

# Achieving High Energy Savings in Multifamily Properties

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## ABSTRACT

The key to achieving high energy savings (over 20% consistently) is offering a turn-key (“one-stop-shop”) approach to implementing deep retrofits. This has traditionally been the model utilized by Energy Service Companies (ESCOs) on large projects in the MUSH (Municipal, University, School and Hospital) market. Emerging, small firms have enhanced the ESCOs approach and now deploy it for multifamily (MF) residential properties to implement deep energy retrofits combined with other services using a “one-stop-shop” model. These smaller ESCOs serving primarily affordable housing but also market-rate MF housing, are able to cater to small or rural properties, while providing the same access to financing and other services offered by traditional ESCOs. The one-stop-shop approach reduces the hurdles of lack of time, availability of personnel, lack of knowledge and access to financing that prevent MF owners from implementing green rehab projects. But these smaller ESCOs typically do not provide the guaranteed savings of traditional energy performance contracts (EPC) – thereby eliminating some costs and reducing others. They approach each MF as a whole building rather than a compilation of rebate programs being offered by the local utility. This holistic evaluation of the MF property allows these smaller ESCOs to combine the fast payback energy conservation measures (ECMs) with longer payback ECMs and offer the owner a project that can yield high energy savings. By providing this one-stop-shop service to these traditionally underserved markets, these smaller ESCOs are able to provide energy efficiency, water conservation, indoor air quality and other services in a manner that is hassle-free, comprehensive, simple and yet affordable. Utilities can take advantage by partnering with these smaller ESCOs to offer scalable and high energy saving programs that can transform their traditionally underserved MF housing market.

## The Need: A Solution to Limited Resources

With the current political and economic environment, government budgets are being slashed<sup>1</sup>—including those of the U.S. Department of Urban Housing and Development (HUD)—and needed funds to retrofit/rehab affordable housing multifamily properties are in short supply<sup>2</sup>. This lack of government funding will at minimum hinder and in many cases prevent owners from making the necessary retrofits/rehabs (“green rehab”) needed on their properties. The problem will exacerbate as federal, state and local jurisdictions revise their building codes to account for energy consumption, carbon emissions reduction, water conservation, and the

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<sup>1</sup> [http://nlihc.org/sites/default/files/FY14\\_Budget\\_Chart\\_HUD\\_USDA.pdf](http://nlihc.org/sites/default/files/FY14_Budget_Chart_HUD_USDA.pdf) and <http://www.housingonline.com/NewsArticle.aspx?NewsArticleId=239354> and <http://www.nahro.org/budget-appropriation>.

<sup>2</sup> “House Approps Approves Cuts to HUD Programs; CNI and HOME Programs Impacted.” *Housing Online.com*. May 22, 2014. <http://www.housingonline.com/NewsArticle.aspx?NewsArticleId=239354>.

impacts of indoor air quality on resident health. In essence, while funding is being reduced, the need for green rehab continue to increase<sup>3</sup>.

Energy service companies (ESCOs) and utility programs, the traditional sources of technical and financial resources, respectively, do not currently, and are reluctant to serve the multifamily market<sup>4</sup>(affordable and market-rate housing) because of the myriad issues faced by this market including their complex financial structures and variety of ownership models (multiple owner LLCs, single owner, REITs, etc.), the classic ‘split-incentive’ issue (owner does not pay utility bills but has to fund the green rehab), and the wide range of building stock (from 5-unit apartments to hundreds of units that are garden style, high-rise, etc.) and typically small size of these projects as compared to projects in the MUSH market. Because the multifamily sector is underserved, a niche exists for smaller ESCOs (whose primary mission is to provide services to this underserved market segment) across the nation to take the lead in upgrading this housing stock in order to preserve its affordability for both owners and residents.

Multifamily property owners, especially those with small portfolios (as little as just one property), have limited resources in terms of man-hours, expertise and knowledge, and access to financing to devote to green rehab. Again, smaller ESCOs utilizing a “one-stop-shop” approach can make it simple and hassle-free, provide the requisite expertise and knowledge for the owner to make the right decisions, and provide access to financing to help execute green rehab projects and achieve high energy savings. The one-stop-shops can also provide O&M services and occupant engagement programs that help maintain and encourage further energy and cost savings while adding to the services provided i.e. higher revenues/MF unit.

