



Industrial Approaches to Net Zero Energy Retrofits

Developer and Building Owner
Engagement Webinar

August 14th, 2018



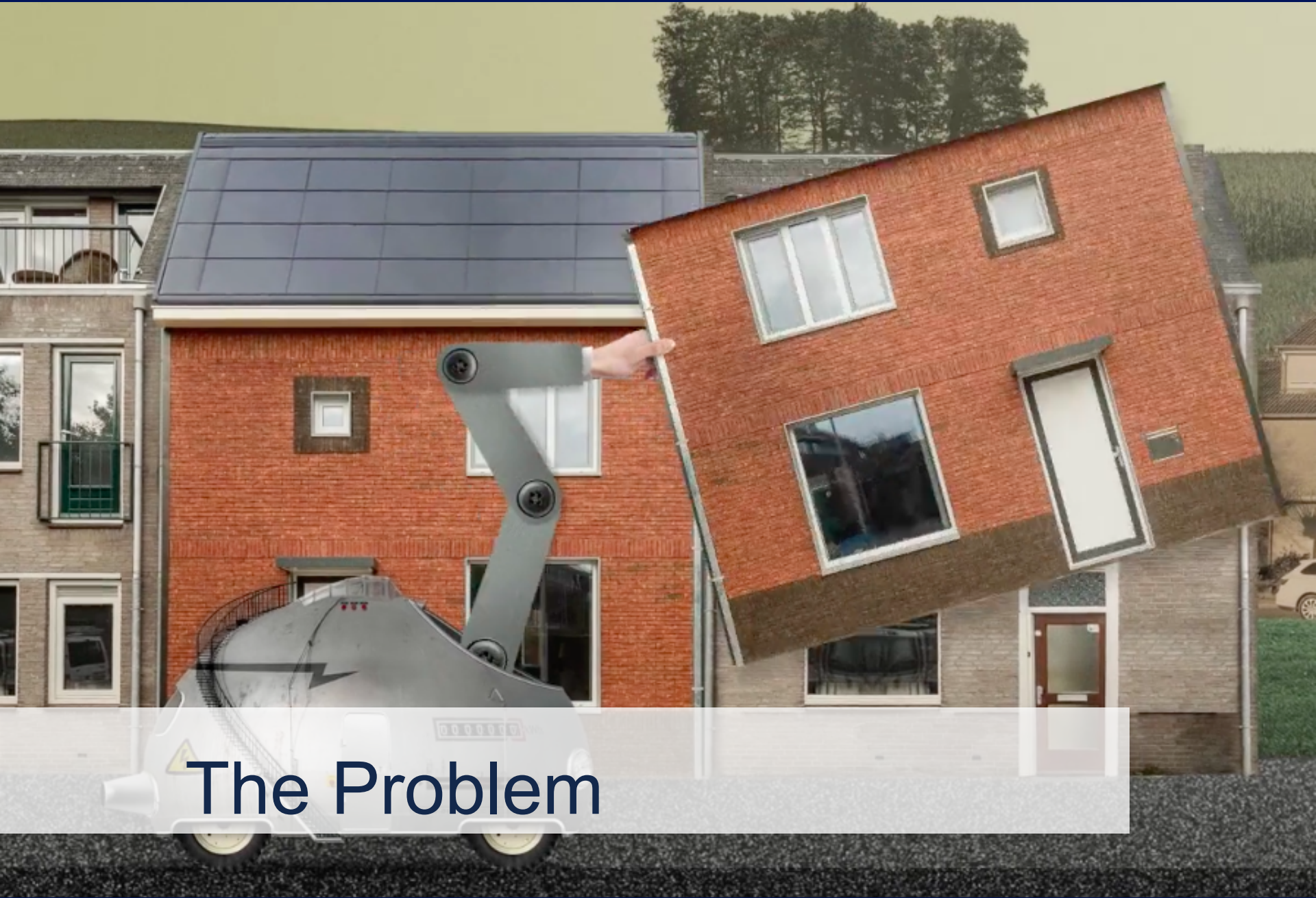
AGENDA

- **WHAT IS REALIZE?**
- **HOW DO BUILDING OWNERS BENEFIT FROM REALIZE?**
- **REALIZE PILOT AND REQUEST FOR PROPOSALS**
- **Q&A SESSION**



