



PROCESS EVALUATION REPORT FOR CON EDISON'S MULTI-FAMILY LOW- INCOME PROGRAM

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March 2013

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1 EXECUTIVE SUMMARY

This report presents the results of the process evaluation for the Multifamily Low-Income (MFLI) program administered by Con Edison as part of their Energy Efficiency Portfolio Standard (EEPS), as ordered by the New York Public Service Commission (DPS).

The MFLI Program was designed, and subsequently approved, to provide funding to the New York City Housing Authority (NYCHA) and the Westchester County Housing Authorities (WCHA) for prescriptive rebates of up to 100 percent of the incremental cost of qualifying cost-effective high efficiency gas heating equipment such as boilers and furnaces. It also provides up to 100 percent of the installed cost for other eligible measures, such as building weatherization measures. Additionally, new technologies or customized applications of other cost-effective energy savings measures may be submitted for program approval.

Con Edison administers the MFLI Program and it is implemented through NYCHA and WCHA, with their existing protocols and processes modified to meet the MFLI Program criteria. NYCHA and WCHA can develop and submit energy-efficient projects with program-approved eligible measures, including the ability to submit new technology or customer measures for review. Con Edison has developed processes for evaluating the energy savings potential and cost-effectiveness of all proposed energy efficiency projects and Con Edison determines which submitted projects are eligible for the program. Con Edison verifies all installations according to the EAG-approved measurement, verification & evaluation (MV&E) protocols, and the Technical Manual established for the multifamily customer segment.

The MFLI program achieved 75 percent of its energy savings goals for natural gas during the 2009-2011 period (Table 1-1).¹ Some of the reasons for the program not achieving its energy savings goals are discussed in the Program Design Challenges and Opportunities section of this report.

¹ Energy Savings reported as achieved are ex ante and have not been confirmed by an independent impact evaluation.

Table 1-1
Con Edison – MFLI
Goals and Reported Achievements: 2009-2011

Energy Savings (Fuel Type)	Program Goal 2009 – 2011	Progress through Year- End 2011	Percent of Goal Achieved
Total Program Savings (Dth)	31,350	23,499	75%

Source: Con Edison Monthly Scorecard (December 2011). The Monthly Scorecard is a monthly progress report required by the New York DPS. Energy Savings reported as achieved are ex ante and have not been confirmed by an independent impact evaluation.

Some key findings from this process evaluation of the MFLI program include:

- *The involvement of HUD in the MFLI program complicates customer acquisition and project implementation.* For most MFLI projects to be funded they must receive HUD approval, in addition to Con Edison approval. The HUD approval process introduces an additional complication in implementing projects that other Con Edison energy efficiency programs do not have. HUD also requires energy efficiency audits and capital improvement plans that can influence the implementation of energy efficiency projects through MFLI and other programs. The way HUD allocates funds for utility costs is also a key barrier to energy efficiency implementation for PHAs. HUD bases the PHA's budget for operating costs on a three-year historical average. Since utility costs are basically a "pass through" cost to HUD, there is limited incentive for PHAs to reduce them. If the PHA improves the energy efficiency of the building, it will realize the associated savings for only a short period.
- *PHAs in general and small PHAs in particular, face many other barriers to the implementation of energy-efficient projects.* In addition to the HUD-related barriers mentioned above, PHAs in general face other barriers such as multi-layered approval cycles, the fact that tenants do not pay their own energy bills, and the tendency of many PHA executive directors to place higher priority on capital improvements that reduce tenant complaints or improve building appearance. Smaller PHAs, in particular, face additional barriers including having no economies of scale for energy savings, having insufficient upfront capital, lacking necessary technical knowledge, having insufficient time or sophistication to consider larger energy efficiency projects, and having difficulty attracting performance contractors.
- *Participation by the Yonkers PHA was due to key advantages it had over other Westchester PHAs.* Yonkers was the only Westchester PHA to have significant participation in the MFLI program due to two key factors. First, it is substantially larger than other Westchester PHAs. This larger size gives it a number of advantages over smaller PHAs. Second, the Yonkers PHA's energy efficiency projects had already been initiated prior to the start of the MFLI

program and were far enough along so that the PHA could meet the relatively tight MFLI project submission deadlines for the 2009-2010 program cycle.

- *The three participating PHAs were very satisfied with the MFLI program, but partial participants and nonparticipants were less satisfied with the aspects of the program that they encountered.*² The three participating PHAs (Yonkers, NYCHA, and the Town of Mamaroneck) gave the MFLI program very high satisfaction ratings. However, other PHAs who considered or submitted projects through the MFLI program were much less satisfied with the project approval process. The nonparticipating PHAs, as well as some other key market actors, displayed a lack of program knowledge which indicated that MFLI program education needs to be improved.

1.1.1 EVALUATION OBJECTIVES AND ACTIVITIES

The overall objective of the MFLI process evaluation is to assess the effectiveness and efficiency of program design, delivery and implementation processes. The research and the findings expressed in this report are based upon a review of program materials and databases, in-depth telephone interviews with different program representatives (including utility staff and Con Edison's in-house Measurement and Verification (M&V) contractor ICF International), participating and nonparticipating Public Housing Authorities (PHAs), and other relevant market actors such as the implementation contractor for the largest participating PHA and a representative of the federal Housing and Urban Development (HUD) agency.

Due to the long time periods required for project implementation in this program, this evaluation has been conducted in two separate phases.

- *Phase I:* As described in the MFLI process evaluation plan, Phase I of the evaluation covered "barriers to program participation faced by PHAs, barriers to project implementation faced by participating PHAs, the project identification/approval processes, and interim assessments of program satisfaction." The preliminary findings from this Phase I evaluation were submitted to Con Edison in May 2011 with the Phase I preliminary findings memorandum finalized in July 2011.

² We are defining partial participants as those PHAs who submitted projects for the MFLI approval process, but whose projects were not implemented through the MFLI program. These partial participants have some experience with MFLI program processes, but not as much as full program participants.

- *Phase II:* This part of the research focused on project installation, M&V, incentive payment processes and the lessons learned from these processes. During this phase the evaluation team also collected final information from participants on program satisfaction. Because the project implementation cycles were so long, we did not want to start the Phase II evaluation cycle until a certain critical mass of projects had been completed (fully installed and processed through the program). Therefore, in the evaluation plan we specified that the Phase II evaluation would only be triggered when the MFLI program had completed four projects. The MFLI program did complete three projects by early 2011 but the subsequent projects were not installed until late 2011 with the final incentive checks not issued until March 2012. Therefore Phase II of the evaluation – which covered all the projects installed by the Yonkers PHA and the Town of Mamaroneck --- did not start in earnest until 2012.

1.1.2 CONCLUSIONS AND RECOMMENDATIONS

This section presents the key conclusions and recommendations from the findings and analyses presented throughout the report. These conclusions and recommendations are organized around the key areas of research. Some of these recommendations require additional on-going program expenditures. Con Edison must identify which of these costs are possible while maintaining a cost effective program. Finally, this evaluation was undertaken during the course of program operations. One or more of the recommendations that the evaluation team provides below may already have been implemented as part of the programs ongoing effort at improving its services.

Program Planning and Design

Findings and Conclusions Concerning Program Planning and Design

Some of our findings and conclusions concerning program planning and design include:

- *Con Edison did not develop an explicit program theory or logic model for the MFLI program, but our interviews with the MFLI program manager revealed that it was a traditional resource acquisition program.*
- *The MFLI program differs from most other Con Edison energy efficiency program in that it targets PHAs only. Since the universe of program-eligible PHAs is very limited – essentially the New York City Housing Authority (NYCHA) and 10 PHAs in Westchester County – the*

program does not need to develop detailed marketing and outreach strategies to recruit customer participants.

- *The involvement of HUD is a unique feature of the MFLI program.* All eight PHAs that we interviewed said that they conduct their capital improvement process within the framework of a HUD five-year plan. As described in the key findings above, the involvement of HUD can greatly complicate and delay customer acquisition and project implementation.
- *Despite the differences discussed above, the MFLI program shares many similarities with other Con Edison programs.* For example, like commercial and industrial (C&I) customers, PHAs have capital improvement budgets that limit how much they can spend for building improvements in any given year. All eight PHAs that we interviewed reported that they initiate energy efficiency projects through their standard capital improvement process in which they must prioritize projects based on energy efficiency as well as other criteria such as safety, security, aesthetics, liability concerns, tenant complaints, etc.
- *NYCHA and the Westchester PHAs have a number of energy efficiency programs available to them besides the MFLI program.* Some PHAs are not participating in the MFLI program because they found another energy efficiency program or funding source more appealing. The alternative programs include HUD programs (the capital expenditure and Energy Performance Contractor (EPC) programs), American Recovery and Reinvestment Act (ARRA) funding for energy and other capital improvements, NYSERDA's Multifamily Performance Program, and local weatherization programs.³
- *The way HUD allocates funds for utility costs is a key barrier to energy efficiency implementation for PHAs.* As described in the key findings above, HUD bases the PHA's budget for operating costs on a three-year historical average, so a PHA that reduces its utility bills through energy efficiency improvements would have lower operating costs that would be reflected in a reduced operating cost allocation from HUD. "Effectively, the benefits of those savings are taken away over a three-year period," a HUD official explained. "So as an energy-saving measure ages, it kind of gets woven into a baseline ... and you don't reap the full long-term benefits for that measure."
- *PHAs, in general, and small PHAs in particular, face many barriers to the implementation of energy-efficient projects.* These barriers are described in the key findings above.

Recommendations for Program Planning and Design

Our recommendations for improving the program design include:

³ The ARRA funding, however, ended in March 2012.

- **Con Edison or the New York DPS should consider reserving/encumbering a portion of the MFLI incentive dollars for smaller PHAs. The amount of the encumbered MFLI incentive dollars could be based on the potential kWh savings of the smaller PHAs, but these encumbered funds could go away if the smaller PHAs did not submit project proposals before the program deadlines.** Two of the interviewees recommended that Con Edison reserve a portion of the MFLI incentive dollars for the smaller PHAs. The evaluation team thinks this is an idea worth considering for the following reasons:
 - *Many of the smaller PHAs are discouraged from participating because they believe that they cannot compete against much larger PHAs like NYCHA and Yonkers.* By reserving a portion of the MFLI funds for smaller PHAs, Con Edison would encourage them to participate in the program. It would also show that Con Edison was giving more than “lip service” to the belief that “we need to include our friends in Westchester,” as the MFLI program manager termed it.
 - *The increased probability of securing MFLI incentive dollars might make it easier for smaller PHAs to secure alternative sources of capital such as HUD funding or energy performance contractors.* For example, Honeywell thought that it could have done some additional energy efficient measures such as window retrofits if the Yonkers PHA had more certainty about whether they would receive the MFLI funding and how much this would be. But uncertainty about this funding caused them to not include the window retrofits in the overall project.
 - *It could serve as a “carrot” to encourage the PHAs to be more ambitious and innovative when considering energy efficiency opportunities.* It could also inspire positive competition among the PHAs.

The amount of the encumbered dollars could be based on a formula that represents the energy savings potential of these smaller PHAs. For example, one simple formula would be to multiply the total annual kWh consumption of the smaller PHAs by 25 percent and then convert that to dollars based on the ratio between incentives dollars paid and kWh acquired based on past program history.

To insure that the encumbered funds would not go unused, Con Edison could allow some or all of the encumbered funds to be reallocated for projects submitted by the larger PHAs if:

- No small PHAs submitted project proposals before the program deadlines; or
 - The value of the encumbered funds exceeded the estimated incentives needed for the projects submitted by the smaller PHAs.
- **Con Edison or the New York DPS should consider working with New York PHAs to introduce an energy-efficiency-based utility allowance program.** As discussed in the barriers section of this report, PHAs face a structural barrier to improving their energy efficiency. They can only get the full economic benefits of the energy-efficiency improvements for a short period of time. The reason for this is that HUD bases the PHA's budget for operating costs (which include utility costs) on a three-year average. So a PHA that reduces its utility bills through energy efficiency improvements would eventually get a reduced operating cost allocation from HUD.

California currently has an energy efficiency program called Designed for Comfort that tries to mitigate this barrier. It does so by allowing PHAs to adopt a HUD-approved Energy-Efficiency-Based Utility Allowance (EEBUA).⁴ This EEBUA allows low-income multifamily buildings to permanently reap some of the energy savings benefits of the energy efficiency improvements they make. Furthermore the Designed for Comfort program has had success getting smaller, as well as larger, PHAs to adopt these EEBUAs.

- **Make it easier to suggest changes to the multifamily Technical Reference Manual:** Two of the interviewees suggested that there was a need to improve the multifamily Technical Reference Manual, either by adding missing measures (e.g., steam traps) or improving the calculation methods for existing measures. "I think that having some additional input ... into the improvements of the algorithms in certain areas or alternative approaches to calculating energy savings would be good," said one of the interviewees. "I think that some additional input from experts would be helpful in making the program ... more successful in New York State." He also noted that the current process did not encourage such input.

⁴ An explanation of an EEBUA can be found at <http://www.h-m-g.com/multifamily/aheea/eebua.htm>

“Any deviation from the [TRM] itself requires a process of approval from the PSC,” he said. “[The process] seems pretty cumbersome.”

- **Require that PHAs and their implementation contractors provide better documentation of saving estimates for the projects they install.** The ICF representatives said that their job of estimating energy savings for the MFLI program projects was made difficult by Honeywell not using the engineering algorithms prescribed by the TRM and the lack of current, complete and accessible information on the energy efficiency projects installed through the program. ICF recommended five improvements, which the evaluation team believes Con Edison should consider because they address problems with the M&V process that were reported by Con Edison and Honeywell, in addition to ICF:
 1. *Going forward, requiring that the energy savings estimates be based on the algorithms in the TRM:* “I think [MFLI program staff] might need to make it a little bit easier for themselves to be able to evaluate whatever submissions they get from prospective participants by having a requirement that all the savings calculations be based on the tech manual,” said one ICF representative. This was based on their experience with the Yonkers projects where the initial calculations that Honeywell submitted were not based on the TRM (although these were later revised to match the TRM calculations – with the exception of steam traps, which were never in the TRM to begin with). In responding to this recommendation, Con Edison acknowledged that they could play a role in educating the PHAs that they must require that their implementation contractors use the TRM algorithms for estimating energy savings if they want to receive MFLI incentives.
 2. *Requiring that end-of-project reports be provided:* “[Honeywell] doesn’t seem to have done any kind of as-built manual, or end-of-project report that says what they actually did,” said one ICF representative. “Or if they did, it was not available to the guy that we dealt with at the housing authority.”
 3. *Requiring that all relevant energy savings calculations be available in a single document:* The ICF representatives complained that the calculations that Honeywell used to justify its energy savings claims were somewhat scattered. “Some of Honeywell’s analysis was in a report, some of it was in a spreadsheet that was ancillary to the report. But it wasn’t an overlap, it didn’t all include the same measures,” said one representative.

4. *Requiring that an update to the project application be provided on inspection:* ICF noted that some of the project information that Honeywell had submitted in their application was three-four years old by the time the inspection took place.
 5. *Requiring a pre-installation inspection:* “I would recommend that Con Edison arrange to have a pre-installation inspection done,” said one ICF representative. “We went [to the site] after the fact and we have no idea what had really been there.” The ICF staff claimed that requiring a pre-installation inspection was reasonable considering the size of the incentive payments that were being made for some of the projects. “The size of the checks that were going out the door on this particular project [Yonkers PHA] were in excess of \$100,000 in some cases, and then sometimes more than that,” said one ICF representative. “So I think with that, given that they’re pushing that much money out the door at once, [they should require] the existing conditions inspection on the front-end as well as a post-install [inspection] after all the work is done.” The evaluation team thinks this is a good recommendation as long as some minimum threshold based on project energy savings or incentive level is established for triggering a pre-inspection.
- **The program should develop a standard checklist of “must have” project information to streamline the project approval process.** Two interviewees identified that the lack of a standard checklist of “must have” information created a need for multiple requests for information when gaps were identified. An ICF representative mentioned “a regular pattern” of having to submit 5-6 questions to the implementation contractors for specific information that had not been included in the documents the contractor had provided. For example, the TRM required information on whether the building where the energy efficiency measures were installed was “old,” “middle-aged,” or “new.” The TRM also required specific information on the general use pattern of the building. If the MFLI program could come up with a standard checklist of this “must have” project information, it could reduce the amount of time it takes for project approval.

Infrastructure Development

Findings and Conclusions Concerning Infrastructure Development

Some of our findings and conclusions concerning the MFLI program’s infrastructure development include:

- *While the MFLI program's use of spreadsheets for tracking program data is reasonable considering the small number of projects that go through the program, these spreadsheets need to be improved.* For a program of this size a large relational database is unnecessary. The current system of using spreadsheets can be used effectively both for program management and for impact evaluation purposes. Yet the spreadsheets lack standardization, transparency and documentation. In addition the savings documented in the tracking spreadsheets do not match the savings reported in the December 2011 scorecard report where the evaluators would expect it to.⁵

Recommendations for Infrastructure and Development

Our recommendations for improving the program infrastructure include:

- **Make some improvements to the spreadsheets being used to track program information:**

Our recommended improvements include:

- *Use a standard format for the tracking file of each project.*
- *For each project, include contact information (contact name, phone number, and email address) in the tracking spreadsheet.*
- *To improve usability and ensure important information is seen and updated when necessary, include a field for comments rather than using the comment feature in Microsoft Excel.*
- *Include a binary field to flag ineligible measures rather than relying on highlighting and comments.* This allows for summary formulas that do not need to be adjusted when a measure is found to be ineligible.
- *To simplify summaries, structure the file so that there is a single table with the measure level information from all sites rather than separate tables for each building.* Each line in the table would include the building name, so that summaries to the building level and building information can be stored in a separate table. This would help in standardizing the tracking spreadsheets from project to project and reduce the opportunity for errors from misaligned formulas.

⁵ The Monthly Scorecard is a monthly progress report required by the New York DPS.

- *Save and label appropriately a version of each project tracking file when the savings and incentives are reported in the Scorecard report.* For example when the savings are committed, the title could be “Project X Reported as committed in Dec 2011 scorecard.xlsx,” and if the savings and incentives are reported as acquired in a later scorecard, that version would substitute the word “acquired” for “committed” and would reflect the date of the scorecard that the savings were reported as acquired in. This would ensure that there is a (virtual) paper trail if the savings in the tracking spreadsheet later do not match those in the scorecard.
- **Con Edison should develop more in-house technical resources so it can more effectively mine the energy efficiency opportunities within NYCHA.** Although NYCHA is far bigger than all the Westchester PHAs put together, the MFLI program did not acquire any energy savings from NYCHA during the 2009-2011 program period. Although factors such as the free ridership impacts of the ARRA funding and the more complicated nature of many of the NYCHA projects helped explain this lack of success, there is no doubt that the MFLI program needs to do a better job of acquiring energy savings from NYCHA going forward. One key to this will be for Con Edison to develop more in-house technical/engineering resources so it can more quickly review proposed multifamily projects for both the MFLI and MFEG programs and not be so dependent on subcontractors such as ICF and AEA. Our May 2012 interview with the manager of both the MFLI and MFEG programs indicated that Con Edison was actively trying to develop this in-house technical expertise. Since that interview, Con Edison has hired two building engineers for that purpose.

Marketing and Customer Acquisition

Findings and Conclusions Concerning Marketing and Customer Acquisition

Key conclusions concerning the MFLI program’s marketing and customer acquisition challenges and activities include:

- *PHAs in general and small PHAs in particular, face formidable barriers in implementing energy efficiency projects.* The evaluation identified over a dozen unique barriers that PHAs in general, and small PHAs in particular, face when trying to implement energy efficient projects. Some of these are barriers introduced by HUD due to the way it allocates energy

efficiency program funding or compensates PHAs for utility costs. Others are structural barriers, such as multiple layers of decisions makers, or the fact that tenants do not pay their own energy bills. Smaller PHAs also face energy efficiency knowledge barriers and capital constraints that are similar to those faced by small businesses. While all these barriers make it difficult for PHAs to implement energy efficiency projects, these barriers also show the necessity of the MFLI and other energy efficiency programs that attempt to mitigate these barriers.

- *Participation by the Yonkers PHA was due to key advantages it had over other Westchester PHAs.* Yonkers was the only Westchester PHA to have significant participation in the MFLI program due to two key factors. First, it is substantially larger than other Westchester PHAs. This larger size gives it a number of advantages over smaller PHAs including:
 - A greater ability to attract interest from energy performance contractors;
 - A greater potential “payoff” in terms of the ultimate dollar value of the energy savings it can garner;
 - A larger annual budget for operating costs and capital improvements, and
 - A larger and more energy-savvy staff that helps it pursue outside funding opportunities like the HUD EPC program and the MFLI program.

Second, the Yonkers PHA’s energy efficiency projects had already been initiated prior to the start of the MFLI program and were far enough along so that the PHA could meet the relatively tight MFLI project submission deadlines for the 2009-2010 program cycle.

