

EmPower New YorkSM

Program Guidelines and Procedures Manual

Updated August 2011

Table of Contents

Section	Title	Page
1	Program Overview	1
2	Contractor Requirements	5
3	Procedures for Referring Households into EmPower New York	12
4	Weatherization Agency Participation	13
5	Referrals of Households in Emergency Situations	15
6	Evaluation of Potential for Energy Services	17
7	Services to Rental Properties	18
8	Assigning Households to Contractors	20
9	Coordination of EmPower New York, Assisted Home with ENERGY STAR® and Utility Programs	21
10	Multifamily Guidelines	23
11	Energy Audit Procedures	28
12	Determination of Workscopes for 1-4 Unit Projects	31
13	Electric Reduction (ER) Measures and Criteria	34
13.1	Compact Fluorescent Lights (CFL's), Torchieres, Candelabra CFLs, and LED Lighting	34
13.2	Installation of Hardwired Fluorescent Fixtures	35
13.3	Refrigerator and Freezer Replacement	37

Section	Title	Page
13.4	Hot Water Efficiency Upgrades (Temperature Adjustment, Tank Wrap, Piping Insulation, Showerhead and Aerator Replacement, Time for Electric Water Heater)	39
13.5	Electric Water Heater Replacement and Conversions	41
13.6	Electric Dryer Conversion to Natural Gas	42
13.7	Waterbed Mattress Replacement	43
13.8	Other Electric Reduction Measures	44
14	Home Performance (HP) Measures and Criteria	45
14.1	Air Sealing Methodology	45
14.2	Insulation	46
14.3	Heating System Repair and Replacement	49
14.4	Inspection and Service to Water Heaters Fueled by a Fossil Fuel	51
14.5	Programmable Thermostats	51
14.6	Other Home Performance Measures	52
15	Procedures Related to Health and Safety	54
16	Energy Education	57
17	Project Completion and Invoicing	58
18	Quality Control Procedures	60

Appendices

Appendix 1:	Forms and Documents
Appendix 2:	Gas Leak Safety Procedures
Appendix 3:	NFG Procedures
Appendix 4:	Heating Systems Testing Guidelines
Appendix 5:	Tips and Solutions to Solve Water Heater Venting Issues
Appendix 6:	Sample Invoice
Appendix 7:	Quality Assurance Manual
Appendix 8:	Education Manual
Appendix 9:	Tool List

Section 1: Program Overview

EmPower New YorkSM (EmPower) is an energy efficiency program administered by the New York State Energy Research Development Authority (NYSERDA). The goal of this program is to help low-income households reduce energy use and costs. The program focuses on cost-effective Electric Reduction (ER) measures such as lighting and refrigerator replacements, as well as cost-effective Home Performance (HP) measures such as insulation and air sealing. Energy related health and safety measures are also addressed as appropriate. On-site energy use education provides households with additional strategies for managing their energy costs, and energy education workshops are available in locations across the state. EmPower New York serves both homeowners and tenants in buildings with up to 100 units.

Honeywell International is currently under contract to NYSERDA to provide program implementation support. Conservation Service Group (CSG) is currently under contract to provide quality assurance services.

EmPower New YorkSM receives funding from a variety of sources:

- **System Benefits Charge (SBC):** serves customers of all SBC-participating electric utilities: Central Hudson, Con Edison, NYSEG, National Grid, Orange and Rockland, and Rochester Gas and Electric. Provides for both ER and HP work.
- **Energy Efficiency Portfolio Standard (EEPS):** provides ER services to customers of all SBC-participating electric utilities (above); provides HP services to customers of participating natural gas utilities: Central Hudson, Con Edison, KeySpan NY, KeySpan Long Island, National Grid, National Fuel, NYSEG, Orange and Rockland, Rochester Gas and Electric. Additionally, participants in the National Fuel Gas Conservation Incentive Program (CIP) are served through EmPower New York with funding from that utility.
- **Settlement Funds:** On occasion, EmPower receives settlement funds from the State of New York to provide energy efficiency services. Currently the Heating Oil Efficiency Pilot provides funding for HP services in homes heated with oil.
- **Regional Greenhouse Gas Initiative (RGGI)** This funding provides for HP measures for oil- and propane- heated homes throughout New York State.

1.1 Program Guidelines and Assistance

This manual outlines guidelines and procedures for the program. It is not a training manual for the installation of the measures described. Contractors who provide services in this program are expected to become familiar with and follow these

guidelines and procedures. The most current version of this manual is available online at the EmPower New York Partner Portal:

www.GetEnergySmart.org/partnerportal

Program Announcements are sent via e-mail to Participating Contractors and Vendors and then posted on the Partner Portal. All contractors are expected to check the Partner Portal regularly.

For further information, clarifications and training, contact the Program Implementer or NYSERDA at the numbers below.

Current Program Implementer: Honeywell International, Inc.
Carol Sweeney, Program Director
Chuck Dolinkas, Senior Program Analyst
1-800-263-0960

NYSERDA EmPower New YorkSM staff:

Kelvin Keraga, Senior Project Manager
518-862-1090 ext. 3374
kk2@nyserda.org

David Friello, Associate Project Manager
518-862-1090 ext. 3355
daf@nyserda.org

Andrew Van Gorder, Assistant Project Manager, Quality Assurance
518-862-1090 ext. 3513
apv@nyserda.org

Gladys Brangman, Project Coordinator
518-862-1090 ext. 3467
geb@nyserda.org

1.2 Building Performance Institute

- A. Contractors providing services through EmPower New YorkSM must be accredited by the Building Performance Institute (BPI), and must perform work to BPI standards. Further information regarding BPI, including technical standards, can be found at:

www.bpi.org

1.3 Participant Eligibility

- A. For all EmPower projects:
 - a. Household must have an income below 60% of state median
 - b. Electric utility bills must be in the name of the applicant to EmPower New YorkSM.
 - c. Household must reside in a building with 100 units or less.
- B. For SBC and EPS-funded projects, eligible households include:
 - a. Households that are customers of the SBC- participating utilities, and are referred by an Office for the Aging, a Weatherization Agency, or other accepted referral source; or
 - b. Are enrolled in SBC-participating utility low-income payment assistance programs;
- C. For natural gas efficiency programs, households that are customers of the relevant gas utility.
- D. For Settlement Funded projects, household eligibility is determined by the terms of the settlement.
- E. Priority is given to:
 - a. Households participating in utility low-income payment assistance programs.
 - b. Seniors referred by County Offices for the Aging or the New York City Department for the Aging (DFTA).
 - c. Eligible households receiving services that are coordinated or co-funded by the Weatherization Assistance Program to create comprehensive workscopes, which include appropriate electric reduction measures.
 - d. Eligible households in need of services living in buildings not eligible for service through the Weatherization Assistance Program.
 - e. Smaller Multifamily Performance Program (MPP) eligible buildings that NYSEKDA determines are better served through EmPower New YorkSM.

1.4 Services Provided

- A. Electric Reduction (ER): Energy-efficient lighting, refrigerators and freezers, change-out of electric clothes dryers or water heaters to natural gas, and other electric reduction measures. In most situations, households will be provided with ER services exclusively. ER services are targeted to households where opportunities for cost-effective electric reduction exist, such as the presence of an old refrigerator.
- B. Home Performance (HP): Insulation, air sealing, and heating system repairs/replacements and other shell measures. Households referred for HP services will also typically be served with energy-efficient lighting and other generally lower cost ER measures. HP services are targeted to 1-4 family homes with moderate-to-high home heating costs, and:
 - a. Where ER measures are not expected to significantly reduce energy costs; or
 - b. Where a household is in need of HP services and WAP is not available.
 - c. Where the job is funded by specific allocations to EmPower that are targeted to HP measures: or

- C. In-home Energy Use Education, as well as Energy Use Management and Financial Management workshops.

Section 2: Contractor Requirements

2.1. All Contractors must:

- A. Agree to the terms of and sign the EmPower New YorkSM Contractor Agreement (CA)
- B. Provide correct tax ID #, as well as documentation of insurance and Workmen's Compensation coverage as required by the CA.
- C. Ensure that all staff members receive appropriate training in program guidelines and procedures, and that BPI-certified staff supervise work.
- D. Ensure that EPA-mandated lead-safe practices are followed.
- E. Provide one (1) e-mail address of a designated employee for Contractor to receive Program Announcements and Project Notifications through NYSERDA's Comprehensive Residential Information System (CRIS) including the Partner Portal. In the event that the designated employee departs from the company, the contractor must immediately notify NYSERDA and the Program Implementer.
- F. Agree to accept, report, and thoroughly document progress of work, including any problems related to work performed.
- G. Promptly notify NYSERDA and the Program Implementer of staffing changes related to the EmPower New York program.
- H. Insure that new staff members receive appropriate training in program procedures.
- I. Maintain and calibrate tools and equipment per manufacturer's specifications.
- J. Cooperate by allowing the Program Implementer to conduct ride-alongs at least once each quarter with each contractor.
- K. Program Implementer and Contractor must review production on a weekly basis, and QA scoring on at least a monthly basis.

2.2. Contractors new to the program and interested in providing services through EmPower New YorkSM must:

- A. Provide documentation of the viability of their business, as outlined in the Contractor Agreement. (Contractors currently participating in NYSERDA's Home Performance with ENERGY STAR[®] program are exempt from this requirement.)
- B. Be accredited with the Building Performance Institute. Contractors who are not currently accredited must request a waiver and propose a written plan for obtaining accreditation, and a commitment to obtain the accreditation by a proposed date within 6 months of acceptance into the program.
- C. Contractors new to the industry will be required to provide a description of steps taken to develop the capacity to provide service, including: energy efficiency tools owned, past experience related to energy efficiency work and contractor plans for developing a business.

2.3. Contractor Participation Status:

- A. Participating Contractors shall be classified in one of the following designations. Each designation shall be subject to limitations, or requirements associated with that designation. NYSERDA reserves the right to modify the definition, limitations, and requirements of these

designations. NYSERDA retains sole judgment over determining a contractor's designation.

- a. **Provisional status:** Reserved for all new Contractors in EmPower New York (Program). Projects completed by Contractors on provisional status will receive enhanced Quality Assurance (QA) and Quality Control (QC) oversight, as outlined in the Quality Assurance Manual. During this period:
- i. Contractor must meet with Program Implementer to discuss production capacity.
 - ii. Program Implementer and Contractor must arrange that the Program Implementer staff accompany Contractor on the first two audits.
 - iii. Contractor must complete three projects meeting all QA requirements (score of 3.0 or better) or two projects exceeding all QA requirements (score of 5.0). These QA Standards must be met by the sixth inspected project. A Contractor who performs Home Performance work for EmPower must achieve these scores on Home Performance projects.
 - iv. Contractor must otherwise meet the standards of the Program as outlined in this Manual.
 - v. Contractor must become accredited by BPI.

If Contractor fails to meet these standards, the Contractor will be reviewed for termination from the Program.

- b. **Full status:** New Contractors who have successfully completed the terms of the provisional period or current Contractors who have demonstrated through past performance that they provide quality services through the Program. Quality service is defined as:
- i. Maintaining an average score of 3.0 or better on QA inspections. Contractor scoring will be issued quarterly and a rolling average of four quarters will be used as the Contractor rating score.
 - ii. Abiding by the terms of the Contractor Agreement.
 - iii. Meeting Program standards in terms of timely completion of work and other Program requirements, as outlined in this Manual.
 - iv. Remaining in good standing as an Accredited BPI Contractor.
 - v. Taking effective corrective actions to deficiencies in performance as identified by Quality Assurance Inspection Notifications, Program Implementer staff, and NYSERDA.

- c. **Probationary status:** Contractors may be placed in probationary status for the following reasons:
- i. Violation of program or ethical standards; or
 - ii. Failure to meet the minimum required QA standard:
 1. An average QA Score of less than 2.0 in a quarter (at least 4 projects must have been inspected);
 2. An average QA Score of less than 3.0 in two of the last four quarters (at least 8 projects must have been inspected); or
 - iii. Failure to take effective corrective actions on a serious deficiency or a minor repeated deficiency in work quality or performance; or
 - iv. Five (5) or more Quality Assurance Inspection Notifications that remain unresolved for more than 30 days; or
 - v. Two or more QA scores of 0.0 within three months; or
 - vi. Suspension of BPI Accreditation due to administrative lapses.