## Financial Constraints

By focusing more on affordable green rehab, smaller ESCOs may provide a clear benefit to MF properties. The total cost of housing is not only the rent but also utilities. As energy costs increase, owners (if they are paying utilities) are forced to either increase rents or reduce other services and the renters (if they are paying utilities) have less disposable income for paying rent. The smaller ESCOs can reduce the utility costs in a cost-effective manner, thus making housing more affordable.

For affordable housing MF properties, public funds are diminishing, for political and economic reasons<sup>5</sup>. Government budgets do not set aside adequate funds to cover the growing green rehab needs of these types of properties, as they continue to grow older. Such constraints lead to an obvious need for property managers and owners to obtaining funding for the required green rehab.

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<sup>3</sup>“Physical Needs Assessment of Public Housing.” *U.S. Department of Housing and Urban Development*. [http://portal.hud.gov/hudportal/HUD?src=/program\\_offices/public\\_indian\\_housing/programs/ph/capfund/physicalassessment](http://portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/programs/ph/capfund/physicalassessment).

<sup>4</sup> Stuart, Elizabeth, Peter H. Larsen, Charles A. Goldman, and Donald Gilligan. “Current Size and Remaining Market of the U.S. Energy Service Company Industry.” *Environmental Energy Technologies Division Lawrence Berkeley National Laboratory*. September 2013. Table ES-1: Median ESCO market penetration estimates. P. 5. Figure ES-3: Range of estimated existing ESCO market penetration (2003-2012) and remaining ESCO market potential by customer market segment. P. 16. [http://emp.lbl.gov/sites/all/files/lbnl-6300e\\_0.pdf](http://emp.lbl.gov/sites/all/files/lbnl-6300e_0.pdf).

<sup>5</sup> “FY14 Budget Chart for Selected Department of Housing and Urban Development (HUD) and Department of Agriculture (USDA) Programs.” *National Low Income Housing Coalition*. 14 Jan 2014. [http://nlihc.org/sites/default/files/FY14\\_Budget\\_Chart\\_HUD\\_USDA.pdf](http://nlihc.org/sites/default/files/FY14_Budget_Chart_HUD_USDA.pdf).

Utility programs provide limited rebates. ESCOs typically utilize utility rebates and market-rate financing to implement energy efficiency projects. A smaller ESCO takes a broader approach. A key ingredient to the ‘one-stop-shop’ approach is identifying every available source of funding so that the MF property owner receives maximum benefit from federal funding, state and municipal grants, private foundation grants, custom utility rebates, low-cost financing options, etc. Because of their mission-based approach, these ESCOs can access low-cost financing from foundations or corporations as part of their mission-based investments or program-related investments. And if working on MF affordable housing properties, they can access Community Reinvestment Act (CRA) funds from Community Development Financial Institutions (CDFIs) for below-market rates. Another vital aspect of this one-stop-shop process includes not only identifying funding/rebate opportunities but also facilitating the access to those funds/rebates/incentives. For example, a MF owner will have little to no knowledge of the various sources to gain access to grant funds or low-cost financing. Even for utility rebates, an owner will not have the understanding and experience of the ESCO to extract the largest amount of rebates through a custom rebate program.

Another area where these smaller ESCOs can provide affordable services is in their different approach to EPC. For a MF property where the cost of the green rehab is, say, \$500K with deemed savings of about \$50K/year, then signing a EPC contract adds costs to the project that increases its payback period as shown in Table 1 below.

Assuming the energy conservation measures (ECMs) cost the same and the energy savings are the same, the difference lies in the energy performance contract (EPC). In order to guarantee the energy cost savings per year, the ESCO will contractually obligate the property owner to implement certain controls to assure those savings. These include both equipment installs that control the energy systems in the facility and the labor spent on monitoring those control systems for the duration of the contract (which increases with the increase in payback years). These stipulations add cost to the project as seen above. Some of these stipulations are not enforceable for a MF property e.g. keeping windows and doors closed so that conditioned air (heated or cooled) does not escape.