Recommendations for Marketing and Customer Acquisition

Our recommendations for improving the MFLI program’s marketing and customer acquisition efforts include:

- **Con Edison should increase outreach and education efforts to the PHAs about the MFLI program and energy efficiency in general.** Increased outreach will maintain awareness of the program and provide PHAs with the advance notice to prepare projects. There are a number of reasons why Con Edison needs to be much more proactive with its MFLI outreach and education efforts:

- *There is evidence of lack of knowledge of the MFLI program:* Although the majority of the PHA staff that we interviewed were aware of the MFLI program, their knowledge of this program was very sketchy and sometimes inaccurate.
- *PHAs need advance notice of funding opportunities due to long lead times for project development:* Advance notice may reduce free-ridership, as PHAs that don't have projects ready to go will have time to develop them.
- *PHAs experience staff turnover:* The simple reality that PHAs experience periodic turnovers in staff means that Con Edison needs to be more proactive in its program educational efforts. For example, the one NYCHA representative who was unaware of the MFLI program had joined NYCHA in 2010, after the MFLI program's last presentation in August 2009.
- *Some PHAs may lack knowledge/interest in energy efficiency in general:* Our interviews with the nonparticipating PHAs revealed that while some of them seemed knowledgeable about energy efficiency opportunities and were proactively investigating possible projects, others were not. This suggests that there are opportunities for Con Edison to provide the smaller PHAs with some general energy efficiency education beyond just describing how the MFLI program works.

Some education and outreach activities that Con Edison should undertake include:

- *PHA listening sessions:* We recommend that Con Edison conduct regular "listening sessions" with the PHAs to find out whether they have any ideas for energy efficiency projects and what these ideas are. They should also learn what specific barriers – e.g., lack of capital, or skeptical boards of directors – these PHAs may face in implementing these energy efficiency projects.
- *Develop a Yonkers case study marketing piece:* The Yonkers PHA representative had very positive things to say about Con Edison and the MFLI program. Con Edison should take advantage of this positive experience. Con Edison should develop a visually appealing and informative "case study" document based on the Yonkers PHA experience with the MFLI program. This document should describe the energy efficiency projects that Yonkers has implemented, highlight the incentive dollars that the MFLI program provided, cite any evidence of energy savings that Yonkers is realizing, and include

testimonials from the Yonkers PHA representative. Perhaps HUD might even be interested in funding a video regarding the project, to encourage other PHAs to make similar improvements.

- *Partner with HUD to educate the PHAs about HUD's energy efficiency opportunities:* Our interview with the HUD representative revealed that HUD also has a keen interest in getting more small PHAs involved in energy efficiency. So the evaluation team recommends that Con Edison should try to partner with HUD in these education efforts. For example, Con Edison could:
 - *Sponsor "lunch and learns" with the Westchester PHAs in which HUD officials could explain HUD's Energy Performance Contracting (EPC) program to them and other energy efficiency opportunities offered by HUD;*
 - *Work with HUD to develop simplified or standardized "boilerplate" documents that would make it easier for smaller PHAs to participate in the EPC program; and*
 - *Con Edison and HUD could also show these smaller PHAs how to do a joint solicitation for an energy performance contractor. A joint solicitation would reduce the administrative burden on any individual PHA and make the solicitation more attractive to performance contractors by increasing the number of buildings and tenant units.*

Our most recent (May 2012) interview with the MFLI program manager indicated that the program is starting to have discussions with HUD on some joint marketing efforts.

Program Delivery

Findings and Conclusions Concerning Program Delivery

Some of our conclusions concerning the MFLI program delivery include:

- *The MFLI program was right to reject 2010 NYCHA energy efficiency projects due to free ridership concerns, but free ridership will continue to be a threat to the MFLI program.* Interviews with the MFLI program manager and the ICF representative indicated that the program chose not to provide incentives for some NYCHA energy efficiency projects due to free ridership

concerns. NYCHA had received about \$420 million in ARRA funding and was spending much of this money on energy efficiency projects. The MFLI program reasoned, rightly in the opinion of the evaluation team, that these projects had sufficient funding from the ARRA sources and would be implemented with or without the MFLI incentives. Free ridership will continue to be a threat to the MFLI program. Although the ARRA funds have now been terminated, there will continue to be cases where the MFLI incentive will account for only a small percentage of project costs. The first come first served approach of the MFLI program provides an advantage to energy efficiency projects that are already far along in their design and development cycle. Such projects are at greater risk of low program attribution (high free ridership) because program involvement is at a later stage, when funding and approvals are already secured.

- *Our in-depth interviews with the PHAs and their contractors collected some indicators of free ridership for the projects installed through the MFLI program. Yet because we did not administer a formal battery of questions designed to estimate free ridership (this was process evaluation not an impact evaluation), this free ridership information is only indicative and preliminary.*
 - For the Town of Mamaroneck project the indicators of free ridership included:
 - The fact that similar high efficiency boilers installations had been made in recent years in the same multifamily building complex without the assistance of the MFLI program; and
 - The PHA had strong motivations to install the efficient equipment outside the MFLI program's influence. The PHA representative mentioned a number of reasons for installing the energy-efficient boilers including an existing policy of trying to reduce tenant energy costs, an enviro-friendly board of directors, and the fact that the previous boilers were getting expensive to repair.
 - For the Yonkers PHA projects the indicators of free ridership included:
 - Before becoming involved in the MFLI program, the Yonkers PHA had already conducted energy audits and had signed an agreement with an energy performance contractor;

- The Yonkers PHA considered itself “ahead of the curve” compared to its fellow Westchester PHAs in terms of its sophistication in pursuing opportunities to save money on utility costs;
 - The MFLI program incentives only paid for a small percentage of the total project costs; and
 - Honeywell did not include the value of the MFLI incentives in its own cost effectiveness calculations when it proposed to Yonkers which energy-efficient measures it planned to implement.
- *Our in-depth interviews with the PHAs and their contractors also collected some evidence that the MFLI program in particular, or Con Edison in general, helped to move the projects forward. This evidence is discussed in the body of the report.*

Recommendations for Program Delivery

Some of our recommendations for improving the delivery of the MFLI program include:

- **Adopt some practices to try to reduce program free ridership:** While the MFLI program may not be able to compete with HUD or ARRA in terms of incentive dollars, it can provide value and get attribution credit in other ways. These include some of the program activities recommended elsewhere in this section such as:
 - Educating smaller PHAs about energy efficiency opportunities;
 - Connecting PHAs to energy audit and other technical resources;
 - Helping them sell energy efficiency projects to their boards of directors;
 - Facilitating their participation in the HUD’s EPC program; and
 - Helping them attract energy performance contractors and other funding sources for capital improvements.

All these practices should increase program attribution (reduce free ridership) by getting the program more involved in projects at a very early stage and increasing the chance that PHAs will give the MFLI program credit for influencing the implementation of their energy

efficiency projects. Of course, these smaller PHAs do not offer the same potential gross energy savings as NYCHA or the Yonkers PHA do. Yet if the MFLI program works closely with them to mitigate barriers, these PHAs are less likely than larger PHAs (which are more self-sufficient) to be free riders. This would result in a higher net-to-gross (NTG) adjustment factors, and possibly higher overall net program savings.

- **Con Edison and participating PHAs should anticipate HUD delays when setting timelines for program and project milestones that involve HUDs funding.** Delays in the HUD approval process have delayed the MFLI program's ability to meet energy savings goals. It took HUD nine months to approve the Yonkers PHA's Phase 1 projects and an additional three months to approve the Yonkers Phase 2 projects. While the program claimed a small amount of energy savings in late 2010, the vast majority of the program energy savings were not claimed until late 2011. A number of respondents pointed to staffing constraints at HUD as the main cause of these delays. Con Edison (and participants) must anticipate these delays when setting timelines for program and project milestones. There is little that Con Edison can do to speed up the HUD approval process. Of course, projects that do not use HUD funding – such as the December 2011 Town of Mamaroneck boiler project – do not face the same delays.

Satisfaction with the Program

Findings and Conclusions Concerning Program Satisfaction

- *The three participating PHAs were very satisfied with the MFLI program, but partial participants and nonparticipants were less satisfied with the aspects of the program that they encountered.*⁶ The three participating PHAs (Yonkers, NYCHA, and the Town of Mamaroneck) gave the MFLI program very high satisfaction ratings. However, other PHAs who considered or submitted projects through the MFLI program were much less satisfied with the project approval process. The nonparticipating PHAs, as well as some other key market actors, displayed a lack of program knowledge which indicated that MFLI program education needs to be improved.

⁶ We are defining partial participants as those PHAs who submitted projects for the MFLI approval process, but whose projects were not implemented through the MFLI program. These partial participants have some experience with MFLI program processes, but not as much as full program participants.

- *Reasons for dissatisfaction with the program in general included:*
 - Limited participation from the PHAs;
 - The number of energy efficiency projects through the program was too small to keep either the implementation staff or the M&V staff busy. Both ICF and Honeywell indicated that the small number of MFLI projects and the long time gaps in between these projects led to some inefficiencies due to the “start and then stop” nature of work and communication; and
 - Uncertainty regarding the amount of financial incentives available through the MFLI program discouraged participation and project expansion.

2 INTRODUCTION

This report presents the results of the process evaluation of the Multifamily Low Income (MFLI) program administered by Con Edison.

2.1.1 BACKGROUND

In May 2007 the New York Public Service Commission (DPS) initiated a proceeding to design an electric and natural gas energy efficiency portfolio standard (EEPS). This order was in response to then-Governor Eliot Spitzer's goal of reducing energy usage 15 percent by 2015. The responsibility for administering the new programs was split between the investor-owned utilities and the New York State Energy Research and Development Authority (NYSERDA). On June 23, 2008 the PSC issued an order establishing the EEPS target, which approved the EEPS programs and required utilities to file their program proposals within 90 days. The DPS approved the MFLI program in a July 2009 Order Approving Multifamily Energy Efficiency Programs with Modifications which was issued in the EEPS proceeding.

2.1.2 PROGRAM DESCRIPTION

The MFLI Program was designed, and subsequently approved, to provide funding to the New York City Housing Authority (NYCHA) and the Westchester County Housing Authorities (WCHA) for prescriptive rebates of up to 100 percent of the incremental cost of qualifying cost-effective high efficiency gas heating equipment such as boilers and furnaces. It also provides up to 100 percent of the installed cost for other eligible measures, such as building weatherization measures. Additionally, new technologies or customized applications of other cost-effective energy savings measures may be submitted for program approval.

Con Edison administers the MFLI Program and it is implemented through NYCHA and WCHA, with their existing protocols and processes modified to meet the MFLI Program criteria. NYCHA and WCHA can develop and submit energy-efficient projects with program-approved eligible measures, including the ability to submit new technology or customer measures for review. Con Edison has developed processes for evaluating the energy savings potential and cost-effectiveness of all proposed energy efficiency projects and Con Edison determines which submitted projects are eligible for the program. Con Edison verifies all

installations according to the EAG-approved measurement, verification & evaluation (MV&E) protocols, and the Technical Manual established for the multifamily customer segment.

Table 2-1 summarizes the incentives for the program energy efficiency. In addition to these prescriptive incentives, Con Edison will allow additional custom measures as long as these measures are subject to an independent engineering analysis to estimate energy savings and these measures can pass the Total Resource Cost (TRC) test. The steam trap, which was implemented by the Yonkers Housing Authority, is an example of such a measure.

Table 2-1
Summary of MFLI Prescriptive Program Incentives

Measure	Eligibility Rating	Incentives
High Efficiency Water Boiler	>= 85% AFUE	100% of incremental cost
High Efficiency Water Boiler	>= 90% AFUE	100% of incremental cost
High Efficiency Steam Boiler	>= 82% AFUE	100% of incremental cost
High Efficiency Gas Furnace	>= 90% AFUE	100% of incremental cost
Attic Insulation*	Bring level to code or above code requirements and must meet the TRC if greater than 1.0	100% of installed cost
Basement Insulation*	Bring level to code or above code requirements and must meet the TRC if greater than 1.0	100% of installed cost
Floor Insulation*	Bring level to code or above code requirements and must meet the TRC if greater than 1.0	100% of installed cost
Wall Insulation*	Bring level to code or above code requirements and must meet the TRC if greater than 1.0	100% of installed cost
Reduced Air Infiltration*	Must Meet TRC of greater than 1.0	100% of installed cost
Weather Stripping and Sweeps for Doors*	Must Meet TRC of greater than 1.0	100% of installed cost
Pipe Insulation*	Must Meet TRC of greater than 1.0	100% of installed cost
Vent Dryer/Bath Fan*	Must Meet TRC of greater than 1.0	100% of installed cost
HVAC Tune-Up & Repair*	Must Meet TRC of greater than 1.0	100% of installed cost

Note: An asterisk ("*") next to an energy efficiency measure in the above table means that the measure is included in a bundle of energy efficiency measures that will be offered to program participants. For this program, weatherization, insulation and air sealing measures were modeled in a bundle, with costs, therm savings and useful life assumptions representing a bundle of approximately fifty energy efficiency measures.

Program Goals and Objectives

The MFLI program's Implementation Plan lists the program's energy savings and participation goals for the 2009-2011 program period.⁷ These included:

- *Energy savings goals:* The Implementation Plan has energy savings goals for the 2009-2011 period of 31,350 dekatherms.⁸
- *Program activity/participation goals:* To achieve these energy savings goals, the Implementation Plan projected that the program would need to have 42 participating buildings and 1,596 participating dwelling units.

2.1.3 EVALUATION OBJECTIVES

The overall objective of the MFLI process evaluation is to assess the effectiveness and efficiency of program design, delivery and implementation processes to achieve the program's outcomes. The evaluation seeks to provide clear and actionable recommendations to support the program in improving operations and meeting its savings goals.

The process evaluation addressed the following program areas:

- Program planning and design;
- Infrastructure development;
- Marketing and customer acquisition;
- Program delivery;
- Satisfaction with the program; and
- Interactions with all other available programs.

Con Edison is committed to meeting its program goals and is most interested in process evaluation findings that will assist them in accelerating program activity. With this in mind, DNV KEMA has prioritized process evaluation activities that are likely to result in program recommendations that meet that objective.

⁷ *Multifamily Low Income Implementation Plan*, Consolidated Edison Company of New York, Inc., Case No. 09-G-0363, revised January 5, 2010, p. 4.

⁸ Energy Savings reported as achieved are ex ante and have not been confirmed by an independent impact evaluation.

2.1.4 OVERVIEW OF METHODOLOGY

The research and the findings expressed in this report are based upon the following evaluation activities:

- Review of program planning and marketing materials,
- Review of program tracking system, data, and other program delivery documents,
- In-depth interviews with program implementers including:
 - Con Edison MFLI program managers (three full interviews⁹ completed, July 2010 (first program manager), March 2011 (first program manager), and May 2012 (second program manager); and
 - ICF International (two interviews completed, February 2011 (one ICF representative) and February 2012 (two ICF representatives)).
- In-depth interviews with:
 - Participating PHAs including:
 - Three interviews with a representative of the Yonkers PHA (July 2010, March 2011, and May 2012);
 - Four interviews with three representatives of NYCHA (July 2010, February 2011, March 2011); and
 - One interview with a representative of the Town of Mamaroneck (April 2012).
 - The Yonkers PHA implementation contractor Honeywell (2 interviews – March 2011, April 2012);
 - Nonparticipating PHAs (5 interviews – January-March 2011); and
 - Housing and Urban Development (1 interview in February 2011).

⁹ In addition to these full interviews, we also conducted three much briefer preliminary interviews with the MFLI program manager that were used to gather information needed for developing the evaluation plan.

2.1.5 ORGANIZATION OF REPORT

This report is organized around five of the six broad research areas, with the sixth research area -- interaction with other programs -- covered in the Challenges and Opportunities section. Two sections follow this introduction:

- Chapter 3. Analysis and Findings, discusses the key findings of the research conducted; and
- Chapter 4. Conclusions and Recommendations, provides the recommendations for modifications to the program.

3 ANALYSIS AND FINDINGS

This chapter discusses the analysis and process evaluation findings, beginning with an examination of program participation and achievements to date. We then assess program processes according to the program areas identified in the evaluation objectives:

- Program planning and design;
- Infrastructure development;
- Marketing and customer acquisition;
- Program delivery;
- Satisfaction with the program; and
- Interactions with all other available programs.

3.1.1 SUMMARY OF PARTICIPATION AND PROGRAM ACHIEVEMENTS TO DATE

The MFLI program reached 75 percent of its 2009-2011 energy savings goals by the end of 2011.¹⁰ The reasons for the program not achieving its energy savings goals were mostly due to some NYCHA projects which the program had expected to be implemented in 2011 being delayed until 2012. The totals also do not include the relatively small Town of Mamaroneck Public Housing Authority project, which was implemented in December 2011, but which was not inspected until January 2012. Table 3-1 summarizes the MFLI year-end program achievements compared to its goals.

¹⁰ Energy Savings reported as achieved are ex ante and have not been confirmed by an independent impact evaluation.

Table 3-1:
Con Edison – MFLI
Goals and Reported Achievements: 2009-2011

Energy Savings (Fuel Type)	Program Goal 2009 – 2011	Progress through Year- End 2011	Percent of Goal Achieved
Total Program Savings (Dth)	31,350	23,499	75%

Source: Con Edison Monthly Scorecards (December 2011). Energy Savings reported as achieved are ex ante and have not been confirmed by an independent impact evaluation.

Program Spending Levels

Through the end of 2011 the MFLI program only spent about 10 percent of its original program budget. One reason for this was that the program did not pay financial incentives (over \$1 million) for the bulk of the Yonkers PHA projects (Phase 2) until March 2012. Another reason is that the design of the MFLI program is such that it has low administrative and marketing costs. Rather than having to target and communicate with thousands of multifamily property managers, as the Con Edison Multifamily Electric and Gas (MFEG) program does, the MFLI program is only targeting about a dozen housing authorities in New York City and Westchester County.

**Table 3-2:
Con Edison – MFLI
Program Spending: 2009-2011**

Expenditure/Budget Category	Program Expenditures (Total)
Incentives & Services	\$43,349
Administration & Planning	\$73,427
Direct Program Implementation	\$31,533
Marketing & Training	\$16,789
Evaluation	\$89,363
Total Expenditures	\$254,461
Total Budget	\$2,671,200
% of Total Budget	10%

Source: Con Edison Monthly Scorecard (December 2011). The amount of incentives in this table does not reflect the full amount of the MFLI program incentive payments. Although all the projects were installed in 2011, the largest portion of the incentive payment to the Yonkers PHA (Phase 2 - \$1,061,121) was not made until 2012. The incentive payment to the Town of Mamaroneck (\$23,307) was also not made until 2012.

Program Activity Levels

The following timeline summarizes key dates in the MFLI program history:

- **July 2009:** The New York Public Service Commission (NYPSC) approves the MFLI program.
- **August 2009:** Con Edison had initial meetings with the eligible entities from NYCHA and WCHA to explain the program and to encourage them to identify potential projects. Since this initial meeting Con Edison has had regular meetings and discussion with the eligible entities.
- **September 2009:** Con Edison submits detailed program implementation plans to the NYPSC.
- **October 2009:** The housing authorities are given until December 2009 to submit proposed projects for MFLI program funding.
- **December 2009:** NYPSC approves the MFLI implementation plan. Con Edison receives project proposals from some public housing authorities (PHAs).
- **February 2010:** Con Edison hires ICF International to review the energy savings calculations for the projects submitted by the PHAs for MFLI funding.
- **February-April 2010:** ICF reviews and approves projects submitted by PHAs (primarily Yonkers and NYCHA). Con Edison tests whether the proposed measures pass Total

Resource Cost (TRC) criteria. Con Edison rejects some proposed NYCHA projects due to free ridership concerns.