The probationary period will not be less than 30 days. Projects completed by Contractors on Probationary status will receive enhanced QA/ QC oversight. During the probationary period, the Contractor:

- i. Continues to be eligible to provide services to EmPower New York
- ii. Will be subject to higher QA inspection levels
- iii. Must remediate all issues related to probation, as directed by NYSERDA
- iv. Must submit to the Program, in writing, an agreed-upon action plan designed to ensure future violations are avoided
- v. Must complete three projects meeting all QA requirements (score of 3.0 or better) or two projects exceeding all QA requirements (score of 5.0). These QA Standards must be met by the sixth inspected project. A Contractor who performs Home Performance work for EmPower must achieve these scores on Home Performance projects.

Upon satisfactory completion of the action plan and all remediation, and upon review of probationary period QA results, NYSERDA will determine the Contractor's participation status during the remaining term of the Contractor Agreement.

- d. **Suspended status:** Contractors may be suspended from the Program if the Contractor:

- i. Fails to adequately fulfill the terms of the probationary period; or
- ii. Qualifies for probation for a second time within twelve (12) months; or
- iii. Is under investigation for, or has been determined to have engaged in practices that have put the public or Program at risk; or
- iv. Indulges in inappropriate language or behavior during the course of the work; or
- v. Has had its accreditation agreement suspended by BPI for any reason other than administrative lapses, including work quality or health and safety issues; or
- vi. Fails to meet the minimum required QA standard:
 - 1. A QA Score of less than 2.0 in two of the last four quarters (8 projects must have been inspected); or
 - 2. A QA Score of less than 2.5 over the last four quarters (8 projects must have been inspected)

During a suspension:

- i. Contractors must obtain prior written approval from NYSERDA for completion of any work that is in progress when Contractor is suspended.
- ii. NYSERDA reserves the right to reassign such jobs from those contractors who have been suspended.
- iii. A suspended Contractor is prohibited from representing him/herself as a participating contractor except in the execution of remedial action as directed by the Program Implementer.
- iv. Depending on the reasons for suspension, NYSERDA may direct the Contractor to remediate issues related to suspension, and may require the Contractor to submit to the Program, in writing, an agreed-upon action plan designed to ensure future violations are avoided

Suspended Contractors will either progress to probationary status upon satisfactory completion of the specified remedial activities or resolution of issues related to suspension, or be terminated from program participation. Nothing in this Program status relieves the Contractor of the responsibility to fulfill any outstanding obligations to the Program, or Program customers as directed by the Program Implementer and NYSERDA.

- e. **Terminated Status:** Contractors may be terminated from the Program if the Contractor:

- i. Has been on suspended status for more than 30 days and has been unresponsive to or failed to adequately fulfill the terms of their suspension; or
- ii. Has had their accreditation agreement terminated by BPI for any reason; or
- iii. Submits falsified documents or unauthorized signatures to the Program; or
- iv. Commits illegal actions while performing services for EmPower; or
- v. Is convicted or has a principal who is convicted of a criminal charge that casts the Program in negative light or calls the integrity or workmanship of the Contractor into question; or
- vi. Is in gross violation of program standards; or
- vii. Repeatedly bills for uninstalled measures; or
- viii. Fails to meet the terms of the Provisional period.

Contractors with this designation are prohibited from participation in the Program. Customers with pending or in-progress jobs will be notified of the contractor's termination and offered such remedies as NYSERDA deems appropriate. NYSERDA shall notify BPI and other organizations responsible for maintaining other certifications the Contractor holds. If appropriate, NYSERDA may notify the New York State Attorney General, the New York State Department of Labor, the Better Business Bureau, or others of NYSERDA's findings and decision to terminate the Contractor. Further, the officers and owners of the terminated Contractor are prohibited from being or becoming officers or owners of any other Program contractor. Nothing in this process relieves the Contractor of the responsibility to fulfill any remaining obligation to the Program, or program customers.

- f. **Inactive Status:** Contractors with this designation are eligible to provide services to the Program, but choose not to participate at the current time.
 - i. Contractor wishing to be listed in inactive status must notify NYSERDA in writing.
 - ii. Inactive contractors wishing to return to the Program must send a written request to NYSERDA. NYSERDA will assign returning contractors to either full or provisional status at its discretion, depending on the time elapsed since the Contractor was active in the Program, personnel changes, quality of previous work, and other factors.

- B. The process for administering Contractor Probation, Suspension, or Termination is as follows:
- a. NYSERDA will provide written notice of up to ten (10) business days of its intention to take action. This notice will outline specific reasons and provide supporting documentation for the proposed action.
 - b. During this notice period, the Contractor will be provided an opportunity to respond to the proposed action.
 - c. If the Contractor fails to respond to NYSERDA prior to the end of the notice period, the action will go into effect without further notice.
 - d. NYSERDA will review all information including any response received before the end of the notice period.
 - e. NYSERDA will confirm, reverse or place its action on hold based upon this review.
 - f. Intended and final action letters will be sent via email and US mail. The ten day notice period commences on the date of the e-mail from NYSERDA.
 - g. NYSERDA reserves the right to shorten these time periods, or to take immediate action, in the event of an emergency, as determined by NYSERDA.

2.4. Appliance Vendors

Vendors interested in providing appliances through EmPower New YorkSM must:

- A. Agree to the terms of and sign the EmPower New YorkSM Vendor Agreement (VA), and:
- a. Provide documentation of the viability of their business
 - b. Provide documentation of insurance coverage as required by the VA.
 - c. Propose pricing for at least three sizes of ENERGY STAR® rated refrigerators and two sizes of freezers, as required by the VA. Such pricing must be consistent with the New York State Weatherization Director's Association (NYSWDA) Bulk Purchasing Bid. The bid results are posted under "materials procurement" on the NYSWDA website:

www.nyswda.org

- d. In the event that changes occur in pricing from the manufacturer, the Appliance Vendor may propose an updated pricing list to NYSERDA. The Appliance Vendor must include documented rationale for the proposed price changes. NYSERDA reserves the right to accept or refuse any proposed changes for any reason. All appliances delivered prior to NYSERDA's signed acceptance of the proposed pricing changes will be paid at the then current rate.

2.5. Quality Service

- A. In all cases, Contractors and Vendors must provide continued high quality service to remain in the program. Contractors and Vendors are evaluated on an ongoing basis according to Quality Control and Quality Assurance procedures outlined in Section 18.

2.6. Customer Signatures

- A. It is imperative that customer signatures be obtained on Homeowner's Agreements, Certificates of Completion and other EmPower documents. If in some situations, another family member (such as a spouse) signs for the program participant, that person must sign their own name, not that of the participant. In no situations may contractor accept a minor's signature. Nor may a contractor ever sign for the participant. The use of unauthorized representations of a participant's signature may be cause for termination of the contractor from the program.

2.7 Use of NYSERDA Logos:

- A. Contractors who have been accepted into and are active in the program:
 - a. May use the following language on company literature and business cards: "**A participating contractor in NYSERDA's EmPower New YorkSM Program.**"
 - b. May use the NYSERDA-approved "**An Independent Contractor to**" Attribution Mark when conducting outreach and marketing services on NYSERDA's behalf, and in their efforts to promote EmPower New York Program.
 - c. Further information is available from NYSERDA Program staff.
- B. Use of such materials by Contractors inactive in the Program is prohibited.

Section 3: Procedures for Referring Households into EmPower New York

- 3.1. Potential participants must complete an EmPower New YorkSM Energy Services Application. This application includes a signed household authorization allowing NYSERDA and its Program Implementer to obtain household information and energy usage data relevant to provision of services in the program. All such information is kept confidential.
- 3.2. Referrals of eligible households may be made into EmPower New YorkSM in one of the following ways:
- A. Utility Referrals: Customers participating in utility low-income payment assistance programs may be referred electronically from the utility to EmPower New YorkSM through a secure server. If a specific customer requires urgent assistance, the utility must supplement the referral with an email to the Program Implementer explaining the circumstances of the emergency. Non-emergency customers referred by a utility will be sent an Energy Services Application. If the customer is a participant of the utility's low-income payment program or received regular HEAP assistance within the last twelve months, no income documentation is required. If no such verification is provided by the utility, income documentation must be provided by the customer.
 - B. Agency Referrals: Offices for the Aging, participating WAP Agencies, and other organizations approved by NYSERDA may also refer households to EmPower New YorkSM. Interested organizations may be provided with flyers describing the program, guidelines for referral, Energy Services Applications and cover letters designed for use by the organization. The application includes a section in which the organization may verify that the household is eligible by one of the following:
 - a. Participates in a utility low-income payment assistance program
 - b. Currently income-eligible for regular HEAP or WAP
 - c. Received HEAP within the last 12 months. (NOTE: In some cases, utility bills may provide documentation of regular HEAP eligibility. organizations may consult with the Program Implementer or the local utility for further guidance.)
 - d. Currently receives Public Assistance, Food Stamps or Supplemental Security Income (SSI)

The organization may fax or mail the completed application to the Program Implementer.

- a. If a WAP Agency or an Office for the Aging has income documentation for the household on file at the agency, the agency need not mail in copies of the income documentation.
 - b. In all other situations, a copy of the appropriate income documentation must be mailed to the Program Implementer along with the application.
 - c. If the Agency is not able to verify income and provide such documentation, the household will be required to provide such documentation to the Program Implementer in order to be considered for energy services. Applications may be obtained from the Program Implementer by calling 1-800-263-0960.
- 3.3. Households may obtain assistance in completing the application by calling the Program Implementer at the number above.

Section 4: Weatherization Agency Participation

- 4.1. It is intended that EmPower New YorkSM funding supplement, not supplant, Weatherization Assistance Program (WAP) funding. Therefore, EmPower New YorkSM prioritizes funding of projects that result in the provision of additional energy efficiency services that would not otherwise be provided through Weatherization.
- 4.2. Referrals from utilities and Offices for the Aging may result in requests that an Agency provide service to households not currently on the Agency's waiting list. Agencies participating in EmPower New YorkSM must be capable of providing timely services to these households while continuing to serve households on their own waiting lists, and continuing to meet all WAP-mandated production goals.
- 4.3. EmPower households may be served either in coordination with WAP or on a fee-for-service basis.
- 4.4. **Single Family: (1-4 units)**
 - A. Units Coordinated with WAP:
 - a. Work performed on coordinated units must conform to WAP policies and procedures.
 - b. Agencies must first refer households for service through EmPower New YorkSM by sending (or arranging for the household to send) an EmPower New YorkSM Energy Services Application to the Program Implementer. This application must be signed by the household. In addition, the Agency must verify and document income and sign the application, indicating household's eligibility, as noted on the form. Agency should indicate on the application that a project will be coordinated with WAP.
 - c. Agencies must follow WAP procedures for audit. In addition, Agencies must complete EmPower energy education procedures, and may install Electric Reduction measures allowed under EmPower without prior approval, such as CFLs, showerheads, etc. (See Section 12 for details).
 - d. If any appliances are tenant-owned, agency must secure a signed EmPower Appliance exchange application, unless covered by a WAP agreement.
 - e. EmPower New YorkSM will fund cost-effective ER measures, such as refrigerator or freezer replacements, CFL and hardwired-fixture installations, replacement of a heated waterbed mattress with a conventional mattress, and hot water tank or dryer change-outs, and HP measures, such as attic and wall insulation, air sealing measures and heating system repairs or replacements may be funded by EmPower New YorkSM. Audit fees may only be charged if EmPower funding is applied to energy efficiency measures. Home Performance Audit Fees may only be charged if EmPower funding is applied to Home Performance measures.
 - f. Agencies participating in Direct Installation may first complete work, as per Direct Installation guidelines (Section 12).
 - g. Agencies not approved for Direct Installation are required to acquire prior approval by submitting proposal for reimbursement of measures to the Program Implementer prior to installation. Cost-effectiveness of measures must be demonstrated through an instrumented audit such as TIPS, TREAT or EmPCalc.