Table 1. A green rehab cost comparison: ESCOs vs. smaller ESCOs

	<b>Typical EPC</b>	<b>One-stop-Shop</b>
Cost of ECMs	\$500,000	\$500,000
<b>Costs for Savings Guarantee</b>		
Labor (for M&V over 14 years)	\$150,000	\$0
Legal	\$10,000	\$2,000
Equipment (control systems and for M&V)	\$30,000	\$0
Re-commissioning Costs	\$0	\$10,000
<b>TOTAL</b>	<b>\$680,000</b>	<b>\$512,000</b>
<b>Savings each year</b>	<b>\$50,000</b>	<b>\$50,000</b>
<b>Simple Payback</b>	<b>13.6 years</b>	<b>10.2 years</b>

*The costs provided above are to indicate the cost differentials and are not reflective of actual costs incurred because each project and firm will have a different actual cost structure.*

These smaller ESCOs offer an additional financial advantage: savings from proper O&M and occupant engagement programs. Properly installed ECMs on their own are not enough to maximize utility savings. Training the facility managers on proper O&M procedures helps maintain those savings over the life of the ECMs (typically 20 years). Also, behavior change management (BCM) targets the residents of the MF units and facilitates behavior change that enhances the savings. As occupants conserve energy through their new behaviors, monthly energy costs decline and complement the property rehab savings.

### **Limited Time and Resources for Green Rehab**

Owners and property managers of MF properties face another dilemma when considering green rehab: time and resource constraints. Amongst their many duties is property maintenance, but green rehab is another task altogether. As Figure 1 displays, the steps involved in a comprehensive green rehab project are numerous and time-consuming.

Once property managers decide to consider green rehab, they open a Pandora's Box of further evaluations and decisions. They will need to perform a search for the right contractor; develop a detailed scope of work and bid qualifications; find financing; obtain bids from companies who might work on specific upgrades/retrofits, such as HVAC or lighting; finalize the scope and budget; manage the contractors with regular site inspections; conduct final inspections with city inspectors and issue completion certificates; complete extensive paperwork, from invoices to rebate information; and track all results, manage invoicing and reporting.