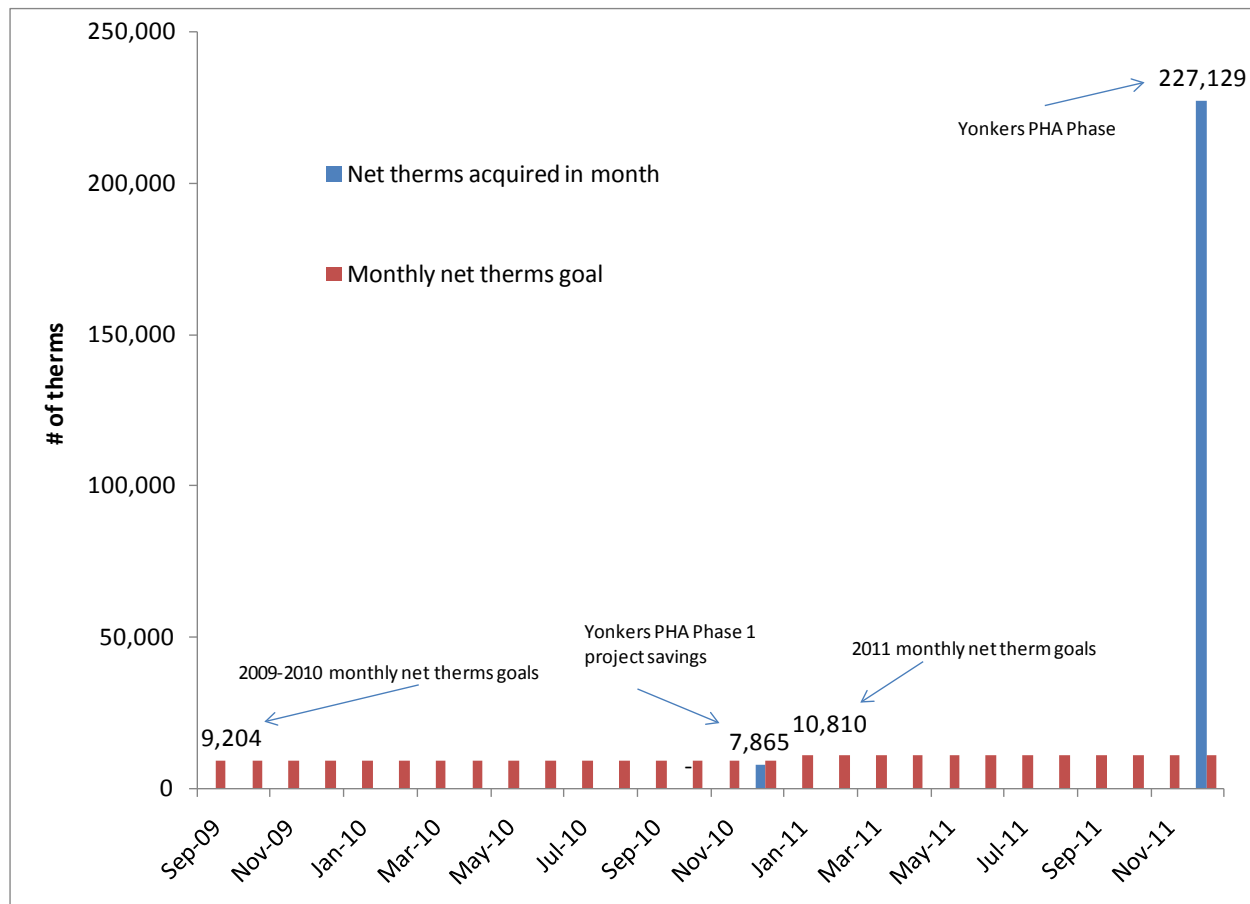
- **July 2010:** The U.S. Department of Housing and Urban Development (HUD) approves the Yonkers Phase 1 (smaller scale) projects.
- **September 2010:** The Yonkers PHA received HUD approval for its Phase 2 (larger scale) projects.
- **August 2010 – March 2011:** Three Yonkers PHA Phase 1 projects and parts of the Yonkers PHA Phase 2 projects are implemented.
- **February 2011:** NYCHA submits some projects for MFLI approval.
- **March 2011:** NYCHA notifies Con Edison that it does not expect the projects it submitted for MFLI approval to be completed before the end of 2011.
- **October-November 2011:** Remainder of Yonkers PHA Phase 2 projects implemented.
- **November 2011:** Con Edison and ICF conduct post-inspections of Yonkers Phase 2 projects.
- **December 2011:** Town of Mamaroneck completes boiler installation project and applies for financial incentives for it through the MFLI program.
- **January 2012:** ICF and Con Edison complete inspections of the Town of Mamaroneck project. Con Edison issues the MFLI incentive payment.
- **January 2012:** ICF completes M&V analysis on Yonkers Phase 2 projects.
- **March 2012:** Con Edison issues incentive payment to Yonkers PHA.

A few of these timeline items require additional explanation. The timeline shows that during the August 2010-March 2011 period Yonkers had implemented the smaller Phase 1 projects, but only parts of the larger Phase 2 projects. One reason for this is that the Yonkers Phase 2 projects did not receive HUD approval until September 2010. Some of the interviewees also pointed to Con Edison's need to convert some of the buildings from oil to gas as also contributed to the delays. Whatever the reasons, the heating season began in mid-October 2010 and so installation of some Phase 2 measures were delayed until the heating season was over in 2011.

The timeline also shows that in February 2011 NYCHA submitted energy efficiency project proposals for MFLI approval. NYCHA had also submitted projects for MFLI approval in 2010, which were not approved primarily due to free ridership concerns. The large majority of funding for these 2010 NYCHA projects was coming from American Reinvestment and Recovery Act (ARRA) stimulus dollars and Con Edison had concerns whether they would be able to claim the energy savings for these projects since the MFLI incentives only would have accounted for a small percentage of total project costs.

Figure 3-1 compares the amount of net therms the program acquired with the program's monthly net therm acquisition goals. It shows that there was a small acquisition of therm savings by the program in late 2010 with the implementation of the Yonkers PHA Phase 1 projects. However, the vast majority of program savings came at the very end of the program cycle in 2011 with the acquisition of the Yonkers PHA Phase 2 energy savings.

Figure 3-1:
MFLI Program
Net Therm Savings Acquisition vs. Monthly Goals
2009-2011¹¹



Implementation Staff

The only contractor that Con Edison used for the implementation of the MFLI program was ICF International which managed the post inspections of the projects installed through the program

¹¹ Energy Savings reported as achieved are ex ante and have not been confirmed by an independent impact evaluation.

as well as the estimation of program energy savings. We interviewed representatives of ICF twice, once in February 2011 (one ICF representative) and once in February 2012 (two ICF representatives).

The ICF staff reported that they first became involved with the MFLI program in early 2010. They said that Con Edison had sought their help in reviewing the larger energy efficiency projects they expected to be coming from the New York City and Yonkers housing authorities. ICF had worked with Con Edison for many years on other energy efficiency programs.

The ICF staff said that Con Edison provided them with a lot of background information about the design and purpose of the MFLI program, most of it from regulatory filings. They also provided ICF with the New York multifamily Technical Reference Manual (TRM), which was to be the basis for most of their energy savings calculations.¹² Finally the MFLI program manager explained to ICF what their role would be in reviewing efficiency projects which had been submitted for MFLI funding. The ICF staff thought that these descriptions of these duties were “pretty clear.” They also had positive things to say about Con Edison’s management of the project review process. “[The MFLI program manager] was very highly embedded in the whole process and ... he managed the process very tightly, and it was a good one, as far as I was concerned,” said one ICF representative.

The primary activities of ICF included estimating the energy savings of projects installed through the program (both prior to project approval and after installation) and conducting post-installation inspections. These activities are discussed in the Program Delivery section of the report.

Program Planning and Design

Con Edison did not develop an explicit program theory or logic model for the MFLI program. However, evaluators conducted three separate interviews with the MFLI program manager in developing the MFLI research plan and these interviews indicated that the MFLI program is a traditional resource acquisition program. The key objective of the program is to achieve its

¹² The official name of this manual is the “New York Standard Approach for Estimating Energy Savings from Energy Efficiency Measures in Multifamily Programs,” prepared for the New York Department of Public Service by New York Evaluation Advisory Contractor Team (Nick Hall, Pete Jacobs, Paul Horowitz, Rick Ridge, Gil Peach, Ralph Prah) and TecMarket Works. We are referring to this manual as the TRM for ease of reference and because this is the generic term for such manuals in many states.

therm savings goals. The program does not have any subsidiary goals such as customer education or market transformation.

The MFLI program manager also observed that his program differs from most other Con Edison energy efficiency program in that the entities that decide whether or not to implement energy efficiency projects are not Con Edison residential or nonresidential customers, but rather PHAs. Since the universe of program-eligible PHAs is very limited – essentially NYCHA and 10 PHAs in Westchester County – some of the program strategies implemented by other Con Edison energy efficiency programs are not be relevant for the MFLI program. For example, while other programs have to develop detailed marketing and outreach strategies to recruit customer participants, it was fairly easy for the MFLI program to make contact with all the eligible PHAs.

Another unique feature of the MFLI program is the involvement of HUD. For MFLI projects to be funded they must receive HUD approval, in addition to Con Edison approval. The HUD approval process introduces an additional complication in implementing projects that other Con Edison energy efficiency programs do not have.

Despite these differences, the MFLI program also shares many similarities with other Con Edison programs. For example, like commercial and industrial (C&I) customers, PHAs have capital improvement budgets that limit how much they can spend for building improvements in any given year. Therefore when considering energy efficiency projects, they face some of the same capital constraint barriers that C&I customers face. Furthermore HUD requirements that projects must meet certain payback criteria to receive funding are very similar to the project payback thresholds that many companies require.

Program Design Challenges and Opportunities

The MFLI program is very dependent on the ability and willingness of the PHAs to initiate energy efficiency projects. Some of the key researchable questions for the MFLI process evaluation included:

1. How do PHAs in the Con Edison service territory identify and implement energy efficiency projects?; and
2. What barriers do these PHAs face in identifying and implementing these energy efficiency projects?

The following subsections explore these questions.

How PHAs identify and implement energy efficiency programs

All eight PHAs that we interviewed reported that they initiate energy efficiency projects through their standard capital improvement process. All of them said that they conduct their capital improvement process within the framework of a five-year plan. HUD requires all PHAs to develop a five-year plan for future capital improvements that must be submitted to the agency for approval. Most PHAs said they must also have this plan approved by their board of directors. A few of them also said that they present the plan to their tenants for approval. One PHA, which had public housing that was owned by New York State rather than HUD, said that they had to follow a separate approval process for this.

The PHAs also reported that every year they must also develop a capital improvement budget and plan that is submitted to HUD for approval and allocation of funds. Although the projects in this annual plan are usually derived from the five-year plan, PHAs have some flexibility to re-prioritize or make other minor modifications to the projects listed in the five-year plan. The PHAs said these minor changes usually receive fairly quick approval from HUD.

In the in-depth interviews the PHA representatives said that when the PHAs develop these plans and prioritize their capital improvement projects, energy efficiency is only one of the factors they consider. For example, a number of them mentioned health and safety as being a more important consideration than energy efficiency. Building security – such as the installation of surveillance systems -- was another priority cited by a number of PHAs. The desire to minimize tenant complaints of any sort is also a key driver. For some projects, such as window replacement, energy savings is not the primary driver but is recognized as a secondary benefit. “We did window replacement in two of our senior buildings,” said one PHA representative. “We obviously knew once we replaced them, there ... was going to be an energy efficiency benefit also. But the real reason was that they were double-hung windows that were getting stuck or weren't staying up. They were old.”

The PHA representatives also noted that project cost considerations – such as the length of payback periods – also influence the decision-making. For example, a couple of the PHA representatives mentioned that they had photovoltaic projects on their “wish list” but these were never implemented because the payback periods were too long.

The number of people involved in choosing and prioritizing the projects varied with the size of the PHA. At minimum, it usually involved the Executive Director and the property managers or maintenance supervisors. Some PHAs also had a dedicated “director of modernization”

involved in the decision-making. Although the PHA boards of directors were responsible for approving the plans, they were usually not involved in developing the list of projects.

The PHA representatives mentioned a number of ways that they identify or prioritize energy efficiency projects, as well as other capital improvement projects. Some of these included:

- From HUD building audits required for the five-year plan;
- From building audits offered by the County of Westchester Weatherization Assistance Program (WAP);
- Based upon the age of the building and equipment;
- From maintenance staff reports;
- From tenant complaints and requests; and
- Based on the quantity of work orders (for repairs or associated problems) generated over the course of the year.

When asked what energy efficiency improvements they had identified in buildings, the PHA representatives cited energy efficiency boiler replacements and weatherization most frequently. Other energy efficiency measures they named included installing CFLs, other energy-efficient lighting measures, geothermal domestic hot water, new roofs, new windows, and faucet aerators.

Other energy efficiency program options for PHA besides the MFLI program

NYCHA and the Westchester PHAs have a number of energy efficiency programs available to them besides the MFLI program. Some PHAs are not participating in the MFLI program because they have found another energy efficiency program more appealing. Of course not all these alternative energy efficiency programs are competing with the MFLI program. For example, the Yonkers PHA used a combination of HUD funding and MFLI funding for its projects. We discuss the HUD programs and other energy efficiency programs below.

3.1.1.1.1 HUD Programs

There are two ways that PHAs can finance energy efficiency improvements through HUD. First, they can spend their allocation of HUD capital expenditure funds on such improvements. HUD makes \$2 billion per year available to PHAs for capital expenditure funds. These funds are allocated among some 3,000 PHAs, based on size and other factors (such as the age of their building stock). Second, PHAs can engage a performance contractor through HUD's Energy Performance Contractor (EPC) program (this is how the Yonkers PHA engaged Honeywell). Each of these options for energy efficiency improvements through HUD has its advantages and disadvantages.

One advantage of the capital expenditure is its relative simplicity. "It's very easy to do this kind of work," said one HUD official. "It effectively amounts to no more than someone having the idea, hiring the architect or engineer, depending on how they go about it, and doing the project. And there are no special approvals associated with that. On the EPC side, it's far more complicated than that." The capital expenditure option is often used for relatively low-cost and quick-payback projects, such as the installation of low-flow showerheads and faucet aerators. "We've been telling people for years to do these things," said a HUD official. "They work for [the PHAs] and for us. They get a short-term benefit, we get the long-term benefit, and it's easy for them to do."

One advantage of the EPC option is that it allows the implementation of larger scale energy efficiency projects or projects with longer payback periods. This is because with the EPC option most of the upfront capital needs of the energy efficiency project are provided by the performance contractor. The PHA is not relying on its HUD capital improvements budget, which must be shared with projects that address a wide range of PHA concerns besides energy efficiency, such as health and safety, security, etc.

One disadvantage of the EPC option is that the HUD approval process and general paperwork requirements are much more complicated and add delays. "The people who actually end up running public housing authorities don't necessarily have the technical skill set to understand exactly what's going on," said a HUD official. "And because we have such a complicated reimbursement process, when they start looking at this and trying to figure out what's going on and ... our set of rules for getting one of these approved and going through the process, I think it scares many of them."

A representative of the performance contractor Honeywell noted that if small PHAs do decide to pursue the EPC option, they face formidable transaction costs. “They cannot just go out and say: ‘Honeywell, we want you to be our performance contractor.’ They have to go through a competitive process in order to meet all the regulations of HUD and ... whatever else is out there,” he explained. “That process itself is time-consuming and so you typically end up hiring a consultant that does it. Well, then you need the money to pay the consultant and the smaller you get, the less you have. And the process is still pretty much the same, whether you’re a 2,000-unit housing authority or a 200-unit housing authority running the solicitation.”

HUD is considering ways to make the EPC option more “user-friendly” for the smaller PHAs especially. “I think that if HUD had documentation that showed people a general format for hiring an EPC contractor to make proposals to you, something like that would probably help us get our message out there,” said a HUD official.

Another disadvantage of the EPC option is that most performance contractors will not pursue energy efficiency projects unless they have a minimum number of buildings or tenant units to work with. “If you can't accumulate 300, 400 units in one place, the traditional contracting community that's involved in these energy programs can't see a way to have enough money there to make it worthwhile,” said a HUD official. This puts smaller PHAs at a disadvantage.

One of the PHA representatives also critiqued the HUD EPC program for being too restrictive on how energy savings can be credited between projects. “In essence HUD is not allowing cross-subsidization between projects,” he said. “You can’t use savings from development A to pay for energy improvements that may make sense in developments B and C. You actually have to look at everything on a unique finite viewpoint and that is difficult and I think it’s problematic. It takes out some of this potential creativity that should be fostered in the marketplace.”

3.1.1.1.2 Other Energy Efficiency Programs and Funding Sources

Besides the HUD programs and the MFLI program, there are some other energy efficiency programs and funding sources available to NYCHA and the Westchester PHAs. These included:

- ARRA funding for energy and other capital improvements,

- NYSERDA's Multifamily Performance Program, and
- Local weatherization programs.

Some PHAs received ARRA funds. In addition to the NYCHA receipt of ~\$420 million in ARRA funds, three of the Westchester PHAs that we interviewed – including Yonkers -- reported receiving ARRA funds. In addition Con Edison staff mentioned that a fourth Westchester PHA, which we did not interview, also received a stimulus grant.

While these PHAs did spend some of their ARRA funds on energy efficiency projects, they also spent them on non-energy-related capital improvements, such as repaving parking lots, replacing flooring, installing surveillance systems, and upgrading elevators. One PHA representative described the ARRA application and approval process as being much more “cumbersome” than the HUD process because they were less familiar with it. “This [ARRA] money was a new operational procedure that we had to set up with new rules, new regulations, new paperwork, new forms,” he said. “Whereas the annual HUD grant money was standard ... boilerplate stuff.”

The evaluators were interested in knowing whether this flood of ARRA funds might have overtaxed HUD staff and helped explain the long delays in HUD approval of MFLI and other energy efficiency projects. HUD approval is required for the ARRA-funded projects that are being implemented in public housing and which also often use a mix of ARRA funds and HUD grants.

One HUD official we interviewed did not think the ARRA funding was a contributing factor to the delays in MFLI project approval. “All the projects were approved for the stimulus ... within one year of the award of the ARRA money, so effectively by March 17, 2010 all of that work was set,” he said. “...It's not something that would prevent us from looking at other energy measures from NYCHA. I mean these are grants at different stages of implementation. They're not going to ... interfere with each other as far as our workload goes.” However, the MFLI program manager questioned whether this was true during the time when all the ARRA funding was available.

Another program option for the PHAs was NYSERDA's Multifamily Performance Program. One of the Westchester PHAs had the choice of going with the NYSERDA program or the MFLI program for a boiler replacement project. The PHA chose to go with the NYSERDA program.

The PHA representative reported choosing the NYSEERDA because it covered the whole cost of the boiler replacement, while the MFLI program would have only covered only the incremental cost of the energy-efficient boiler.

A couple of the PHAs also mentioned receiving funds from weatherization programs that were run either by the County of Westchester or by local community action agencies. The PHA representatives said that they became familiar with these weatherization programs when these programs completed HUD-mandated energy audits of their buildings. The energy efficiency projects they ended up doing with these programs were opportunities that these audits had identified. Con Edison's Multifamily Electric and Gas (MFE&G) program does offer free surveys as a tool for participant recruitment, but the MFLI program does not offer free surveys.

Barriers to Energy Efficiency Implementation

While the energy efficiency programs we mentioned in the previous section sometimes competed with the MFLI program, sometimes they likely increased participation in the MFLI program through the bundling of financial incentives from both programs to make a project feasible. Regardless as to whether they competed with or complemented the MFLI program, these programs should not be considered barriers to energy efficiency implementation *per se*. Yet our interviews with various program actors, as well as with nonparticipating PHAs, revealed a number of significant barriers to energy efficiency implementation that these PHAs face.

A key overriding barrier to energy efficiency implementation, regardless of PHA size or efficiency funding source, is HUD treatment of operating costs (including utilities). HUD bases the PHA's budget for operating costs on a three-year historical average. Since utility costs are basically a "pass through" cost to HUD, there is limited incentive for PHAs to reduce them. "Part of [the reason why PHAs do not focus more on energy efficiency] is this historic perspective that energy costs are a pass-through," said one PHA representative. "Someone else pays the bills ... if the cost is X, in essence we get reimbursed X ... so that's a pass through."

If the PHA improves the energy efficiency of the building, it will realize the associated savings for only a short period. A PHA that reduces its utility bills through energy efficiency improvements would have lower operating costs that would be reflected in a reduced operating cost allocation from HUD. "Effectively, the benefits of those savings are taken away over a

three-year period,” a HUD official explained. “So as an energy-saving measure ages, it kind of gets woven into a baseline ... and you don't reap the full long-term benefits for that measure.”

The PHAs face other barriers to implementing energy efficiency projects. Table 3-3 below lists these barriers and groups them into categories.