Section 5: Referrals of Households in Emergency Situations

5.1 EmPower New YorkSM is not an emergency-services program. The program does, however, attempt to respond to emergency situations within the constraints of program guidelines and the existing infrastructure for the provision of services.

5.2 Prior to referring households to EmPower New YorkSM for emergency services, it is important that referring Agencies:

- A. *Verify that home is owned* by a low-income family (NOTE: In some cases, "Life Use" situations may be honored with appropriate documentation.) **Emergencies occurring in rental situations must be referred to the landlord, unless the emergency involves a tenant-owed appliance.**
- B. Attempt to gain a first person understanding of the situation from the household, or an appropriate representative of the household, such as an assisting family member.
- C. Evaluate whether a true emergency exists (see below).

5.3 Heating system problems

- A. Emergency: Suspect natural gas leak or Carbon Monoxide (CO) poisoning: When natural gas or CO leaks are found or suspected in the dwelling, the Agency or Contractor **MUST** contact, or ensure that the household contacts the local Utility IMMEDIATELY. The Agency or Contractor must ensure that the household understands potential hazards and acts appropriately. **It is the Contractor's responsibility to become familiar with hazards related to natural gas leaks, CO poisoning and other hazards and take appropriate actions in situations where life-threatening conditions exist.** If, for example, a life-threatening situation exists, such as a natural gas or propane leak, the Contractor must instruct the family to leave the home immediately and not turn off or on any light switches or other electronic devices if the risk of sparks is a concern. If the heating system is shut down due to health risks, the Agency or Contractor must refer the household to the Department of Social Services (DSS) for the Office of Temporary and Disability Assistance Heating Emergency Repair and Replacement (HERR) program prior to referral to EmPower New YorkSM. See "Gas Leak Safety Procedures" in Appendixes 2 & 3
- B. Emergency: Heating system failure/inadequate heat for health reasons: Agency or Contractor must refer household to HERR program prior to referral to EmPower New YorkSM.
 - a. If household is rejected for service by HERR, household may be referred for services if documentation of the rejection by HERR is provided. Referral to and coordination with the local WAP Agency must be explored by the Program Implementer whenever the household is eligible for WAP.
 - b. In referring households to WAP Agencies for emergency services, the Program Implementer must indicate whether or not the household has already attempted to obtain assistance through HERR.

5.4 Refrigerator Problems

- A. Emergency: In situations where the refrigerator is not functioning well enough to cool food or medicine safely, household may be referred to EmPower New YorkSM. The Program Implementer will attempt to provide services as soon as possible. However, immediate replacement cannot be guaranteed.
- B. Non-Emergency: In situations where the refrigerator is still functioning but the household expresses concerns about a refrigerator, such as concerns about the age of the refrigerator, the household may be referred to EmPower New YorkSM. In these situations, the household's needs will be evaluated according to normal non-emergency procedures. Agency may note the nature of the concerns on the household application.

5.5 Water Heater Problems

- A. EmPower is an energy efficiency program. Water heaters may only be replaced through the Program in situations where the current water heater poses a health risk due to venting problems. See Appendix 4A – ***Tips and Solutions to Solve Water Heating Venting Issues*** for more information.

Section 6: Evaluation of Potential for Energy Services

6.1 Households are evaluated for measures on the basis of the Energy Services Application and energy usage data.

- A. Households are targeted for Electric Reduction (ER) audits if electric usage is greater than 7,500 kWh (5,500 for New York City apartments or Senior Citizens living alone) and any of the following conditions exist:
 - a. Old refrigerator or freezer is in use
 - b. Household uses a rent-to-own refrigerator
 - c. A heated waterbed is in use
 - d. Electric clothes dryer, with a family of 4 or more, and opportunity for cost-effective fuel switching
 - e. Electric water heater, with a family of 4 or more, and opportunity for cost-effective fuel switching
 - f. Other household-specific opportunities for electric reduction exist
 - g. Health and safety concerns expressed on the application appear to warrant a visit.
- B. Households will be targeted for a Home Performance audit if both of the following are true:
 - a. No opportunities exist for substantial ER measures, such as refrigerator, freezer or waterbed replacement, or change-out of electric dryer or hot water heater to natural gas units; and
 - b. Bills indicate moderate to high fuel usage for home heating (i.e., 1,200 Therms of Natural Gas per year, 1,000 gallons of oil or kerosene per year, 1,300 gallons of propane)
 - c. These thresholds are subject to change according to changes in the price of fuel.
- C. Contractor must perform job as either an ER or HP as assigned by the Program Implementer, unless prior approval has been given by the Program Implementer.
- D. In-Home Energy Education must be provided in all homes visited.

6.2 If household is selected for participation in energy services, the Program Implementer assigns the household to an approved Contractor. Assignments are made on the basis of current backlog, Contractor availability, and, Contractor performance.

6.3 Households served by SBC- participating utilities who are not selected for energy services will be mailed a packet of energy efficiency-saving materials, which includes CFLs, energy education materials, and a letter indicating that no further energy services will be provided.

Section 7: Services to Rental Properties

- 7.1** Landlord permission must be obtained prior to installation of measures, which require landlord authorization. (See Section 11.2.)
- 7.2** Coordinated units: If the household is being served in coordination with the Weatherization Assistance Program (WAP), the participating Agency shall follow WAP policies and procedures regarding landlord authorization and negotiations. EmPower may fund allowable measures provided that landlord investment represents at least 25% of the total cost of the WAP project.

7.3 Units not being served in coordination with WAP:

- A. For these units, landlord investment requirements are as follows:
- a. Tenant-owned measures, such as CFLs and tenant-owned appliances are provided at no cost to either tenant or landlord.
 - b. Where the tenant is directly responsible for paying the electric bills, the following additional measures will be offered at no cost to the landlord:
 - i. Installation of 5 or less ENERGY STAR[®] refrigerators.
 - ii. Installation of energy efficient lighting
 - c. Where the tenant is directly responsible for paying the heating bills, the following measures will be offered:
 - i. At no cost to the landlord:
 1. Minor heating system repairs and maintenance
 2. Air sealing
 3. Attic or wall insulation, whichever has the highest savings-to-investment ratio (SIR)
 - ii. Additional insulation or heating system measures may be offered if the SIR is acceptable, but will require a landlord investment of 25% of the cost of these additional measures.
 - d. Where the landlord is responsible for the electricity or heating bills, a landlord investment of 25% is required for related measures. If more than 5 refrigerators are to be appliance installed in a multi-family building, a landlord investment of 25% of the installed cost is required.
 - e. Exceptions to landlord contributions may be made in situations where the landlord is a not-for-profit housing organization dedicated to creating affordable housing for low-income families. Any exceptions are at NYSERDA's discretion.
- B. The Program Implementer will attempt to contact the landlord prior to Contractor referral. Landlord forms will be sent as follows:
- a. If the household is targeted for electric reduction measures only, a Rental Property Appliance Agreement and cover letter will be sent to the landlord. This agreement provides authorization to replace a landlord-owned refrigerator and allows for minor energy efficiency measures, such as hot water tank wrap, at no cost to the landlord.
 - b. If the household is targeted for home performance services, a Rental Property Energy Audit Agreement and cover letter will be sent to the landlord. This agreement allows for a complete energy audit, including heating system inspection and installation of minor energy efficiency measures at no cost to landlord.

- C. If such agreements are signed and returned by the landlord with appropriate documentation, the Program Implementer will refer the household to a Contractor for an energy audit.
 - D. Upon completion of the audit, the Contractor may propose additional measures to the Program Implementer.
 - a. If services are limited to replacement of a landlord-owned refrigerator, the Program Implementer will refer the project to a vendor who will arrange delivery.
 - b. If HP services are considered, the Program Implementer will evaluate proposed measures; and if appropriate, a Home Performance Services Agreement will be sent to the landlord by the Program Implementer. Upon receipt of an agreement signed by the landlord, the Program Implementer will authorize the Contractor to proceed. If a landlord investment is required (i.e., when the landlord is responsible for the heating bills), the Program Implementer will contact the landlord to arrange payment.
- 7.4** Fee-for-service Multifamily units: In the case of multifamily units not being served in coordination with WAP, the Program Implementer or Weatherization Agency must negotiate an EmPower landlord agreement for measures to be completed in the building. See Section 10 for Multifamily Guidelines.
- 7.5** In situations where the landlord is also income-eligible for HEAP, no landlord investment will be required, provided that appropriate documentation is submitted. Low Income landlords must submit documentation consistent with Section 3.2-B of this manual.
- 7.6** “In-kind” contributions to a project, such as landlord-financed heating system replacement and other energy-efficiency improvements completed within the last twelve months may be accepted as landlord investment. Acceptance of such contributions will be determined by the Program Implementer on a case-by-case basis.
- 7.7** Property owners are responsible for the replacement of failed heating systems or water heaters, unless the water heater is replaced due to health and safety concerns identified through BPI-mandated testing. If the property owner replaces heating appliances, the program may offer to pay part of the cost if ENERGY-STAR[®] –rated equipment is installed.
- 7.8** In situations where no landlord permission is obtained, Contractor may still proceed with tenant-owned measures, such as installation of CFLs and replacement of tenant-owned appliances. In situations where major tenant-owned measures are not possible, the Program Implementer will mail to the tenant a packet of energy saving materials, including CFLs, energy education materials, and a letter indicating that no further energy services will be provided.

Section 8: Assigning Households to Contractors

- 8.1** Once a household has been approved for services, the Program Implementer sends a letter to the household, informing them of approval and providing the name and contact information of the Contractor and the Program Implementer. (See Household Energy Services Assignment Letter.)
- 8.2** Referrals to Contractors are made via the Internet. The Program Implementer sends an e-mail message to the email account designated by the contractor to receive such messages. The Contractor must ensure that the recipient is the correct designee. The Contractor is then required to log into the EmPower New YorkSM tracking system, CRIS, where detailed referral information is provided.
- 8.3** The Contractor is given ten days in which to accept the referral. Once this deadline has past, the Program Implementer may refer the household to a different Contractor.
- 8.4** Upon accepting a household, the Contractor must download contact information and, when available, energy usage information, directly from CRIS. Prior to the visit, the Contractor should review this data to identify energy usage patterns and potential measures.
- 8.5** The Contractor must then contact the household to schedule a visit. During this contact, the Contractor may:
 - A. Verify interest
 - B. Schedule an audit
 - C. Clarify directions
 - D. Use this opportunity to identify the make and model of appliances under consideration for replacement
 - E. Find out if the household has a halogen or incandescent torchiere in use. If the Contractor carries an inventory, the Contractor may bring along a fluorescent replacement torchiere.
 - F. Communicate to the household that there is no cost to the household for services provided through EmPower New YorkSM.
 - G. Discuss the need to gain FULL access to the dwelling and the length of the inspection.
- 8.6** The Contractor must make at least three phone call attempts to contact the household at various times of the day and evening. If no response is received, the Contractor must send a letter to the household requesting contact from the household by a given deadline and providing appropriate phone numbers. The Program Implementer's 800- number must be included. In the event that the household does not respond by the deadline, the Program Implementer must be notified. The Program Implementer may then choose to drop the household from the program, or initiate further contact attempts.
- 8.7** If an appointment is scheduled more than a week in advance, Contractor must contact the household a day or so before to remind them of the appointment, thus reducing the likelihood of a no-show appointment.

Section 9: Coordination of EmPower New YorkSM, Assisted Home Performance with ENERGY STAR[®] (AHPwES), and Utility Programs

9.1 The programs compare as follows:

- A. EmPower New YorkSM serves households participating in utility low-income payment programs and households with incomes below 60% of state median who are referred by Offices for the Aging and Weatherization Agencies. Services focus on ER with HP services available when opportunities for ER are limited or the need for HP takes precedence. There is no cost to the household.
- B. While AHPwES targets households with incomes between 60% and 80% of state median income, households with incomes below 60% are also served. AHPwES provides comprehensive HP services with an average project cost of nearly \$8,000. The household is required to pay 50% of the cost of the AHPwES workscope. Low interest loans are available.
- C. Utility programs may provide rebates or energy efficiency services. Consult local utilities for details.

9.2 It is intended that EmPower New YorkSM and AHPwES serve as stand-alone programs, thereby providing service to a larger number of households.