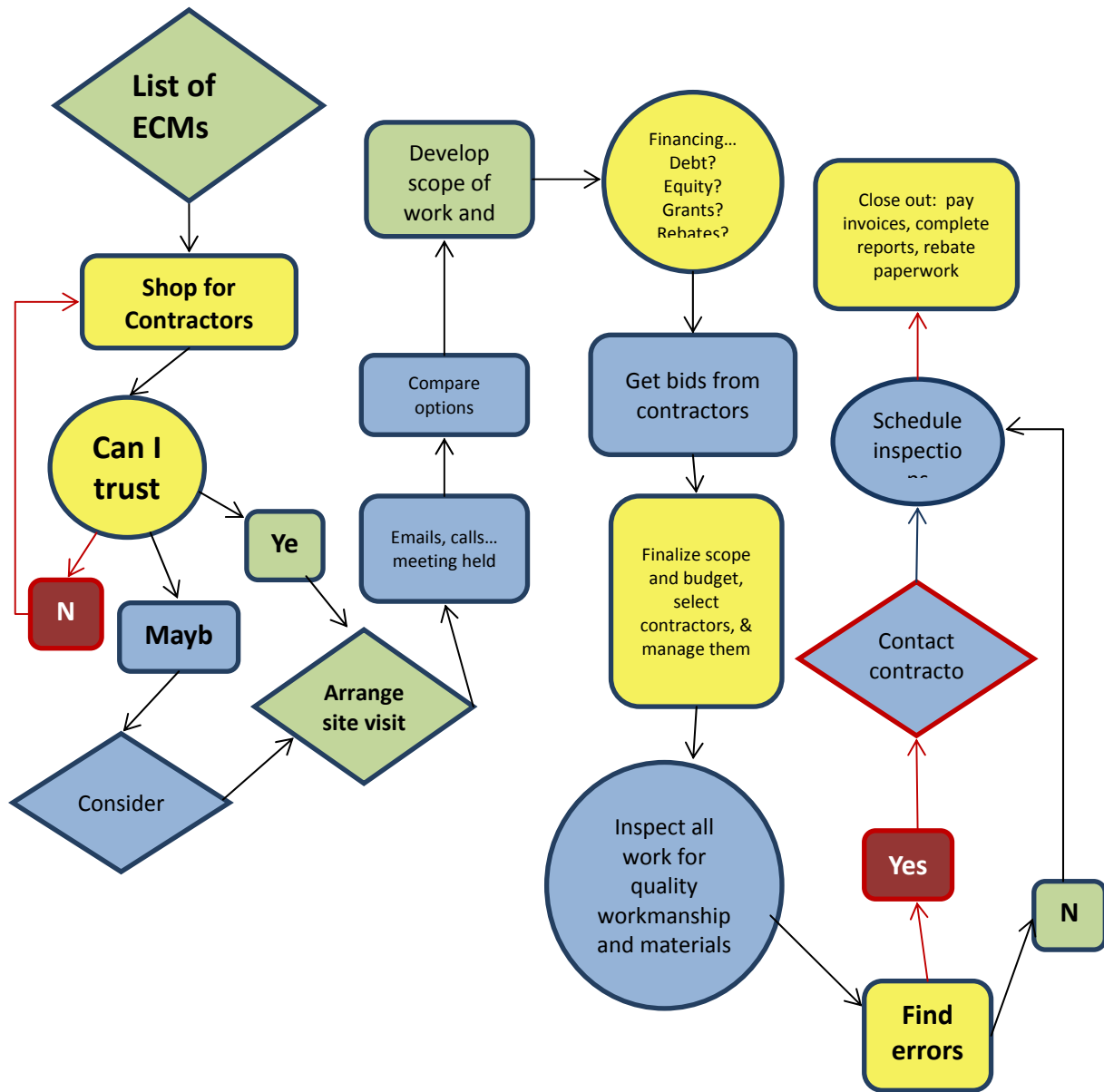


Figure 1. The numerous steps of DIY green rehab.

The one-stop-shop saves the property manager a lot of this time. Figure 2 serves to demonstrate just how hassle-free the turn-key approach can be:



Figure 2. The hassle-free process of one-stop-shops.

By employing a truly end-to-end approach, the time saved makes the one-stop-shop approach more attractive – and thus more likely to make green rehab occur.

### **Lack of Green Rehab Knowledge**

A related constraint for property managers is a lack of knowledge. Since green rehab is typically not their background, all of the steps identified in Figure 1 are difficult to evaluate. Beginning with the assessment on what needs to be done and what it will save (i.e. what is the payback) on each ECM, the owner or property manager must research various contractors and their backgrounds and decide if they can trust them to do a good job at a reasonable price – and even then, property managers do not have the knowledge necessary to discern whether the selected contractor did the job well! The one-stop-shop has both the knowledge and the relationships to identify, select and manage contractors, and thus help the owner make the right decisions on the ECMs.

The one-stop-shop will correctly identify the scope of work based upon the assessment and suggest optimal solutions. For example: rather than install triple-pane windows, the ESCO will recommend double-pane windows because of their better payback.

The smaller ESCOs employ green rehab project knowledge gained from many projects over many years that MF property owners simply do not have. Managing to project scope and budget are complex matters that require experience in comprehensive green rehab. The history a smaller ESCO has of managing such projects can prove beneficial when overseeing budgets and schedules because the owner can hold the ESCO to the budget and schedule and mitigate their own risk.

### **Ancillary Benefits: Social, Environmental and Economic**

In addition to alleviating the financial, time and knowledge constraints of property managers, smaller ESCOs provide ancillary social, environmental and economic benefits of local job creation, emission reductions and spending of the utility savings in the local economy. The triple bottom line impact is often a central part of the mission of the smaller ESCOs. Even if these ancillary benefits do not directly inform a property manager's decision on green rehab,

they do provide additional reasons to support the smaller ESCO approach from a community, state and national perspective.

## Conclusion

The need for green property rehab is not limited to financial, environmental or social concerns. The MF market presents a quandary for a number of reasons, including the multiply types and sizes of these buildings, their ownership structures, and split incentive issues. Such buildings are typically underserved because the typical MF property is too small to serve or is a high financial risk client. The property managers also face other financial limitations (driven primarily by split incentives and regulatory issues) along with a lack of time or knowledge to undertake such work. What they need is a comprehensive, turn-key and, most importantly, affordable solution.

Mission-driven ESCOs are an emerging alternative model to the traditional ESCO due to their focus and approach. These smaller organizations focus on underserved MF communities. By managing every step of the green rehab process using a one-stop-shop approach, they save time and deliver extensive knowledge, creating a hassle-free approach that appeals strongly to otherwise uncertain MF property managers and owners. By managing the entire process, using creative financing solutions and utilizing local contractors, they are also able to provide deep energy retrofits at an affordable cost.

MF properties comprise a significant portion of the buildings in the U.S. and house over 25% of the population<sup>6</sup>. This one-stop-shop approach will be an important play for providing green rehab for this large demographic, while also creating triple bottom-line benefits. Utilities and policy officials should look to these smaller mission-driven ESCOs as a model for driving high energy savings for this highly underserved MF market.

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<sup>6</sup> “State and Country QuickFacts.” *United States Census Bureau*. 27 March 2014. <http://quickfacts.census.gov/qfd/states/00000.html>.