**Table 3-3:
Barriers to Energy Efficiency Implementation
for PHAs**

Barriers to ...	Barriers
Participation in HUD energy efficiency programs	<ul style="list-style-type: none"> • The HUD Energy Performance Contractor (EPC) program has very complicated requirements for participation. • Smaller PHAs have difficulty attracting performance contractors. • HUD doesn't allow cross-subsidization of energy savings across different projects.
Energy efficiency implementation caused by HUD rules	<ul style="list-style-type: none"> • HUD compensates PHAs for utility costs using a three-year average, so PHAs will realize the benefits of energy efficiency only temporarily. • PHAs pass through their energy costs to HUD.
Energy efficiency implementation, in general	<ul style="list-style-type: none"> • Energy efficiency projects face multi-layered approval cycles. • Tenants do not pay their own energy bills. • PHA executive directors place higher priority on capital improvements that reduce tenant complaints or improve building appearance. • For the PHAs there are limited availability of funds outside of HUD sources.
Energy efficiency implementation more common in smaller PHAs	<ul style="list-style-type: none"> • Smaller PHAs: <ul style="list-style-type: none"> ○ Have no economies of scale for energy savings; ○ Have insufficient upfront capital; ○ Lack necessary technical knowledge; ○ Have insufficient time or sophistication to consider larger energy efficiency projects; and ○ Have difficulty attracting performance contractors
Energy efficiency implementation more common in larger PHAs	<ul style="list-style-type: none"> • Intra-organizational split incentives within larger PHAs are exacerbated by "silo" problems. • The larger PHAs need to improve their energy usage benchmarking capability.
MFLI eligibility	<ul style="list-style-type: none"> • The White Plains PHA (and perhaps others) are primarily on interruptible natural gas rates, which currently makes them ineligible

The following bullet points provide some explanation and elaboration for the barriers listed above:

- *PHAs pass through their energy costs to HUD:* One PHA representative said that many PHAs do not focus much attention on energy efficiency because their energy costs are currently a “pass through” expense that HUD will cover. “Part of [the reason why PHAs do not focus more on energy efficiency] is this historic perspective that energy costs are a pass-through,” he said. “Someone else pays the bills ... if the cost is X amount, in essence we get reimbursed X ... so that’s a pass through.”
- *Energy efficiency projects face multi-layered approval cycles:* “Usually, [to get an energy efficiency project approved by a PHA] first you have to get past the executive director at the housing authority and get buy-in from him and then he's got to get buy-in from his board,” said a HUD official. “Having to sell it twice does make it a little harder. I could look at that as a barrier to implementation.”
- *Tenants do not pay their own energy bills:* “When the tenants aren't effectively paying their own energy bill, they're not complaining about [the inefficiency of the energy equipment],” a HUD official noted. “You're back to a subsidy mechanism that doesn't necessarily lend itself to saving money on this stuff the way the private sector has an incentive to save.” A couple of the PHA representatives also cited this as a barrier. “If you have to pay your own bill, then you become responsible for the amount of consumption that you have and if you don’t have to pay your bill and somebody else is paying it for you, then why be responsible?,” asked one of the PHA representatives.
- *PHA executive directors place higher priority on capital improvements that reduce tenant complaints or improve building appearance:* “One of the major goals [of the PHA Executive Director] is not to be criticized,” said a HUD official. “Well, what do you get criticized for? Well, issues that affect the quality of life of the residents and cause the residents to complain and if the place doesn't look sharp on the outside to the board [of directors]. ... There's a kind of willingness to focus on external appearances and things that ... keep people from complaining.”
- *Limited availability of funds outside of HUD sources:* One PHA representative said that “funding would be the biggest barrier” to the implementation of energy efficiency projects. He noted that his PHA does look for “outside money” such as from NYSERDA or city

officials, but these alternate funding sources tend to be much smaller in magnitude compared to the HUD funding.

- *Smaller PHAs lack necessary economies of scale for energy savings:* Having fewer multifamily buildings and tenant units not only makes it more difficult for smaller PHAs to attract energy performance contractors, it also discourages them from initiating projects on their own due to the smaller value of their potential energy savings. When asked to explain why the Yonkers Housing Authority was more proactive than other Westchester PHAs, one respondent pointed to the larger value of Yonkers' potential energy savings. "Even if you have a \$10 million-a-year, \$15 million-a-year budget, a \$700,000 savings on effectively one item you're buying is huge," he said. "There's some things that just make it much more reasonable for larger authorities to look at ... Just the absolute dollars saved is so much bigger."
- *Smaller PHAs lack sufficient upfront capital:* One respondent pointed out that the "financial piece" was one of the main reasons why smaller PHAs do not participate in energy efficiency programs such as Con Edison's MFLI program. "In order to get the benefit of [Con Edison] incentive to replace the boiler ... maybe it's \$150,000 to replace the boilers," he said. "And so the incremental cost of the boiler itself is tiny in all of that. So if they don't have \$150,000, they can't get the \$7,000 from [Con Edison]."
- *Smaller PHAs lack the resources (time):* "[A PHA project manager] is a great energy guy, he's very knowledgeable, but he's got a job other than energy ... all modernization is up to him," a respondent said. "So he doesn't do calculations like this day to day. ... I had a team of like seven different engineers working on this [specific] project at times ... in order to get to the calculations we needed ... They [small PHA] don't have the resources to do that."
- *Smaller PHAs may lack the technical expertise to consider larger energy efficiency projects:* "I just remember some of the people that came into the [Program] meeting, where you have some people that are kind of real business people and then others are, it's kind of like Joey the Mechanic," said one respondent. "And Joey's just trying to keep things working, you know what I mean, keep the building heated, if he needs to make emergency repairs. He's not thinking outside the box, and there's not a kind of a real strategy about looking at their portfolio. ... That kind of sophistication I don't think a lot of them have."

- *PHAs have intra-organizational split incentives which are exacerbated by “silo” problems:* “This is a large agency so there is what’s called ‘silo management’,” said a NYCHA representative. “So people do well when their own parts of the organization are involved, but there may not be much crossover or interaction.” He said that these silo problems can exacerbate “split incentives” within the organization. “The people [within NYCHA] who build [a multifamily structure] don’t necessarily run it and pay those energy bills associated with it, so they have a completely different viewpoint of things,” he explained.
- *PHAs need to improve their energy usage benchmarking capability:* Two of the NYCHA representatives said that their energy department is currently trying to improve, for benchmarking purposes, their database of energy usage data and other relevant information. This enhanced database will make the data from their Energy Management Systems more accessible and user-friendly while also allowing them to compare the energy usage of buildings across a variety of variables such as building size, building age, equipment age, maintenance history, who is managing the building, etc.
- *Ineligibility due to rates – use of interruptible natural gas:* At least one PHA was using interruptible natural gas in its buildings, which made them ineligible for the MFLI program.¹³ “This removed a significant portion of the [energy efficiency] opportunity,” he explained.

¹³ The New York Public Service Commission had ruled that only customers who use firm gas would be eligible for the program since only firm gas customers pay the Systems Benefit Charge which funds the MFLI and other energy efficiency programs.

3.1.2 INFRASTRUCTURE DEVELOPMENT

In this section, we summarize our brief examination of the MFLI program tracking databases. As we noted in the MFLI program evaluation plan, “because the MFLI program has a small number of projects, it requires a less sophisticated project tracking system than other Con Edison Energy Efficiency programs.” For this reason we did not believe that the program tracking database merited as close an examination as we gave to the MFEG program tracking databases, for example.

Yet our brief review of the MFLI program tracking data did raise some issues of concern. The program tracks data for the MFLI program in Excel spreadsheets, one per public housing authority. For a program of this size a large relational database is unnecessary. The current structure can be used effectively both for program management and for impact evaluation purposes. Yet the spreadsheets lack standardization, transparency and documentation. In addition the savings documented in the tracking spreadsheets do not match the savings reported in the December 2011 scorecard report where the evaluators would expect it to.¹⁴

On March 28, 2012, in response to document request #39, the evaluators received three spreadsheets the program uses in lieu of a formal program tracking database. To comply with state data confidentiality rules, Con Edison redacted information that might identify specific customers prior to delivery to DNV KEMA. The three spreadsheets were labeled:

1. “MFLI Project TRC by Measure 2012_FinalGE_REV2-redacted.xlsx”
2. “MHACY ConEd Analysis 2011 v23 2012-01-03-redacted.xlsx”
3. “Hommocks_Savings Analysis_1 23 12 redacted.xlsx”

Spreadsheet 1 appeared to be a version of the same data in spreadsheet 2, but with slight alterations. Both contained information necessary for TRC calculations for the Yonkers projects. Spreadsheet 3 included data for the Town of Mamaroneck boiler project that was installed in December 2011.

Each of the spreadsheets includes measure level savings, estimated incremental costs, rebate amounts, measure lives and the TRC. Measure costs and measure savings used for the TRC

¹⁴ The Monthly Scorecard is a monthly progress report required by the New York DPS.

were tracked in separately labeled fields as well. Regarding data quality and spreadsheet transparency, DNV KEMA found the following in spreadsheets 1 and 2:

- *Complete quantitative data:* The program tracked data for costs, rebates, savings and measure lives and information required for savings calculations.
- *Missing information:* Twelve of thirteen were missing account numbers and 12 of 13 sites were missing addresses. In one case a comment indicated that the account number and address was missing from the application. In the other eleven cases DNV KEMA assumed that the information had been redacted.
- *Opaque ways of presenting key information:* Several records had highlighting and/or comments embedded in the cells indicating that the measures were ineligible (either due to a TRC ratio below one or for another reason). We believe that such key information should be presented in a more transparent and accessible fashion.
- *Savings discrepancies:* There were three types of saving discrepancies that we found:
 1. The difference in total savings between spreadsheet 1 and spreadsheet 2 is that the savings for one measure were deleted from the summary section of spreadsheet 1, but remained in spreadsheet 2.
 2. The savings from measures that were ineligible for incentives remained in the total in spreadsheet 2, while spreadsheet 1 had two totals, one with and one without ineligible measures.
 3. Measure savings for TRC was calculated from gross savings differently for each measure. In some cases the same factor was used on both savings and costs, but in other cases only the savings were reduced.
- *Other issues:*
 - The spreadsheets contained actual incremental costs (from Honeywell), but the TRC calculations did not appear to use them.
 - The spreadsheets did not appear to have a place where contact information could be recorded.

In spreadsheet 3 the evaluators found:

- The format of the spreadsheet is somewhat different from spreadsheets 1 and 2.
- A likely formula error - there were nine boilers, but the individual boiler savings were the total savings divided by ten and yet the incremental costs were divided by nine.
- No actual incremental costs were recorded
- There is a cell for contact information

While structuring the tracking for the program around individual project spreadsheets is appropriate for a program of this size, DNV KEMA had several recommendations for improving the spreadsheets. These are discussed in the Executive Summary as well as the Recommendations section of this report.

3.1.3 MARKETING APPROACHES

Because the only entities that are eligible for the MFLI program are public housing authorities in the New York City and Westchester County area, in theory the program should not need to do much marketing. In August 2009, soon after the program was approved, the MFLI program manager gave a presentation describing the program to the Hudson Valley Association of Housing Authorities. Con Edison reported that since then it has had regular meetings and discussion with the eligible entities. For example, in early 2012 it did another presentation to the Hudson Valley Association. However, as discussed below, some PHA representatives reported that Con Edison's communications concerning the program could have been more frequent. For the whole 2009-2011 period, the MFLI program spent a little over six percent of its budget on marketing.

Marketing and Outreach Findings from the Participant and Nonparticipant Interviews

DNV KEMA asked both participating and nonparticipating public housing authorities whether they were aware of the Con Edison Multifamily Low Income program. Four of the five (80%)

nonparticipating PHAs said that they were aware of the program.¹⁵ Four of the five interviewees (80%) with participating PHAs also said they were aware of the program.¹⁶

Some program-aware PHA representatives acknowledged that their knowledge of the program was limited. Two of them had trouble distinguishing the MFLI program from other Con Edison energy efficiency programs. One of them wondered how the MFLI program might differ from the County of Westchester weatherization program that they were currently participating in. One of them mistakenly thought that the MFLI program was only available for Section 8 housing, and thus concluded that his PHA did not qualify for the program. One PHA representative attributed his lack of knowledge of the program to Con Edison not focusing much attention on his small PHA. “Con Ed and NYPA [the New York Power Authority], they usually go for the big housing authorities,” he said. “We’re a very small housing authority, so we get kicked out of a lot of things.”

We asked the program-aware PHA representatives how they heard of the program. They cited a variety of sources including calls from the MFLI program manager, calls or emails from other Con Edison staff, the August 2009 Con Edison presentation of the MFLI program mentioned previously, and bulletins or listings from the HUD website. We also asked other program actors, such as HUD and Honeywell, how they heard about the program. They both heard about it from the Yonkers PHA.

3.1.4 PROGRAM DELIVERY

The Project Approval Process

The MFLI program will only approve projects and energy-efficient measures submitted by eligible PHAs that meet Total Resource Cost (TRC) criteria. However, the program also reserves the right to reject funding for projects which the program considers to have a high risk of free ridership.

¹⁵ The MFLI Program Manager provided contact names for the interviews.

¹⁶ One of the three NYCHA representatives we interviewed was not aware of the program.

Free Ridership Considerations

The ICF staff said that Con Edison told them that when evaluating projects they should consider not only expected gross energy savings but also the possibility of free ridership. It was this latter consideration that influenced the MFLI program's decision to not fund some of the early NYCHA projects. One ICF representative explained:

Con Ed took a very, very conservative approach in view of whether a project was influenced or could be influenced by their funding. And many of the NYCHA projects that ... were going forward, Con Ed didn't feel like they could justifiably take credit for those projects, even if they'd put money towards them, because they were already going to happen. So they made a concerted effort to make sure that ... the conversations that they were having with NYCHA during the course of the year [2010] were identifying upcoming projects that would fall under the program timeline. And [Con Edison wanted to] really start the discussions early with those so that they could demonstrate that they actually had an influence on those projects and weren't taking advantage of free ridership.

Besides avoiding potential free ridership, the ICF staff reported that one advantage of Con Edison's reluctance to become involved in projects that were too far along was to give ICF staff more time to prepare the energy savings analysis. "Generally they wouldn't give us a project that was already done because of the free ridership concern," said one ICF representative. "So ... we would get ample time before the project was moving forward and being implemented so that we could evaluate it and come up with a savings estimate."

However, while the program is to be commended for avoiding the NYCHA projects because of free ridership concerns, we did come across some evidence that the projects that were installed through the Town of Mamaroneck and Yonkers PHAs may have some free ridership issues. This evidence included:

- Town of Mamaroneck PHA:
 - *Similar installations had been made in the past in the same building complex without the assistance of the MFLI program:* The nine dwelling unit boilers that the Town of Mamaroneck installed through the MFLI program in December 2011 were just the latest stage of a multi-year installation of the same boiler types that the town had begun in the same building complex in 2009 long before their involvement in the

- MFLI program. The PHA representative explained that they chose to install the same model of high efficiency boilers in all their units because it would simplify future maintenance work and they might be able to get some sort of volume discount.
- *The PHA had strong motivations to install the efficient equipment outside the MFLI program's influence.* The PHA representative mentioned a number of reasons for installing the energy-efficient boilers including:
 - *The PHA had an existing policy of trying to reduce tenant energy costs:* "Like any apartment complex if you have an inexpensive rent, your utilities are very high, because you've got no insulation or anything. You're just putting the burden on the tenant," said the PHA representative. "...I think it's our responsibility to try to mitigate the cost to the tenant, and that's what we always have done." In addition to the installation of the high efficiency boilers, the PHA had also recently installed new insulation and CFLs in the complex.
 - *An enviro-friendly board of directors:* The PHA representative said that the choice to go with the high efficiency boilers, including those that had been installed before becoming involved in the MFLI program, had been influenced by the fact that the board of directors was "very green." For example, the chair of the PHA's board of directors owned a company that provides energy efficiency services to low-income customers.
 - *The previous boilers were getting expensive to repair:* "We had issues with the [boilers] prior to [the new energy efficient boilers], that's why we started changing them," said the PHA representative. "They were just getting very expensive to repair."
 - The Yonkers PHA:
 - *Before becoming involved in the MFLI program, the Yonkers PHA had already conducted energy audits and had signed an agreement with an energy performance contractor:* Our in-depth interviews with the Yonkers PHA representative revealed that before becoming involved with the MFLI program, the Yonkers PHA had already enlisted an engineering consulting firm to identify energy efficiency opportunities in their

buildings. Before becoming involved with the program they also had issued an RFP for an energy performance contractor and had selected Honeywell out of four candidates. “And [the MFLI program manager] put on a presentation with some other people about the opportunities available under the MFLI Program. And boy, I was so far along at that point and had Honeywell on board,” said the Yonkers PHA representative. “...when I found out about Con Edison, we were so far along and we were so far ahead of every other housing authority.” Yet the Honeywell representative reported that while Yonkers had selected them as their performance contractor before becoming aware of the MFLI program, Honeywell’s development of its list of energy-efficiency measures to implement was occurring concurrently with Yonkers’ involvement with the MFLI program.

- *The Yonkers PHA considered itself “ahead of the curve” compared to its fellow Westchester PHAs in terms of its sophistication in pursuing opportunities to save money on utility costs:* “We even beat out the New York City Housing Authority, we’re the only ones eligible for any [MFLI program] money this year,” said the Yonkers PHA representative. “I just started doing it before anybody. “... We were just ... that much further along. I obviously was always looking for ways to save the housing authority money. I was bidding natural gas contracts four, five years ago before anybody else did it. I always kept quite informed.”
- *The MFLI program incentives only paid for a small percentage of the total project costs:* The Yonkers PHA representative estimated that the total cost of the projects they had agreed to do with Honeywell amounted to nearly \$20 million. He also said that Con Edison had estimated the value of the MFLI program incentives to be \$1 - \$1.5 million or a little over 5 percent of the total project costs. The Yonkers PHA representative also said that before hearing about the MFLI program they had planned to finance the projects through the energy performance contract that Honeywell was offering.
- *Honeywell did not include the value of the MFLI incentives in its own cost effectiveness calculations:* The Honeywell representative that we interviewed said that when calculating which energy-efficient measures they deemed cost-effective for the purposes of their energy performance contract with the Yonkers PHA, they did not

include the value of the MFLI program incentives in their calculations. “We can’t guarantee incentives because they’d never come in on time, and sometimes they disappear,” he explained. This meant that many of the energy efficiency measures that Yonkers installed were determined to be cost effective even without the MFLI program funds. Of course, Yonkers always had the option to go ahead with some marginal measures under the assumption that the MFLI program incentives would come through. However, in such cases if the program incentives did not come through, Yonkers and not Honeywell would shoulder the risk.

It is important to note that since this was a process evaluation and not an impact evaluation, we did not ask questions that were designed to come up with an estimate of free ridership. So the information in this section is only suggestive and any estimate of free ridership should be based on a series of questions that explore all the possible avenues of program influence including influences on the efficiency of the installed measures, on the timing of the projects and the quantity of the efficient measures installed.

Our in-depth interviews also uncovered some evidence that the MFLI program in particular, or Con Edison in general, helped to move the projects forward. This evidence included:

- The Yonkers PHA representative indicated that the MFLI program might have influenced the timing of the Yonkers projects. “I believe if you were to figure out the total grants that we would be eligible for from Con Edison could it be \$1 million, maybe \$1.5 million. And that will help us to really get the project going,” he told us in a 2010 interview.
- The Yonkers PHA contributed \$500,000 of its own capital to the energy efficiency projects on the assumption that the MFLI program incentives would be forthcoming. If the MFLI program incentives had not been available, it was possible that Yonkers might not have contributed this capital.
- The PHA representative claimed that Con Edison helped them with some gas pressure problems. “One of the problems in the older areas of Yonkers is ... the gas pressure isn't high enough in order to run this new high efficiency equipment,” he explained. “But Con Edison is helping us to increase the gas pressure in these areas so that we can run this new high tech stuff that will, instead of running at 70 percent efficiency, we should be running upwards into the 97 percent efficiency range.”

- Con Edison's Oil-to-Gas Conversion program made some buildings eligible for the energy-efficient gas equipment that otherwise would not have been.

The Savings Estimation Process

ICF International was primarily responsible for estimating energy savings for the projects and measures that the PHAs proposed through the program. The ICF staff reported that after becoming familiar with the MFLI program requirements, they began developing spreadsheets that would allow them to estimate energy savings (per the TRM) for the types of energy efficiency measures they expected to be implemented through the program. The spreadsheets were designed to provide energy savings estimate that Con Edison could then feed into its own screening tools for estimating the cost effectiveness (based on the Total Resource Cost (TRC) test) of proposed measures or projects. The MFLI program could then decide whether to offer financial incentives for a given energy efficiency measure or project based on these TRC screenings.

The ICF staff said that their energy savings calculations were mostly based on engineering algorithms from the TRM. In some cases they had to request additional information about the planned energy efficiency measures from the housing authorities and their implementation contractors (e.g. Honeywell). Examples of such additional information might include "cut sheets" containing more detailed specifications for the boilers that the housing authorities expected to install. Other key information might include the expected hours of operation of the new equipment.

The ICF staff said that initially these information requests were only made to the housing authorities and contractors through the MFLI program manager. Yet over time Con Edison allowed the ICF staff to make their requests directly to the housing authorities and their contractors, as long as the MFLI program manager was included in the email exchanges. When there were conference calls between ICF and the housing authorities, the MFLI program manager or some other Con Edison representative usually participated.

The Honeywell representative thought that the initial communications approach in which Con Edison was the intermediary in communications between ICF and Honeywell was not ideal. "ICF seemed to know what they had to do, but it was kind of like things went from me through

ConEd to ICF back to ConEd,” he said. “And so rather than facilitating, you know, a common method and approach, it was kind of bounced back and forth through Con Ed.”

