

Building Decarbonization In-A-Box

A turnkey solution for municipalities and utilities
to upgrade existing buildings

The opportunity

The US EPA's Greenhouse Gas Reduction Fund (GGRF) represents a once-in-a-generation opportunity for cities, counties, utilities, and green banks to activate the market for decarbonization upgrades in the small commercial and multifamily buildings sector. This sector, often called "the missing middle," is incredibly important because it accounts for 94% of commercial buildings nationally and nearly half of carbon emissions from commercial buildings in cities.¹

These underserved buildings include grocery stores, retail stores, hotels, places of worship, family farms, and multifamily buildings. Every year, 5-7% of these buildings require new HVAC equipment because it breaks or reaches the end of its useful life.

In the market today, most building owners replace their broken HVAC units with the cheapest like-for-like model that meets the minimum energy code. From a climate perspective, this is a terrible outcome because these buildings are locking in higher than necessary carbon emissions and fossil fuel equipment for another 15-20 years.

Building Decarbonization In-A-Box

Through a grant from the Rockefeller Brothers Fund, a national coalition, led by the Missouri Green Banc, worked with dozens of stakeholders to design a turnkey technical and financial assistance program that addresses this market failure. With funding from Elemental Excelsior, Building Decarbonization In-A-Box (BDAB) will be launched in nine initial cities and counties.

How it works

1. In partnership with each municipality, the BDAB team will analyze building permit data and, where available, energy benchmarking data to identify underperforming commercial and multifamily buildings that need or will soon need new HVAC and/or other clean energy upgrades.
2. Then, the BDAB team will offer free wraparound technical and financial assistance (TFA Services) to identified building owners, with special attention and priority given to buildings located in designated Low-Income and Disadvantaged Communities.²

Historically, approximately 20% of building owners whose HVAC equipment is failing or about to fail choose to participate in free TFA Services.³ Building owners that opt into the BDAB program will receive coordinated TFA Services from Allectrify, SRS, and UtilityAPI in the form of:

¹ https://www.eia.gov/consumption/commercial/data/2018/pdf/CBECS_2018_Building_Characteristics_Flipbook.pdf

² <https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5>

³ Unlocking the Mission Critical Building Decarbonization Opportunity in the SMB Sector, January 2022. Anthony J. Buonicore, P.E. and Brian McCarter. Link: https://srsworx.com/wp-content/uploads/2022/01/Whitepaper_SMB_Decarbonization_SRS_01-03-22.pdf

- Virtual site assessment and energy report. Allectrify and SRS will use EPIC software and, with property owners' permission, utility data provided by UtilityAPI to complete a virtual site assessment and provide building owners with an energy report that outlines potential decarbonization upgrades for each building, along with available grants, rebates, and tax incentives for those upgrades.
- Access to financing. Building owners will have access to a network of participating local community lenders (i.e., a community bank, credit union, CDFI, or green bank) that are interested in supporting decarbonization upgrades, like solar PV, energy efficiency, and building electrification. Available financial products may include a traditional bank loan, a Commercial PACE loan, and, where available, a green bank loan.⁴

Crucially, a portion of building owners receiving free TFA Services will choose to finance their energy upgrades through a local community lender. This will create a market signal for additional local community lenders to offer financing products for decarbonization upgrades.

As part of the BDAB program, Allectrify will train community lenders for Commercial PACE (C-PACE) loans alongside their existing lending products. From an annual cash-flow perspective, the longer terms associated with C-PACE financing can make the economics of a decarbonization upgrade more appealing to building owners than traditional financing options.

3. This will generate self-sustaining capital deployment for building decarbonization, including in designated low-income and disadvantaged communities, through a growing network of community lenders. Once community lenders learn how to offer a profitable new financial product, they will continue to do so long after GGRF funds are exhausted.

Implementation partners

- Allectrify
- Colorado Clean Energy Fund
- Fort Collins Utilities
- Invest Atlanta
- Missouri Green Banc
- Montgomery County Green Bank
- Philadelphia Green Capital Corporation
- Sustainable Real Estate Solutions
- UtilityAPI

Conclusion

Building Decarbonization In-A-Box is specifically designed to accomplish the myriad goals of the Greenhouse Gas Reduction Fund. The BDAB model is cost-effective, inclusive of low-income and disadvantaged communities, and replicable almost anywhere. We look forward to collaborating with municipalities, green banks, and the numerous GGRF coalitions to scale this innovative building decarbonization program.

⁴ SRS' Energy Performance Improvement Calculator (EPIC™ software), was recently approved by the U.S. Department of Housing & Urban Development (HUD) to satisfy HUD's energy audit requirements for small commercial buildings.

Case Study:

9 Building Decarbonization In-A-Box Programs

The following cities and counties are participating in Building Decarbonization In-A-Box programs beginning in April 2024. As part of the programs, up to 120 building owners across all of these municipalities will receive free technical and financial assistance.

In addition, at least 12 community lenders that serve these communities will receive training in how to offer Commercial PACE financing for energy upgrades.

| | Total Commercial Buildings | >10K sqft | >50K sqft | Est. 10K-50K sqft (SMBs) | 5-7% of SMBs need new HVAC annually | 15-20% of targeted SMBs would benefit from BDAB annually |
|------------------------|----------------------------|----------------|---------------|--------------------------|-------------------------------------|--|
| Atlanta, GA | 9,070 | 7,874 | 1,431 | 6,442 | 387 | 77 |
| Fort Collins, CO | 2,274 | 1,774 | 324 | 1,449 | 87 | 18 |
| Los Angeles County, CA | 175,692 | 140,214 | 23,463 | 116,752 | 7,005 | 1,401 |
| Milwaukee, WI | 10,340 | 8,524 | 1,438 | 7,086 | 425 | 75 |
| Montgomery County, MD | 6,413 | 5,720 | 1,072 | 4,647 | 279 | 55 |
| Philadelphia, PA | 23,485 | 19,830 | 3,282 | 16,548 | 995 | 180 |
| Reno, NV | 4,667 | 3,881 | 714 | 3,166 | 190 | 38 |
| San Antonio, TX | 19,082 | 14,788 | 2,829 | 11,960 | 715 | 130 |
| St. Louis County, MO | 11,716 | 10,233 | 1,965 | 8,268 | 496 | 99 |
| Total | 256,326 | 207,118 | 35,446 | 171,671 | 10,300 | 2,018 |

Example: City of Philadelphia

Using the numbers in the chart above, here is how we would use building permit data in the City of Philadelphia to target the best decarbonization opportunities in “the missing middle” small commercial sector:

- Philadelphia has 16,548 buildings between 10,000-50,000 square feet.
- Of these, 995 buildings (5-7%) will need to replace their aged energy equipment each year, no matter what. These buildings can be identified by pulling permit data and determining which buildings haven't filed for a new HVAC unit within the last 15 years. Larger buildings identified through Philadelphia's benchmarking program can be added to this total.
- A targeted outreach campaign to the owners of these 995 buildings (plus the buildings impacted by performance standards) would result in an estimated 180 buildings (15-20%) taking advantage of free technical assistance and incentives to facilitate a more robust decarbonization upgrade.

Using GGRF funds to target all 16,548 buildings simultaneously would be an inefficient use of capital. Instead, just \$180,000 in GGRF funds per year can be deployed to target the buildings that will most likely result in carbon emissions reductions. Starting with building permit data enables us to systematically target the small commercial and multifamily sector in a cost-efficient, strategic way.