

A PATH TO DECARBONIZATION IN AFFORDABLE HOUSING

MINI-TECHNICAL ASSISTANCE PANEL (“MTAP”)



TEAM



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STUDY AREA

CLIENT:

Mercy Housing

ORIGINAL STUDY AREA SCOPE:

Develop scoring system to support sustainable/decarbonization in Qualified Allocation Plans so affordable developers get credit for these items in the LIHTC applications.

REVISED STUDY AREA SCOPE:

Identify strategies and actionable steps for the affordable housing industry, particularly developers of low-income housing tax credit (“LIHTC”) properties, to advance the efforts for sustainable building as an iterative step ultimately towards a longer-term Net Zero vision.

DECARBONIZATION is a process not a switch!



HIGHLIGHTS

- ▶ There are a variety of Green Certification programs to glean from in determining metrics for our assignment, but not one specifically addresses feasibility challenges for affordable housing developers in achieving Net Zero. Self certification could lead to more projects pursuing certification due to lower costs.
- ▶ Many affordable housing developers don't believe **Net Zero** is currently a financially feasible solution for most affordable housing developments due to limits on total development costs. Maine Housing Finance Agency allows developers to increase their total development cost cap by 2% if they commit to building to the Passive House standard and is in their QAP. Advocate for Georgia.
- ▶ Affordable Housing Developers may not have access to, or the ability to translate data collected on sustainable initiatives. Without either, it's difficult to act and create change. Without examining, and understanding, your current environmental footprint, it's difficult to take action and apply proven sustainable practices into the community, on aren't currently gathering sustainable initiative data on their existing real estate portfolios, which can serve as baselines for building process improvements
- ▶ *The Inflation Reduction Act and The Infrastructure Investment and Jobs Act* are both Federal Bills that could potentially present financial solutions and/or benefits to Affordable Housing Developers in their desire to decarbonize and move towards Net Zero in their building practices
- ▶ *Green financing solutions are becoming more and more prevalent*

TIER 1 MEASURES - \$

1. EDUCATION PROGRAM

WHY:

Builds awareness and ignites a journey of personal responsibility for sustainability issues and becoming part of the solution!

ACTIONS:

- Required Facilities and Maintenance Staff Sustainability/ Decarbonization Training Program (Building Operator Certification course is one example)
- Required Administrative Staff Education
- Residents' General Public Awareness Program



RESULTS:

- Increases overall sustainability awareness amongst staff and residents

2. INCREMENTAL ENHANCEMENTS

WHY:

You have to start somewhere to increase stakeholder buy-in!

ACTIONS:

- Gift reusable water bottles to residents
- Install Bottle Filling Stations (FF&E)
- Install Automatic Sensor Lights
- Introduce Recycling Collection Program onsite

RESULTS:

- Minimizes single-use plastic bottle usage
- Minimizes electricity usage and lowers electricity costs
- Incentivizes residents to participate in regular recycling activities because it meets them where they are



3. ELECTRIFICATION OF HOUSING

WHY:

Electrification of housing should lower housing costs and improve housing quality and create safer and healthier indoor environments! With power rates expected to climb over the next few years, and uncertain gas prices, efficient choices are becoming more critical.

ACTIONS:

- Install all-electric equipment and appliances
- Use demand controls



RESULTS:

- Eliminates carbon emissions' exposure to residents and staff
- Reduces prolonged health and medical ailments to tenants

TIER 2 MEASURES - \$\$

1. DATA BENCHMARKING & ANALYSIS

WHY:

You need to know where you've been to know where you're going!

ACTIONS:

- Perform data benchmarking for entire real estate portfolio
- Allow collected data to inform real estate portfolio decision-making and implementation

RESULTS:

- Knowledge-based decarbonization metric goals and targets
- Readily accessible data for use in real estate asset construction and long-term maintenance



2. CERTIFICATION PROGRAMS

WHY:

Provides for a pre-determined path; serves as a baseline to decarbonization!