9.3 Households applying for AHPwES with incomes below 60% of state median are informed of their potential eligibility for EmPower New York by EFS, the AHPwES program lenders, and Green Job Green New York outreach coordinators.

9.4 If a household expresses an interest in a more extensive workscope involving a 50% owner investment, the Program Implementer will refer the customer to Contractors participating in both EmPower New YorkSM and AHPwES.

9.5 Contractor will perform a TREAT audit. The Contractor will then propose to the household the option of either a more limited workscope through EmPower or a more extensive workscope through AHPwES.

9.6 The Contractor must clearly advise the household that the services provided through EmPower are at no cost to the household, and with no obligation to proceed with partially funded worksopes through AHPwES.

9.7 The work proposed through EmPower must not be considered customer investment for AHPwES.

9.8 If the household chooses to participate in EmPower, the Contractor will work with the EmPower Program Implementer to complete the work. Prior approval will be required in all such cases. If the household chooses to participate in AHPwES instead of EmPower, the Contractor will work with the AHPwES Program Implementer to qualify the household for financing and services and will complete the project according to the rules of that program.

- 9.9** In the event that the household participates in a Utility program which provides services or rebates for measures installed, customer is not eligible for rebates on measures funded through EmPower. Contractor must not support any attempts by an EmPower participant to obtain rebates for EmPower-funded measures. Contractor must not charge EmPower for services provided through a Utility program.
- 9.10** At the conclusion of an EmPower funded project, a Contractor may propose additional measures through AHPwES. The proposed work scope must follow AHPwES program rules.

Section 10: Multifamily Buildings (5 or More Units)

10.1 Eligibility

- A. For all EmPower projects:
 - a. Household must either:
 - i. Have a documented income of less than 60% of state median;
 - ii. Be a participant in a utility low-income payment assistance program;
or
 - iii. Be a resident of a building declared eligible for services through the Weatherization Assistance Program (WAP).
 - b. Household must reside in a building with 100 units or less.
- B. For SBC and EEPS-electric funded projects, building must be served by a participating electric utility.
- C. For EEPS-gas or other natural gas efficiency programs, building must be served by a participating gas utility. Buildings served by a natural gas efficiency program must have Non-Interruptible Gas Service.
- D. For Settlement Funded projects, building eligibility is determined by the terms of the settlement.
- E. Priority is given to:
 - a. Households participating in utility low-income payment assistance programs
 - b. Seniors referred by County Offices for the Aging or the New York City Department for the Aging
 - c. Eligible households receiving services that are coordinated or co-funded by the Weatherization Assistance Program to create comprehensive worksopes, which include appropriate electric reduction measures
 - d. Buildings in which the tenant is directly responsible for the heating or electricity bills
 - e. Eligible households in need of services residing in buildings not eligible for service through the WAP
 - f. Smaller buildings eligible for the Multifamily Performance Program (MPP) that NYSERDA determines are better served through EmPower New YorkSM
- F. Buildings currently being served by MPP or Assisted Home Performance with ENERGY STAR® are ineligible for service through EmPower.
- G. Measures may be provided as follows:
 - a. Whole-building measures may be implemented on the entire building if at least 66% of the tenants are documented as eligible, as per Section 10.1-A, above.
 - b. If less than 66% of the building is eligible:
 - i. If an eligible tenant is directly responsible for electric utility bills, electric reduction measures may be provided to that apartment.
 - ii. If an eligible tenant is directly responsible for space heating bills, Home Performance measure may be provided to that apartment.

10.2 Landlord agreements and investment requirements

- A. For all buildings:
 - a. Landlord permission must be obtained prior to installation of any measures which require such authorization.
 - b. A signed EmPower application, providing permission to share utility usage data and contact information must be obtained from ALL households receiving services through EmPower, regardless of income eligibility.
- B. For buildings served through WAP:
 - a. The Agency will follow WAP procedures for landlord negotiations, auditing, measure installation and documentation.
 - b. EmPower may fund allowable measures provided that landlord investment represents at least 25% of the total cost of the WAP measures. Exceptions may be made in situations where the landlord is a not-for-profit housing organization dedicated to creating affordable housing for low-income families.
 - c. All reasonable exceptions are at the discretion of NYSERDA.
- C. For buildings not served by WAP
 - a. Where the landlord is responsible for the electricity and/or heating bills, a landlord investment of 25% is required for related measures.
 - b. Where a multifamily project includes the replacement of five or more landlord-owned refrigerators or more, a landlord investment of 25% is required for all of the appliances.
 - c. Exceptions may be made in situations where the landlord is a not-for-profit housing organization dedicated to creating affordable housing for low-income families.
 - d. Any reasonable exceptions are at the discretion of NYSERDA.

10.3 Measure eligibility

- A. The installed cost of each energy efficiency measure must meet an SIR of 1.1 or greater. Depending on the funding source, a TRC of 1.0 or greater may be required for specific measures. In evaluating proposed measures, NYSERDA will also take into account the impact on specific program goals for annual savings.
- B. Reasonable costs for health and safety measures or energy audits may be proposed, and are subject to NYSERDA's review and approval.
- C. Savings estimates must be based on an approved audit tool (currently TREAT, EmPCalc or TIPS).
- D. Prior written approval from NYSERDA must be obtained for the workscope and before measures are installed.
- E. Measure installations must follow guidelines outlined in the "EmPower New York Program Guidelines and Procedures Manual".
- F. Funding levels will be determined on the basis of the requirements of specific funding sources.
 - a. Generally, Multifamily Projects will be funded at levels up to the program averages, as follows:

- i. Home Performance Measures: \$3,500 per unit
 - ii. Electric Reduction Measures: \$900 per unit
 - b. At NYSERDA's discretion, the incentive amount may exceed program averages if the additional cost(s) generate enhanced energy savings.
 - c. Incentives may not exceed \$7,000 per unit for Home Performance measures, or \$3,000 per unit for Electric Reduction measures.
- G. Pricing must be as follows:
 - a. Pricing must be consistent with current EmPower Contractor and Vendor Agreements for measures outlined in these agreements.
 - b. For additional measures provided by subcontractors, and for additional materials installed, such as heating system replacements, at least two written bids must be provided.
 - c. Additional custom measures to be completed by the Contractor must be submitted to the Program Implementer for review and prior-approval.

10.4 Participating Contractors

- A. Contractor must be a participating EmPower New York Contractor in good standing:
 - a. Full active status as an EmPower contractor, or
 - b. Provisional status as an EmPower contractor and good standing as a contractor in the Home Performance with ENERGY STAR program; or
 - c. Provisional status as an EmPower contractor and demonstrated experience in multifamily weatherization as a Weatherization Agency.

10.5 Procedures for projects managed by a Weatherization Agency

- A. Initial request for funding:
 - a. The Agency may first submit the building address to NYSERDA, to verify that the building is not currently active in other NYSERDA programs.
 - b. NYSERDA will notify the agency as to whether the building may be considered for EmPower.
- B. Agency must submit an EmPower Multifamily Building Application to Program Implementer. The following must be included:
 - a. A Preliminary EmPower Multifamily Workscope Summary Spreadsheet
 - b. At least one year of monthly pre-usage data must be provided, unless utility fuel is individually metered.
 - c. Copy of the letter to owner stating WAP eligibility.
 - d. A copy of the audit, if requested by NYSERDA or the Program Implementer
- C. Upon approval of EmPower-funded portion of the workscope, NYSERDA will notify Agency and Implementation Contractor in writing.
- D. Once these are reviewed and approved, Agency may proceed with work.
- E. Upon completion of the work, the Agency must report the building completion data on a building-wide basis to the Program Implementer. Data to be included:
 - a. Invoice for building
 - i. Audit fees may only be charged for units in which energy efficiency measures have been installed through EmPower.
 - b. Any modifications to:

- i. Basic building information (address, owner contact information, square footage, etc.)
 - ii. Number of units served
 - iii. WAP, landlord or other investment amounts
 - iv. Multifamily Workscope Summary Spreadsheet
 - c. Copies of signed EmPower applications for all eligible tenants.
 - d. Final Building-wide audit report (if changes made during installation of measures). Report must include but not be limited to:
 - i. Pre and post energy usage and number of CFLs and hardwired fixtures installed
 - ii. Pre and post energy usage and number of replaced refrigerators and freezers
 - iii. Pre and post energy usage for any custom electric reduction measures, with electric savings in KWh
 - iv. Pre and post R-Value and condition of pre-existing insulation
 - v. Pre and post heating equipment efficiency
 - vi. Estimated average apartment square footage
 - vii. Other information requested by NYSERDA or the Program Implementer
- F. Additionally, the following documents must be kept on file at the Agency for review by the Program Implementer.
 - a. Customer sign-offs for installed measures, including appliances and lighting.
 - b. EmPower Energy Action Plans
 - c. Appliance Exchange agreements for any tenant-owned appliances
 - d. A copy of the landlord agreement, with WAP, NYSERDA, Landlord and other funds and measures identified

10.6 Procedures for projects managed by a Participating Contractor

- A. An Authorized Representative of the Property Owner must submit an EmPower Multifamily Building Application to the Program Implementer. The following must be included:
 - a. The EmPower Multifamily Workscope Summary Spreadsheet
 - i. If an audit has been completed, a copy of the audit must be included.
 - ii. If not, the worksheet must propose criteria by which EmPower will fund specific measures, pending completion of an audit.
 - b. At least one year of monthly pre-usage data must be provided, unless utility fuel is individually metered.
- B. NYSERDA will determine whether project is eligible for EmPower, and notify the building owner, the Participating Contractor and the Program Implementer in writing.
 - a. The proposed funding commitment will be subject to termination for failure to meet a 45 day time limit to submit project modeling data sufficient to define the project's finalized work scope and projected energy savings.
- C. Workscope determination and final approval:
 - a. If the Property Owner decides to proceed with the proposal, the Authorized Representative of the Building Owner and the Participating Contractor must work with the Program Implementer to develop an EmPower New York Multifamily Agreement.

- i. Implementation Contractor must be provided with documentation that the tenants are eligible for services through EmPower.
 - ii. Copies of signed EmPower applications for all eligible tenants must be provided to the Implementation Contractor
 - iii. Audit must be completed and submitted for reviewed by Program Implementer and NYSERDA.
 - iv. Finalized EmPower Multifamily Workslope Summary spreadsheet must be attached, and must include investment amounts, measures and savings for each of the following:
 1. NYSERDA
 2. WAP
 3. Landlord
 4. Other, if any
 - b. Upon execution of the Agreement by NYSERDA work may proceed.
 - i. Work must commence no later than 3 months from the date of the Project Approval letter and be completed within a time frame identified on the letter. This time frame will be based on funding source requirements.
- D. Upon completion of the work, the Contractor must provide the following to the Program Implementer:
 - a. Invoice for building
 - b. Any modifications to:
 - i. Basic building information (address, owner contact information, square footage, etc.)
 - ii. Number of units served
 - iii. WAP, landlord or other investment amounts
 - iv. Multifamily Workslope Summary Spreadsheet
 - v. Building-wide final audit report.
 - c. Final Building-wide audit data (if changes were made during installation of measures), including but not limited to:
 - i. Pre and post energy usage and number of CFLs and hardwired fixtures installed
 - ii. Pre and post energy usage and number of replaced refrigerators and freezers
 - iii. Pre and post energy usage for any custom electric reduction measures
 - iv. Pre and post R-Value and condition of pre-existing insulation
 - d. Pre and post heating equipment efficiency Estimated average apartment square footage
 - e. Customer sign-offs for installed measures, including appliances and lighting.
 - f. EmPower Energy Action Plans
 - g. Appliance Exchange agreements for any tenant-owned appliances
 - h. Any other information requested by NYSERDA or the Program Implementer

10.7 Quality Assurance:

- A. The Program Implementer must periodically review building documents on file with the Contractor.
- B. The Quality Assurance Contractor will conduct on-site inspections of work performed according to the terms of the EmPower QA plan.