The Honeywell representative indicated that Con Edison should have played a more active role in managing the communications to insure that ICF and Honeywell were clear about action items. “When we get something that’s a bit more complex like that, we schedule two-week calls, and run an action register,” he said. He explained that in such calls questions such as: ‘Whose job is it?’ and ‘When are you going to do it?’ are decided. In contrast he described the communications between ICF and Honeywell that Con Edison was moderating “was a little bit more free flowing” and should have been more structured and specific about action items and responsibilities and the schedule. Since the Yonkers PHA was the most active program participant, the ICF staff estimated that 90 percent of their communications with housing authorities were with Yonkers, with the remainder of communications being with NYCHA.

In response to these comments from Honeywell, a Con Edison representative said that Con Edison was active in coordinating the communications throughout the early and middle stages of the project. However, towards the end of the project it did allow ICF and Honeywell to deal with each other directly so that they could “tie up all the loose ends.”

The evaluators asked the ICF staff whether they sent the housing authorities or their contractors a standardized list of “must have” information needed for energy savings calculations. The ICF representatives said they did not but it was more of an “ad hoc” process. “Basically we would take what we were given,” said one ICF representative. “We would plow through it and look for the gaps, and request additional information as needed.” As discussed in the Program Satisfaction section of this report, Honeywell indicated it would have benefitted all parties if these measure information needs were more clearly spelled out ahead of time.

After the installation of the Yonkers Phase 1 projects in 2010 the ICF staff reported that the housing authorities and their contractors were generally pretty good about supplying the requested information in a timely manner. In some cases the requested information was provided that same day and a week was the longest they had to wait.

However, after the installation of the Yonkers Phase 2 projects in 2011 the ICF representatives gave a less positive assessment of Honeywell’s cooperativeness in providing the information needed for verifying savings. “They were a little bit [annoyed] about having to answer all the

questions, and the guy that we were dealing with directly kept passing stuff on to other people,” one ICF representative reported. “And it just took a long time to get what we needed out of them. I think the housing authority people were a little bit frustrated also.”

The ICF representative theorized that Honeywell’s reduced cooperativeness after the installation of the Phase 2 projects was related to the fact these installations marked the end of Honeywell’s primary obligations to the Yonkers PHA. “I think at that point, they had completed the work that was required by the housing authority,” he said. “My impression was that they had already been paid, and they had no incentive to move any faster than they were moving.”

The Honeywell representative had a different recollection of the energy savings estimation process for the Phase 2 projects. “Well, by Phase 2 the calculations had pretty much all been tested, so we came pretty close [to the ICF savings estimate],” he said. “By that time, we were using ICF’s spreadsheet that had already been through one round and there were no significant changes there.” However, the Honeywell representative also acknowledged that the ICF was sending them a lot of questions in Phase 2 just as they had in Phase 1. So it may have been the case that while Honeywell and ICF were coming to agreement on how to calculate energy savings for Phase 2, Honeywell was still not supplying all the information needed for the TRM calculations. As discussed elsewhere in the report, some of this missing information included information about building age and equipment operating parameters.

The evaluators asked the ICF staff if they were asked to estimate energy savings for multiple projects how they would prioritize their analyses. “[The MFLI program manager] gives us his prioritization of what’s important, and we adjust our schedules accordingly,” said an ICF representative. “Absent that, we generally take them on a first come, first served basis.”

Both ICF and Honeywell expressed some dissatisfaction with the completeness of the New York Technical Reference Manual (TRM) in providing guidance for calculating energy savings for the energy-efficient measures installed through the Yonkers projects. For example, one of the major measures in the Yonkers projects was the steam trap and the manual provided no guidance on how to calculate the energy savings for this measure. Honeywell also claimed that when they were just replacing burners in boiler systems, the manual was unclear on how to calculate savings for these measures.

ICF reported that the savings estimates that Honeywell provided for the Yonkers PHA projects did not use the engineering algorithms prescribed by the TRM. “Honeywell's calculations in their materials were all based on their own practices and not on the tech manual, so for all intents and purposes, they were not particularly useful,” an ICF representative complained. Therefore ICF had to recalculate all these savings estimates and develop documents that showed the differences between the savings estimates based on the TRM algorithms and the savings estimates that Honeywell had calculated based on its own methods.

In the in-depth interviews, the Honeywell representative indicated that they had preferred to use their own savings estimation methods because they were comfortable using these for the purposes of the performance contract. “You know, we originally proposed what we had proposed to the customer and were willing to guarantee to the customer. Because they were all tested ... they were the calculations we've been using for 20 years,” he explained. However, in cases where measures qualified for the MFLI rebates and there was a clear energy savings calculation method in the TRM, Honeywell agreed to use the TRM method. For measures such as steam traps where there was no recommended calculation in the TRM, they came to an agreement with ICF on a savings calculation methodology which was developed by Con Edison.

In the case of the Yonkers PHA projects, ICF's savings estimation process along with Con Edison's TRC calculations caused the program to reject some of the energy-efficient measures that Honeywell had originally proposed. These measures included windows, faucet aerators, low-flow showerheads, attic insulation for some of the buildings, and pipe insulation.

Yet because the Yonkers PHA and Honeywell had their own cost-effectiveness criteria, some of these measures were installed anyway without MFLI funding. For example, Honeywell ended up installing some of new windows even though the MFLI program had refused to fund these because they still passed Honeywell's cost effectiveness criteria. Similarly the Yonkers PHA had many of the hot water measures such as faucet aerators and low-flow showerheads installed because even though they did not provide enough energy savings to pass the MFLI program tests, they produced water savings for Yonkers.

The limits of ICF's project review responsibilities

The ICF staff said that they were not involved in some aspects of the project review process. For example, Con Edison alone was responsible for determining whether a given building or customer was eligible for the MFLI program.

The ICF representatives were very insistent that the decision whether to accept or reject a project was Con Edison's alone and they only provided the energy savings estimates that fed into the cost effectiveness tool. However, Con Edison did keep them informed as to whether a given project had been approved or rejected. They noted that sometimes a project that had initially been rejected on cost effectiveness grounds might be reanalyzed because the housing authority or their implementation contractor had proposed a different type of technology for the project. An ICF representative said that in such cases they would "update our analysis based upon whatever changes in the input occurred, and then we'd just provide that information back to Con Ed."

The HUD approval process

After MFLI projects received approval from Con Edison, they required HUD approval. Although the HUD approval process is not part of the MFLI program, no MFLI energy efficiency project could move forward without HUD's approval for two reasons. First, HUD approves all capital improvements in public housing, and second, HUD is providing a large share of project funding.

The HUD approval process did cause significant delays in the installation of MFLI projects. For example, many of the Yonkers Phase 2 project measures could not be installed in 2010 because these projects did not receive HUD approval until September 2010. This did not allow enough time to install measures before boilers were turned on for the heating season (they could not be installed while the boilers were operating). One respondent noted that these long delays increased the risk profiles for these projects. "If [a project] goes past a certain date ... it means that interest rates can go up, labor rates can go up," he said. "All of those things are concerns when you can't predict when a review is going to be complete."

The Yonkers PHA representative gave their contractor Honeywell a lot of credit for helping them get the HUD approval. HUD would send numerous questions about the projects to the Yonkers PHA and the PHA would rely on the Honeywell representative to gather the necessary information.

We asked the interviewees who were involved in the submission of MFLI projects to HUD for approval to rate their satisfaction with this HUD approval process.¹⁷ Only two respondents were willing to give satisfaction ratings. Once again they used a five-point satisfaction scale where five meant “very satisfied” and one meant “very dissatisfied.” The ratings were relatively low – a 3.5, and a 2.

The main reason for these lower satisfaction levels was the length of time it took for HUD to approve the projects submitted. One set of projects took nine months for HUD approval; another set took only three months. This still delayed the installation of many measures until 2011.

Two respondents thought the delays were due mostly to staffing turnover and shortages within HUD. One respondent said “I just don’t think [the HUD office in Buffalo] had enough personnel in order to review the documents, so that set us back a bit,” The other echoed this sentiment. “They’re understaffed.” A third respondent noted that: “On a given approval you could have staffing issues, related to the fact that there are only so many engineers in the office, and you need someone with a certain skill set to be looking at this.”

One respondent identified project complexity as a potential source of HUD delays. Some projects required multiple HUD staff members and months to review the details. The projects had assumptions and pushed the boundaries of HUD rules in size and scope. These required HUD contact with staff in Washington to address broader policy issues before they could provide approval. The process evaluation team has not assessed how complex or novel the projects were.

Some of the interviewees also claimed that the HUD approval process was not the only source of delay for implementing the Yonkers Phase 2 projects. They pointed to Con Edison’s need to convert some of the buildings from oil to gas as also contributing to the delays.

The measure installation process

Both the Yonkers PHA and the Town of Mamaroneck used outside contractors to install most of the energy-efficient measures that were funded through the MFLI program. In the case of the

¹⁷ We did not include these satisfaction rejections in the Program Satisfaction section of this report because while the HUD approval process is important for the MFLI program, it is not a program process *per se*.

Yonkers PHA, Honeywell chose the installation subcontractors. The Honeywell representative described the process:

We often use ... the same contractors nationally for some of the energy conservation measures, so they're contractors we have experience with. And we try to use local contractors, minority contractors, ones that are familiar with the housing authority, assuming that they can meet Honeywell's risk requirements, insurance requirements, and can demonstrate experience ... meet all the safety requirements, financial requirements, etc. Typically ... for a big boiler project, we'll probably invite six or seven mechanicals to bid.

The Honeywell representative said that his company prefers to select the installation contractors because they bear the risk of nonperformance. "It comes down to the risk is on Honeywell. We have to deliver the project on budget, on time, and guarantee it for 20 years," he explained. "...If the customer wants us to use a contractor that we don't approve of, then our price goes up, the guarantee goes down, and they get less of a bundle. So they pretty much give us the option to manage that on our own."

The Honeywell representative said that the Yonkers PHA did provide the names of some installation contractors that they had worked with and Honeywell added them to the bid invitation list. Because their boiler project was much smaller, the Town of Mamaroneck only sought bids from three mechanical contractors.

We asked the participating PHAs and their contractors if there were any difficulties in getting the energy efficient measures installed. The Honeywell representative reported that the Yonkers PHA had some difficulties keeping up with all their demands to getting access to the buildings. "We very quickly outstripped the ability of [the key Yonkers PHA liaison] and the maintenance people to keep up with us when we needed access to buildings," he said. "Because today we get an order, and 60 days from now we have 5 contractors running around installing all these measures in parallel." The Yonkers PHA representative also mentioned that when they removed some of the boilers they discovered some asbestos underneath the pads that had to be removed.

The conversion of some of the Yonkers PHA buildings from oil to gas also was a very involved process. "I had to go to city council meetings and speak before the members of the city council and the mayor to request permission to dig up the streets so that we could run larger gas lines

and knock holes in buildings,” said a Yonkers PHA representative. “And then the way that Con Edison works is in order for the price to remain low on [the gas], we basically can't run a new service and what we have to do is cut into the old service in the building and then that involves bringing trucks in with bottled gas and stuff like that.” The Honeywell representative said that this conversion process contributed to project delays, but they tried to work around them by installing the boilers in the summertime and having them run off oil for a while and then doing the steam traps later in the year.

Yet some aspects of the Yonkers installation process went better than expected. For example, one potential complication for the Yonkers projects was that the replacement of the steam traps required entry into all the tenant units. However, the Honeywell representative indicated that this went relatively smoothly.

The housing authority was real helpful with regards to access to tenant units. I mean, there's a process in place for it. You've just got to follow the process. ... The process is that the residents have to be notified ... 48 hours in advance. So, you tell the building superintendent that we need to be in there next Tuesday. He puts a piece of paper under everybody's door, and then they're either there or they're not, but the building superintendent lets you in. So that's pretty smooth.

One complication for the Town of Mamaroneck project was that their original boilers were difficult to access. So when they installed the new boilers they had to open up a wall to get the old boilers out and this increased the project cost.

Post-installation inspection and Incentive Payment

ICF was also responsible, under a separate work order, to assist Con Edison with the post-installation inspections of the projects that were implemented through the MFLI program. One objective of these inspections was to simply verify that the equipment was installed as claimed. The interviews revealed that Con Edison representatives accompanied ICF on all of these post-installation inspections. The Yonkers PHA's director of maintenance also was involved in all these inspections. Not only did he give the ICF and Con Edison representatives access to all the sites, but he also acted as a "go-between" between ICF and Honeywell to provide any missing information that was needed to complete the inspections.

Our in-depth interviews and our review of the ICF inspection report revealed that the post-inspection verification process varied with the type of equipment being inspected. For the types of energy efficient measures that were more numerous – such as light bulbs or steam traps – ICF and Con Edison inspected a sample of the measures. They also relied on reports from the Yonkers PHA building staff. "We were told that in each of the projects, [the Yonkers PHA] had their own maintenance people accompanying the Honeywell people and they developed their own punch lists and were able to verify that everything was done as it was supposed to be," said one ICF representative.

Some measures such as attic insulation could not easily be verified. In these cases ICF would talk to the building superintendent to confirm that the measure had been installed. However, sometimes they would disallow what they could not see. For example, Honeywell claimed that they had removed old un-insulated pipework and replaced it with new insulated pipework. Yet because the old pipework had been removed and it was impossible to verify that the original pipework had not been insulated, ICF disallowed this measure.¹⁸

The post-inspections would sometimes find that the installed equipment was different than what the housing authority or its implementation contractor said they would install. This was the case in the Yonkers Phase 2 projects where the models of the installed boilers were different than the models that had been described in the paperwork that had been submitted for project approval. "So we had to scramble to come up with spec sheets for new equipment," an ICF representative reported. "We had to have combustion tests done on the new boilers in order to do the [energy savings] calculations." In the case of some of the water boilers that were being

¹⁸ *Memorandum: Yonkers Housing Authority Inspections for Con Edison Low Income Multifamily Program*, from Bruce Applebaum of ICF International to Con Edison, November 16, 2011.

used for space heating ICF actually found that the installed boilers were actually much more energy efficient than the models they had planned to install and so they increased the energy savings estimates for these measures.

However, in some cases the inspections resulted in a reduction in energy savings. For example, Honeywell had claimed energy savings for some of the boilers under the assumption that they were operational all the time. Yet ICF discovered that some of these boilers were standby boilers that were not operational all the time and discounted the savings accordingly. ICF also reduced energy savings for some buildings which had been identified as firm gas users but which turned out to be dual fuel users.

In some cases the quantity of measures might be also be different. For example, Honeywell ended up installing many more steam traps in the Yonkers PHA buildings than they had said they would in the original proposal.¹⁹ Therefore both ICF and Con Edison had to revise their savings and cost calculations to account for the higher number of steam traps.

Another small complication in the post-installation inspection process was the fact that Honeywell and its installation contractors had replaced the steam trap mechanisms but had retained the old steam trap covers. Therefore when ICF initially did its inspection it thought that Honeywell had not replaced as many steam traps as it had claimed. “The shells [of the steam traps] had been painted and in the first couple of steam traps that I looked at, I couldn't discern that the traps had actually been opened. There seemed to be no damage, no scrape marks from the wrench on any of the paint,” explained the ICF representative. However, members of the Yonkers PHA building staff subsequently removed some of the steam trap covers to show that the steam traps had indeed been replaced.

The MFLI program's final incentive payments were then based on these revised savings calculations. Although ICF completed its verification of the Yonkers PHA project energy savings in January 2012, Con Edison did not issue the incentive check to the PHA until March 2012. Con Edison staff explained that the delay was mostly due to the fact that the size of the incentive check – over \$1 million – required that the payment amount receive greater-than-ordinary scrutiny and higher-level approval from Con Edison management. Con Edison had

¹⁹ In an interview the Honeywell representative explained that this was simply because when they began replacing the steam traps they discovered that there were more of them than they had counted in their original audit of the facilities.

also planned at one time to turn the awarding of the incentive check into a publicized event with the presentation of a “big check.” This event was later canceled, but the planning for it likely also contributed to the delay in the incentive payment.

3.1.5 SATISFACTION WITH THE PROGRAM

This section discusses how satisfied the program actors were with various aspects of the MFLI program and with the program as a whole.

Satisfaction with the Initial Program Marketing Presentation

Con Edison marketed the MFLI program by giving a presentation of the program to the Hudson Valley Association of Housing Authorities in August 2009. A number of the PHA representatives recalled this August 2009 presentation. However, only two of them recalled it well enough to feel comfortable providing a satisfaction rating for it. Using a five-point satisfaction scale where five meant “very satisfied” and one meant “very dissatisfied,” one gave a satisfaction rating of four and the other gave a satisfaction rating of three. “It was very informative. I found it very interesting,” said the PHA representative who provided the satisfaction rating of four. The PHA representative who gave a satisfaction rating of three said that he did not think the program made it clear that participants would only be compensated for the incremental cost of the equipment as opposed to the total project cost.

Satisfaction with the MFLI Project Approval Process

We asked the eight interviewees who had experience with the MFLI project approval process to give their impressions of this process and, if appropriate, to provide satisfaction ratings for it. These interviewees included the MFLI program manager, the ICF representative, the Honeywell representative, and five PHAs who submitted projects for MFLI program approval. We asked Honeywell and the five PHAs to rate their satisfaction ratings with the project approval process using a five-point scale where five meant “very satisfied” and one meant “very dissatisfied.”²⁰ Three respondents giving the highest satisfaction rating (five), two gave mid-range satisfaction ratings (3 and 3.5) and one gave a low rating (2).

²⁰ We did not ask the MFLI program manager or the ICF representative to provide a satisfaction rating for the project approval process since they were responsible for implementing it.

We asked these interviewees to explain their satisfaction ratings. We also asked the MFLI program manager and ICF to discuss how the project approval process went. Below we discuss the positive and negative aspects of the process, as identified by respondents.

Positive aspects of program processes, identified by respondents

The interviewees identified a number of positive aspects of the project approval process including:

- *Con Edison was very helpful:* “Con Ed has been extremely helpful ... “they’ve all been quite knowledgeable and quite helpful,” said a representative for one of the participating PHAs.
- *For the Town of Mamaroneck the process was simple and easy:* The Town of Mamaroneck representative, who faced a much simpler program approval process due to the small scale of the project and not being subject to the HUD approval process, described the approval process as “simple” and “easy.”
- *The DPS Technical Resource Manual (TRM) provides strict guidelines:* The DPS TRM provided strict guidelines, which are used as a roadmap for evaluating each project and calculating New York State-approved energy savings. One respondent found the instructions for reviewing MFLI projects and estimating energy savings “pretty clear.” The in-house project review consultant used the TRM to develop spreadsheet tools to streamline the review process. “There was some time involved in getting that established at the very beginning, but now when we get a new project, we plug in all the inputs into the models that we’ve developed and come up with a savings. It’s a piece of cake.” However, as discussed later, other respondents found them cumbersome, incomplete and in some cases, flawed.
- *The limited number of program participants simplifies communications:* The fact that the program has few participants (who may have multiple projects) makes communication easy. “It’s been easy because there are few people to deal with,” said one interviewee. “It’s easy when you have multiple projects go through the process once and then people understand on both sides what’s expected, and subsequent projects go even faster and smoother through the evaluation [review] process.”

Negative aspects of program processes, identified by respondents

The interviewees also identified a number of negative aspects of the project approval process including:

- *“Fire drill” aspect to requests for information from implementation contractors:* A couple of respondents noted that sometimes the program would request significant amounts of project information on very short notice. “Nothing happens for a month or a month and a half, and then [a program representative says]: ‘Oh, we need something by Friday,’ he said. “... We’ve all got other jobs we’re working on, so there were times when that became a bit frustrating.” Another representative acknowledged that sometimes these information requests were made with very short notice. One respondent suggested that “more real-time engagement” between the MFLI program and implementation contractors might mitigate these problems going forward.
- *The program lacked a standard checklist of required project information:* Two interviewees identified the lack of a standard checklist of “must have” information as creating a need for multiple requests for information when gaps were identified. The Conclusions and Recommendations section of this report discusses some of the information that might be included in this checklist. In response to this suggestion, Con Edison commented that “boilerplate” checklists could be helpful for some energy-efficient measures, but could actually be confusing for other measures which are more custom in nature.
- *The Multifamily Technical Manual was not “user friendly.”* One respondent noted that the Multifamily Technical and other required Technical Manuals should have been easier to use. He described them as “pretty cumbersome” and “time-consuming.” He found it challenging to make sense of all that was and was not in the manual, noted that it was time consuming and that “there was a big learning curve.”
- *The Multifamily Technical Manual is missing key measures, and some algorithms or assumptions appear inaccurate.* One respondent with substantial program interaction and technical expertise noted that some proposed (and common) energy efficiency measures – such as steam traps – were not in the technical manual. Items not in the manual required customized analysis, which was then submitted for approval. Another respondent said that their engineers questioned some of the energy savings assumptions and calculations in the Manual. “What I understand and glean from ... engineers are that a lot of the algorithms in

the ... Manual don't make any sense or aren't accurate for what happens in certain building types.”

