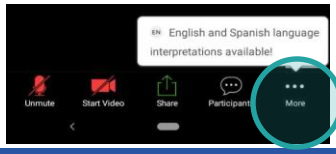
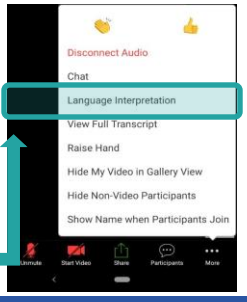
Energy efficiency is particularly important in affordable housing. Because one of the benefits of energy efficiency interventions is lower utility bills, these upgrades can help to ensure rents and costs of living remain affordable. This webinar will explore energy costs in the context of total operating expenses in different types of affordable housing, introduce the drivers (or lack thereof) of energy efficiency upgrades, and offer suggestions for overcoming challenges. Attendees will learn how to make the business case for energy efficiency upgrades to affordable housing owners and developers.

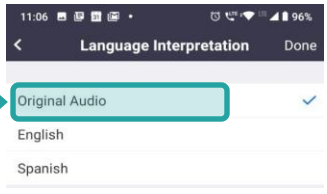
Interpretation

Para escuchar un canal de interpretación, haz clic en el ícono de globo y escoge el canal de tu preferencia. Si seleccionas "Apagado" escucharás el lenguaje original.

To listen to the interpreter, please select the globe icon and choose the language of your preference. If you choose "Off" you'll hear the original language.







R2E2

Housekeeping Announcements

- We are recording this webinar and will be making it available to all registrants within a few business days.
- To ask a question during the webinar, please submit it via the Q&A button at the bottom of your screen.
- You can upvote questions in the Q&A box that you would like us to prioritize.
- Use the chat to engage in respectful and productive discussion with other participants.
- Code of conduct: R2E2 will not tolerate behaviors that cause harm or disrupt the learning environment. Please direct message Carolyn Conant if you feel unsafe in this space. Disruptive participants may be removed from the webinar.

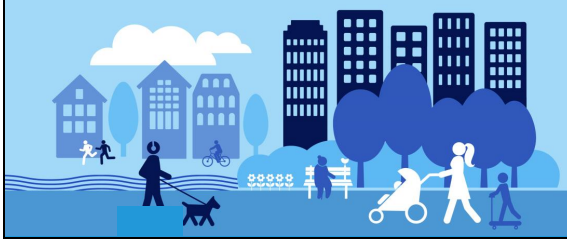
Holly Jamesen Carr

U.S. Department of Energy, Building Technologies Office

The Buildings Upgrade Prize (Buildings UP)

Buildings UP is designed to rapidly scale energy efficiency and efficient electrification building upgrades in communities across the country. The prize is envisioned to consist of four phases over approximately five years.

Application support prizes available for new and under-resourced teams.



Phase 1: Concept

- $22M+ in Prizes to Teams + Technical Assistance
- Applications due by July 18, 2023
- Seeking 20–60 teams to join the "coopetition."

www.heroX.com/buildingsUP

Buildings UP | U.S. Department of Energy

Prize Goals

Buildings UP aims to address persistent non-technical barriers to improving building energy efficiency and reducing on-site emissions (e.g., administrative, financial, social, and other barriers).

Buildings UP is a capacity-building prize to support teams with solutions that:

- **Accelerate building upgrades** for efficiency and on-site emissions reductions beyond current best practices in the applicant's identified area of focus
- **Demonstrate scalability and replicability** across building type(s), climate zone(s), and/or, community type(s)
- **Advance holistic and lasting energy efficiency and efficient electrification** initiative development
- **Benefit underserved communities** by ensuring that benefits accrue to equity-eligible buildings*, their occupants, and surrounding communities.

*Equity-eligible buildings include buildings in disadvantaged communities; low- and moderate-income (LMI) households; and underserved commercial, nonprofit, and public buildings.

Phase 1: Pathways & Prizes

Equity-Centered Innovation Pathway

$400,000 in cash prizes for each winning team

- Develop replicable, scalable, innovative building upgrade initiatives **in equity-eligible buildings* (i.e., 80% equity-eligible).**

Open Innovation Pathway

$200,000 in cash prizes for each winning team

- Develop replicable, scalable, innovative building upgrade initiatives. **May include a focus on equity but are not required.**

Access to Technical Assistance is awarded to winning teams in both pathways.

Equity-Eligible Buildings

Geographic Location
(Justice 40 Census Tracts, Tribal Lands, Territories)

Affordable Housing
(Subsidized, Naturally Occurring)

Underserved Commercial
(including Title 1 Schools, Community Services, Non-profits)

Team-Defined

Additional information is in Section 3.5 of the official rules.

Example Projects*

A **rural electric cooperative** partners with a **local CBO** and **the county** to help **LMI single-family home residents** transition from **propane heat** to **efficient electric heat pumps.**

A **K-12 school district** and an **energy services company** partner to **electrify district buildings**.

A CBO in a midsized town in the southeast partners with the **local government** to bring **heat pumps (and air conditioning!)** to affordable housing buildings throughout the community.

A **national residential property owner** teams up with **multiple local governments** and **utilities** on an initiative to **electrify its properties in three major markets**.

A business improvement district in a large city neighborhood partners with **local houses of worship** to bring efficient electric heating and cooling equipment to small businesses.

+Innovations!

***Minimum technologies and strategies teams must include in their initiatives:**

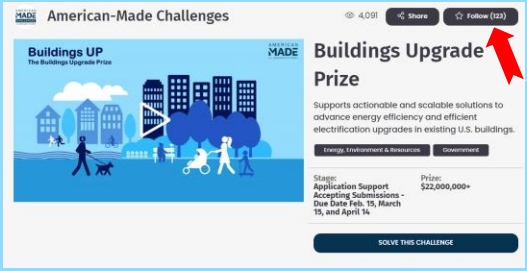
- Weatherization and envelope improvements (e.g., insulation, air sealing, window improvements)
- Efficient electric heating and cooling equipment (e.g., heat pumps and/or heat pump water heaters).

Seeking Innovations to Address Non-Technical Challenges to Widespread Building Upgrades

- **Lack of contractor and occupant familiarity** with technologies
- **High first costs for upgrades**, limited short-term payback
- **Lack of retrofit materials** and equipment
- **Insufficient workforce** to complete upgrades
- **Lack of reach of funding and incentive programs** to historically underserved households and building owners
- **Inconsistent quality of work** and consumer mistrust.

Next Steps for Competitors

- **Follow the prize on HeroX.com**, read the rules, and review the FAQs.
- **Register for an Informational Webinar:** May 4, 11 am ET
- **Create an account on HeroX** and click on the "Solve this Challenge" button.
- **Team up and submit a Phase 1 "Concept" application** via HeroX by July 18, 5 PM ET.



Follow www.HeroX.com/BuildingsUP
Questions: buildingsUP@nrel.gov

Drivers of Energy Efficiency in Affordable Housing


Jon Meyers
HR&A Advisors


Callahan Seltzer
HR&A Advisors


Hannah Glosser
HR&A Advisors


Lauren Ross
HUD

Residential Retrofits for Energy Equity

Buildings UP
The Buildings Upgrade Prize

Meet Your Presenters

Jon Meyers,
Partner, HR&A Advisors

Hannah Glosser,
Director, HR&A Advisors

Callahan Seltzer,
Principal, HR&A Advisors

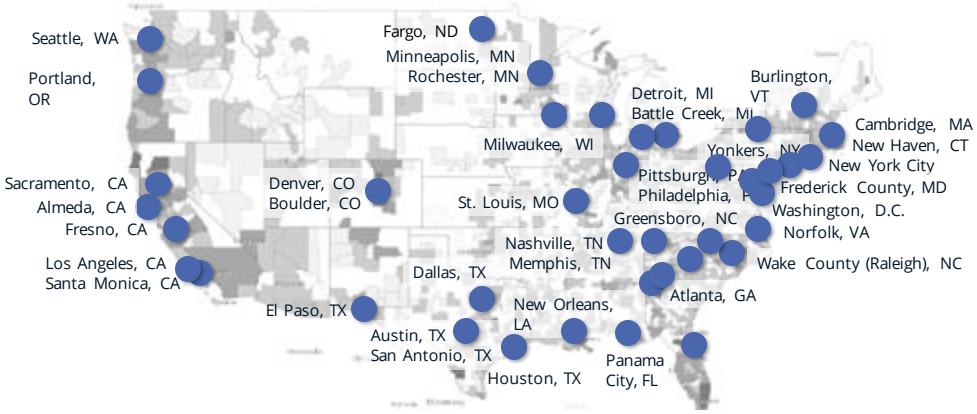
Lauren Ross
Senior Advisor, HUD

R2E2
Residential Retrofits for Energy Equity

Residential Retrofits for Energy Equity (R2E2) is a new nationwide initiative that provides trainings to state, local, and tribal governments as well as community-based organizations and other partners to jumpstart energy upgrades for affordable housing that will lower utility bills, reduce greenhouse gas emissions, improve residents' health, create good-paying local jobs, and help advance racial equity. R2E2 is supporting the Buildings Upgrade Prize by providing training and technical assistance to applicants and awardees.