Section 11: Energy Audit Procedures

11.1 General Notes Regarding Provision of Energy Services

- A. All measures are voluntary. Households are given choices and the information necessary to assist them in choosing these measures.
- B. Contractors are not obligated to continue in any situation in which they feel their personal health or safety is at risk. In situations where a Contractor decides not to proceed with work, all dealings with the household must be courteous and professional.
- C. Contractor must carry an ID and display it to an appropriate household member prior to entering the home for the first time.
- D. Contractors must provide and carry with them all necessary tools, including at least two wattage meters for use in evaluating appliances.
- E. If an adult is not home at the time of the audit, the Contractor must not enter the home, but should leave a note for the adult household member(s) requesting that they contact the contractor to reschedule the visit.
- F. Contractor must represent the Program in a manner that is professional and courteous. Failure to do so may result in suspension or termination from the program.
- G. In the event of a no-show due to the household's negligence, the Contractor may submit an invoice for reimbursement for time spent, provided that the Contractor has followed the scheduling procedures as outlined in Section 8.
- H. A household may be referred to a Contractor for either ER services alone, or for a combination of ER and HP services. If a household is referred to a Contractor for ER services, and no real opportunities for substantial electric reduction are found, the Contractor should explore opportunities for Home Performance measures that may benefit the household.
- I. It is very important that the Contractor work directly with the residents of the building. The household is familiar with how the building performs and can provide valuable data as to how well the heating system functions, whether the hot water system satisfies the needs of the family, etc. This contact also provides the opportunity for in-home energy use management education. See Section 16 for further details.
- J. Work performed must be in compliance with BPI Health and Safety Standards as outlined under "Building Performance Institute Technical Standards for Certified Building Analyst". (www.bpi.org)
- K. The Contractor must take digital photos to document pre-existing conditions as follows:
 - a. Pre-existing attic insulation (HP only);
 - b. Failing DHW tanks;
 - c. Asbestos-like material (HP only);
 - d. Heating systems recommended for replacement;
 - e. Windows or doors recommended for replacement (HP only); or
 - f. Other situations requiring custom measures.

11.2 Electric Reduction Audits must consist of the following as appropriate:

- A. Completion of appropriate signoffs and permissions.
 - a. If the household is the property owner, the Contractor must ensure that the household signs an Owner's Agreement prior to completing any invasive work.

- The Contractor must review a document that proves home ownership (deed, mortgage book, tax bill, etc.)
- b. If the household owns an appliance that is being considered for replacement through EmPower New YorkSM, the Contractor must obtain a signed Appliance Exchange Agreement.
 - c. If the household is a renter, the Contractor must ensure that the landlord has signed an Energy Services Agreement prior to completing any work which requires landlord authorization.
 - i. Measures that do not require landlord authorization include: energy education; installation of CFLs; replacement of tenant-owned torchiere(s) and waterbed mattresses; installation of smoke alarms or CO detectors; metering and replacement of tenant-owned refrigerators and freezers.
 - ii. Measures that require landlord authorization include: installation of showerheads and aerators; installation of hard-wired fixtures; hot water tank wraps; pipe insulation; insulation; heating system testing, repair and replacement; air sealing measures; hot water tank or dryer replacement. These measures require a signed landlord permission form and, in some cases, a landlord investment. See Section 7.
- B. Energy education, with a goal of identifying energy-saving actions which the household will commit to completing. (See Section 16 and the EmPower NY In-Home Education Manual for further details).
- C. The installation of cost-effective measures, as identified under Section 12.1.
- D. Test of the ambient air for CO on either a HP or ER job if a combustion appliance is present or if the building has an attached garage.
- E. The following ER measures must be evaluated through the use of an approved audit instrument (currently EmPCalc, TIPS or TREAT):
- a. Replacement of refrigerators or freezers
 - b. Electric dryer conversion to natural gas
 - c. Electric hot water heater conversion to natural gas
 - d. Heated waterbed mattress change-out to a conventional mattress
 - e. Other household-specific opportunities for elimination of high-energy consumption, such as removal of electric space heaters.

11.3 Home Performance Audits must conform to BPI standards and consist of all of the above, as well as the following:

- A. Prior to blower-door testing, Contractor must inspect premises for the presence of asbestos-like material. If found, contractor must:
 - a. Consider the material "Presumed Asbestos Containing Material" (PACM)
 - b. Document its location on the audit forms, and with photographs.
 - c. Inform the occupant that material suspected to be asbestos exists in the dwelling, and provide the occupant with a copy of the form, "Notification of Possible Presence of Asbestos." A second signed copy must be provided to the Program Implementer.
 - d. Follow BPI guidelines regarding working in a dwelling with PACM.
 - e. Document workscope decisions made in light of the presence of PACM.

- B. A comprehensive analysis of conductive heat loss, taking into account the interaction among the measures considered for installation, as well as issues such as household comfort and indoor air quality.
- C. Steady-state combustion efficiency test of the heating system, along with evaluation of the system's overall performance. A tag or sticker with the test results, contractor name and date must be left on or near the heating system tested. In the event that such testing is not performed, the Contractor must document reasons for not doing so in the notes section of CRIS.
- D. Analysis of the domestic hot water heating system and any and all secondary heating systems such as electric space heaters, wood stoves, gas-fired kitchen stoves and kerosene space heaters. Inspection and measurement of insulation options, providing square footage, existing levels of insulation and house temperatures.
- E. If wall insulation is a consideration, Contractor must take steps to determine presence of wall insulation:
 - a. Ask household and:
 - i. Probe wall outlets or drill holes and probe (at least 3 places);
 - ii. Check siding outside for signs of previous insulation;
 - iii. If available, use boroscope or scan with infrared camera
 - iv. Document where and how determinations were made
 - v. Draw locations of pre-existing insulation on the insulation diagram
- F. Evaluation of the thermostat.
- G. The use of blower-door technology to determine pre-existing air exchange rates, locations of air infiltration and exfiltration, and building tightness limits. It is expected that all participating Home Performance Contractors own a blower door test kit and are familiar with the operation of this essential tool.
- H. Health and safety checks on all combustion appliances to determine proper venting and levels of CO, according to BPI Standards. A matrix of testing requirements under EmPower is included as an Appendix to this manual.
- I. In the event that multiple units exist in the dwelling, and access is available, Contractor must test all units if possible. Notification to the landlord prior to audit can help in obtaining access.
 - a. Contractor may invoice NYSEERDA for additional time spent, constant with the CA. In these instances, prior approval on an acceptable cost must be obtained.
 - b. If the additional unit cannot be tested, Contractor must decide whether to go forward with measures that impact air movement in the dwelling. Contractor should consult with EmPower Regional Representative and make notes regarding situation in CRIS.
- J. If natural gas or propane is in use in the home, gas leak testing of the gas lines according to BPI standards.
- K. Evaluation of the home's smoke alarm(s) and CO detector(s).
- L. Evaluation of Home Performance measures through the use of an approved audit instrument (currently EmPCalc, TIPS or TREAT).

Section 12: Determination of Workscopes for 1 - 4 Unit Projects

- 12.1** For all Contractors, the following measures have been deemed cost-effective and may be installed during the audit, as per current Contractor Agreement (CA) pricing, without prior approval from the Program Implementer:
- A. ENERGY STAR® CFLs
 - B. High efficiency showerheads and aerators
 - C. Setback thermostats as follows:
 - a. For homeowners only.
 - b. If home is heated with electricity, setback thermostats may be installed on both HP and ER jobs.
 - c. If home is heated by combustion fuels, such as gas or oil, setback thermostats may be installed for HP jobs ONLY.
 - d. Prior approval of model and price is required.
 - D. Water heater insulation (electric only).
 - E. Water pipe insulation (up to 9 feet, including 3 feet of “cold” supply pipe above hot water tank)
 - F. Health and safety measures including one CO detector and/or one smoke detector (UL listed only. Pre-approved models and prices are required. Total health and safety cost not to exceed \$150)
 - G. Replacement of halogen torchieres with ENERGY STAR® fluorescent models
 - H. Replacement of incandescent lights left on all night with LED nightlights. (Pre-approved pricing required.)
 - I. Furnace filter replacement (HP only)
- 12.2** New Contractors and those not approved for Direct Installation are required to provide audit reports and recommended workscopes for further measures to the Program Implementer for pre-approval.
- A. The Contractor must use an approved audit instrument (TREAT, EmPCalc, or TIPS) to determine which measures are most cost effective, and present these results to the Program Implementer.
 - B. The Program Implementer will ensure that project cost averages are maintained, and that proposed workscopes are consistent with guidelines for EmPower New YorkSM
 - C. For jobs completed through EmPower, excluding the National Fuel Gas Conservation Incentive Program: In situations where a Home Performance (HP) workscope (including electric reduction measures) is to exceed \$5,500 or an Electric Reduction (ER) workscope is to exceed \$2,500, Program Implementer will first obtain approval from NYSERDA.
 - D. For HP jobs completed through the National Fuel Gas Conservation Incentive Program: In situations where a Home Performance (HP) workscope (including electric reduction measures) is to exceed \$6,500, Program Implementer will first obtain approval from NYSERDA.
- 12.3** Experienced Contractors may request authority for Direct Installation, where the Contractor determines workscopes without prior approval from the Program Implementer. If the Contractor is approved for Direct Installation, the following

measures may be installed (as per current CPA pricing) provided the workscope meets the criteria outlined below:

- A. Each measure must have a Savings to Investment Ratio (SIR) of 1.1 or greater as measured by an approved instrumented audit.
- B. For jobs completed through EmPower, excluding the National Fuel Gas Conservation Incentive Program: Total proposed HP job cost to EmPower New YorkSM does not exceed \$4,500, or total proposed ER job cost to EmPower New YorkSM does not exceed \$1,500, not including funding from the Weatherization Assistance Program (WAP) or other sources.
- C. For HP jobs completed through the National Fuel Gas Conservation Incentive Program: Total proposed HP job cost to EmPower New YorkSM does not exceed \$5,500, not including funding from the Weatherization Assistance Program (WAP) or other sources.
- D. The workscope consists of the following measures, at the following all-inclusive costs:
 - a. Insulation according to pricing on Contractor Participation Agreement
 - b. Air sealing costs not to exceed \$600
 - c. Minor heating system repairs (including Clean and Tunes) not to exceed \$300 (Prior approval is required for ALL clean and tunes on Electric Reduction jobs)
 - d. Refrigerator or freezer replacements (Pre-approved pricing and Vendor Agreement is required)
 - e. Dryer conversions not to exceed \$750
- E. Program Implementer must monitor individual contractor costs to ensure compliance.

12.4 For all Contractors, prior-approval must be obtained from the Program Implementer for:

- A. Workscopes where the total proposed workscope cost exceeds the levels listed under 11.3-B&C, above.
- B. Workscopes in which landlord authorization is required (unless such authorization is part of an agreement negotiated through WAP).
- C. Workscopes which include options for funding through Assisted Home Performance with ENERGY STAR[®].
- D. Measures as follows:
 - a. All-inclusive dryer cost exceeding \$750
 - b. All-inclusive water heater replacements/conversion costs.
 - c. All inclusive heating system replacements and major repair costs exceeding \$300
 - d. All-inclusive air sealing costs exceeding \$600
 - e. All-inclusive Health and Safety measure costs exceeding \$150
 - f. Emergency heating system or water heater replacements
 - g. Certain measures for which the SIR may not be easily identifiable, but are deemed by NYSERDA or the Program Implementer to be appropriate (such as heating distribution repairs).
 - h. Custom measures, such as window and door replacements, replacement of rent-to-own refrigerators, roof repairs, etc.

- 12.5** In situations where variations in procedure are required, Contractor must first discuss potential changes with the Regional Representative and note such changes on CRIS.
- 12.6** In all instances incentives may not exceed \$7,000 per unit for Home Performance measures or \$3,000 per unit for Electric Reduction measures.

