

Better Buildings Residential Network case studies feature members to fulfill our mission to share best practices and learn from one another to increase the number of homes that are energy efficient. This case study addresses multifamily energy upgrade experiences by two members of the Better Buildings Residential Network—Elevate Energy and the International Center for Appropriate and Sustainable Technology (ICAST). Elevate Energy is a nonprofit organization that designs and implements efficiency programs that lower costs, protect the environment, and ensure the benefits of energy efficiency reach those who need them most. ICAST is a nonprofit that develops and implements market-based solutions for issues that affect underserved communities. Interviews were conducted with each organization, and highlights follow in a question-and-answer format.

Elevate Energy Multifamily Projects in Chicago

[Elevate Energy](#), which administers efficiency and smart grid programs in the Midwest, started multifamily energy upgrade work in 2007. Since that time, the organization has supported upgrades in more than 25,000 units in Illinois alone and has helped establish and expand multifamily programs in new markets across the United States, modeled after its program in Illinois. Peter Ludwig, Elevate Energy’s director of building retrofits, shares some of the lessons learned from its successful projects in Chicago’s older units.



How has Elevate Energy targeted energy upgrades in the multifamily sector?

Chicago has a lot of multifamily housing, and the building stock tends to be on the older side. We knew there were a lot of building owners facing rising energy costs. The average building size in the city is 30 units; we found that buildings with five to 50 units were our “sweet spot” because that area was underserved. The owners wanted to reduce operating costs and provide safer, healthier buildings, but they were often unsure how to monitor utility bills, where to start, or how to pay for upgrades.

What has been your strategy for success in the multifamily market?

We serve as a one-stop-shop for building owners and managers. We conduct assessments, review their energy bills, show the financial payback of various measures, and help owners with the contractor bidding process (Elevate Energy maintains a list of certified contractors). We partner with a local community development financial institution, Community Investment Corporation, which uses projected energy savings as a factor in underwriting loans. An energy analyst with project management experience helps them throughout the process, including project oversight and inspection. Quality installation is key to getting good performance out of the project. After a project is completed, we review the energy bills and work with them on operations and maintenance if the upgrades are not performing as expected.

“Do your homework to understand the local market, building stock, and owners. That’s how you build trust.”

— Peter Ludwig,
Director of Building Retrofits,
Elevate Energy

What type of upgrades do you target?

In older buildings, it’s heating/distribution, air sealing, and insulation. It’s rare that windows are a wise investment if you want to get payback from the energy savings. The heating systems in many of these

buildings are original, but they have been reconfigured many times over the years. We saw that there was a huge opportunity not only to replace equipment, but to improve piping and controls. The average investment is about \$2,500 per unit, and we help a building owner or manager find good financing options. The payback is two to five years, plus we're bringing benefits to the owner and the tenant almost immediately in terms of comfort and reduced maintenance calls. Here are a few examples:

- ▶ At a 55-unit, 87-year-old building, a new steam boiler and boiler controls with indoor temperature sensors were installed, hot water heaters were replaced with more efficient models, and heating pipes were insulated. The building (shown at right) cut its natural gas bill in half, saving over \$20,000 per year, and became one of the first ENERGY STAR® qualified multifamily building in Illinois.
- ▶ By replacing windows, doors, and an old steam boiler with a hot water boiler, a 92-year-old, 96-unit building saved \$46,000 per year on natural gas and preserved affordable housing in the Rogers Park neighborhood of Chicago.
- ▶ A seven-building affordable apartment complex with 102 units expects to save 40% on energy and water costs by installing high-efficiency gas furnaces, exhaust fans, domestic hot water heaters, solar hot water systems, air sealing, insulation, and ENERGY STAR certified appliances.



What barriers have you faced with these projects, and how have you overcome them?

Building owners are busy and skeptical. It takes a while to earn their trust, but developing a relationship where we provide service and technical expertise helps build that trust. Our goal is to give the owner the best advice in terms of energy savings. Still, only about one third of the building owners that we approach go through with it. And sometimes you have to start with just one building to get a landlord to see the benefit of investing across multiple buildings.