- *Con Edison did not provide enough assistance.* Two nonparticipating PHAs that initiated projects, but did not complete them through the program, felt that Con Edison did not provide them with enough information or attention (one completed the project through another program; the other did not complete the project.) One of these said “They came to us. They helped us out, but, they didn’t go out of the way to contact us and help us out and discount these things out, and, make it happen.” The other respondent said “assign a case manager to work with the issues that we had,” when asked what Con Edison could have done to make his PHA’s participation in the MFLI program more likely.
- *One of these respondents claimed it was not clear upfront that the MFLI program would only pay the incremental costs of their boiler project and he wished he had known this sooner.* “We spent some time investigating the possibility, only to find out that it really wasn't cost effective,” he said.
- *Finding cost information for baseline equipment was difficult:* One of the interviewees mentioned that they were asked by Con Edison and ICF to provide cost information for the baseline equipment so that incremental cost of the energy-efficient equipment could be calculated. He indicated that this was difficult and time consuming because it was not equipment that they usually dealt with.

Satisfaction with the Post-Installation Inspection Process

The Yonkers PHA and the Town of Mamaroneck PHA were the only PHAs to receive post-installation inspections from the program. We asked representatives of both these PHAs to rate their satisfaction with this inspection process. Both of them indicated that they were very satisfied (ratings of 5) with the inspection process. Their comments included:

- “I’d say five. I mean, there was nothing [to it]. He went to inspect it. He came back and said ‘great,’ and they cut us a check.”
- “Five ... Because, actually, they got me out of my sedentary position to go out and do the inspections myself. ... I said, I want to be sure that the Housing Authority was getting its bang for its buck. I mean, [the implementation contractor] has their onsite person, but from

my point of view, I like to go out and check too, and it was at the point where I really hadn't seen [the contractor] taking out traps, but I'd like to make sure that they were done also, that nobody missed anything."

Satisfaction with the Incentive Levels

The Yonkers PHA and the Town of Mamaroneck PHA were also the only PHAs to receive financial incentives from the MFLI program. We asked representatives of both these PHAs to rate their satisfaction with the incentives they received. Both of them indicated that they were very satisfied (ratings of 5) with the incentive payments. However, Honeywell only gave a satisfaction rating of four for the incentive levels. The Honeywell representative thought that the MFLI program should have paid incentives for measures such as faucet aerators and building envelope improvements (although the MFLI program could not pay for these because they did not pass the TRC tests).

Interviewees involved in the estimation of these incentives commented that these incentives had been based on realistic incremental costs. For example, in the case of the boiler incentives, they noted that these were calculated from incremental costs based on actual equipment list prices from boiler suppliers.

On the negative side, a couple of the nonparticipating PHA representatives complained that Con Edison covered only the incremental cost of expensive equipment such as boilers. They pointed out that this was not competitive with the NYSEERDA multifamily program, which provides incentives for replacement costs.

There was also evidence that the MFLI program incentives cover only a small percentage of total project costs. One PHA representative estimated that the MFLI incentives would only cover 5-10 percent of costs for his energy efficiency projects. "Most of the cost of any improvement is labor," he explained.²¹ "I've got 300 horsepower boilers, so I don't really know what \$25,000 was going to get us." Although the Yonkers PHA was very happy with their incentive payment, the fact remains that it accounted for a little over five percent of their total project costs.

²¹ It should be noted that while the MFLI program does not cover installation costs for larger measures like boilers, it will cover installation costs for other measures such as steam traps and pipe insulation.

Uncertainty as to how much the PHA would receive in MFLI incentive dollars discouraged one PHA from pursuing a larger energy efficiency project. “There was always uncertainty [with the MFLI program] about how much and when, he said. “There was no guarantee until the end ... and with that uncertainty the [PHA] had no comfort level to do more work.” The interviewee said that while the PHA could still pursue these projects, the costs would be higher since economies of scope and scale of combining them with other energy efficiency projects were no longer available. One of the nonparticipating PHAs also cited lack of certainty about the incentive payments as their reason for not joining the MFLI program.

Satisfaction with the Installed Equipment

We asked the representatives of the Yonkers and Town of Mamaroneck PHAs whether they were satisfied with the installed equipment and whether they had received any tenant complaints since the equipment had been installed. The Town of Mamaroneck representative reported that there had been no problems so far with the installed equipment and there had not been any tenant complaints. The Yonkers PHA representative did report a couple of problems with installed equipment (light bulbs blowing out prematurely, vacuum pumps malfunctioning), but these were not related to the equipment that the MFLI program had incentivized.

At the time of the interview (May 2012) the Yonkers PHA representative said that they were still trying to figure out what was causing these problems. However, he reported that in general they had not received many tenant complaints.

Overall Program Satisfaction

We asked representatives of the three participating PHAs (Yonkers, NYCHA, Town of Mamaroneck), HUD, Honeywell, and ICF to provide satisfaction ratings for the MFLI program as a whole. Overall satisfaction was high, with an average satisfaction rating of 4.3, with three respondents giving the program “very satisfied” ratings. The reason noted by at least one respondent for satisfaction was that Con Edison and their consultants were very helpful.

Despite high overall satisfaction among these participants and program delivery stakeholders, respondents explained their ratings mostly by pointing out things they did not like. These included:

- *Limited participation from the PHAs:* Only two PHAs received program funds and the program acquired no energy savings from NYCHA -- the largest PHA in the Con Edison service territory.
- *The number of energy efficiency projects through the program was too small to keep either the implementation staff or the M&V staff busy.* This “start and stop” nature of the project flow reduced efficiency. “It’s kind of hard, to develop a real streamlined plan of cranking things through, because [the projects] kind of came in bunches here and there,” said one interviewee. “So I guess the one thing I would change, would be if there was any way to get a constant flow of projects or more projects so we could dedicate more staff to do it.”
- *Uncertainty regarding the amount of financial incentives available through the MFLI program:* The Honeywell representative noted that if there had been more certainty as to how much the Yonkers PHA would receive in incentive dollars, the PHA could have implemented more energy efficiency measures. “If we had known earlier that there was X-dollars [from the MFLI program], and there was some certainty to it, we probably could have done more work for the housing authority,” said the Honeywell representative. “So they could have contributed more to the project, which would have increased the size of the bundle. ... They may have gotten three or four more buildings of windows or ... or another boiler somewhere.” As noted earlier in the report, one of the nonparticipating PHAs also cited lack of certainty about the incentive payments as their reason for not joining the MFLI program. In responses to these comments, Con Edison noted that they did provide “ballpark” estimates of the incentive payments, but they were simply unable to provide more precise figures for the incentive payment amounts. This was because this program had no pre-qualification of energy-efficient measures and they could only pay for measures which passed the TRC test, which could not be determined before actual incremental costs were known.

4 CONCLUSIONS AND RECOMMENDATIONS

This section presents the key conclusions and recommendations from the findings and analyses presented throughout the report. These conclusions and recommendations are organized around the key areas of research. Some of these recommendations require additional on-going program expenditures. Con Edison must identify which of these costs are possible while maintaining a cost effective program. Finally, this evaluation was undertaken during the course of program operations. One or more of the recommendations that the evaluation teams provides below may already have been previously implemented as part of the programs ongoing effort at improving its services.

4.1.1 PROGRAM PLANNING AND DESIGN

Findings and Conclusions Concerning Program Planning and Design

Our findings and conclusions concerning program planning and design include:

- *Con Edison did not develop an explicit program theory or logic model for the MFLI program, but our interviews with the MFLI program manager revealed that it was a traditional resource acquisition program.*
- *The MFLI program differs from most other Con Edison energy efficiency program in that it targets PHAs. Since the universe of program-eligible PHAs is very limited – essentially the New York City Housing Authority (NYCHA) and 10 PHAs in Westchester County – the program does not need to develop detailed marketing and outreach strategies to recruit customer participants.*
- *The involvement of HUD complicates customer acquisition.* One unique feature of the MFLI program is the involvement of HUD. For most MFLI projects to be funded they must receive HUD approval, in addition to Con Edison approval. The HUD approval process introduces an additional complication in implementing projects that other Con Edison energy efficiency programs do not have. HUD also requires energy efficiency audits and capital improvement plans that can influence the implementation of energy efficiency projects through MFLI and other programs (including HUD energy efficiency programs). All eight PHAs that we interviewed said that they conduct their capital improvement process within the framework of a HUD five-year plan.

- *Despite these differences, the MFLI program also shares many similarities with other Con Edison programs.* For example, like commercial and industrial (C&I) customers, PHAs have capital improvement budgets that limit how much they can spend for building improvements in any given year. All eight PHAs that we interviewed reported that they initiate energy efficiency projects through their standard capital improvement process in which they must prioritize projects based on energy efficiency as well as other criteria such as safety, security, aesthetics, liability concerns, tenant complaints, etc.
- *NYCHA and the Westchester PHAs have a number of energy efficiency programs available to them besides the MFLI program.* The reason why some PHAs are not participating in the MFLI program is due to the fact that they found another energy efficiency program or funding source more appealing. The alternative programs include HUD programs (the capital expenditure and Energy Performance Contractor (EPC) programs), American Recovery and Reinvestment Act (ARRA) funding for energy and other capital improvements, NYSERDA's Multifamily Performance Program, and local weatherization programs.
- *The way HUD allocates funds for utility costs are a key barrier to energy efficiency implementation for PHAs.* HUD bases the PHA's budget for operating costs on a three-year historical average. Since utility costs are basically a "pass through" cost to HUD, there is limited incentive for PHAs to reduce them. If the PHA improves the energy efficiency of the building, it will realize the associated savings for only a short period. A PHA that reduces its utility bills through energy efficiency improvements would have lower operating costs that would be reflected in a reduced operating cost allocation from HUD. "Effectively, the benefits of those savings are taken away over a three-year period," a HUD official explained. "So as an energy-saving measure ages, it kind of gets woven into a baseline ... and you don't reap the full long-term benefits for that measure."
- *PHAs face many other barriers to the implementation of energy-efficient projects.* These other barriers cited by the PHAs and other program actors include:
 - The HUD Energy Performance Contractor (EPC) program has very complicated requirements for participation.
 - HUD doesn't allow cross-subsidization of energy savings across different projects.
 - Energy efficiency projects in PHAs face multi-layered approval cycles.
 - Tenants do not pay their own energy bills.
 - PHA executive directors place higher priority on capital improvements that reduce tenant complaints or improve building appearance.

- *Smaller PHAs, in particular, face formidable barriers to energy efficiency implementation. These include having no economies of scale for energy savings, having insufficient upfront capital, lacking necessary technical knowledge, having insufficient time or sophistication to consider larger energy efficiency projects, and having difficulty attracting performance contractors.*

Recommendations for Program Planning and Design

Our recommendations for improving the program design include:

- **Con Edison or the New York DPS should consider reserving/encumbering a portion of the MFLI incentive dollars for smaller PHAs. The amount of the MFLI incentive dollars encumbered could be based on the potential kWh savings of the smaller PHAs, but these encumbered funds could go away if the smaller PHAs did not submit project proposals before the program deadlines.** Two of the interviewees recommended that Con Edison reserve a portion of the MFLI incentive dollars for the smaller PHAs. The evaluation team thinks this is an idea worth considering for the following reasons:
 - *Many of the smaller PHAs are discouraged from participating because they believe that they cannot compete against much larger PHAs like NYCHA and Yonkers. By reserving a portion of the MFLI funds for smaller PHAs, Con Edison would encourage them to participate in the program. It would also show that Con Edison was giving more than “lip service” to the belief that “we need to include our friends in Westchester,” as the MFLI program manager termed it.*
 - *The increased probability of securing MFLI incentive dollars might make it easier for smaller PHAs to secure alternative sources of capital such as HUD funding or energy performance contractors. For example, Honeywell thought that it could have done some additional energy efficient measures such as window retrofits if the Yonkers PHA had more certainty about whether they would receive the MFLI funding and how much this would be. But uncertainty about this funding caused them to not include the window retrofits in the overall project.*
 - *It could serve as a “carrot” to encourage the PHAs to be more ambitious and innovative when considering energy efficiency opportunities. It could also inspire positive competition among the PHAs.*

The amount of the encumbered dollars could be based on a formula that represents the energy savings potential of these smaller PHAs. For example, one simple formula would be to multiply the total annual kWh consumption of the smaller PHAs by 25 percent and then convert that to dollars based on the ratio between incentives dollars paid and kWh acquired based on past program history.

To insure that the encumbered funds would not go unused, Con Edison could allow some or all of the encumbered funds to be reallocated for projects submitted by the larger PHAs if:

- No small PHAs submitted project proposals before the program deadlines; or
 - The value of the encumbered funds exceeded the estimated incentives needed for the projects submitted by the smaller PHAs.
- **Con Edison or the New York DPS should consider working with New York PHAs to introduce an energy-efficiency-based utility allowance program.** As discussed in the barriers section of this report, PHAs face a structural barrier to improving their energy efficiency. They can only get the full economic benefits of the energy-efficiency improvements for a short period of time. The reason for this is that HUD bases the PHA's budget for operating costs (which include utility costs) on a three-year average. So a PHA that reduces its utility bills through energy efficiency improvements would eventually get a reduced operating cost allocation from HUD.

California currently has an energy efficiency program called Designed for Comfort that tries to mitigate this barrier. It does so by allowing PHAs to adopt a HUD-approved Energy-Efficiency-Based Utility Allowance (EEBUA).²² This EEBUA allows low-income multifamily buildings to permanently reap some of the energy savings benefits of the energy efficiency improvements they make. Furthermore the Designed for Comfort program has had success getting smaller, as well as larger, PHAs to adopt these EEBUAs.

- **Make it easier to suggest changes to the multifamily Technical Reference Manual:** Two of the interviewees suggested that there was a need to improve the multifamily Technical Reference Manual either by adding missing measures (e.g., steam traps) or improving the

²² An explanation of an EEBUA can be found at <http://www.h-m-g.com/multifamily/aheea/eebua.htm>

calculation methods for existing measures. “I think that having some additional input ... into the improvements of the algorithms in certain areas or alternative approaches to calculating energy savings would be good,” said one of the interviewees. “I think that some additional input from experts would be helpful in making the program ... more successful in New York State.” He also noted that the current process did not encourage such input. “Any deviation from the [TRM] itself requires a process of approval from the PSC,” he said. “[The process] seems pretty cumbersome.”

- **Require that PHAs and their implementation contractors provide better documentation of saving estimates for the projects they install.** The ICF representatives said that their job of estimating energy savings for the MFLI program projects was made difficult by Honeywell not using the engineering algorithms prescribed by the TRM and the lack of current, complete and accessible information on the energy efficiency projects which were installed through the program. ICF recommended five improvements, which the evaluation team believes Con Edison should consider because they address problems with the M&V process that were reported by Con Edison and Honeywell, in addition to ICF:
 1. *Going forward, requiring that the energy savings estimates be based on the algorithms in the TRM:* “I think [MFLI program staff] might need to make it a little bit easier for themselves to be able to evaluate whatever submissions they get from prospective participants by having a requirement that all the savings calculations be based on the tech manual,” said one ICF representative. This was based on their experience with the Yonkers projects where the initial calculations that Honeywell submitted were not based on the TRM (although these were later revised to match the TRM calculations – with the exception of steam traps, which were never in the TRM to begin with). In responding to this recommendation, Con Edison acknowledged that they could play a role in educating the PHAs that they must require that their implementation contractors use the TRM algorithms for estimating energy savings if they wanted to receive MFLI incentives.
 2. *Requiring that end-of-project reports be provided:* “[Honeywell] doesn’t seem to have done any kind of as-built manual, or end-of-project report that says what they actually did,” said one ICF representative. “Or if they did, it was not available to the guy that we dealt with at the housing authority.”

3. *Requiring that all relevant energy savings calculations be available in a single document:* The ICF representatives complained that the calculations that Honeywell used to justify its energy savings claims were somewhat scattered. "Some of Honeywell's analysis was in a report, some of it was in a spreadsheet that was ancillary to the report. But it wasn't an overlap, it didn't all include the same measures," said one representative.
 4. *Requiring that an update to the project application be provided on inspection:* ICF noted that some of the project information that Honeywell had submitted in their application was three-four years old by the time the inspection took place.
 5. *Requiring a pre-installation inspection:* "I would recommend that Con Edison arrange to have a pre-installation inspection done," said one ICF representative. "We went [to the site] after the fact and we have no idea what had really been there." The ICF staff claimed that requiring a pre-installation inspection was reasonable considering the size of the incentive payments that were being made for some of the projects. "The size of the checks that were going out the door on this particular project [Yonkers PHA] were in excess of \$100,000 in some cases, and then sometimes more than that," said one ICF representative. "So I think with that, given that they're pushing that much money out the door at once, [they should require] the existing conditions inspection on the front-end as well as a post-install [inspection] after all the work is done." The evaluation team thinks this is a good recommendation as long as some minimum threshold based on project energy savings or incentive level is established for triggering a pre-inspection.
- **The program should develop a standard checklist of "must have" project information to streamline the project approval process.** Two interviewees identified that the lack of a standard checklist of "must have" information created a need for multiple requests for information when gaps were identified. An ICF representative mentioned "a regular pattern" of having to submit 5-6 questions to the implementation contractors for specific information that had not been included in the documents the contractor had provided. For example, the TRM required information on whether the building where the energy efficiency measures were installed was "old," "middle-aged," or "new." The TRM also required specific information on the general use pattern of the building. If the MFLI program could come up with a standard checklist of this "must have" project information, it could reduce the amount of time it takes for project approval.

4.1.2 INFRASTRUCTURE DEVELOPMENT

Findings and Conclusions Concerning Infrastructure Development

Key conclusions concerning the MFLI program's infrastructure development include:

- *While the MFLI program's use of spreadsheets for tracking program data is reasonable considering the small number of projects that go through the program, these spreadsheets need to be improved.* For a program of this size a large relational database is unnecessary. The current system of using spreadsheets can be used effectively both for program management and for impact evaluation purposes. Yet the spreadsheets lack standardization, transparency and documentation. In addition the savings documented in the tracking spreadsheets do not match the savings reported in the December 2011 scorecard report where the evaluators would expect it to.²³

Recommendations for Infrastructure and Development

Our recommendations for improving the program infrastructure include:

- **Make some improvements to the spreadsheets being used to track program information:**
Our recommended improvements include:
 - *Use a standard format for the tracking file of each project.*
 - *For each project, include contact information (contact name, phone number, and email address) in the tracking spreadsheet.*
 - *To improve usability and ensure important information is seen and updated when necessary, include a field for comments rather than using the comment feature in Microsoft Excel.*

²³ The Monthly Scorecard is a monthly progress report required by the New York DPS. Energy Savings reported as achieved are ex ante and have not been confirmed by an independent impact evaluation.

- *Include a binary field to flag ineligible measures rather than relying on highlighting and comments. This allows for summary formulas that do not need to be adjusted when a measure is found to be ineligible.*
- *To simplify summaries, structure the file so that there is a single table with the measure level information from all sites rather than separate tables for each building. Each line in the table would include the building name, so that summaries to the building level and building information can be stored in a separate table. This would help in standardizing the tracking spreadsheets from project to project and reduce the opportunity for errors from misaligned formulas.*
- *Save and label appropriately a version of each project tracking file when the savings and incentives are reported in the Scorecard report. For example when the savings are committed, the title could be "Project X Reported as committed in Dec 2011 scorecard.xlsx," and if the savings and incentives are reported as acquired in a later scorecard, that version would substitute the word "acquired" for "committed" and would reflect the date of the scorecard that the savings were reported as acquired in. This would ensure that there is a (virtual) paper trail if the savings in the tracking spreadsheet later do not match those in the scorecard.*
- **Con Edison should develop more in-house technical resources so it can more effectively mine the energy efficiency opportunities within NYCHA.** Although NYCHA is far bigger than all the Westchester PHAs put together, the MFLI program did not acquire any energy savings from NYCHA during the 2009-2011 program period. Although factors such as the free ridership impacts of the ARRA funding and the more complicated nature of many of the NYCHA projects helped explain this lack of success, there is no doubt that the MFLI program needs to do a better job of acquiring energy savings from NYCHA going forward. One key to this will be for Con Edison to develop to more in-house technical/engineering resources so it can more quickly review proposed multifamily projects for both the MFLI and MFEG programs and not be so dependent on subcontractors such as ICF and AEA. Our recent interview with the manager of both the MFLI and MFEG programs indicated that Con Edison was actively trying to develop this in-house technical expertise. Since that interview, Con Edison has hired two building engineers for that purpose.