R2E2

HR&A is committed to improving life in America's cities, bringing decades of experience driving energy efficiency investments and improving housing affordability.



R2E2

We work on housing affordability issues at four closely connected levels.

HOUSING STRATEGIES

Creating strategies and plans based on local needs and priorities

HOUSING POLICIES

Developing policies that align with community goals and regulations based on local needs

PROGRAM DESIGN

Designing programs that align community goals

HOUSING TRANSACTIONS

Advising on the development and preservation of housing at all levels of affordability

R2E2

By the end of today's presentation, you should be able to:

Understand the basics of housing considered affordable and the different types of affordable housing.

Identify benefits to pursuing building upgrades in affordable housing.

Recognize barriers to achieving building upgrades in affordable housing, and ways to address those barriers.

Prioritize among building upgrade outcomes to develop a plan that can directly achieve those goals.

R2E2

Buildings UP Scoring Overview

Phase 1 Concept Plans (due July 18) are scored against scoring statements under each prize criterion.

One narrative is required for each criterion. The summation of narratives constitutes the Concept Plan.

Learn more details about the criteria and scoring at an upcoming Buildings UP Informational Webinar: May 4, 11 a.m. ET

https://www.herox.com/BuildingsUP/229-upcoming-webinars-recordings

This webinar is most relevant to the following prize criteria:

Buildings UP Phase 1 Scoring Criteria (equally weighted)
1. Assessing & Prioritizing Challenges
2. Addressing Challenges Through Innovation: Initiative Scope and Impacts
3. Scaling & Replicating Innovation through Community Involvement
4. Demonstrating Capabilities & Team Characteristics Critical for Success
5. Achieving Equitable Building Upgrade Strategies (additional criterion: Equity-Centered Innovation Pathway)

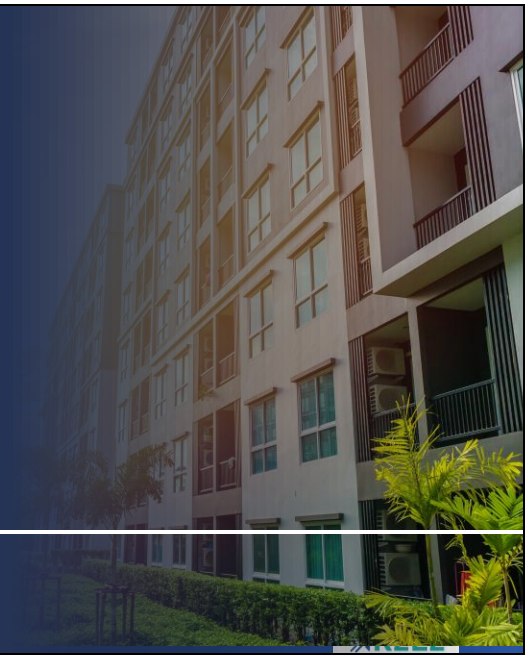
R2E2

Agenda

1. Primer on Affordable Housing
2. Primer on Building Upgrades
3. Drivers of Building Upgrades in Affordable Housing
4. Setting Priorities for Affordable Housing Upgrades
5. Q&A

R2E2

Primer on Affordable Housing



Residential Retrofits for Energy Equity

Primer on Affordable Housing

Introduction

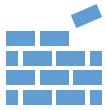
What is affordable housing?

Residents & Owners

Who lives in affordable housing?

Typologies

What are the different types of affordable housing?



Buildings

What are the typical building characteristics of affordable housing?

R2E2

Today, we're going to start off talking about Affordable Housing- what is it, who lives in it, what are the different types (there are many!). And as we talk about some of the different TYPES of housing, we'll also get into some of the CHARACTERISTICS they share- especially related to ENERGY systems and energy usage.

Housing is considered "affordable" when housing and utility costs are less than 30% of a household's income.

Whether or not a unit is considered "affordable" depends on the household's income.

For most affordable housing, households are eligible based on their income relative to Area Median Income (AMI). AMI is the midpoint income in a region.

Low-Income	Very Low-Income	Extremely Low-Income
51 - 80% of AMI	31 - 50% of AMI	Below 30% of AMI

Half of all households make more than the AMI and half make less.

R2E2

When someone says affordable housing, they actually may mean many different things. Looking at a people centered definition, housing is considered affordable when the person or family living there pays NO MORE than 30% of their annual income towards housing cost AND utilities.

As a note – AMI is different from 200% of the Federal Poverty Level, the measure used for the Weatherization Assistance Program, which many attendees may be familiar with. And, AMI is adjusted for variations in regional cost of living, whereas FPL is not.

When housing and utility costs are more than 30% of a family's income, the family is considered cost-burdened.

- The more a household spends on housing costs, the less is available for other basic needs, such as food and childcare.
- When affordable rental housing is unavailable, low-income households face:
  - Housing instability
  - Increased vulnerability to unsafe living conditions, overcrowding, and costly and harmful evictions.

Monthly Costs 2 Working Adults and 2 Children Chicago Metro Area	
Housing	$15,628
Food	$11,812
Medical	$8,427
Child Care	$20,792
Transportation	$14,164
Other	$19,822
Taxes	$18,342
Required Income before Taxes	**$109,119**
Monthly Income	**9,093**

*MIT's Living Wage Calculator demonstrates the cost-of-living estimate based on geographic location. The living wage estimate accounts for basic needs of a family.
Source: Living Wage Calculator, MIT 2023

R2E2

For households in the US that spend MORE than 30% of their income on housing and utilities, they're considered housing-burdened. Housing is too much of their monthly budget and does not leave enough cushion for other necessary expenses, savings, etc.

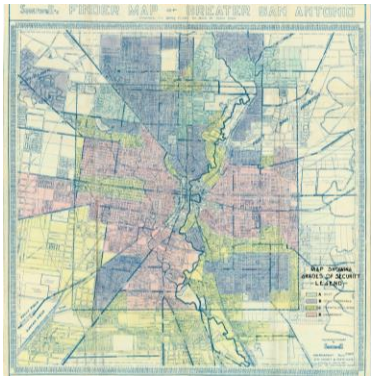
Housing access and affordability in 2023 remains deeply rooted in historical inequity and segregation.

Exclusionary Zoning

- For most of the 20th century, federal, state, and local agencies developed and maintained policies that reinforced segregation and prevented people of color from building wealth.
- Many of these programs embedded racial segregation into housing and finance policy (such as redlining).
- Local governments further embedded exclusionary practices into housing through zoning.

Exclusionary land use policies and discriminatory lending have implications on affordability today, including:

- The quantity, location, availability, and quality of housing stock;
- Generational wealth inequities
- Access to resources in underinvested communities



A map of San Antonio, used by commercial banks to determine lending 'risk'. This is an example of redlining.

Source: HR&A

R2E2

Housing access and affordability in 2023 remains deeply rooted in historical inequity and segregation.

BIPOC households continue to be left out of the wealth building aspects of housing.