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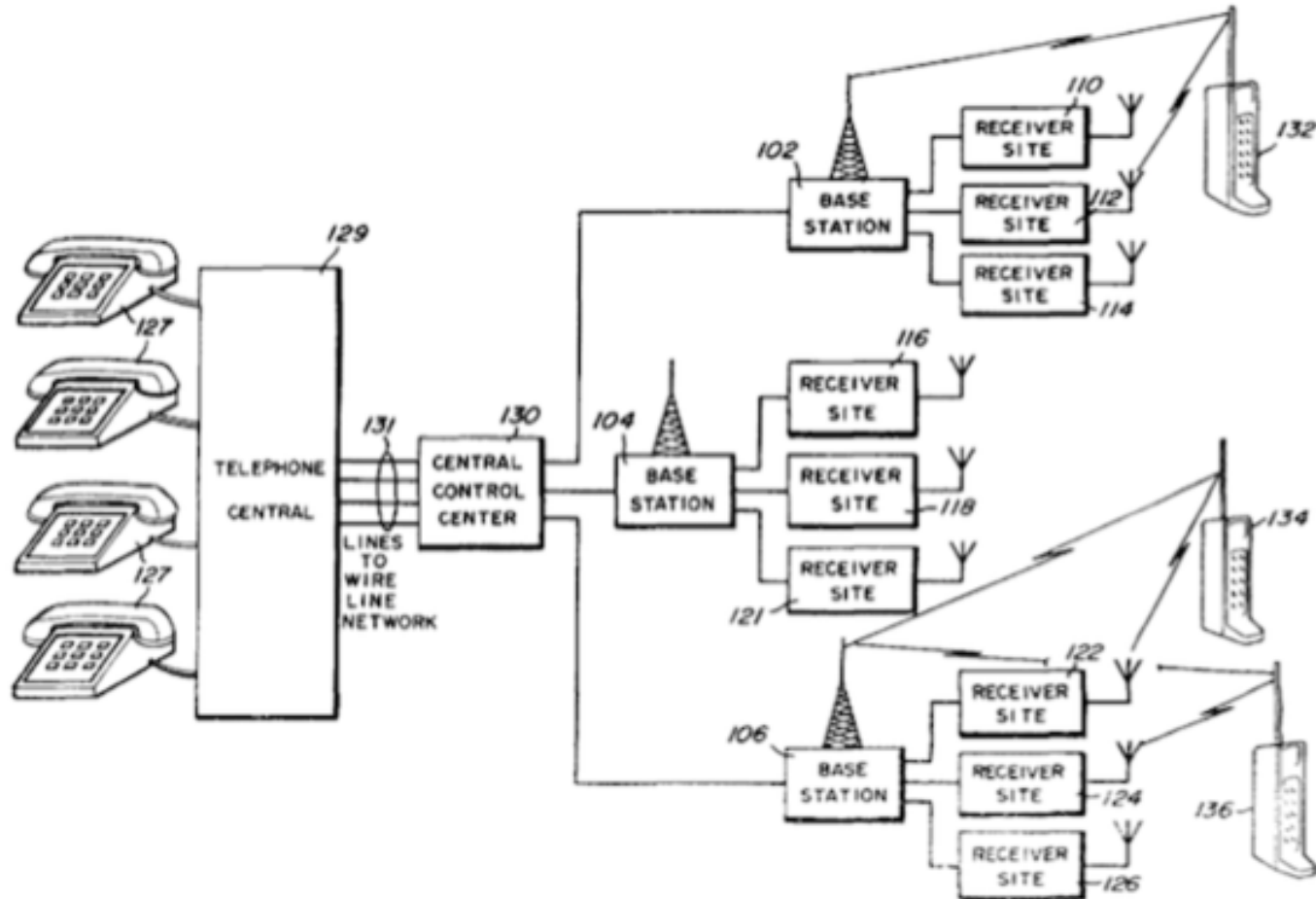


The Problem

A “MODERN” DAY RENOVATION



A SERVICE ANALOGY





The Solution

ENERGIESPRONG



ENERGIESPRONG: A MODEL OF INSPIRATION

Core offering: A net zero carbon retrofit bundle that is 1) affordable, 2) attractive, 3) ensures energy performance, and 4) can be delivered in less than two weeks



QUALITY

*Net-zero energy homes
with long performance
warranties*



NON-INTRUSIVE

*Refurbishment within a
week to 10 days*



AFFORDABLE

*Financeable through
energy cost savings*



LOOK & FEEL

*Attractive and
comfortable homes*

MARKET ENABLEMENT MODEL



REALIZE: GOAL AND MISSION

REALIZE seeks to create a business model inspired by Energiesprong to catalyze industry to develop industrialized, deep energy retrofits for the US residential market



SOME OF OUR COLLABORATORS



U.S. DEPARTMENT OF
ENERGY



CNCA
CARBON NEUTRAL CITIES ALLIANCE



Passive House Institute US



Net-Zero
ENERGY COALITION



ASSOCIATION FOR
ENERGY AFFORDABILITY INC.