ACTIONS:

- Advocate for Self-Certification w/ the State
- Use Existing Certification Programs (*LEED, Fitwell, Living Community Challenge, NGBS, etc.*)
- Pursue Higher Levels of Green Certification



RESULTS:

- Lessens dependency on 3rd Party Certification to improve on schedule/ timelines and over project costs for affordable housing
- Forces State to create standards in building code for sustainable priorities in affordable housing construction
- No need to reinvent the wheel; take advantage of proven methods to decarbonization

3. GREEN FINANCING

WHY:

Leverage cost-savings to reinvest into sustainable initiatives for stakeholders!

ACTIONS:

- Advocate for QAP bonus points for securing green financing
- Seek out HUD, Fannie Mae and Freddy Mac green building financing solutions
- Exercise opportunities available under the ***Inflation Reduction Act***
 - Solar Power Benefits
 - Developer receives direct pay from US Treasury for non-profits
 - 50% benefit to the project

RESULTS:

- Obtain QAP innovation points
- Minimize overall project costs



TIER 3 MEASURES - \$\$\$

1. SUSTAINABILITY COMMITMENT + VALUE PROPOSITION

WHY:

The industry can't afford to be shortsighted; there is a social/ moral imperative to prioritizing sustainability!



ACTIONS:

- Craft a Sustainability Mission/ Vision Statement
- Advocate for Sustainability Innovation Points in QAP
- Hire In-house Sustainability Director

RESULTS:

- Displays organizations commitment to decarbonization
- Streamlines standardization in achievable decarbonization efforts
- Directs uniformity in Sustainability initiatives throughout new and existing development portfolio

2. WEATHERIZATION



WHY:

Promotes a safer, more equitable environment, particularly for lower-income households and communities of color who are often most vulnerable to climate change

ACTIONS:

- Perform energy assessments for housing in the development
- Air seal housing in the development
- Tap into Biden Infrastructure Plan benefits that specifically address and fund weatherization for low-income housing
- Review access to Georgia's WAP (Weatherization Assistance Program)

RESULTS:

- \$283 in annual cost savings per household
- \$2.78 in non-energy benefits, including improved health and safety, for every \$1 invested

[Brookings Institute]

3. BALANCED VENTILATION w/ HEAT RECOVERY

WHY:

A balanced ventilation system removes stale air and brings in clean, fresh outside air. A well-ventilated space will improve indoor air quality and can prevent mold and other contaminants that contribute to residents' health problems.

ACTIONS:

- Install Unitized Systems
- Install Central Systems
- Install Semi-centralized systems



RESULTS:

- Recovers 70% to 90% of heat from exhaust air
- HRVs cost approximately \$3,000 or less per unit. The energy and cost savings recovered typically pay for the operating costs of the system

[Housing Development Consortium Exemplary Buildings Program]

TIER 4 MEASURES - \$\$\$\$

1. DEPLOY GEOTHERMAL DISTRICT HEATING & COOLING

WHY:

Geothermal reduces energy demand, producing 1/6TH of the carbon dioxide of a natural gas power plant and release essentially zero emissions.



ACTIONS:

- Deploy Geothermal District Heating & Cooling
- Apply for Department of Energy's funding
- Utilize ground source heat pump systems in single and multifamily

RESULTS:

- DOE funding that ranges from \$300,000 to \$13 million for projects that help communities design and deploy geothermal district heating and cooling systems
- Ground source heat pump systems reduce summer peak demand by 56%

[Egg Geo LLC]

2. TRANSIT ORIENTED DEVELOPMENTS

WHY:

Transit-oriented developments (TODs) reduce dependence on single user vehicular transportation; becomes a measure towards socio-economic parity!

ACTIONS:

- Seek out TOD Zoning for developments
- Decrease Parking Spaces provided
- Provide dedicated bike lanes
- Incentivize Mass Transit Ridership

RESULTS:

- Decreased dependency on fossil fuels
- Decreased Carbon Emissions in Atmosphere
- Increased walkability which promotes healthier lifestyle through passive physical fitness



3. ADDITIONAL CONSTRUCTION/ DEVELOPMENT MEASURES

WHY:

Willingness to attempt these measures reflects the stakeholders' commitment to decarbonization and overall sustainability; this is where lasting impact begins!!!