- Homes in majority-Black neighborhoods are **1.9X** more likely to be appraised under the contract price than homes in majority-white neighborhoods.
- Homes in predominately Black neighborhoods across the country are valued at **$48,000** less than predominately white neighborhoods for a cumulative loss in equity of approximately **$156 billion.**

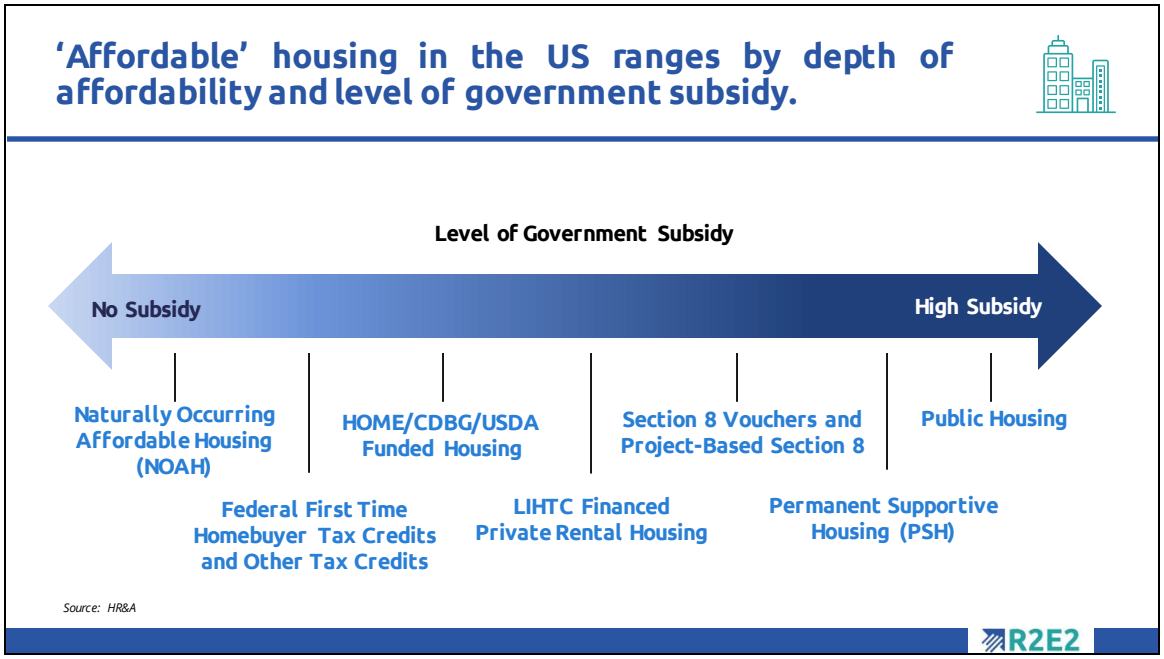
Black and Hispanic Renters are disproportionately housing cost-burdened nationwide.

- Research from the Joint Center for Housing Studies at Harvard University shows 42% of white households, 42% of Asian households, 52% of Hispanic households, and 54% of Black households experienced rental cost burden in 2019.
- This is particularly consequential, as 58% of Black households and 53% of Hispanic / Latino households are renters, compared to just 28% of white households.

Sources: Brookings Institute, US Census

R2E2


Primer on Affordable Housing Supply
Residential Retrofits for Energy Equity



NOAH is housing in your community without any subsidy. It is privately owned, and the cost to live there is lower typically because of its age or housing quality. This can include single family housing to apartments.

Moving across the continuum: First Time Homebuyer Tax Credits is a subsidy for new buyers to purchase a home.

There are also direct subsidy – federal block grant programs that assist local and state governments fund housing programs (this includes HOME/CDBG/USDA)

Section 8 vouchers and project-based vouchers are deeper forms of subsidy to pay the difference between market rate, and what a household can pay (30% of their income).

PSH – may have other sources involved, but also has on site support services.

Lastly, public housing. Once had a huge amount of investment in the late 20th century. This is publicly owned housing, publicly subsidized, but today has a huge backlog of capital investment needs.

A portion of housing that is deemed 'affordable' to low – and – moderate income households is subsidized, public, or deed-restricted.

Units by Affordability

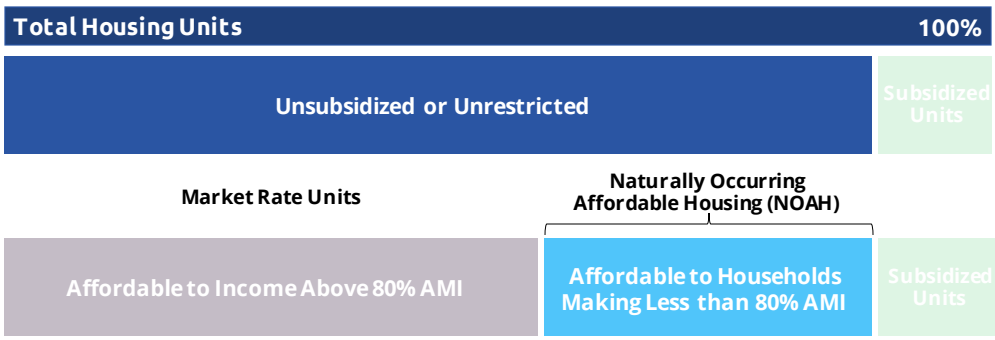
Subsidized, Public, or Deed Restricted Units are units that receive federal, state or local funding in exchange for a use-restriction that limits the rent or purchase price and requires occupancy by low-income residents.

Source: HR&A; Elevate, Making Naturally Occurring Affordable Housing More Efficient: Outreach to Upgrade

R2E2

Some unsubsidized units may still be affordable based on the rent level, known as Naturally Occurring Affordable Housing (NOAH).

Units by Affordability



Source: HR&A

R2E2

Not all units of housing that are considered affordable are actually subsidized. This includes NOAH units.

Naturally occurring affordable housing (NOAH) accounts for the bulk of affordable housing stock in the United States.

Unsubsidized Units

Naturally Occurring Affordable Housing (NOAH) typically refers to properties that:

- ***Are not subsidized*** by any federal or state program; there is **no regulation on rents;**
- and have rents that are considered affordable ***to households earning 80% AMI*** or less by the Department of Housing and Urban Development (HUD)'s definition.

All Affordable Units
(2021)

The majority (over 80%) of the 'affordable' housing stock is unsubsidized. This is due to the limited amount of subsidy sources for housing in the US.

Source: HR&A; Elevate, Making Naturally Occurring Affordable Housing More Efficient: Outreach to Upgrade

R2E2

NOAH units make up nearly 30% of the total U.S. housing stock, or nearly 19 million units nationally.

Characteristics of NOAH Housing:

- These units tend to be older (built before 1990) and in neighborhoods with lower average incomes.
- In San Diego for instance:
  - **90% of all unrestricted NOAH units** were built before 1990.
  - **64% of these NOAH units** were in buildings with fewer than 20 units.

NOAH

- Parc Square Apts.
- Alexandria, Virginia
- 66 Units
- Naturally-Occurring Affordable Housing (NOAH)

Source: San Diego Affordable Housing Preservation Study, HR&A Advisors; Wesley Housing

R2E2

Some 17.6 million occupied rentals—40% of the nation's supply—are located in areas with at least moderate risk of annual losses from natural hazards.

More than a fifth (4 million) of the units under threat have rents under $600.

Much of the subsidized stock is also located in high-risk areas, including 1.2 million units supported by the Low-Income Housing Tax Credit program, 700,000 project-based HUD units, and 200,000 USDA multifamily units.

The remaining portion of affordable housing is deed-restricted and/or subsidized, through federal, state or local programs or policies.

Subsidized, Public, and/or Regulated Units

These units have rents that are considered ***affordable to households earning 80% AMI.*** Some units are subsidized, such as through:

- **Public Housing Authority (PHA)** subsidy in the form of tenant-based, project-based vouchers, or public housing;
- **The Low-Income Housing Tax Credit (LIHTC)** program support units for households earning under ~60% AMI, with rent limits set by HUD;

All Affordable Units
(2021)

Some units may also be **regulated affordable, but unsubsidized** in the US, such as through:

- Inclusionary Zoning or Rent Control Regulations, which may prevent rent growth in some or all units.

Source: HR&A

R2E2

Similar to NOAH units, subsidized housing tends to be older, not energy efficient, and at risk of potential loss of affordability.