Energie
Sprong



ELEVATE ENERGY
Smarter energy use for all



Re:Vision

GREEN ARCHITECTURE
SUSTAINABILITY CONSULTING
COMMUNITY ENGAGEMENT



CALIFORNIA
ENERGY
COMMISSION

NEW ECOLOGY
Community-Based Sustainable Development

nyserda
Energy. Innovation. Solutions.



STEWARDS OF AFFORDABLE
HOUSING FOR THE FUTURE



**MITSUBISHI
ELECTRIC**



THE **LEVY** PARTNERSHIP

FreddieMac

STAENGL
ENGINEERING



Fannie Mae

DAIKIN



Goodman
Air Conditioning & Heating



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THE REALIZE VALUE PROPOSITION

Project Economics	Local Integration	Technical Solution
Energy Savings	Program Coordination <i>Long-term Program Element</i>	Predesigned Retrofit Package
Low Income Housing Tax Credit (LIHTC) Competitiveness	Codes and Regulations	Reduced Contractor Risk <i>Long-term Program Element</i>
Improved Debt Capacity	Reduced Procurement Costs <i>Long-term Program Element</i>	Performance Guarantee <i>Long-term Program Element</i>
Labor Costs	Access to Capital	Improved Indoor Environmental Quality
Access to Capital <i>Long-term Program Element</i>		Reduced Tenant Disruption

THE REALIZE VALUE PROPOSITION

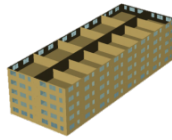
Owner and Tenant Value-Add Features

- Clean new facade
- New windows and doors
- Improved noise control
- Improved indoor air quality
- Improved occupant comfort
- Improved access for mechanical system maintenance and servicing
- Increased tenant satisfaction
- Increased building durability
- Reduced energy costs
- Stable cost of living
- Increased building asset value



Add efficiency targeting NZE-ready as an incremental cost to planned capital improvement projects

LET'S DO THE NUMBERS: 65 UNIT PROTOTYPE



Business as Usual (no improvements)		REALIZE		Variance
<u>Assumptions</u>		<u>Assumptions</u>		
Units	65	Units	65	
Average Gross Rent	1500	Average Gross Rent	1500	
Utility Allowance (Energy Portion)	67	Utility Allowance (Energy Portion)	10	57
Net Rent	1,433	Net Rent	1,490	
INCOME		INCOME		
Total		Total		
Rental Income		Rental Income		
Gross Rents	\$ 1,117,740	Gross Rents	\$ 1,162,200	\$ 44,460
Rental Losses	\$ -38,213	Rental Losses	\$ -38,213	\$ -
Other Revenue	\$ 22,928	Other Revenue	\$ 22,928	\$ -
TOTAL INCOME	\$ 1,102,455	TOTAL INCOME	\$ 1,146,915	\$ 44,460
EXPENSES		EXPENSES		
Operating Expenses		Operating Expenses		
Administration	\$ 95,533	Administration	\$ 95,533	\$ -
Utilities		Utilities		
Electricity	\$ 22,928	Electricity	\$ 3,439	\$ -19,489
Gas	\$ 19,107	Gas	\$ -	\$ -19,107
Water and Sewer	\$ 66,600	Water and Sewer	\$ 53,280	\$ -13,320
Waste Removal	\$ 17,196	Waste Removal	\$ 17,196	\$ -
O&M		O&M		
Maintenance Payroll	\$ 95,533	Maintenance Payroll	\$ 71,650	\$ -23,883
Maintenance Supplies	\$ 105,087	Maintenance Supplies	\$ 78,815	\$ -26,272
Contract Maintenance	\$ 105,087	Contract Maintenance	\$ 78,815	\$ -26,272
Energy Services Agreement	\$ -	Energy Services Agreement	\$ 76,427	\$ 76,427
Taxes & Insurance	\$ 171,960	Taxes & Insurance	\$ 171,960	\$ -
TOTAL OPERATING EXPENSES	\$ 699,031	TOTAL OPERATING EXPENSES	\$ 647,115	\$ -51,915
Net Ordinary Income	\$ 403,424	Net Ordinary Income	\$ 499,799	\$ 96,375
Debt Service	\$ 288,160	Debt Service	\$ 357,000	\$ -68,840
15 YR Debt Capacity	\$ 2,991,002	15 YR Debt Capacity	\$ 3,705,534	\$ 714,532
25 YR Debt Capacity	\$ 4,061,311	25 YR Debt Capacity	\$ 5,031,533	\$ 970,222