What advice would you give programs looking to branch into multifamily upgrades?

We try to bring partners from all different worlds together—technical, financial, commercial, etc. Piloting is important; we secured our lending and other partners ahead of time and tested a couple of projects. This allowed us to fine-tune our approach over time. You also have to think like a building owner. Ask them what they need, be responsive, and be flexible to their needs, which could change over time. Do your homework to understand the local market, building stock, and owners. That's how you build trust.

ICAST Upgrades at DMA Plaza in Colorado

[ICAST's ResourceSmart initiative](#) provides energy upgrades for affordable and market-rate multifamily housing communities in Colorado, New Mexico, and Texas. ICAST's founder and president, Ravi Malhotra, explains why his organization is focused on the multifamily market, the importance of resident engagement in energy upgrades, and details of a successful upgrade project at DMA Plaza—an affordable, senior housing development in Fort Collins, Colorado.

How has ICAST approached the multifamily sector?

We spend a lot of time on recruitment. What sells in Colorado doesn't necessarily sell in New Mexico or Texas, so our sales pitch varies. The message also varies based on the organization and its primary contact. You're not always dealing with the building owner, sometimes you're talking with the property manager, a developer, a representative of a state housing agency, or a financier. Based on the contact, we try to address their interests and concerns.



What energy efficiency work did ICAST complete at DMA Plaza?

DMA Plaza management wanted to reduce their energy costs; they were referred to us by the Colorado Division of Housing. We assessed the 14-story high-rise building and suggested options for the most economic measures. The big one was to change their domestic hot water usage from electric to gas. The project also replaced existing lighting fixtures and bulbs with more energy-efficient models; installed weather stripping and insulation; and replaced doors. These measures were completed in three months, but we also conducted a resident engagement program that went on for six months following the energy upgrade. DMA Plaza reduced its energy consumption by nearly 21% following the upgrade project; some of the savings were a result of the resident engagement program.

How did ICAST engage residents?

We used various means including pizza parties, energy bingo, and other activities, and educated residents on ways to save energy and water through behavior changes like shutting off lights, arranging their furniture so it's not blocking heating vents, and using their window shades to control heat from the sun. Seniors are a good population to engage on these topics, as are kids. However, resident engagement works best if you have management and staff buy-in.



Were there any funding incentives?

We helped them access utility rebates and grant funds (approximately \$50,000 of the \$145,000 project). We convinced the local utility that by eliminating electric heating for the hot water system, we were saving peak load demand, so they received some sizeable rebates for the project. It's very difficult to get rebates for fuel-switching projects, so this was an exception.

What are the challenges for energy upgrades in the multifamily housing market?

Multifamily housing is a very tough market, and a very segmented one. We are focused mainly on subsidized affordable housing, which is a complicated marketplace driven by regulations on what can and cannot be done. The hurdle we face more than anything else in subsidized affordable multifamily is the market expectation that energy efficiency upgrades should be installed at no cost. There are a number of programs that provide energy efficiency services for free to property owners, but by focusing on short-term measures and not completing the more expensive and higher payback items like upgrading heating and cooling systems and making shell improvements, we're missing opportunities to reduce housing costs.

“Our partners, whether state agencies, federal agencies, financiers, subcontractors, architects, or consultants, are what make us successful.”

— Ravi Malhotra,
President, ICAST

How has your organization succeeded in the multifamily market?

Our success comes in part from the fact that we're able to take care of everything for the owner, including financing, regulatory affairs, planning, design, and execution. We have our own community development financial institution (CDFI) and use off-balance-sheet financing and other innovative financing mechanisms. Our partners, whether state agencies, federal agencies, financiers, subcontractors, architects, or consultants, are what make us successful.

Learn more by visiting the [Elevate Energy](#) and [ICAST's ResourceSmart initiative](#) websites. Explore more tools related to multifamily energy upgrade program design by visiting the [Better Buildings Residential Program Solution Center](#). For more information about the Residential Network and membership, visit the [Residential Network website](#) or email us at bbresidentialnetwork@ee.doe.gov.