Subsidized and/or Public Housing is often characterized by:

Deferred Maintenance Challenges

- Many public housing units have systems have a backlog of capital needs.

Older Buildings

- 70% of public housing was built between 1950 and 1985

High Utility Costs

- 22% of public housing operating budgets go to utilities.

Expiring Affordability Restrictions

- Many subsidized units face potential loss of affordability when covenants expire.

High Risk Locations

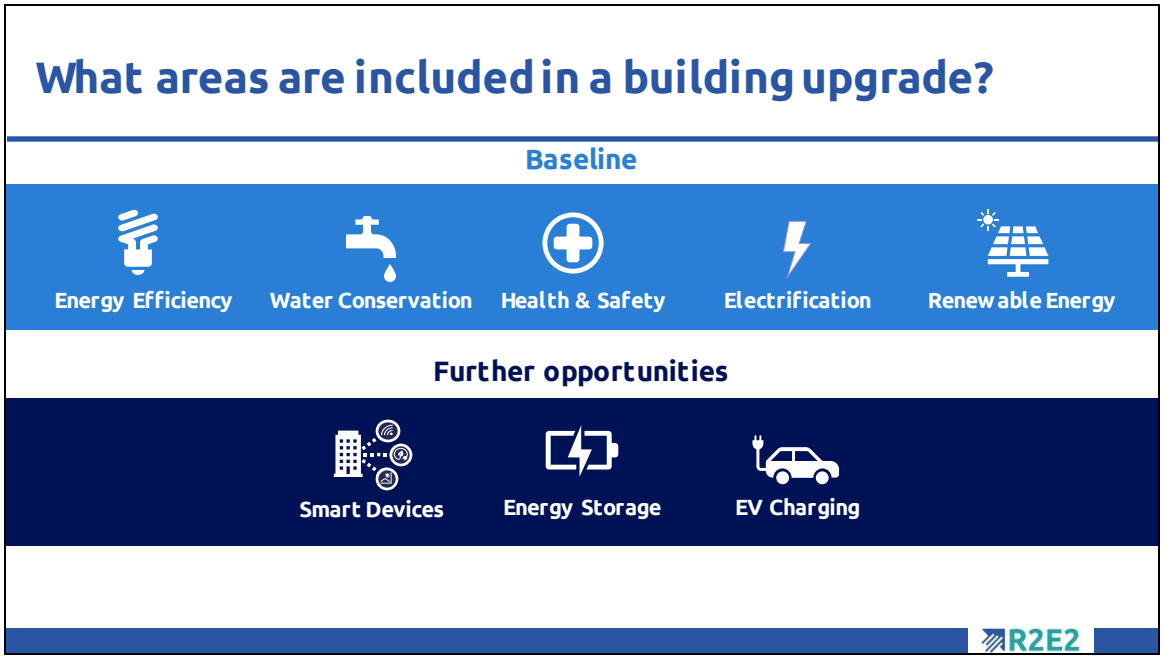
- Much of the U.S.'s subsidized housing stock is in high-risk areas for losses from natural hazards, including *coastal flooding, drought, earthquakes and hurricanes.*

Source: Moving to the Next Level: Progress Report and Energy Update: Report to Congress – August 2016, Department of Housing and Urban Development; America's Rental Housing 2022, Joint Center for Housing Studies of Harvard University; Characteristics of HUD-Assisted Renters and their Units in 2013.

R2E2

Primer on Building Upgrades

Residential Retrofits for Energy Equity



Building upgrade programs can include many different types of upgrades, depending on the scope and goals of what you are trying to accomplish.

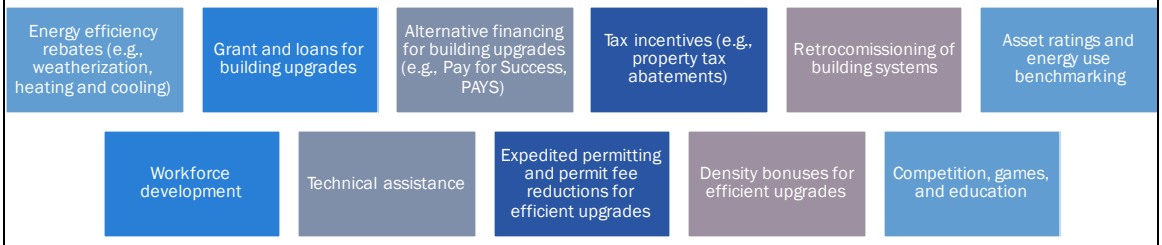
Building upgrades at a baseline include repair or replacement for:

- Energy efficiency
- Water conservation
- Health + safety
- Electrification
- Renewable energy

Required upgrades for Buildings UP include efficient electric equipment upgrades and envelop upgrades. Required: efficient electric equipment (heat pump and/or heat pump water heater) and envelope upgrades where needed to reduce energy costs.

Typical energy efficiency building upgrade initiatives

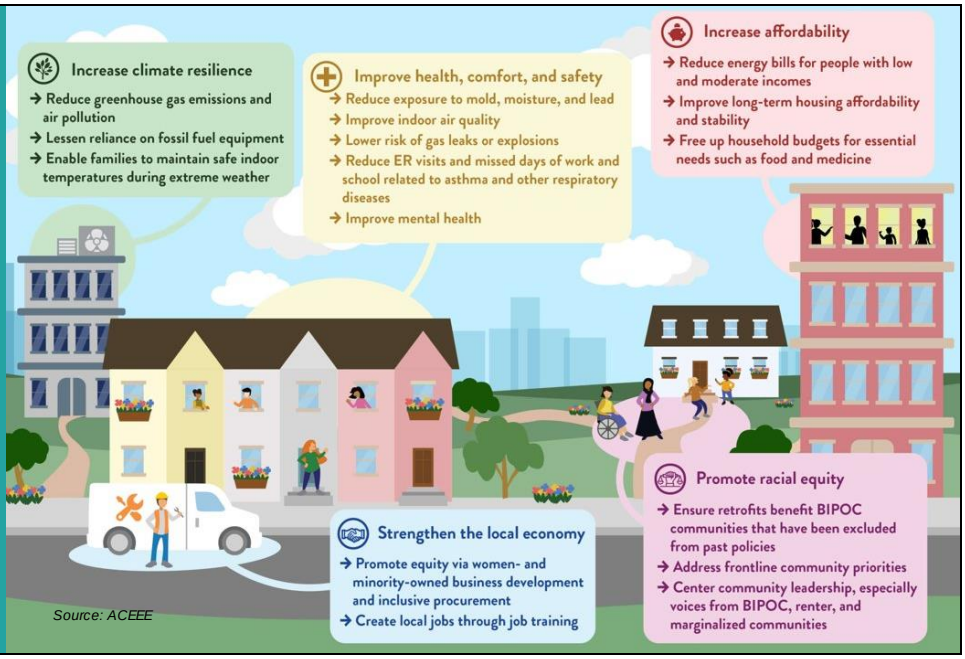
Upgrade initiative examples *(offered as stand-alone initiative or as custom initiatives that combines multiple initiative elements into one)*



Various entities (e.g., local governments, state governments, energy utilities, and nonprofit organizations) can offer upgrade initiatives. **Partnerships** (e.g., city-utility partnerships) can help to coordinate or market upgrade initiatives offered within the same geographic areas. Jurisdictions can offer **one-stop-shops** to streamline and coordinate offerings across a range of upgrade initiatives.

R2E2

How can building upgrades benefit underserved communities?



Depending on your goal, there are a number of strategies that can be advanced as part of a building upgrade.