4.1.3 MARKETING AND CUSTOMER ACQUISITION

Findings and Conclusions Concerning Marketing and Customer Acquisition

Some of our findings and conclusions concerning the MFLI program's marketing and customer acquisition challenges and activities include:

- *PHAs in general and small PHAs in particular, face formidable barriers in implementing energy efficiency projects.* The evaluation identified over a dozen unique barriers that PHAs in general, and small PHAs in particular, face when trying to implement energy efficient projects. Some of these are barriers introduced by HUD due to the way it allocates energy efficiency program funding or compensates PHAs for utility costs. Others are structural barriers, such as multiple layers of decisions makers, or the fact that tenants do not pay their own energy bills. Smaller PHAs also face energy efficiency knowledge barriers and capital constraints that are similar to those faced by small businesses. While all these barriers make it difficult for PHAs to implement energy efficiency projects, these barriers also show the necessity of the MFLI and other energy efficiency programs that attempt to mitigate these barriers.
- *Participation by the Yonkers PHA was due to key advantages it had over other Westchester PHAs.* Yonkers was the only Westchester PHA to have significant participation in the MFLI program due to two key factors. First, it is substantially larger than other Westchester PHAs. This larger size gives it a number of advantages over smaller PHAs including:
 - A greater ability to attract interest from energy performance contractors;
 - A greater potential “payoff” in terms of the ultimate dollar value of the energy savings it can garner;
 - A larger annual budget for operating costs and capital improvements, and
 - A larger and more energy-savvy staff that helps it pursue outside funding opportunities like the HUD EPC program and the MFLI program.

Second, the Yonkers PHA's energy efficiency projects had already been initiated prior to the start of the MFLI program and were far enough along so that the PHA could meet the relatively tight MFLI project submission deadlines for the 2009-2010 program cycle.

Recommendations for Marketing and Customer Acquisition

Our recommendations for improving the MFLI program's marketing and customer acquisition efforts include:

- **Con Edison should increase outreach and education efforts to the PHAs about the MFLI program and energy efficiency in general.** Increased outreach will maintain awareness of the program and provide PHAs with the advance notice to prepare projects. There are a number of reasons why Con Edison needs to be much more proactive with its MFLI outreach and education efforts:
 - There is evidence of lack of knowledge of the MFLI program: Although the majority of the PHA staff that we interviewed were aware of the MFLI program, their knowledge of this program was very sketchy and sometimes inaccurate.
 - PHAs need advance notice of funding opportunities due to long lead times for project development: Advance notice may reduce free-ridership, as PHAs that don't have projects ready to go will have time to develop them.
 - PHAs experience staff turnover: The simple reality that PHAs experience periodic turnovers in staff means that Con Edison needs to be more proactive in its program educational efforts. For example, the one NYCHA representative who was unaware of the MFLI program had joined NYCHA in 2010, after the MFLI program's last presentation in August 2009.
 - Some PHAs may lack knowledge/interest in energy efficiency in general. Our interviews with the nonparticipating PHAs revealed that while some of them seemed knowledgeable about energy efficiency opportunities and were proactively investigating possible projects, others were not. This suggests that there are opportunities for Con Edison to provide the smaller PHAs with some general energy efficiency education beyond just describing how the MFLI program works.

Some education and outreach activities that Con Edison should undertake include:

- *PHA listening sessions:* We recommend that Con Edison conduct regular “listening sessions” with the PHAs to find out whether they have any ideas for energy efficiency projects and what these ideas are. They should also learn what specific barriers – e.g., lack of capital, or skeptical boards of directors – these PHAs may face in implementing these energy efficiency projects.
- *Develop a Yonkers case study marketing piece:* The Yonkers PHA representative had very positive things to say about Con Edison and the MFLI program. Con Edison should take advantage of this positive experience. Con Edison should develop a visually appealing and informative “case study” document based on the Yonkers PHA experience with the MFLI program. This document should describe the energy efficiency projects that Yonkers has implemented, highlight the incentive dollars that the MFLI program provided, cite any evidence of energy savings that Yonkers is realizing, and include testimonials from the Yonkers PHA representative. Perhaps HUD might even be interested in funding a video regarding the project, to encourage other PHAs to make similar improvements.
- *Partner with HUD to educate the PHAs about HUD’s energy efficiency opportunities:* Our interview with the HUD representative revealed that HUD also has a keen interest in getting more small PHAs involved in energy efficiency. So the evaluation team recommends that Con Edison should try to partner with HUD in these education efforts. For example, Con Edison could:
 - *Sponsor “lunch and learns” with the Westchester PHAs in which HUD officials could explain HUD’s Energy Performance Contracting (EPC) program to them and other energy efficiency opportunities offered by HUD;*
 - *Work with HUD to develop simplified or standardized “boilerplate” documents that would make it easier for smaller PHAs to participate in the EPC program; and*
 - *Con Edison and HUD could also show these smaller PHAs how to do a joint solicitation for an energy performance contractor. A joint solicitation would reduce the administrative burden on any individual PHA and make the solicitation more*

attractive to performance contractors by increasing the number of buildings and tenant units.

Our most recent (May 2012) interview with the MFLI program manager indicated that the program is starting to have discussions with HUD on some joint marketing efforts.

4.1.4 PROGRAM DELIVERY

Findings and Conclusions Concerning Program Delivery

Some of our findings and conclusions concerning the MFLI program delivery include:

- *The MFLI program was right to reject 2010 NYCHA energy efficiency projects due to free ridership concerns, but free ridership will continue to be a threat to the MFLI program.* Interviews with the MFLI program manager and the ICF representative indicated that the program chose not to provide incentives for some NYCHA energy efficiency projects due to free ridership concerns. NYCHA had received about \$420 million in ARRA funding and was spending much of this money on energy efficiency projects. The MFLI program reasoned, rightly in the opinion of the evaluation team, that these projects had sufficient funding from the ARRA sources and would be implemented with or without the MFLI incentives. Free ridership will continue to be a threat to the MFLI program. Although the ARRA funds have been terminated, there will continue to be cases where the MFLI incentive will account for only a small percentage of project costs. The first come first served approach of the MFLI program provides an advantage to energy efficiency projects that are already far along in their design and development cycle. Such projects are at greater risk of low program attribution (high free ridership) because program involvement is at a later stage, when funding and approvals are already secured.
- *Our in-depth interviews with the PHAs and their contractors collected some indicators of free ridership for the projects installed through the MFLI program. Yet because we did not administer a formal battery of questions designed to estimate free ridership (this was process evaluation not an impact evaluation), this free ridership information is only indicative and preliminary.*

- For the Town of Mamaroneck project the indicators of free ridership included:
 - The fact that similar high efficiency boilers installations had been made in recent years in the same multifamily building complex without the assistance of the MFLI program; and
 - The PHA had strong motivations to install the efficient equipment outside the MFLI program's influence. The PHA representative mentioned a number of reasons for installing the energy-efficient boilers including an existing policy of trying to reduce tenant energy costs, an enviro-friendly board of directors, and the fact that the previous boilers were getting expensive to repair.
- For the Yonkers PHA projects the indicators of free ridership included:
 - Before becoming involved in the MFLI program, the Yonkers PHA had already conducted energy audits and had signed an agreement with an energy performance contractor;
 - The Yonkers PHA considered itself "ahead of the curve" compared to its fellow Westchester PHAs in terms of its sophistication in pursuing opportunities to save money on utility costs;
 - The MFLI program incentives only paid for a small percentage of the total project costs; and
 - Honeywell did not include the value of the MFLI incentives in its own cost effectiveness calculations when it proposed to Yonkers which energy-efficient measures it planned to implement.
- *Our in-depth interviews with the PHAs and their contractors also collected some evidence that the MFLI program in particular, or Con Edison in general, helped to move the projects forward. This evidence is discussed in the body of the report.*

Recommendations for Program Delivery

Some of our recommendations for improving the delivery of the MFLI program include:

- **Adopt some practices to try to reduce program free ridership:** While the MFLI program may not be able to compete with HUD or ARRA in terms of incentive dollars, it can provide value and get attribution credit in other ways. These include some of the program activities recommended elsewhere in this section such as:
 - Educating smaller PHAs about energy efficiency opportunities;
 - Connecting PHAs to energy audit and other technical resources;
 - Helping them sell energy efficiency projects to their boards of directors;
 - Facilitating their participation in the HUD's EPC program; and
 - Helping them attract energy performance contractors and other funding sources for capital improvements.

All these practices should increase program attribution (reduce free ridership) by getting the program more involved in projects at a very early stage and increasing the chance that PHAs will give the MFLI program credit for influencing the implementation of their energy efficiency projects. Of course, these smaller PHAs do not offer the same potential gross energy savings as NYCHA or the Yonkers PHA do. Yet if the MFLI program works closely with them to mitigate barriers, these PHAs are less likely than larger PHAs (which are more self-sufficient) to be free riders. This would result in a higher net-to-gross (NTG) adjustment factors, and possibly higher overall net program savings.

- **Con Edison and participating PHAs should anticipate HUD delays when setting timelines for program and project milestones that involve HUDs funding.** Delays in the HUD approval process have delayed the MFLI program's ability to meet energy savings goals. It took HUD nine months to approve the Yonkers PHA's Phase 1 projects and an additional three months to approve the Yonkers Phase 2 projects. While the program claimed a small amount of energy savings in late 2010, the vast majority of the program energy savings were not claimed until late 2011. A number of respondents pointed to staffing constraints at HUD as the main cause of these delays. Con Edison (and participants) must anticipate these delays when setting timelines for program and project milestones. There is little that Con Edison can do to speed up the HUD approval process. Of course,

projects that do not use HUD funding – such as the December 2011 Town of Mamaroneck boiler project – do not face the same delays.

4.1.5 SATISFACTION WITH THE PROGRAM

Findings and Conclusions Concerning Program Satisfaction

Our findings and conclusions concerning program satisfaction include:

- *The three participating PHAs were very satisfied with the MFLI program, but partial participants and nonparticipants were less satisfied with the aspects of the program that they encountered.*²⁴ The three participating PHAs (Yonkers, NYCHA, and the Town of Mamaroneck) gave the MFLI program very high satisfaction ratings. However, other PHAs who considered or submitted projects through the MFLI program were much less satisfied with the project approval process. The nonparticipating PHAs, as well as some other key market actors, displayed a lack of program knowledge which indicated that MFLI program education needs to be improved.
- *Reasons for dissatisfaction with the program in general included:*
 - Limited participation from the PHAs;
 - The number of energy efficiency projects through the program was too small to keep either the implementation staff or the M&V staff busy. Both ICF and Honeywell indicated that the small number of MFLI projects and the long time gaps in between these projects led to some inefficiencies due to the “start and then stop” nature of work and communication; and
 - Uncertainty regarding the amount of financial incentives available through the MFLI program discouraged participation and project expansion.

²⁴ We are defining partial participants as those PHAs who submitted projects for the MFLI approval process, but whose projects were not implemented through the MFLI program. These partial participants have some experience with MFLI program processes, but not as much as full program participants.

Appendix A. INTERVIEW GUIDES

Con Edison Multifamily Low-Income Program (MFLI) Program – Interview Guide for Participating and Non-Participating Public Housing Authorities (PHAs) (11/10/2010)

Purpose: We are first seeking to find out the level of MFLI program awareness/knowledge among the PHAs in New York City and Westchester County. For those PHAs not currently participating in the program, we are trying to find out why they are not participating and whether there are opportunities to mitigate possible barriers to participation. We are also seeking to determine how satisfied the two participating PHAs were with the processes for submitting projects to the program and getting them approved. Finally we are hoping to learn more about the standard practices for PHAs in initiating capital improvement projects and to what degree energy efficiency is a consideration in these projects.

Interview Research Objectives:

- 1) Understanding PHA standard practices for capital improvement projects and the role of energy efficiency considerations (if any) in the project development process;
- 2) Determining PHA awareness/knowledge of the MFLI program and the sources of this awareness/knowledge;
- 3) Measuring participant satisfaction with program requirements and processes for project submittal and improvement;
- 4) Understanding the HUD project approval process; and
- 5) Gauging nonparticipating PHA interest in the program.

Target Respondents: Participating and non-participating PHAs

Instructions to the interviewer:

The numbered questions are the main topics for inquiry. The lettered bullets are intended as sub-topics to follow up, if respondent hasn't covered them.

Introduction

[We are assuming that we will receive the key contact names for each PHA. But if not, please use the following introduction"]

Hello, my name is _____ and I'm calling from KEMA, on behalf of Con Edison to learn about your company's possible involvement with a Con Edison program called the Multifamily Low-Income Program. This program provides financial incentives to public housing authorities to help them implement energy efficiency projects. We are conducting research to better understand how the program is being implemented, and how it could be improved.

INT1. Who is the person in your organization that would be the most knowledgeable about the Con Edison Multifamily Low-Income Program?

[Ask for name of appropriate contact. Ask to be transferred to that person.]

[IF RESPONDENT SAYS NOW IS NOT A GOOD TIME FOR THIS CALL SAY:] When would be a more convenient time for me to call you back? [RECORD APPT DATE/TIME BELOW]:

DATE:_____ TIME:_____

[Once the knowledgeable contact is available, start with question B1]

Background Information, Capital Improvement/EE Project-Identification Practices

- B1. What is your job title and what are your responsibilities with ____ Housing Authority?
- B2. About how many buildings are owned or managed by your housing authority?
- B3. What is the total number of tenant units under your authority? [GET BREAKDOWN BY UNITS IN OWNED BUILDING VS. MANAGED BUILDINGS, IF POSSIBLE]
- B4. What is the general mix of your housing stock in terms of building size (e.g., number of units)?
- B5. Do you own or manage any Section 8 housing?
 - a. (IF YES) What is the general mix of your housing stock in terms of public housing vs. Section 8?
- B6. What is your process for making capital improvements in the buildings you own or manage?

[IF NOT ALREADY MENTIONED, PROBE FOR:

- a. SIZE OF BUDGET
- b. WHO THE DECISIONMAKERS ARE
- c. CRITERIA FOR PRIORITIZING PROJECTS
- d. WHETHER ENERGY EFFICIENCY IS CONSIDERED AND WHETHER THEY HAVE SPECIFIC ENERGY POLICIES OR ANYONE THAT HAS ENERGY MANAGEMENT OR EFFICIENCY REVIEW OF PROJECTS AS PART OF THEIR JOB RESPONSIBILITIES.
- e. WHAT HUD APPROVAL, IF ANY, IS REQUIRED FOR PROPOSED PROJECTS]

- B7. Do you have any processes in place – such as building audits -- to help your housing authority identify opportunities for energy efficiency improvements in the buildings that it owns or manages?
- a. [IF YES] What are these processes?
 - b. [IF YES] What energy efficiency opportunities, if any, have been identified?
 - i. [IF SOME OPPORTUNITIES IDENTIFIED] Have you taken any actions to make these energy efficiency improvements?
 - 1. [IF NO] Why not? [PROBE FOR THE EXISTENCE OF ANY FINANCIAL, INSTITUTIONAL, ETC. BARRIERS, IF NOT ALREADY MENTIONED]
 - ii. [IF SOME OPPORTUNITIES IDENTIFIED] What funding sources do you have available for making these types of energy efficiency improvements?
 - c. [IF NO] If your housing authority wanted to identify opportunities for energy efficiency improvements in the buildings that it owns or manages, how would it go about doing that?
 - d. [IF NO] What funding sources do you have available for making energy efficiency improvements?
- B8. Have you made any energy efficiency improvements in your housing stock in recent years?
- a. [IF YES] What was the nature of these improvements?
 - b. [IF YES] How were these energy efficiency opportunities identified?
 - c. [IF YES] How were these improvements funded? [NOTE: POSSIBLE ANSWERS MIGHT BE STIMULUS \$, HUD EE PROGRAMS, PERFORMANCE CONTRACTING, OR THEIR OWN CAPITAL IMPROVEMENT FUNDS]
 - d. [IF YES] Was the work done with in-house staff, with outside contractors, or a combination of both?
 - i. [IF CONTRACTORS] Who were these contractors and how did you find them?
 - e. [IF YES] Did these improvements have to receive approval from HUD?
 - i. [IF YES] What was this approval process like?
 - ii. How long did the HUD approval process take?

Awareness of, Involvement with the MFLI Program

M1. Have you heard of Con Edison's Multifamily Low-Income Program?

- a. [IF YES] How did you hear about the program?
- b. [IF YES] About when did you first become aware of the program?

M2. [IF AWARE] What do you know about this program?

[IF NOT ALREADY MENTIONED PROBE FOR:

- a. What do you know about the process for submitting energy efficiency projects for approval?
- b. What do you know about the criteria that Con Edison uses for approving projects?
- c. What do you know about the financial incentives that are available through the program?]

M3. [IF UNAWARE] This program allows public housing authorities in the New York City and Westchester County areas to propose energy efficiency projects to Con Edison for incentives. If Con Edison determines these projects meet the cost effectiveness criteria, it will provide prescriptive rebates to cover 100% of the incremental costs of energy-efficiency measures such as high efficiency boilers and furnaces or building weatherization. Based on this description, does this program sound familiar to you? [IF THEY CONTINUE TO SAY THEY ARE NOT FAMILIAR WITH THE PROGRAM, SKIP TO H4, OTHERWISE SKIP BACK TO M2]

Program Information

M4. [IF THEY ALREADY MENTIONED THE PRESENTATION IN RESPONSE TO M1A, SKIP TO M4A] According to Con Edison program staff, they first presented the Multifamily Low-Income Program to Westchester County Housing Authorities in August 2009. Do you recall this presentation?

- a. [IF YES] Using a five-point scale, where five equals very satisfied and one equals very dissatisfied, how satisfied were you with the presentation in terms of explaining how this program works?
 - i. Why do you say that?
- b. [IF YES] Were there any aspects of the program that were unclear to you after this presentation?
 - i. [IF YES] What aspects of the program were unclear?

M5. Besides this August 2009 presentation, did Con Edison provide you with any other information about this program?

- a. [IF YES] What was the nature of this information?
 - b. [IF YES] Using a five-point scale, where five equals very satisfied and one equals very dissatisfied, how satisfied were you with this information in terms of explaining how this program works?
 - i. Why do you say that?
- M6. Were you or anybody else at the ____ public housing authority interested in participating in this program?
- a. [IF YES] What were your reasons?
 - b. [IF NO] Why not?
 - c. [IF NO] Was there anything that Con Edison could have done to increase your likelihood of participating in this program?
 - i. [IF YES] What could Con Edison have done?

Project Submission/Approval Processes, Program Satisfaction

- M7. Did you submit any energy-efficiency projects to Con Edison for funding through this Multifamily Low-Income Program?
- a. [IF YES] What was the nature of this project? [NOTE: IF PROJECT WAS ALREADY DESCRIBED IN RESPONSE TO B8, SKIP TO M9E]
 - b. [IF YES] How were these energy efficiency measures in the project identified?
 - c. [IF YES] Besides the incentives you were hoping to receive from the Con Edison program, how was this project to be funded? [NOTE: POSSIBLE ANSWERS MIGHT BE STIMULUS \$, HUD EE PROGRAMS, PERFORMANCE CONTRACTING, OTHER CON-ED PROGRAMS (E.G., OIL-TO-GAS CONVERSION, OR THEIR OWN CAPITAL IMPROVEMENT FUNDS)]
 - i. [IF OTHER PROGRAM SOURCES MENTIONED BESIDES CON ED MFLI OR OWN CAPITAL IMPROVEMENT FUNDS] Did these other funding sources affect the size, scope, or timing of the project?
 - 1. [IF YES] How so?
 - d. [IF YES] Was this work to be done with in-house staff, with outside contractors, or a combination of both?
 - i. [IF CONTRACTORS] Who were these contractors and how did you find them?
 - e. [IF YES] What do you recall about the project submission process for this program?

[IF NOT ALREADY MENTIONED, PROBE FOR WHICH PARTIES (E.G. CON EDISON, ICF, HONEYWELL) THEY INTERACTED WITH, WHAT THE TIMELINE WAS]

- f. [IF YES] Did Con Edison assist you in the project submittal process?
 - i. [IF YES] What was the nature of this assistance?
 - g. [IF YES] Did you interact at all with Con Edison's engineering consultant ICF concerning this project?
 - i. [IF YES] Using a five-point scale, where five equals very satisfied and one equals very dissatisfied, how satisfied were you with your interactions with ICF?
 - 1. Why do you say that?
 - h. [IF YES] did you work with any other entities in getting these project submitted?
 - i. [IF YES] Who else?
 - ii. [IF YES] What role did they play in the project submittal process?
 - i. [IF YES] Using a five-point scale, where five equals very satisfied and one equals very dissatisfied, how satisfied were you with the process of submitting energy efficiency projects to Con Edison for review?
 - i. Why do you say that?
 - ii. What, if anything, could Con Edison have done to improve this project submission process?
 - j. [IF NO] Why not?
- M8. Did any of the energy efficiency projects that you submitted to the Con Edison Multifamily Low-Income program get approved?
- a. [IF YES] Which one(s)?
 - b. [IF YES] What do you recall about the process that you went through after your project was approved?
 - c. [IF YES] Using a five-point scale, where five equals very satisfied and one equals very dissatisfied, how satisfied were you with the program's process after your project was approved?
 - i. Why do you say that?
 - ii. What, if anything, could Con Edison have done to improve this process?