Section 13: Electric Reduction (ER) Measures and Criteria

13.1 Compact Fluorescent Lights (CFLs), Torchieres, Candelabra CFLs, and LED lighting

- A. Criteria for replacement
- Pre-existing light bulbs must be 40 watts or greater.
 - Socket is functional, and no hazardous conditions exist.
 - Circuit is not controlled by a dimmer.
 - Fixture is on participating household's utility meter/bill.
 - Lighting must be installed in locations where the lighting is used the most.
 - Contractor may install and charge for up to 16 CFLs, or 15 CFLs and one LED nightlight. Candelabra CFLs for chandeliers are not included in this limit.
 - Halogen Torchieres must be in use in order to be considered for replacement.
 - Halogen Torchieres must be replaced with ENERGY STAR[®] fluorescent models of comparable luminescence
 - All replacement CFLs, including Candelabra bulbs, must be ENERGY STAR[®] rated.
- B. General Procedures for all lighting
- Contractor must install, or assist household in installation of all lighting provided by the Contractor at the time of the audit.
 - Contractor must install lighting of comparable or higher luminescence. Care must be taken that adequate lighting is provided to households with visual impairments.
 - Care must be taken to ensure that the color rendition of the installed bulbs is acceptable to the family and appropriate for their needs.
 - As each CFL is installed, Contractor must document installation on data collection form and document wattage reductions.
 - CFLs must not be installed in a light fixture operated by a dimmer.
 - All replaced incandescent bulbs must be removed from the premises and disposed of properly. Any damaged CFLs must be disposed of properly.
 - During the lighting installation, the Contractor should also look for opportunities to downsize existing lighting, such as reducing the number of bulbs used.
- C. Procedures specific to CFLs
- Contractor must procure and have available a variety of CFLs varying in size and luminescence in order to ensure that opportunities for replacement of high use bulbs are maximized.
 - To ensure adequate lighting, Contractor must, whenever possible, replace incandescent bulbs with CFLs as follows:

<u>Pre-existing Incandescent</u>	<u>Replacement CFL</u>
60 watts	15-20 watts
75 watts	20-23 watts
100 watts	27-30 watts

- c. Care must be taken to hold the base when installing the CFL to reduce the risk of damage.
- C. Procedures--Candelabra CFLs
 - a. The chandelier must be in use for an average of three or more hours per day.
 - b. The household may be willing to accept the appearance and any potential slow startup.
- D. Procedures—Halogen Torchiera Replacement
 - a. The Contractor may propose to Program Implementer a make, model and price for the provision of ENERGY STAR[®] fluorescent torchieres to replace halogen torchieres. If pricing is accepted by the Program Implementer, the Contractor may replace torchieres during the home visit. Alternatively, replacement torchieres may be mailed to the household by the Program Implementer. However providing torchieres and replacing them during the audit is preferable.
 - b. Prior to the visit, the Contractor should identify (either from the application or conversation with the household) whether a torchiera exists in the home. If the Contractor has an inventory of fluorescent torchieres, the Contractor should bring one along for installation.
 - c. If replacement is acceptable, and Contractor has brought along a torchiera, the Contractor must assemble and install the fluorescent torchiera. If none is available, Contractor must request that the Program Implementer send a fluorescent torchiera to the home.
 - d. If a new torchiera is installed during the visit, the old torchiera must be disabled by removing and disposing of the old bulb and cutting the power cord. The Contractor may leave the old halogen torchiera for disposal by the household.
- E. Procedures--LED Lighting
 - a. Contractors may install one LED nightlight in homes where a 40-watt or greater bulb is kept on all night.
 - b. For all other LED installations, make and model of all LED lights must be prior-approved by Program Implementer.
 - c. Program Implementer must ensure that lighting meets a TRC of 1.0 or greater.

13.2 Installation of Hardwired Fluorescent Fixtures

- A. Criteria:
 - a. Hardwired fixtures may only be installed if the proposed wattage reduction meets program requirements for cost-effectiveness, as per the chart below.
 - b. Socket is functional, and no hazardous conditions exist.
 - c. Circuit is not controlled by a dimmer.
 - d. The fixture must be installed according to all local electrical codes.
 - e. The fixture installation must be acceptable to the household.
 - f. Hardwired fixtures may only be installed in areas where the fixture is in use for an average of four or more hours per day.
 - g. All installed fixtures must be ENERGY STAR[®] rated.
- B. Procedures

- a. The Contractor must provide EmPower New YorkSM with a proposal that includes specific lamp models, wattage data, material and labor cost for installations. These fixtures must be ENERGY STAR rated. Installing a fixture designed for incandescent and installing CFLs into that fixture is not acceptable. Fixtures must be low-cost but attractive enough to be welcome in the home. Pricing must include a replacement bulb, which must be left with the household or building maintenance personnel. If an electrician is required for installation, this must be noted.
- b. During the audit, the Contractor will evaluate whether the proposed fixture meets the minimum wattage reduction threshold for cost-effectiveness. This is determined by calculating the proposed wattage reduction. (Existing wattage minus wattage of proposed hardwired fixture = wattage reduction). Using the following chart, the Contractor may then determine whether the fixture exceeds the threshold:

NYC	
All-inclusive Cost of Fixture	Minimum Watt Reduction
\$ 67	46
\$ 99	68
\$ 120	82
\$ 125	86
\$ 150	103
\$ 200	137

Upstate	
All-inclusive Cost of Fixture	Minimum Watt Reduction
\$ 67	62
\$ 99	89
\$ 120	110
\$ 125	120
\$ 150	137
\$ 200	195

For example:

An existing fixture in NYC has two 60 watt bulbs. The proposed hardwired fixture uses one 26-watt bulb and costs \$120.

Existing wattage: 120 Watts (2 x 60 Watts)

Post Wattage: 26 Watts

Watt Reduction: 94 Watts (120 Watts – 26 Watts = 94 Watts)

Minimum Watt Reduction: 82 Watts

In this instance, the hardwired fixture is deemed cost-effective because the Wattage reduction (94 Watts) is greater than the threshold (82 Watts).

- a. If the Contractor determines that the existing wiring condition is inadequate or that replacement will result in damage to the home, or if a household member is not amenable to the change, the installation will not go forward. The contractor may then install CFLs instead, if appropriate.
- b. The Contractor may install up to three hardwired fixtures per home. At the time of installation, household must be left with:
 - i. Contact number of the Contractor in case of a problem.
 - ii. A spare bulb for each fixture.
 - iii. Product information for additional bulb replacement.
- c. The Contractor must provide pre- and post-wattage data to Program Implementer.
- h. The Contractor is responsible to follow up on any issues related to installation.

13.3 Refrigerator and Freezer Replacement

A. Criteria for replacement

- a. Pre-existing refrigerator must be at least ten years old.
- b. SIR is 1.1 or greater. In the case of WAP-coordinated projects, WAP criteria for replacement may be followed.
- c. Household agrees to give up the old appliance in exchange for the new one.
- d. The owner of the appliance provides signed permission for the replacement.
- e. Circuit must be safe.
- f. The appliance is under a rent-to-own contract and most of the payments are still outstanding (requirement for a SIR of 1.1 is waived.)
- g. Icemaker installations or other accessories are not available through EmPower.
- h. Side-by-side refrigerators and bottom freezer units may only be installed in Special Needs situations, such as wheelchair bound households who have difficulty reaching upper compartments of appliances.

B. Evaluation of appliance energy use

- a. The primary tool for evaluating appliance energy usage is the NYSERDA Refrigerator KWh Calculator.
- b. Refrigerators must be metered for at least one hour in the following situations:
 - i. Make and model is not listed in the Calculator.
 - ii. Appliance was bought used. Often in reconditioning old units, parts are interchanged in a way that diminishes efficiency. The usage data provided by the NYSERDA Refrigerator KWh Calculator may no longer be accurate.
 - iii. Appliance is in a semi-conditioned space, such as a basement.
 - iv. Unit is damaged or otherwise in poor condition.

Metering must not be attempted if the Contractor's efforts to gain access to the plug for metering may result in damage to the home.

- c. When metering is not possible and the appliance is not listed in the Calculator, an auditor may propose replacement on the basis of evidence that the existing refrigerator is either over ten years old, or is in poor condition. Such situations must be documented with a digital photograph of the old refrigerator.
- d. Units kept in unheated areas such as garages or porches are unsuitable for replacement. Such locations must be noted on data collection forms. Please note that installation of new refrigerators and freezers into unconditioned spaces may void the product warrantee.

C. Metering guidelines

- a. If metering of refrigerators or freezers is included in the workscope, Contractor should install meter(s) **as soon as possible** after introduction and run meter for as long as possible in order to create the maximum length of meter run time.
- b. While the meter is running, the Contractor must return to the meter every 15 minutes to check the wattage in order to determine whether or not the refrigerator is in a defrost cycle. (Instructions on how to check wattage are typically included in meter instruction manuals.)
- c. If metering is performed on a warm day, metering results must be adjusted by 2.5% for every degree above the typical yearly temperature of the home. For example: If metering is done in a home where the typical yearly temperature is 70 degrees, and the temperature during the visit is 80 degrees (10 degrees above normal), the metering results should be reduced by $10 \times 2.5\%$, or 25%.
- d. IMPORTANT NOTE: If the unit was unplugged for metering, make sure that the refrigerator is plugged in and functional before leaving the home. Generally, the refrigerator light is an easy way to verify that the unit has power.

D. Procedures

- a. The Contractor must evaluate all refrigerators and freezers on premises.
- b. The Contractor must look for opportunities to:
 - i. Downsize appliance
 - ii. Unplug and remove a second appliance instead of replacing it
 - iii. Replace two appliances with one larger refrigerator.
- c. The Contractor must evaluate the location of the refrigerator in relation to the following: stove and other heat sources; heating system ducts and radiators; freezer on sun porch; etc. The Contractor must consider opportunities to relocate the refrigerator to a more appropriate location and discuss this with the household.
- d. The Contractor must negotiate the appropriate appliance size for the family. As a general rule, a similar size as the current refrigerator is to be installed. Size may be determined in the following ways:
 - i. NYSEDA Refrigerator kWh Calculator data
 - ii. Sticker on door
 - iii. Size is sometimes a part of the model number
 - iv. Measurement: measure in inches and multiply the length, width and depth of the freezer and refrigerator section interiors. Add the two totals, and divide this number by 1728.
- e. Contractor must measure the space available for appliance installation and verify that recommended appliance will fit in terms of height, width and depth. It is important that care be taken to check the back of the cavity, because sometimes kitchen counters or walls may be irregular in dimension, and narrower in the back.
- f. Contractor must check egress to ensure that appliance can be safely installed. Issues regarding egress must be noted on the data collection forms.
- g. All recommendations must be discussed with and accepted by the household. In situations where appliance replacement is determined by the Program Implementer, Contractor *must make no commitment* to the household regarding

replacement but state that a recommendation is being made. It is important to emphasize that the old refrigerator must be given up in exchange for the new one, and that the old one is immediately decommissioned.

- h. Replacement refrigerators must be ENERGY STAR® models.
- i. All relevant refrigerator data must be filled out on Electric Reduction Audit Form. If a replacement is recommended, an Appliance Exchange Application must be filled out and signed, and an Appliance Q&A form left in the home. The Contractor must review the application with household and include hinge side, proposed replacement size, and other data.

13.4 Hot Water Efficiency Upgrades (Temperature Adjustment, Tank Wrap, Pipe Insulation, Showerhead, and Aerator Replacement, Timer for Electric Water Heaters)

A. Temperature adjustment

a. Criteria

- i. Tested hot water temperature is greater than 120 degrees
- ii. The Household is amenable to temperature change
- iii. In the case of tenants, owner permission to perform minor measures, such as changing the hot water temperature, must be obtained.

b. Procedure

- i. In the case of electric water heaters, the Contractor must first ensure that the circuit breaker to the water heater has been turned off.
- ii. Whenever possible, the household member participating in the audit should be present, shown how to make the adjustments and encouraged to perform the adjustment themselves.
- iii. In the case of electric hot water heaters, if the heater contains two heating elements, both heating elements must be adjusted.
- iv. In the case of natural gas or propane water heater, temperature settings are typically not identified on the dial. The Contractor must turn down the dial an estimated amount based on the original reading, and teach the household member how to make further adjustments if necessary. It is helpful to mark the original setting with a marker to guide further adjustments.
- v. In the case of electric water heater, the Contractor must ensure that the circuit breaker to the water heater has been turned back on after the adjustments have been completed.