Upgrade Type	Definition	Example Strategy
Electrification	Installation of all-electric equipment	Install heat pump
Renewable Energy	Production of energy from sources that are naturally replenished (e.g. wind or sun)	Install solar panels
Energy Efficiency	Use less energy to heat, cool, and run appliances/electronics	Add wall insulation
Water Conservation	Reduction of water consumption and improvement of water use	Upgrade fixtures to low flow
Health + Safety	Reduction of exposure to hazardous materials and toxins	Improve indoor ventilation

R2E2

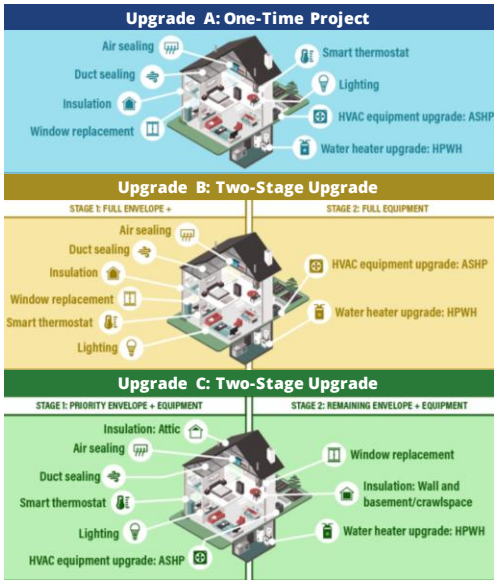
Buildings UP teams must include (1) envelope/weatherization and (2) efficient electric equipment (e.g. ASHPs or HPWHs) in their concept plans and that other technologies/strategies listed here are optional for Buildings UP.

Teams must be consciously prioritizing; if your goal is cost reduction, you may come up with a set of solutions that is different then if your goal is Ghg reduction; if you just want to reduce costs, you can just subsidize and reduce the burden on low-income households , as NY does.

Staging Building Upgrades

Completing building upgrades in stages can be an effective strategy for scaling comprehensive building upgrades and achieving energy and carbon savings.

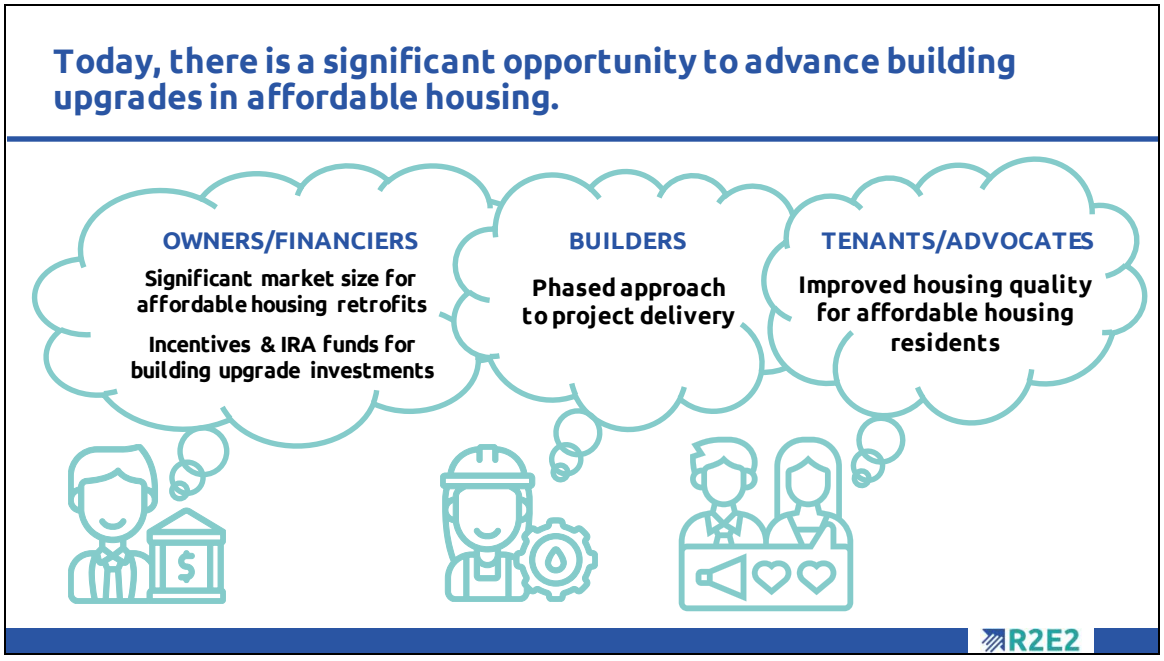
- **Upgrade B** prioritizes envelope upgrades in the first phase. Older homes in the heating-dominant cold, mixed-humid, and marine climate regions benefit the most from comprehensive envelope upgrades, which account for the vast majority of energy savings.
- **Upgrade C** combines some envelope efficiency measures with equipment replacement and may be especially appealing to customers in the hot-humid and hot-dry regions, which have milder winters and newer housing stock.



Source: ACEEE

Drivers of Building Upgrades in Affordable Housing

Residential Retrofits for Energy Equity



There are three different perspectives important to understanding how affordable housing retrofits happen, owners/lenders, builders, and tenants/advocates.

BENEFITS

Building upgrades benefit building owners; however, various economic and legal variables influence their decision to pursue one.

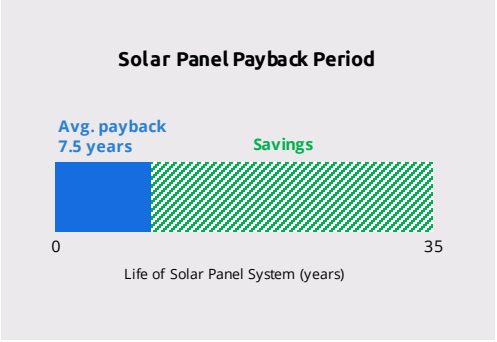
COST SAVINGS

Ability to recoup investments over time through direct cost savings, rent increase, and market value increases (at time of sale).

REGULATORY COMPLIANCE

Avoid local penalties. Some local governments have instituted mandates to compel building electrifications and energy performance.

Example: NYC's Local Law 97 sets limits on building emissions enforced with penalties



R2E2

From the perspective of an owner, most owners invest because there is a cost saving (economic rationale) or to avoid local penalties for non-compliance to regulatory requirements.

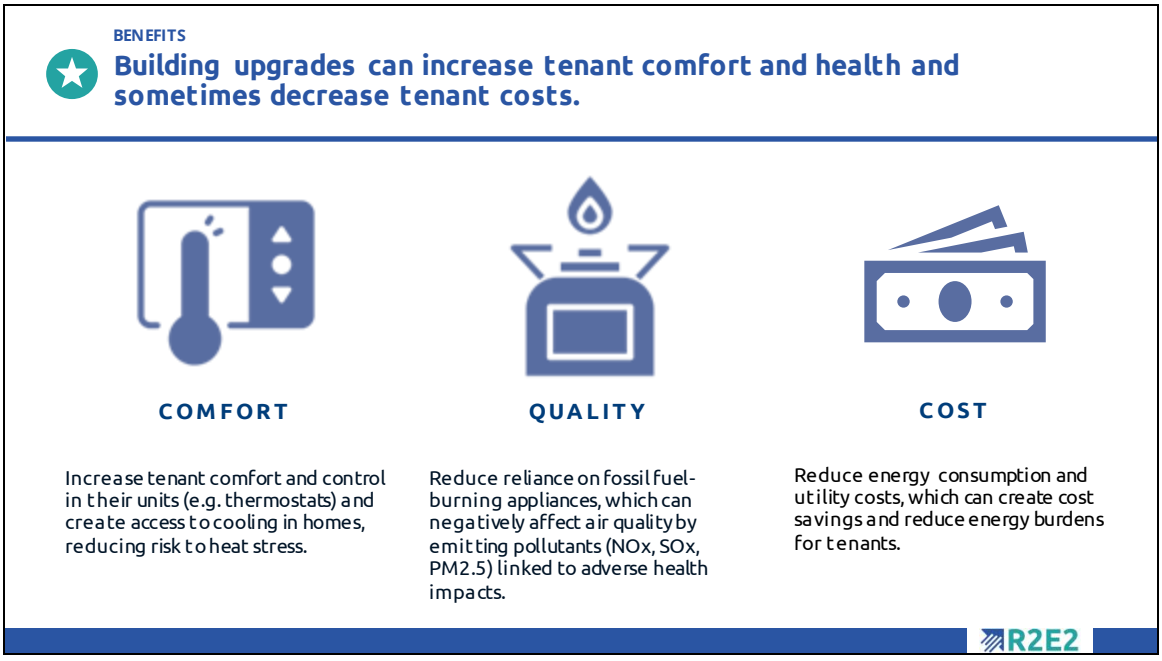
BENEFITS

Building owner characteristics drive upgrade and energy efficiency investment motivations.