ACTIONS:

- EV Ready Infrastructure
- Solar Power in Common Areas
- Electrification of Housing Infrastructure
- Use Onsite Renewable Energy
- Store Energy On-site
- Adaptive Reuse/ Prioritize Existing Buildings for Redevelopment
- Construction Waste Program
- Pre-fabricated/ Modular Construction
- Type 4 - Mass Timber Construction



DECARBONIZING AFFORDABLE HOUSING – THE BENEFITS



HEALTH



Better indoor air quality from green healthy housing can lead to more symptom-free days and fewer visits to the hospital *



1 in 5 people have experienced mental health issues due to housing issues; higher quality housing (lower utility expenses) adequate lighting (access to daylight), and reduced noise transference could mitigate some of this



30% higher rates of childhood asthma if a gas stove exists in a residence****



COST SAVINGS



Nationally, energy efficiency upgrades can produce cost savings of as much as \$9.2 billion for property owners and tenants*



Investments in energy efficiency help stimulate economic activity and create new jobs. Every \$1 million invested in energy retrofits creates 10 jobs*



Installing efficient utilities, or upgrading existing ones, could create safeguards to rising utility rates



CLIMATE/ RESILENCY



Resilient housing can better withstand the effects of extreme weather events. Every \$1 spent on resilience measures reduces the cost of damage from extreme weather events by \$4*



Weatherizing homes could be one of the most vital legacies of Biden's infrastructure plan; only about 2% of the 38.6 million eligible low-income homes are weatherized each year, despite the benefits**



HUD-assisted properties have the potential to generate over 11,548 GWh of solar electricity annually and reduce carbon emissions by more than 8 million metric tons***

RESOURCES

Better Building Solutions Center | <https://betterbuildingsolutioncenter.energy.gov/>

Brookings Institute | <https://www.brookings.edu/blog/the-avenue/2021/04/22/weatherizing-homes-could-be-one-of-the-most-vital-legacies-of-bidens-infrastructure-plan/>

Housing Consortium |

<https://www.housingconsortium.org/sustainable-building-initiatives/>

https://exemplarybuilding.housingconsortium.org/wp-content/uploads/sites/2/2021/01/HDC-EBP-Technical-Brief_Balanced-Ventilation_v.2_2021.01.21.pdf

<https://exemplarybuilding.housingconsortium.org/>

Rocky Mountain Institute | <https://rmi.org/insight/decarbonizing-homes/>

Stewards of Affordable Housing for the Future (SAHF) | <https://www.sahfnet.org/>

The Federal Reserve Bank of New York |

<https://www.newyorkfed.org/medialibrary/media/outreach-and-education/community-development/fed-affordable-housing-and-energy-transition-final-10-4-22>

The National Housing Trust | <https://leadingage.org/wp-content/uploads/2022/12/NHT-EPA-HQ-OA-2022-0859.pdf>

Wealth Management.com | <https://www.wealthmanagement.com/multifamily/affordable-housing-and-decarbonization-are-no-longer-mutually-exclusive>

FOLLOW-UP REFERENCES

Geothermal

- Efforts to develop centralized community geothermal heat pumps expand | S&P Global Market Intelligence https://bit.ly/SandP_ThermalEnergyNetworks
- What the IRA Provides for Geothermal Technologies <https://bit.ly/3mY8kVF>
- Texas neighborhood to be built atop largest residential geothermal grid <https://www.thinkgeoenergy.com/texas-neighborhood-to-be-built-atop-largest-residential-geothermal-grid/>
- Contact: Jay Egg, CMC
President, Egg Geo
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Type IV Construction

- Premium for mass timber is approximately is:
 - \$5/SF more than steel structure, and
 - \$6-\$8/SF more than concrete structure

THANK YOU!