B. Water Heater Wraps

a. Criteria

- i. The household heats water by electricity
- ii. The tank is not currently wrapped, or is wrapped poorly, and has one inch or less of insulation between the outer and inner shell. The amount of insulation can be determined at the access panels or at the pressure relief valve.
- iii. A water heater change-out is not under consideration
- iv. Installation does not void warranty
- v. Existing tank is not leaking or in need of replacement
- vi. Tank is located more than 12" away from a stove, range or cook top.
- vii. Tank is located more that 36" from a furnace or boiler.
- viii. No excessive moisture problems exist in basement

- ix. Access doors to tank must be in place.

IMPORTANT NOTE: There is a common misconception tank wraps void the warranties of new water heaters. This is not necessarily true. Most new water heaters carry a number of cautions on them, such as "Insulating this tank with a hot water jacket MAY void the warranty. Please see Owner's Manual for information." Most often, the notation in the owner's manual cautions, in effect, that the warranty may be voided if the insulation blanket is installed INCORRECTLY. But in many cases, the tank may still be insulated if correct procedure is followed. Because of the high cost of electricity, even new electric water heaters may benefit from insulation.

- b. Procedures

- i. The Contractor shall follow correct installation procedures.
- ii. Blanket R-value must be specified as "R-6 Minimum" or greater.
- iii. The wrap must be secured to the tank with blanket straps of polypropylene or baling wire. At least three straps around the circumference (towards top, middle and bottom) are required.
- iv. In situations where the tank is more directly exposed to the weather, such as a water tank closet on a trailer that is accessed from outside, consideration must be given to providing greater insulation to the tank or closet.

- C. Hot Water Pipe Insulation

- a. Criteria

- i. Water is heated by electricity or natural gas
- ii. A water heater change-out is not under consideration
- iii. Pipes are not currently insulated or are insulated poorly
- iv. No pipe leaks exist
- v. If the water heater has heat traps, insulation of the intake pipe is not required.
- vi. If the first foot of pipe insulation cannot be installed due to close proximity to the flue, pipe insulation must not be installed.
- vii. Pipes are not part of a tankless system.

- b. Procedures

- i. All installed pipe insulation should be of a size that is correct for the pipe: i.e., no exposed pipe due to using pipe insulation that is too small. Corners must be mitered and insulation secured with tape.
- ii. First 6 feet of hot water pipe and 3 feet of intake water pipe must be insulated.
- iii. Pipe insulation must be at least the thickness of the pipe diameter.
- iv. Combustible pipe insulation must not be installed within 6 inches of the flue.

- D. Showerhead Replacement

- b. Criteria

- i. Water is heated by electricity or natural gas
- ii. Pre-existing showerhead has a flow rate greater than 3 gallons per minute (GPM)
- iii. Current showerhead is not required for medical reasons
- iv. Showerhead may be installed without causing damage to plumbing
- v. Showerhead is acceptable to household

- c. Procedures
 - i. The Contractor must test the water flow. This can be done simply by using a gallon plastic jug with a hole cut out of the top that is large enough to fit the showerhead in. If the showerhead fills the jug in less than twenty seconds (i.e. has a flow rate of more than three gallons per minute) the showerhead is appropriate for replacement.
 - ii. Plumbing tape should be used at joints.
 - iii. Shower-massager or hand-shower models may be preferable, and can be inexpensive.
 - iv. The new showerhead must have a flow rate in the range of 1.7-2.5 GPM.
- E. Aerator Replacement
 - a. Criteria
 - i. Hot water is heated by electricity or natural gas
 - ii. Faucet provides hot water
 - iii. High-efficiency aerators do not currently exist on plumbing
 - iv. Aerator may be installed without causing damage to plumbing
 - v. Is acceptable to household
 - b. Procedures
 - i. Plumbing tape should be used at joints.
- F. Time-of-Use Timers for Electric Hot Water Tanks
 - a. Criteria
 - i. Water is heated by electricity
 - ii. The household must have time of use (or on-peak/off-peak) rates. If time-of-use rates are in effect, or the Contractor must ensure that household is switched over to these rates as part of the process
 - iii. Water tank must have an 80-gallon capacity or greater
 - iv. Timer to be installed must have a battery backup
 - v. Written permission has been obtained by owner, and timer and rates must be acceptable to household
 - vi. Household must be willing and capable of adjusting the timer and replacing the batteries as needed
 - b. Procedures
 - i. Timer model must be reviewed and approved by Program Implementer
 - ii. Timer must be installed in accordance with all appropriate electrical codes
 - iii. Contractor must educate family on maintenance of timer.

13.5 Electric Water Heater Conversions

- A. Criteria:
 - a. SIR of 1.1 or greater
 - b. High electricity consumption (greater than 10,000 KWh)
 - c. Household must be homeowner
 - d. House must not be for sale and household must indicate that they plan to stay in home
 - e. No flooding currently exists in basement and no evidence of a risk of future flooding.

- f. If change-out to natural gas is being considered, natural gas must be in use in the home and available to an appropriate location for a water heater. Appropriate options for safe flue gas venting must be available.
 - g. Replacement of an electric water heater for another electric water heater will only be considered if day/night meter rates exist at the home, and a timer is being installed on the water heater. (In these cases, an 80-gallon tank is required.)
 - h. New natural gas water heater must have an energy usage rating of .63 or greater.
 - i. If the new water heater does not have integral heat traps, heat traps or u-shaped bends at least 12 inches high must be added to both the input and output pipes directly above the tank.
- B. Procedures
- a. Pre-existing conditions must be documented with digital photographs.
 - b. During the energy audit, the Contractor must inspect the water heater and evaluate draft considerations, such as size of flue, lining of chimney, and additional length of pipe required if relocation is necessary. If the Contractor is uncertain about technical aspects of retrofit decisions, the Contractor should notify the Program Implementer that further evaluation by a heating professional is necessary.
 - c. The Contractor must discuss option with the household and verify their interest in the retrofit. The household must be informed that, in a “fuel-switch” scenario, the electricity costs will go down, but the new water heater will increase the cost of the new fuel. It is important to inform the household that the electric reductions offset the increase in the new fuel costs. Data from EmPCalc or other instrumented audit tools can be helpful in this regard.
 - d. The Contractor must consult with the Program Implementer regarding the proposed change-out. This discussion should occur prior to sending Subcontractors to visit a home to provide estimates. Projected costs for repairs or replacements must include all necessary plumbing, venting, and structural costs associated with the change-out.
 - e. CAZ and gas leak testing must be completed as required by BPI.
 - f. Gas or oil hot water heating systems must meet venting codes of the National Fire Protection Association (NFPA) as applicable:
 - i. NFPA 54: The National Fuel Gas Code
 - ii. NFPA 31: Standard for the Installation of Oil-Burning Equipment
 - iii. NFPA211: Standard for Chimneys, Fireplaces, Vents, and Solid-Fuel Burning Appliances.

13.6 Electric Dryer Conversion to Natural Gas

- A. Criteria
 - a. Four or more people must live in home.
 - b. Generally dryer usage must be 7 loads a week or greater
 - c. Natural gas must currently be in use in the home, with cost-effective availability of gas lines and venting
- B. Procedures
 - a. The purpose of this measure is to *reduce a household's energy costs*. It is important to make clear to the household that the program is not a repair service.

- b. The Contractor must discuss conversion with household and verify their interest.
- c. Dryers that are installed through the program must have a sensor that turns off the dryer automatically when clothes are dry.
- d. The Contractor must evaluate the appropriateness of installation:
 - i. Location must allow dryer to be vented to the outside without an extensive dryer duct run.
 - ii. Natural gas must be available to the location where the dryer is to be replaced.
 - iii. If there are indications that the house is very tight, adding another combustion appliance may not be advisable. In these cases, Contractor should contact the Program Implementer and discuss the option of blower-door testing to ensure safe installation.
- e. Dryer installations must include aluminum vent ducts (not vinyl).
- f. CAZ and gas leak testing must be completed as required by BPI.

13.7 Waterbed Mattress Replacement

A. Criteria

- a. SIR of 1.1 or greater
- b. Heated Waterbed in use in home. Replacement is only an option for heated waterbeds, not "soft-sided" heater-less mattresses.
- c. No medical conditions exist which would cause adverse health affect if the household switches to a conventional mattress.
- d. Replacement is acceptable to household.

B. Procedure:

- a. The Contractor must ask household whether there are medical reasons for using the waterbed. For some people with arthritis, for example, the heat from the waterbed can be an important therapy. **If there is any question as to possible negative health effects that might be caused by removing the waterbed, the Contractor must not proceed with this measure.** Medical issues must be noted on the data collection form.
- b. If there is any risk that the household may have allergies to the new bedding material, replacement should not be recommended.
- c. Because of the expense involved, and the personal nature of the product, there is no "try-it-out" option with the mattresses.
- d. The replacement mattresses must be **innerspring mattresses**, which have a strong inner frame of metal springs. (This is not the same thing as a "box spring" which is a second mattress-sized, framed cushioning that is sometimes installed under a mattress. Box springs are NOT provided, but the mattresses DO have springs inside.)
- e. If the household expresses an interest in mattress replacement, the Contractor must check the measurements of the **inside of the frames** to make sure that they conform to one of the three sizes available, and note on data collection form:

	<u>Frame Size</u>	<u>Replacement Mattress Size</u>
KING:	72" x 82"	70" x 82"
QUEEN:	60" x 82"	58" x 82"
SUPER SINGLE:	48" x 82"	46" x 82"

- f. NOTE: the mattresses are actually 2 INCHES NARROWER than the frame sizes. This allows an inch of space on each side for ease of changing sheets.
- g. Contractor must make clear to household that the new mattress is sized to fit into the waterbed frame, and frame removal is not necessary. However if household expresses intent to remove waterbed frame, the option for a conventional-sized mattress replacement may be explored.
- h. Egress must be checked to ensure that a conventional mattress can be brought into the room.
- i. If the household is willing to proceed, the Contractor must have the household sign an appliance agreement. Two important points must be emphasized: the household must make sure that someone is available on the day of delivery and must be sure to drain the waterbed completely prior to delivery.
- j. The Program Implementer will arrange delivery of the mattress to the home.

13.8 Other Electric Reduction Measures

- A. In evaluating options for reducing energy use, it is important that the Contractor review household usage patterns to identify additional measures. Some examples are as follows:
 - a. Opportunity to reduce or eliminate electric space heater use by enhancing or repairing the main heating system's distribution system, air sealing or insulating. NOTE: Use of electric space heaters may not be noted on the household's appliance sheet since households are sometimes reluctant to admit that they use them.
 - b. Programmable thermostats may be installed on ER jobs in homes heated by electricity. See Section 14.5 for further information.
 - c. A motion sensor light or timer for a high-wattage outdoor light that is currently left on all night.
 - d. Repairs to well pump systems that cycle continuously due to a leak in the system.
 - e. Heat tape that runs continuously.
 - f. Leaking hot water pipes or faucets.
 - g. Occasionally, a Contractor may encounter a home that has been converted from a two family to a one family, but still retains two meters and two accounts. This means that the household is paying two basic service charges instead of one, and probably a higher overall cost per kWh than if the whole house was on one meter. In these situations, Contractor should explore the option of switching the house to one set of meters.
 - h. Provide timers for TVs or other appliances left to run continuously.
- B. All such measures must be reviewed and discussed with the Program Implementer.

Section 14: Home Performance (HP) Measures and Criteria

14.1 Air Sealing Methodology

Note: NYSERDA is currently developing an Advanced Air Sealing Protocol that is expected to replace this section in late 2011 or early 2012. A Program Announcement will be sent via e-mail. Please check the Partner Portal for updates.

A. Criteria:

- a. Blower door testing must be performed during the audit and Contractors must test in accordance with BPI standards outlined in "Technical Standards for Building Analyst I-Building Airflow". Air sealing results should be monitored during the air sealing process through blower door testing.
- b. Air sealing strategies must be cost-effective, as measured by an accepted instrumented audit (EmPCalc, TREAT or TIPS).
- c. All air sealing measures must be consistent with BPI guidelines. (Refer to BPI standards outlined in "Technical Standards for Certified Shell Specialist—Installation Requirements" for further details.)