- d. [IF YES] Using a five-point scale, where five equals very satisfied and one equals very dissatisfied, how satisfied were you with the financial incentives that Con Edison offered to pay for the completion of this project?
 - i. Why do you say that?
 - e. [IF YES] Has your energy efficiency project been installed and completed?
 - i. [IF NO] Why hasn't it been completed?
 - ii. [IF NO] When do you expect it to be completed?
 - f. [IF NO] Why didn't Con Edison approve your energy efficiency project for program financing?
 - g. [IF NO] Was it clear to you what reasons or criteria Con Edison could use to reject a project for program funding?
- M9. Did your organization withdraw any of the projects originally submitted, from consideration under this program ?
- M10. Considering the program as a whole, what is your overall level of satisfaction with this Con Edison Multifamily Low-Income Program? Please use a five-point scale, where five equals very satisfied and one equals very dissatisfied.
- a. Why do you say that?
 - b. What, if anything, could Con Edison have done to improve this process?

HUD approval

- H1. [IF PROJECT WAS APPROVED BY CON EDISON] Did the energy efficiency project that Con Edison approved also have to receive approval from HUD?
- a. [IF YES] What is the status of this HUD approval process?
 - b. [IF YES] What do you recall about this HUD approval process?
- [IF NOT MENTIONED, ASK HOW THE HUD APPROVAL PROCESS DIFFERED FROM THE CON EDISON APPROVAL PROCESS]
- H2. [IF YES] Using a five-point scale, where five equals very satisfied and one equals very dissatisfied, how satisfied were you with the HUD approval process?
- a. [IF YES] Why do you say that?
 - b. What, if anything, could HUD have done to improve this process?

Wrap Up, Program Interest of Unaware PHAs

- H3. Are there any other aspects of this Con Edison Multifamily Low-Income Program that we haven't already discussed that you think we should be aware of?
- a. [IF YES] What? [THEN THANK AND TERMINATE]
 - b. [IF NO] [THANK AND TERMINATE]
- H4. [IF UNAWARE OF PROGRAM] Based on the description of the program I just gave you [REPEAT DESCRIPTION IN M3, IF NECESSARY] would you or ____ public housing authority be interested in participating in this program?
- a. [IF YES] What additional information or assistance, if any, would you need to get your housing authority involved with this program?
 - b. [IF NO] Why not?
 - c. [IF NO] Is there any additional information or assistance that Con Edison could provide to increase your likelihood of participating in this program?
 - i. [IF YES] What could Con Edison do?

These are all the questions I have for you today. Thanks very much for your time.

Con Edison Multifamily Low-Income Program (MFLI) Program – Interview Guide for a Housing and Urban Development (HUD) Representative Who Has Worked with MFLI Projects (12/3/2010)

Purpose: We are first seeking to find out from HUD what opportunities for energy efficiency (EE) projects are available to Public Housing Authorities (PHAs) in addition to those offered by the MFLI program. We are also interested in learning the HUD representative's perspectives on the barriers to energy efficiency in the public housing sector. We will then ask about the HUD representative's knowledge of the MFLI program and his/her assessment of its design and performance. Finally we will find out how the HUD project approval process works.

Interview Research Objectives:

- 6) Learning what programs, incentives, and opportunities are currently available for PHAs to make EE improvements (besides the MFLI program).
- 7) Collecting information on what barriers PHAs in general face in implementing EE projects.
- 8) Learning what HUD knows about the MFLI program, how it compares to other EE programs that HUD works with, and how compatible it is with HUD requirements.
- 9) Learning what criteria HUD uses to decide whether to approve EE projects, how compliance with these requirements is measured, the timing of this process, and what could be done by PHAs/programs to insure quicker project approval.

Target Respondents: HUD Representative

Instructions to the interviewer:

The numbered questions are the main topics for inquiry. The lettered bullets are intended as sub-topics to follow up, if respondent hasn't covered them.

Introduction

[We have already received a HUD contact name from the Yonkers PHA and assume it will be the same one for the NYCHA PHA, but in case not, we will use the following introduction]

Hello, my name is _____ and I'm calling from KEMA, on behalf of Con Edison to learn about HUD's possible involvement with a Con Edison program called the Multifamily Low-Income Program. This program provides financial incentives to public housing authorities to help them implement energy efficiency projects. We are conducting research to better understand how the program is being implemented, and how it could be improved.

INT2. Who is the person in your organization that would be the most knowledgeable about the Con Edison Multifamily Low-Income Program?

[Ask for name of appropriate contact. Ask to be transferred to that person.]

[IF RESPONDENT SAYS NOW IS NOT A GOOD TIME FOR THIS CALL SAY:] When would be a more convenient time for me to call you back? [RECORD APPT DATE/TIME BELOW]:

DATE: _____ TIME: _____

[ONCE THE KNOWLEDGEABLE CONTACT IS AVAILABLE, START WITH QUESTION B1]

Background Information, EE Opportunities and Barriers for Public Housing

- B9. What is your job title and what are your responsibilities with HUD?
- a. [IF NOT ALREADY MENTIONED] What region of the country do you cover?
- B10. Are you reasonably familiar with the options and opportunities that public housing authorities have to improve the energy-efficiency of their housing stock?
- a. [IF YES] What options and opportunities do these Public Housing Authorities have to improve energy efficiency?
- b. [IF YES] What are some of the pros and cons of these options and opportunities?
- i. [IF NOT ALREADY MENTIONED] To what degree do these pros and cons vary depending on the size of the housing authority?
- ii. [IF NOT ALREADY MENTIONED] To what degree do these pros and cons vary depending on the mix of the housing stock owned or managed by the housing authority?
- B11. In general, what barriers do public housing authorities face in improving the energy efficiency of their housing stock?
- B12. What efforts are being made by HUD and other entities to try to overcome these barriers?

Awareness of, Involvement with the MFLI Program

- M11. Have you heard of Con Edison's Multifamily Low-Income Program?
- a. [IF YES] How did you hear about the program?
- b. [IF YES] About when did you first become aware of the program?
- c. [IF YES] From where did you get your information about how the program works?
- M12. [IF AWARE] What do you know about this program?
- [IF NOT ALREADY MENTIONED PROBE FOR:
- a. What do you know about the process for submitting energy efficiency projects for approval?

- b. What do you know about the criteria that Con Edison uses for approving projects?
 - c. What do you know about the financial incentives that are available through the program?]
- M13. [IF UNAWARE] This program allows public housing authorities in the New York City and Westchester County areas to propose energy efficiency projects to Con Edison for incentives. If Con Edison determines these projects meet the appropriate cost effectiveness criteria, it will provide prescriptive rebates to cover 100% of the incremental costs of energy-efficiency measures such as high efficiency boilers and furnaces or building weatherization. Based on this description, does this program sound familiar to you? [IF THEY CONTINUE TO SAY THEY ARE NOT FAMILIAR WITH THE PROGRAM, SKIP TO H4, OTHERWISE SKIP BACK TO M2]
- M14. How does the design of the MFLI program compare to other multifamily energy efficiency programs you are familiar with?
- M15. What is your assessment of how the MFLI program fits in with other energy efficiency options or programs that are available to public housing authorities? [NOTE: IF NOT ALREADY MENTIONED, PROBE FOR THE DEGREE THAT THE MFLI PROGRAM FILLS IN GAPS VS. OVERLAPS WITH EXISTING EE OPTIONS/PROGRAMS]

HUD Project Approval Process, Satisfaction with the Program

- H1. Once an energy efficiency measure or project had been approved by the PHA and Con Edison for MFLI program funding, what is the process for getting it approved by HUD?
 - a. [IF NOT ALREADY MENTIONED] Who within HUD is responsible for reviewing and approving the submitted projects?
 - b. [IF NOT ALREADY MENTIONED AND CITATION OF HUD AUTHORITY WAS NOT ALREADY OBTAINED FROM PHA INTERVIEWS] Why do such projects require HUD approval?
 - c. [IF NOT ALREADY MENTIONED] What sort of information about the projects must be included in the submission?
 - d. [IF NOT ALREADY MENTIONED] What sort of criteria does HUD use to decide whether or not to approve a submitted EE projects?
 - e. [IF NOT ALREADY MENTIONED] How do you measure whether the EE project has met HUD requirements?
 - f. [IF NOT ALREADY MENTIONED] How long does this project approval process normally take?

- g. [IF NOT ALREADY MENTIONED] What factors might cause this approval process to take longer than normal?

H2. Did HUD reject or request re-submission for any of the energy-efficient measures or projects that were associated with Con Edison's MFLI program?

- a. [IF YES] Which projects [NOTE: IF INTERVIEWEE DOESN'T RECALL, JUST TELL THEM YOU CAN GET THE DETAILS LATER VIA EMAIL AND MOVE TO NEXT QUESTION]?
- b. [IF YES] Do you recall what reasons HUD had for not approving these projects?
 - i. [IF YES] What were these reasons?
- c. [IF YES] Were these energy efficiency projects ever re-submitted for HUD approval?
 - i. [IF YES] Were they approved the second time around?
 - 1. [IF NO] Why not?

H3. Is there anything the Con Edison MFLI program or its participating PHAs could be doing to increase the chance that their energy-efficient measures or projects will receive a quicker approval from HUD?

- a. [IF YES] What could they be doing?

H4. Did applications for ARRA (e.g. stimulus) funding have any impact on how long it took HUD to approve the projects for Con Edison's MFLI program?

- a. [IF YES] What was this impact?

H5. Considering the program as a whole, what is your overall level of satisfaction with this Con Edison MFLI Program? Please use a five-point scale, where five equals very satisfied and one equals very dissatisfied.

- a. Why do you say that?

These are all the questions I have for you today. Thanks very much for your time.

Con Edison Multifamily Low-Income Program (MFLI) Program – Interview Guide for PHA Implementation Contractors (12/3/2010)

Purpose: One of the most important roles in the delivery of the Con Edison MFLI program is played by the implementation contractors who are responsible for the installation of energy-efficiency measures through projects at various sites, either directly, or through the management of subcontractors. This interview guide is designed to collect information on such important issues such as how they identify energy efficiency projects in low-income multifamily buildings, what is the typical process for getting these projects approved, and how satisfied they have been with the MFLI program.

Interview Research Objectives:

- 10) *Project identification:* Understanding how the PHA implementation contractors identify energy-efficiency projects including:
 - a) What consultation (if any) was conducted with PHA staff and building management/maintenance staff to identify projects,
 - b) What auditing, billing analysis, or other means were used to identify potential projects,
 - c) Which EE measures/projects were seriously considered for proposal,
 - d) Whether any EE measures/projects were seriously considered and then rejected and (if so) why,
 - e) What criteria are used to decide whether EE measures/projects should be proposed, and
 - f) How energy savings estimates were calculated for proposed projects.
- 11) *Project approval process:* Their experience with and assessment of the Con Edison, ICF, and HUD project approval processes.
- 12) *Satisfaction with the program:* Their level of satisfaction with the MFLI program.

Target Respondents: PHA implementation contractors

Instructions to the interviewer:

The numbered questions are the main topics for inquiry.

Introduction

[We are assuming that we will receive the key contact names from each PHA. But if not, please use the following introduction"]

Hello, my name is _____ and I'm calling from KEMA, on behalf of Con Edison to learn about your company's possible involvement with a Con Edison program called the Multifamily Low-Income Program. This program provides financial incentives to public housing authorities to help them implement energy efficiency projects. We are conducting research to better understand how the program is being implemented, and how it could be improved.

INT3. Who is the person in your organization that would be the most knowledgeable about the Con Edison Multifamily Low-Income Program?

[Ask for name of appropriate contact. Ask to be transferred to that person.]

[IF RESPONDENT SAYS NOW IS NOT A GOOD TIME FOR THIS CALL SAY:] When would be a more convenient time for me to call you back? [RECORD APPT DATE/TIME BELOW]:
DATE:_____ TIME:_____

[Once the knowledgeable contact is available, start with question B1]

Background Information

B13. What is your job title and what are your responsibilities with [company name]?

B14. How did you first hear about the MFLI program?

B15. How did your company first become involved with the _____ housing authority?

[IF NOT ALREADY MENTIONED, PROBE FOR:

- a. WHETHER THEY HAD A RELATIONSHIP WITH THE PHA PRIOR TO THE MFLI RFP AND WHAT THE NATURE OF THAT RELATIONSHIP WAS (E.G. WERE THEY ON RETAINER, ETC.)
- b. WHAT THE MFLI RFP PROCESS WAS LIKE

B16. What was the process for getting selected and on-board as an implementation contractor for the _____ housing authority for the MFLI program?

[IF NOT ALREADY MENTIONED, PROBE FOR:

- a. WHAT WAS THE NATURE OF THEIR INTERACTION WITH _____ HOUSING AUTHORITY IN THIS APPROVAL PROCESS
- b. WHAT WAS THE NATURE OF THEIR INTERACTION WITH CON EDISON AND CON EDISON'S M&V CONTRACTOR, (ICF) IN THIS APPROVAL PROCESS]

B17. How did you learn about how the MFLI program functions?

B18. Were there any aspects of how the MFLI program functions that were unclear to you or which could have been better explained?

- a. [IF YES] What aspects of the program?

The Project Identification Process

I1. What is your process for identifying energy-efficiency projects for Con Edison's MFLI Program?

I2. [IF NOT ALREADY MENTIONED] Has the _____ housing authority ever provided you with project leads for the MFLI program?

- a. [IF YES] What was the nature of these leads?
 - b. [IF YES] What assistance, if any, did the ____ housing authority provide in helping you to pursue these leads?
 - 13. Did the ____ housing authority or Con Edison provide you with any guidance in terms of the types of buildings or customers that were eligible for the MFLI program?
 - a. [IF YES] What was the nature of this guidance?
 - 14. Did the ____ housing authority or Con Edison provide you with any guidelines or parameters as to the permissible implementation costs of the energy efficiency projects you were considering?
 - a. [IF YES] What were these guidelines or parameters?
 - 15. [IF NOT ALREADY MENTIONED] What are your procedures for determining whether a project lead or potential project is likely to develop into a cost-effective energy efficiency project for the MFLI program?
 - [IF NOT ALREADY MENTIONED, PROBE FOR:
 - a. ANY INSPECTIONS, AUDITS, WALKTHROUGHS THEY CONDUCT TO IDENTIFY PROJECT POTENTIAL.
 - b. ANY ON-SITE DATA LOGGING, BILLING ANALYSIS OR EM&V STUDIES THEY DO TO IDENTIFY PROJECT POTENTIAL.]
 - 16. Which energy-efficient measures or projects did you submit to Con Edison and its in-house contractor ICF for approval?
 - 17. How were these energy-efficient measures or projects identified?
 - 18. What information sources did you use for coming up with energy savings estimates for these measures and projects?
- [NOTE: THE INTERVIEWEE DOESN'T NEED TO PROVIDE CALCULATION DETAILS, JUST WHERE THESE SAVINGS ESTIMATES CAME FROM – E.G. FROM THE TECMARKET WORKS MULTIFAMILY TECH MANUAL, CUSTOM CALCULATIONS, BASED ON BILLING ANALYSES, ETC.]
- 19. Before submitting these measures or projects for approval, did you run them through any cost-effectiveness screeners?
 - a. [IF YES] What were these cost effectiveness screeners? [NOTE: AGAIN, DON'T NEED DETAILS JUST NEED TO KNOW THE NAME OF THE TOOL AND/OR THE B/C CRITERION – E.G. TOTAL RESOURCE COST (TRC) TEST]
 - b. [IF YES] Where did you get key inputs for these calculations such as project cost estimates, incentive level estimates, etc.? [NOTE: THEY SHOULD HAVE ALREADY TOLD YOU IN I8 HOW THEY ESTIMATED ENERGY SAVINGS]

- c. [IF YES] Did you have any difficulty collecting the necessary information for estimating the cost effectiveness of these projects?
 - i. [IF YES] What difficulties did you encounter?
- I10. Did you seriously consider any other energy-efficient measures or projects for MFLI program approval that you ultimately decided not to submit for program approval?
 - a. [IF YES] What were these other energy-efficient measures or projects?
 - b. [IF YES] Why didn't you submit them for program approval?
- I11. In general, what criteria do you consider when deciding whether to submit an energy-efficient measure or project for MFLI program approval?

The Project Approval Process

Now I would like to ask you a few questions about the process for getting these MFLI program projects approved.

The PHA Project Approval Process

- A1. Once you had selected an energy efficiency measure or project, what was the process for getting it approved by the ____ housing authority?
 - [IF NOT ALREADY MENTIONED, PROBE FOR:
 - a. HOW LONG THE PROCESS TOOK
 - b. WHO THE KEY PHA DECISIONMAKERS WERE
 - c. WHAT FACTORS THE PHA CONSIDERED IN APPROVING THE PROJECT]
- A2. Were any of the proposed energy efficiency measures or projects rejected by the PHA?
 - a. [IF YES] Which ones?
 - b. [IF YES] What reasons, if any, were given for rejecting them?
- A3. Were there any aspects of this PHA approval process that you thought were unnecessary or particularly onerous?
 - a. [IF YES] What were these?
- A4. Using a five-point scale, where five equals very satisfied and one equals very dissatisfied, how satisfied were you with the PHA project approval process?
 - a. [IF YES] Why do you say that?

The Con Edison Project Approval Process

- A5. Once you had selected an energy efficiency measure or project, what was the process for getting it approved by Con Edison and its M&V contractor ICF?

[IF NOT ALREADY MENTIONED, PROBE FOR:

- a. HOW LONG THE PROCESS TOOK
- b. WHO THE KEY CON EDISON AND ICF DECISIONMAKERS WERE
- c. WHAT FACTORS CON EDISON AND ICF CONSIDERED IN APPROVING THE PROJECT]

A6. Were any of the proposed energy efficiency measures or projects rejected by Con Edison or its contractor ICF?

- a. [IF YES] Which ones were these?
- b. [IF YES] What reasons, if any, were given for rejecting them?

A7. Were there any aspects of this Con Edison approval process that you thought were unnecessary or particularly onerous?

- a. [IF YES] What were these?

A8. Using a five-point scale, where five equals very satisfied and one equals very dissatisfied, how satisfied were you with the Con Edison project approval process?

- a. [IF YES] Why do you say that?

The HUD Project Approval Process

A9. Once an energy efficiency measure or project had been approved by the PHA and Con Edison, what was the process for getting it approved by HUD?

[IF NOT ALREADY MENTIONED, PROBE FOR:

- a. HOW LONG THE PROCESS TOOK
- b. WHO THE KEY HUD DECISIONMAKERS WERE
- c. WHAT FACTORS HUD CONSIDERED IN APPROVING THE PROJECT]

A10. Were any of the proposed energy efficiency measures or projects rejected by the HUD?

- a. [IF YES] Which ones were these?
- b. [IF YES] What reasons, if any, were given for rejecting them?

A11. Were there any aspects of this HUD approval process that you thought were unnecessary or particularly onerous?

- a. [IF YES] What were these?

A12. Using a five-point scale, where five equals very satisfied and one equals very dissatisfied, how satisfied were you with the HUD project approval process?

- a. [IF YES] Why do you say that?

A13. Did your company submit any energy efficiency projects for consideration from the Con Edison MFLI program and then later withdraw them?

- a. [IF YES] Which projects were these
- b. [IF YES] Why were these projects withdrawn?

The Project Implementation Process

Next I would like to ask you a few questions about whether any of these approved projects were implemented and if not, why not.

I1. Have any of the MFLI program-approved energy-efficient measures been installed?

- a. [IF YES] Which energy-efficient measures were these?
- b. [IF YES] In which multifamily buildings were these measures installed?
- c. [IF YES] Were these measures installed by your company or a subcontractor?
[NOTE: IF SOME WERE INSTALLED BY THE IMPLEMENTATION CONTRACTOR AND SOME BY THE SUBCONTRACTORS, TRY TO DETERMINE WHICH WERE INSTALLED BY WHICH]
 - i. [IF AT LEAST SOME WERE INSTALLED BY A SUBCONTRACTOR] Did your subcontractor(s) have to go through any approval or vetting process for this program?
- d. [IF YES] Did you encounter any barriers or challenges to getting these energy-efficient measures installed?
 - i. [IF YES] What were the barriers or challenges?

I2. Are there any MFLI program-approved energy-efficient measures that have not been installed yet?

- a. [IF YES] Why haven't these measures been installed?
- b. [IF YES] When do you expect these measures to be installed?

I3. What barriers or challenges, if any, have you faced in getting these MFLI program-approved energy-efficient measures installed?

I4. [IF BARRIERS OR CHALLENGES NAMED] What could be done to help you overcome these barriers or challenges?

Program Satisfaction

Finally I want to ask you about your satisfaction with the program

S1. Using a five-point scale, where five equals very satisfied and one equals very dissatisfied, how satisfied are you with the financial incentives offered by the Con Edison MFLI program?

a. Why do you say that?

S2. Considering the program as a whole, what is your overall level of satisfaction with this Con Edison Multifamily Low-Income Program? Please use a five-point scale, where five equals very satisfied and one equals very dissatisfied.

d. Why do you say that?

S3. What, if anything, could Con Edison have done to improve this program?

These are all the questions I have for you today. Thanks very much for your time.