Potential
Incremental
REALIZE
Budget

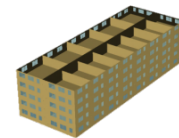
Note: Debt Service Coverage Ratio assumed to be 1.4. Debt capacity calculated using a 5% cost of debt and amortized over 15 years.

* Utilities are assumed to be reduced 85% for electricity, 100% for natural gas, 20% for water and sewer. O&M costs are modeled to be reduced 25% and replaced with an Energy Service Agreement for a performance guarantee.

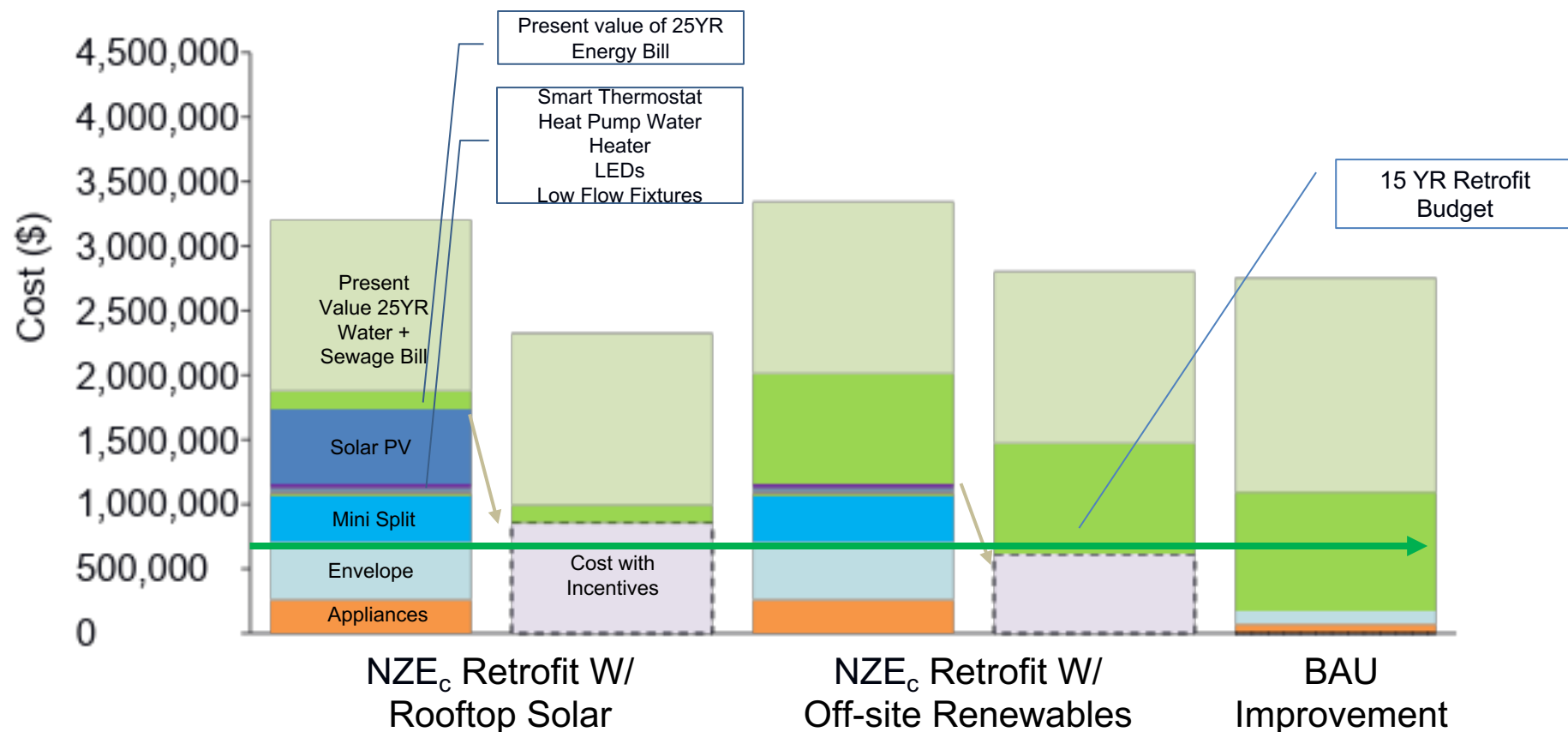


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65 UNIT PROTOTYPE: NZEC VS. BAU



