California Association of NonProfit Housing

THANK YOU!

Questions?

Email bdelacruz@chpc.net