	Non-regulated Rental Housing	Subsidized Rental Housing
Capital Funding Characteristics	• Generally private funding • Less time to secure capital • Capital must be returned with interest • Includes public incentive	• Government & private funding • Takes more time to secure capital • Low/no interest • Includes public incentive
Long-Term Value Perspective	• Interested in increased asset value • Increased rent • Decreased energy costs for building owner	• More focused on long-term hold • Better housing quality • Decreased energy costs

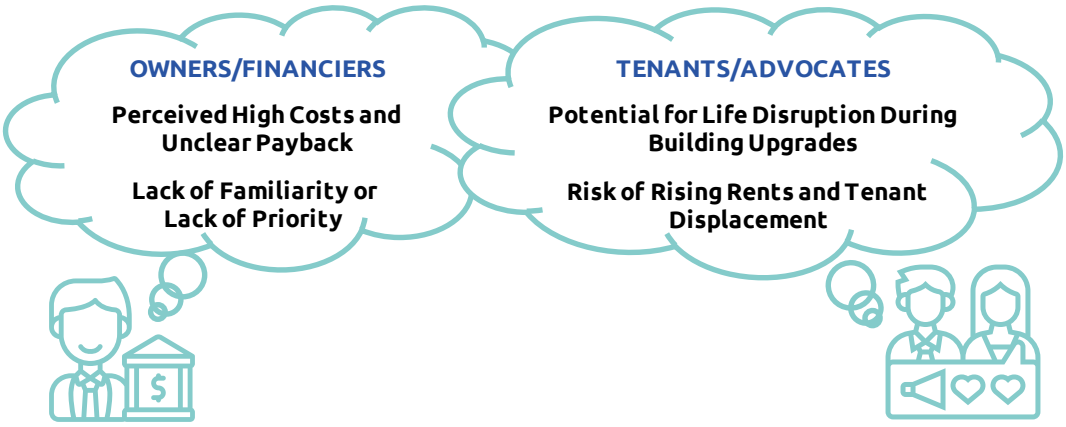
R2E2

However, not all owners are the same and can be divided between those who own non-regulated rental housing and subsidized rental housing.



From a tenant perspective, building upgrades present a unique opportunity to improve tenant comfort and health. Today, among residents nationwide without air conditioning, 30% lived in the highest-poverty neighborhoods, while only 1% lived in the lowest. Children are 24% more likely to be diagnosed with asthma if they live in homes with gas stoves instead of electric stoves.

However, there are still some structural challenges to implement building upgrades in affordable housing.



R2E2

BARRIERS

High costs and project complexity are a barrier to building owners pursuing building upgrade projects.

UPFRONT INVESTMENT COSTS

Absent incentives, building upgrades **can require high upfront costs**, which include labor, equipment, and sometimes service upgrades.

LACK OF FAMILIARITY

Executing a project **requires expertise and capacity,** including an understanding of the regulatory requirements, that owners and managers may not yet have.

UNCLEAR PAY BACK

Calculating financial returns from building upgrades depends on many other variables that impact building operations. Maintenance savings are expected, but **difficult to quantify**.

LACK OF PRIORITY

Building upgrades are often an **afterthought to other major housing issues**.

R2E2

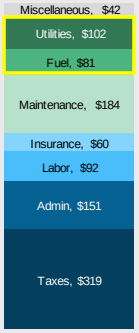
BARRIERS

Building owners may not be easily convinced to move forward with building upgrades, as energy costs are typically a small portion of operation costs.

However, energy costs **are one of the few expenses that can be reduced** (compared with taxes, insurance, or administration).

Average Monthly Expenses per Dwelling Unit for a Pre-1947 Rent-Stabilized Property in NYC

Utilities and fuel account for 18% of monthly expenses



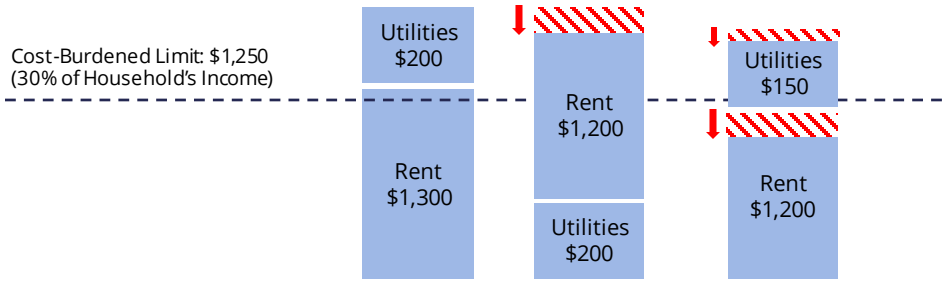
Source: HR&A

R2E2

BARRIERS

Total housing cost burden should consider both rent and utility costs. A household may remain cost burdened even if their utilities or rent decrease.

1-Person Household Income: $50,000



Total Housing Cost	$1,500	$1,400	$1,350
Cost Burdened?	Yes	Yes	Yes

Source: HR&A

R2E2

BARRIERS

A thoughtful approach is required to mitigate potential residential displacement and potential increase of housing cost burdens.

- To anticipate the effect that building upgrades could have on tenant costs– including energy and rent burden—requires an **understanding of the local housing market**, the **incentives building owners face** for each type of housing, and how **low- to moderate-income tenants** in these housing types might experience cost shifts
- Electrification of heating, hot water, and cooking equipment—if paired with a switch from a single building meter to individual meters for each unit—**could shift utility costs from building owners to tenants.**
- If energy costs increase or utilities costs shift from the building owner to tenants, there is the **possibility of an increase in housing cost burden**. For many low- to moderate-income tenants who are already rent-burdened, this creates an important concern.

R2E2

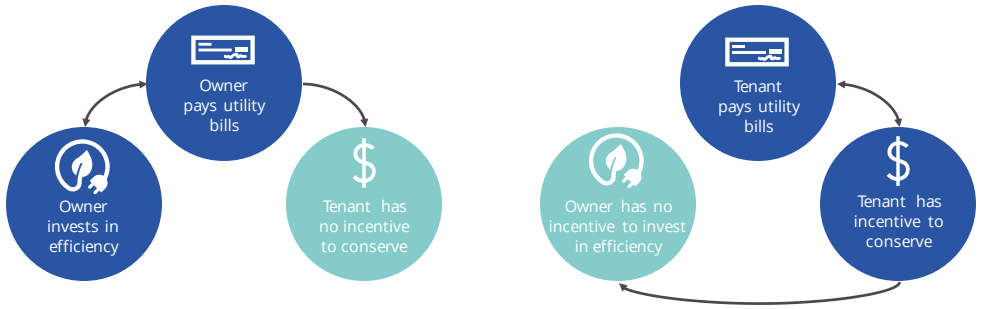
To think through these forces thoughtful, requires a holistic understanding of housing and energy together. It is clearly the case that there are risks to LMI tenants when doing these upgrades, so it is important to understand within your market how these upgrades may impact tenants.

Part of the effort here is to help teams think about that overall housing cost burden.

Note from DOE: No upgrades should occur under Buildings UP that increase energy costs, unless consent provided by building owner or person paying utility bill. (This could logically occur if a new HP also provides AC in a building that did not have AC before -- in which case energy costs could go up but with the benefit of AC. Here individual paying energy bill should agree to this in writing.)

BARRIERS

One of the greatest challenges to making the case for upgrades in multifamily housing is the diffusion of decision-making among different stakeholders.



R2E2

Here is a visual to better understand some of the barriers to ensure reduction of housing costs.

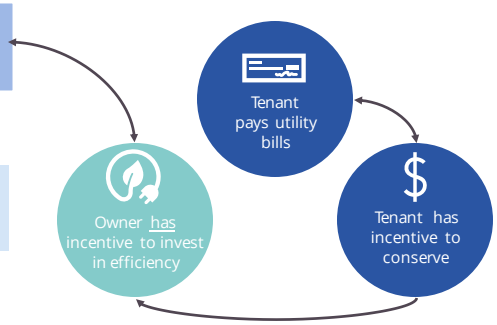
BARRIERS

For instance, if a tenant pays for utilities, an owner does not have an incentive to invest in efficiency. Interventions must work to address these challenges.