The net zero retrofit cost does not include expected cost reduction from REALIZE ECM integration and scale



*Energy savings PV calculated using a 5% discount rate and an escalation rate of 2.48%, which is a blended average based on 10 years of gas and electric escalation in California from the EIA. 25 years selected as life of retrofit package. Water and sewage savings calculated assuming 5% discount rate and 5% escalation rate.



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REALIZE PILOT

US Department of Energy Building America Program FOA-0001630

Project Title:

Integrated Zero Energy Ready Retrofit Solution for Multifamily Renovations

Major Partners: Passive House Institute US, Net Zero Energy Coalition, Re:Vision Architecture, The Levy Partnership, Staengl Engineering, Energiesprong, Mitsubishi, Goodman Manufacturing, RenewAire, and PowerWise

Desired Project Outcome:

Develop a standardizable, transferable, climate zone specific net zero energy ready retrofit system, designed with at least a 50% lower energy use intensity relative to the measured baseline energy performance



U.S. DEPARTMENT OF
ENERGY

PROJECT SCHEDULE FOR DOE PILOT

TASK NAME	TASK		2018				2019				2020				2021	
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Task 2.0	Pilot Selection															
Subtask 2.3	Select Pilot															
Milestone 2.3.1	Pilot RFP issued				◆											
Milestone 2.3.2	Pilot selected					◆										
Task 3.0	Pilot Design and Engineering															
Subtask 3.2.1	Design and Engineer Pilot Retrofit Solution															
Milestone 3.2.1	Retrofit solution designed for pilot						◆									
Subtask 3.3	Pilot Commitment Formalized															
Milestone 3.3.1	Pilot implementation commitment secured							◆								
Task 4.0	Pilot Construction															
Subtask 4.1	Develop pilot specifications and support materials selection															
Milestone 4.1.1	Pilot specifications produced								◆							
Milestone 4.1.2	Pilot materials and equipment finalized									◆						
Subtask 4.2	Preferred pilot construction period															
Milestone 4.2.2	Pilot constructed											◆				
Subtask 4.4	Monitoring															
Milestone 4.4.1	Performance results collected and analyzed															◆

PILOT BUILDING REQUIREMENTS

Building Characteristics

- Three to five story standalone with at least 30 units
- Load-bearing exterior brick wall (preferably in good condition)
- Sufficient clearance around the perimeter to allow for expansion of the envelope by up to twelve inches plus five inches for installation
- Simple building with no ornate architectural features or balconies
- Basement access (where applicable)
- Minimal energy improvements to date or in need of major capital upgrades

SOMETHING THAT LOOKS A BIT LIKE THIS...



GROWING A MARKET THROUGH OUR PARTNERSHIPS

What We Seek From a Partner

- Share our values
- An eye for the broader vision
- Determination to do something transformative in the market

How We Want to Support You

- Provide technical support for design, install, and monitoring
- Work closely with cities, states, utilities, and philanthropic organizations to secure project gap funding
- Work closely with manufacturers and suppliers to bring integrated products to market



FREQUENTLY ASKED QUESTIONS

- How much will this cost?
- Is REALIZE paying capital costs?
- If selected does that commit the building owner to implementing a solution, sight unseen?
- Does the building owner have a say over the design?
- How rigid are the pilot building typology requirements?
- Will a performance guarantee be included in the pilot?



PROPOSAL PROCESS AND TIMELINE

Building Eligibility Forms Due	8/28/18
Full Applications Distributed to Eligible Candidates	9/3/18
Building Applications Due	9/14/18
Building Documents Request and Interviews	9/28/18
Interview and Documents Submission Period Ends	10/12/18
Site Visit Period Begins	10/15/18
Site Visit Period Ends	11/2/18
Selected Pilot Building Announced	11/12/18



THANK YOU! QUESTIONS?

**For More Information Visit:
www.rmi.org/REALIZE
or contact
realize@rmi.org**