Multifamily Building where Tenant Pays Utilities

Intervention: Capital Funding support for building upgrades to reduce energy consumption and improve health outcomes.

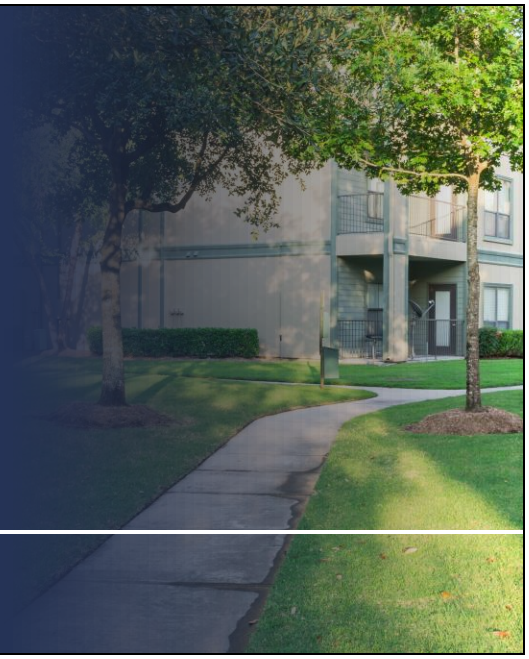
Outcome: Tenants pay less on their energy bills each year and the property is improved.



R2E2

Program must incentivize the owner directly to make the investment, in this simple example.

Setting Priorities for Affordable Housing Upgrades



Residential Retrofits for Energy Equity

As your team starts planning, you must begin by identifying priorities among energy and housing outcomes.

Example Outcomes for Prioritization

ENERGY OUTCOMES	HOUSING OUTCOMES
Lower Costs for Building Owners	Minimize Displacement Risk
Decrease Energy Consumption	Lower Residents' Housing and Utility Costs
Reduce Carbon Emissions	Improve Housing Quality

R2E2

We have a set of energy and housing outcomes, which all have importance for a project.

To pursue retrofits, teams must pursue a balance of those often competing goals/ propositions.
A successful team must always be prioritizing among these goals.

Teams should be aligned on priority outcomes, which will affect program design.

Example Prioritization with a focus on Energy Costs and Tenant Costs

ENERGY OUTCOMES	HOUSING OUTCOMES
Lower owner energy costs	Minimize displacement risk
Decrease Energy Consumption	Lower residents' housing and utility costs
Reduce Carbon Emissions	Improve housing quality

- One team member may be strictly focused on reducing costs for tenants.
- They may advocate for innovations that decrease household energy costs.

Example Prioritization with a Focus on Energy Consumption

ENERGY OUTCOMES	HOUSING OUTCOMES
Lower owner energy costs	Minimize displacement risk
Decrease Energy Consumption	Lower residents' housing and utility costs
Reduce Carbon Emissions	Improve housing quality

- Another team member is focused on reducing carbon emissions.
- They may advocate for a technological innovation, that may not necessarily reduce costs for tenants.

R2E2

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- Another team member is focused on reducing carbon emissions.
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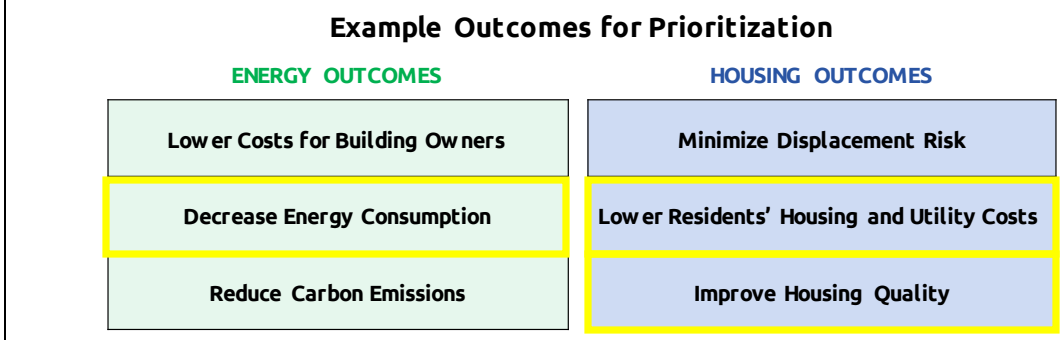
R2E2

EXAMPLE

For instance, your team's goal may be to reduce energy consumption and housing costs, while improving housing quality to improve the health of residents.



How do we bring all these priorities together? The following are examples of ways in which to think about your project by focusing on what your priorities are.

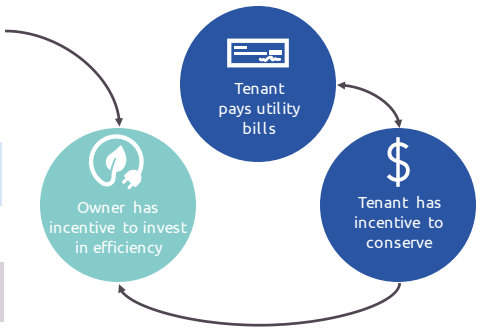
SOLUTION

To target these priorities, a team may develop a program that reduces capital funding barriers and implements training to decrease workforce constraints.

Intervention 1: Capital Funding for building upgrades to reduce energy consumption and improve health outcomes. Program requires health-related building upgrades.

Outcome: Tenants pay less on their energy bills each year and have healthier homes to live in.

But...this intervention may not directly reduce carbon emissions or decrease displacement risk



R2E2

EXAMPLE

Your team's goal is to achieve carbon neutrality in buildings while reducing the risk of displacement.

Example Outcomes for Prioritization

ENERGY OUTCOMES	HOUSING OUTCOMES
Lower Costs for Building Owners	Minimize Displacement Risk
Decrease Energy Consumption	Lower Residents' Housing and Utility Costs
Reduce Carbon Emissions	Improve Housing Quality

R2E2

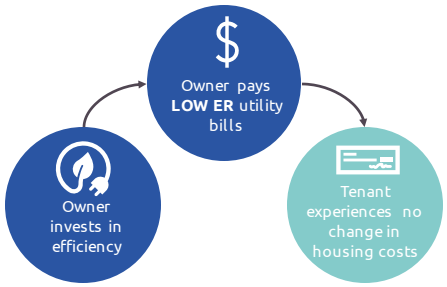
SOLUTION

To address these challenges, a team may prioritize interventions that reduce owner operating expenses through reduced gas and electricity consumption.

Intervention 2: Reduce energy and gas usage, with support from a statewide technical assistance program.

Outcome: Installation of high efficiency boiler and heater, high efficiency lighting and optimized mechanical system reduces operating expenses for the owner.

But...this intervention may not directly reduce renter housing costs or change housing quality.



R2E2

SOLUTION

Case Study: Creating Energy Savings at Atwood Acres (Massachusetts)

- Atwood Acres is a 50-unit senior housing facility funded in part through the HUD Section 8 Program.
- After 25 years of operations, **the hot water system and heating were failing** in the building.
- To address these challenges, the building owners enrolled in the **Massachusetts Green Retrofit Initiative (MAGRI).**
- The MAGRI program provided a **one-stop-shop for holistic energy management services to property owners.**

Source: LISC Boston, Turning Crisis into Energy Savings Opportunity (2011 – 2016)

R2E2

MAGRI is funded by the Barr Foundation and HUD's Energy Innovation Fund Grant.

SOLUTION

Case Study: Creating Energy Savings at Atwood Acres (Massachusetts)

- MAGRI program administrators performed an **energy audit**, helped solicit and **review bids** from contractors, and assisted in **rebate coordination**.
- This process helped to identify building needs and potential funding sources.
- The building was able to use incentives from the Massachusetts' low-income utility efficiency program towards building upgrades, by leveraging a portion of the property's reserves.

Annual Savings	
Gas	28.6%
	$4,973
Electricity	21.3%
	$4,181
Total Annual Operating Expenses Savings: $9,154	

Source: LISC Boston, Turning Crisis into Energy Savings Opportunity (2011 – 2016)

R2E2

Through MAGRI, the building owner worked with program administers: New Ecology, Inc (NEI) and LISC Boston.

Leveraging RCAP Solutions' investment of approximately $41,000 from the property's reserves, the utility efficiency program provided funding of almost $73,000 toward the boilers and lighting upgrades to enable a comprehensive retrofit of the property.

This assistance helped the building owner to finance the installation of new high efficiency condensing boiler and hot water heaters, high efficiency lighting, and optimized mechanical systems.

Session Takeaways

- Upgrades, when implemented, involve a **combination of financial and operational propositions for both owners and tenants**.
- To pursue upgrades, teams must **find a balance of often competing goals**. A successful team must always be prioritizing among these goals.
- **Form a multi-disciplinary team** and work together to be clear about priorities.
- There is **no right or wrong way to pursue building upgrades** as long as you're focusing and prioritizing as a team on successful outcomes for your community.

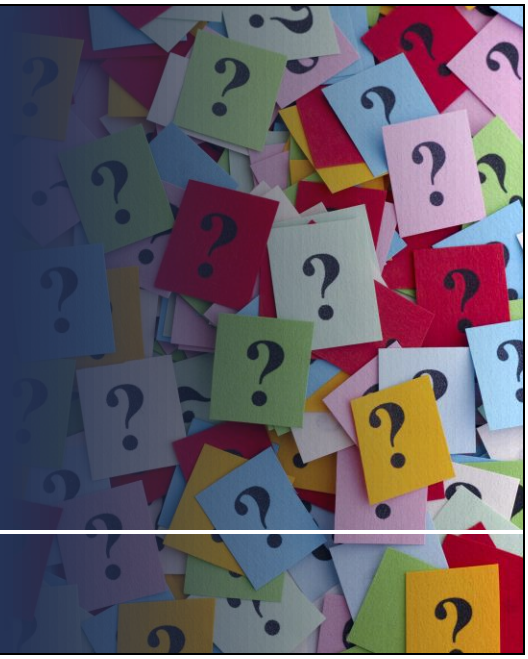
Upcoming Webinars

- May 4- Informational Webinar, 11 am ET
- May 10- Training Webinar, 1:30 pm ET
  - Choosing your Building Upgrade Zone
- May 11- Training Webinar, 12 pm ET
  - Building Upgrades: An Opportunity for Workforce Development and Economic Inclusion

Scan to view additional details and register for training webinars.

R2E2

Q&A



Residential Retrofits for Energy Equity

Resources

- Energy Equity for Renters Toolkit, ACEEE
- HUD Fair Market Rents and Income Limits, 2023 and Historical
- Living Wage Calculator, MIT 2023
- "What is Redlining," New York Times, 2021
- Making Naturally Occurring Affordable Housing More Efficient: Outreach to Upgrade, Elevate
- Moving to the Next Level: Progress Report and Energy Update: Report to Congress – August 2016, Department of Housing and Urban Development
- Achieving Utility Savings in HUD-Assisted Housing: Progress Report to Congress – September 2019, Department of Housing and Urban Development
- Multifamily Rehabilitation Resource Guide, International Center for Appropriate and Sustainable Technology (ICAST),

Thank You

Questions?
Contact buildingsUP@nrel.gov

Appendix

SOLUTION

Case Study: Weatherization Plus Health (Washington)

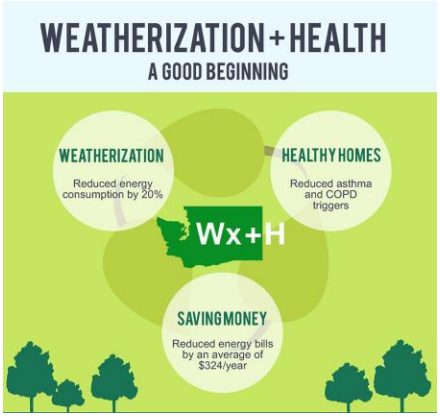
The **Weatherization Plus Health Program** is intended to weatherize low-income households; and to focus on the health of residents through healthy-home interventions and by forming partnerships with local healthcare providers/nonprofits.

Program Goal: Incorporate social services and healthy home programs with existing weatherization programs.

Funding: $15M (2021-23). Washington State Legislature Capital Fund.

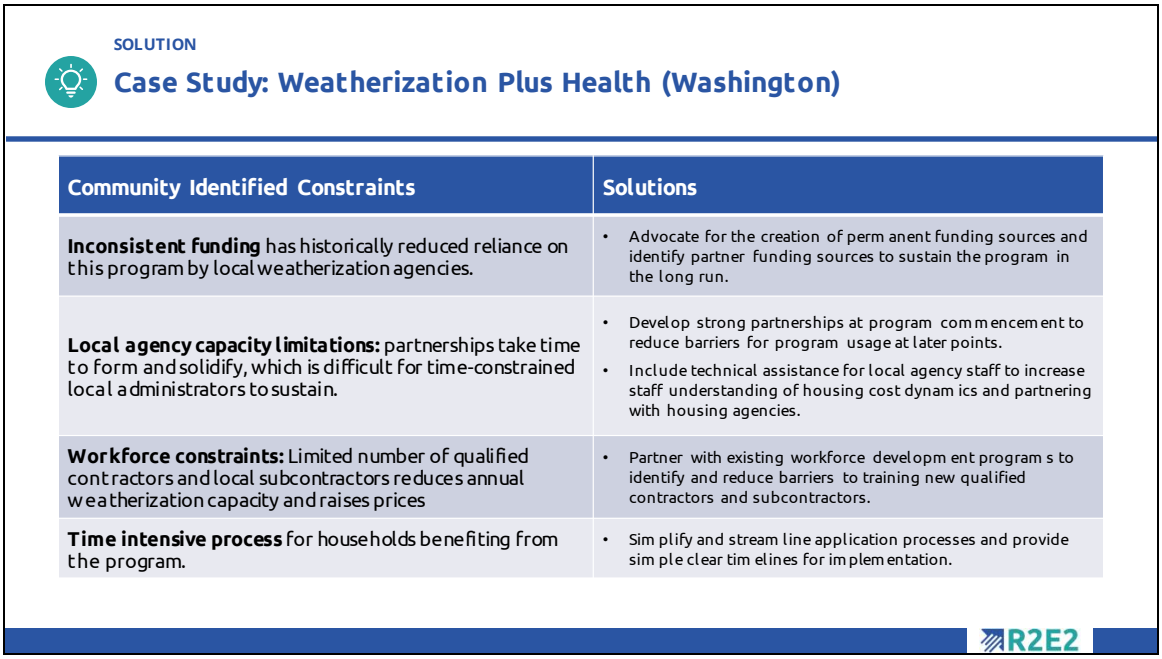
Eligibility : Homes eligible for WAP, LIHEAP

Impact: Increased funding outside of DOE rules, Reduction in health burdens, improved community partnerships.



R2E2

Weatherization Plus Health is run by the Department of Commerce. Funding annually has been roughly $7.5M, but will likely grow soon in the next state capital budget for 2023-25. The goal of this program is twofold: to weatherize low-income households; and to focus on the health of residents through healthy-home interventions and by forming partnerships with local healthcare providers/nonprofits. Another part of Weatherization Plus Health is the Matchmaker Program. Matchmaker matches state dollars with utility and other programs' investments in weatherization. Through Matchmaker dollars in Weatherization Plus Health, the state is able to amplify utility weatherization funding with an added emphasis on health outcomes in addition to energy savings. This program is also run mostly by CAP agencies at the local level, in addition to tribal and municipal government offices.



In addition to traditional energy retrofits, the WX+H program combines assistance from local community health partnerships to provide clients with green cleaning kits, dust prevention tools, carbon monoxide detectors, carpet removal, and other tools and services. This strategy has been proven to reduce health costs of households who receive it.

Washington State Department of Commerce. "Weatherization Plus Health (Wx+H)."
Washington State University Energy Program. (2018). "The Washington State Weatherization Plus Health Pilot: Implementation and Lessons Learned"