B. Procedures:

- a. During the audit, the Contractor will conduct a blower door test and use pressure diagnostic techniques to identify major sources of infiltration.
- b. Attic by-pass air sealing and air sealing between attached garages and living space must be completed prior to insulation, as per BPI guidelines.
- c. The Contractor will make a list of specific air sealing tasks to be performed. These tasks are to be based on the current EmPower NY hourly rate. For example:
 - Air seal attic chases prior to insulation: \$XX
 - Seal holes in foundation: \$XX
 - Weather-strip three doors: \$XX
- d. If the Contractor is required to obtain prior approval:
 - i. The list of air sealing tasks and costs must first be submitted to the Program Implementer, along with a projected goal for post air infiltration levels.
 - ii. The Program Implementer must then select and approve specific air sealing strategies.
 - iii. The Contractor may provide up to one hour of additional air sealing without prior approval if further leaks are discovered during work.
- e. If the Contractor has been given authority to determine workscopes without prior approval, the Contractor may proceed with air sealing provided that the estimated air leakage reduction meets the SIR goal of 1.1 or greater.
- f. Prior approval must be obtained from Program Implementer in situations where total air sealing cost exceeds \$600, or total project cost exceeds \$3,500 as outlined in Section 12, above.
- g. Upon completion of work, the Contractor must provide the Program Implementer with list of specific air sealing tasks completed and both pre- and post- air infiltration readings. Contractor must enter into CRIS the final blower door number in order to ensure accurate representation of savings.
- h. If the Contractor does not provide appropriate air sealing as part of the workscope, written explanations must be provided to Program Implementer.

14.2 Insulation

- A. Criteria:
 - a. SIR of 1.1 or greater
 - b. No structural deficiencies exist (such as leaking roof) which would impede the effectiveness of the insulation. Such deficiencies must be corrected prior to insulation.
 - c. Structure is sound enough to support the weight of the insulation and installer(s).
- B. General Procedures:
 - a. All insulation must be installed in a manner that is consistent with BPI Standards. Refer to “Technical Standards for Certified Shell Specialist” and “Technical Standards for Certified Building Analyst I”.
 - b. All insulation and other materials installed must comply with manufacturer's standards and meet the minimum requirements for thermal resistance, fire safety, and quality. All installations must comply with all state and local codes.
 - c. Whenever possible, material labels for material installed must be visibly attached to the structure in the area where they were installed.
 - d. In enclosed areas, such as wall cavities or floored attics, high-density (3.5 lbs/cu ft³) cellulose insulation shall be required, unless otherwise specified, or unless defects in the structure prohibit a high-density application.
 - e. All measures performed by the Contractor must be of a permanent nature and should have a reasonable life expectancy of thirty years or greater, unless otherwise specified.
 - f. Minor repairs that either allow for or protect measures installed in this program, such as minor roof repairs to allow for insulation, may be considered for inclusion in workscope. Such repairs must be reviewed and approved by the Program Implementer prior to installation. All such materials must be appropriately resistant to weather conditions, have a lifespan appropriate for their use (typically 15 years or greater), and match as closely as possible the existing aesthetics of the structure.
 - g. Contractor must inspect premises for presence of knob and tube wiring and note location. If knob and tube insulation exists in the attic Contractor may:
 - i. Propose removal of knob and tube in order to fully insulate attic; or
 - ii. Insulate attic, but ensure that no insulation is in direct contact with knob and tube wiring.
- C. Procedures specific to attic insulation:
 - a. Contractor must ensure that insulation levels are sufficient to allow for any settling that may occur in an open blow. At the time of installation the installed insulation must be at least 1” higher than the invoiced level.
 - b. Stairway accesses to attics must receive wall insulation and stair tread high-density cellulose to ensure a complete thermal boundary. The access door must receive weather-stripping and a door sweep and must be secured against air leakage. The door must be insulated to a minimum of R-14.
 - c. In situations where attic areas have no access, an opening must be provided in an accessible yet inconspicuous location, such as a closet, whenever possible. Openings must be properly trimmed and finished with a 5/8” or greater thickness material such as plywood, which is primed on the heated

- side. The cover must be insulated to a minimum of R-14 and weather-stripped and secured to prevent air leakage.
- d. Contractors must avoid sealing working attic hatches whenever possible. In the event that the Contractor and household agree to permanently seal the opening, such as when the opening is patched with drywall, the Contractor must ensure that the non-heated side of the covering is insulated to a minimum of R-14. The cover must be spackled and primed on the heated side.
 - e. In situations where access to an attic area has been gained through an opening which will be permanently sealed such as a patch (above) or a roof vent, the Contractor must notify the Program Implementer at least one day in advance, providing the Program Implementer with the option to inspect the attic area prior to closure, and photograph the completed insulation work in the event that the Program Implementer is no able to inspect the work.
 - f. In situations where objects stored in attic impede the Contractor's ability to adequately insulate attic, the Contractor may require household to move objects within a given time frame. In rare instances, such as situations in which the household is disabled, the Contractor may propose a charge for moving objects to the Program Implementer, prior to installation.
 - g. When a floored attic exists, the Contractor must remove and replace flooring in a manner that provides minimum damage, and which provides access to all areas. Broken and split boards must be replaced with a like product and fastened appropriately. If a drill-and-plug method is used, plugs must be flush with existing surfaces.
 - h. Whenever possible, the kneewall areas must be insulated with the thermal barrier close to the heated area; i.e., insulation installed on the kneewalls and the floored flats beyond the kneewalls, rather than at the ceiling joists of the knee wall areas. Decisions regarding these options must take into account the household's storage use of the kneewall areas.
 - i. In situations where the kneewalls are insulated, the Contractor must adequately block the thermal bypass at the attic floor/kneewall intersection. This may be achieved by rigid foam insulation caulked to fit, or dense-packed cellulose.
 - j. In situations where excessive clutter inhibits the ability to complete the work, the Contractor should consult with the Program Implementer. In some situations, the energy savings may justify the cost of removing the clutter. In other situations, additional resources from outside of the Program may be available.
- D. Procedures specific to attic ventilation:
- a. Ventilation must be installed in accordance with all applicable building codes and BPI standards. All openings must be sealed in a weathertight manner, and must not greatly detract from the aesthetics of the structure.
 - b. Vent opening shall be cut in such a manner as to allow maximum airflow through vent.
- E. Procedures specific to sidewall insulation:
- a. It is critical that the contractor assess this measure appropriately. See Section 11.3 for guidance.
 - b. If pre-existing fiberglass wall insulation is found, Contractor must consult with Program Implementer. Additional insulation may only be installed with prior approval.

- c. If pre-existing cellulose wall insulation is found and there is reason to believe that significant settling has occurred, re-insulation may be considered as follows:
 - i. Contractor must notify Program Implementer.
 - ii. An infrared scan must be used to identify extent of voids.
 - iii. Insulatable square footage must be documented.
 - iv. Contractor may then propose an adjusted wall price, based on higher labor cost/ft² and lower material cost
 - v. Program Implementer and Contractor must then calculate SIR; and proceed as appropriate.
 - vi. Whenever possible, Program Implementer will visit home prior to insulation and after audit to verify conditions.
 - d. When Insulating walls:
 - i. If pre-existing wall insulation is present, crew must accurately document location of added wall insulation. Notes and pictures regarding situation must be added to CRIS.
 - ii. Siding must be removed in all cases and reinstalled to match the original condition. Damaged siding must be repaired and replaced as necessary, and must be watertight. Unpaintable caulk is not acceptable for sealing replaced siding.
 - iii. Drilling directly into exterior siding, or drilling into the interior walls of the home is prohibited unless Contractor obtains written permission from both the Homeowner and the Program Implementer.
 - iv. The tube insertion method is the preferred method for insulation
 - e. During QA, inspectors will verify wall insulation installation using a combination of the following:
 - i. Probing outlets or drilling holes;
 - ii. Pulling and checking under siding;
 - iii. Infrared scans;
 - iv. Core sampling to verify density.
- F. Procedures specific to rim joist insulation

In situations where blower door testing determines that significant air leakage exists in the rim joist area, the Contractor may either:

- A. Air seal leaks in the rim joist area without insulating. If this approach is taken the Contractor must seal all cracks and holes in the rim joist area where pressure diagnostics and visual inspection indicate that leaks, exists. This includes the interface with the foundation wall, the joists, and the first floor. However, air sealing will not be required at crevices where diagnostic tests indicate that no leaks exist.
- B. Propose application of 1" or 2" of two-part spray foam insulation. Prior approval must be obtained from the Program Implementer staff for this approach; the staff will review the project budget with the contractor and determine what depth of foam to install.
- C. Application of foam and air sealing materials must be applied to manufacturer's recommendations. Be aware that extreme temperatures or humidity may reduce the effectiveness of foam and caulk applications. If issues arise, contact your Regional Representative.
- D. Installation must be neat, of the proper density, and must seal all air leakage paths along the rim joists between the foundation and the floor above.

- G. Procedures specific to miscellaneous insulation measures:
- a. Insulation of floors or crawlspaces with an SIR of 1.1 or greater may be acceptable measures provided that these measures:
 - i. Do not create the potential for freezing of pipes
 - ii. Are consistent with an appropriate thermal boundary for the home. Floor insulation between a warm basement and a heated space above, for example, is not appropriate.
 - iii. Address any air leakage issues with appropriate air sealing
 - b. Floor insulation must be installed in such a manner that insulation is in contact with the sub-floor, with kraft or foil face applied towards the sub-floor. A minimum R-19 must be installed.
 - c. Dirt-floor crawlspaces require a continuous air/moisture barrier. This may consist of plastic sheets of a minimum 4 ml, overlapped at least one foot. This barrier must extend at least 10-16" up the foundation wall.
 - d. Exhaust fans that terminate into crawlspaces must be rerouted to the outside. Ductwork must be rigid.

14.3 Heating System Repair and Replacement

- A. Criteria for installation:
- a. All heating system replacements, with the exception of no-heat emergencies, must have an SIR of 1.1 or greater. Heating system repairs, including clean and tunes, are not subject to this restriction.
 - b. Prior approval by Program Implementer has been obtained if the cost of the Clean and Tune is greater than \$150 and/or the overall repair cost to EmPower New YorkSM is greater than \$300.
 - c. Ownership by household has been established and written owner permission has been obtained.
 - d. If the household is a tenant, major heating system repairs or replacement is the responsibility of the landlord, and will not be covered by EmPower New YorkSM.
 - e. Heating system replacements will only be considered as a last resort in situations in which Program Implementer has documented attempts to obtain assistance from the HEAP Heating System Repair and Replacement (HERR) program, the Weatherization Assistance Program, and other appropriate funding sources have been rejected.
- B. General Procedures:
- a. All Contractors are expected to be familiar with, or to employ Subcontractors familiar with the wide variety of mechanical heating systems in use throughout New York State. The Building Performance Institute, the New York State Weatherization Directors' Association and other organizations provide training resources.
 - b. All work performed must comply with all State and local codes, and must be completed in accordance with BPI standards, as outlined in "Technical Standards for Certified Heating Specialists" and "Technical Standards for Building Analyst I". Any new heating system equipment must comply with the National Fire Protection Agency (NFPA), the National Fuel Gas Code (NFGC), and New York State Building construction codes.

- c. All new heating systems must be ENERGY STAR[®] compliant unless, in an emergency situation, prior approval is obtained from the Program Implementer.
 - d. Contractor must discuss the heating system operation with an appropriate household member to:
 - i. Identify problems and concerns expressed by the household
 - ii. Educate the household on appropriate use and maintenance of the heating system.
 - e. Adjustments to the heating system that are deemed to be cost effective may be part of the inspection/servicing. Such measures may include replacement of a furnace filter, opening of restricted ductwork, bleeding an air-bound radiator, or adjustment of a gas burner.
 - f. Furnace filter slots must be covered. A magnetic tape strip or garage-door-type rubber gasket, secured with screws, may be acceptable options if they provide a reasonably tight seal.
 - g. Contractor may not proceed with home performance measures unless the heating system is deemed to be in safe and operable condition.
 - h. Upon the completion of a combustion efficiency test, the Contractor must leave a tag on the heating system indicating test results and identifying tester, and document test results on EmPower New YorkSM audit paperwork.
 - i. Major repairs or replacement must be submitted to Program Implementer for prior approval. Contractor must submit two or more bids from competent heating contractors, to ensure competitive prices. Contractors may add up to 15% surcharge if the Subcontractor cost is less than \$1,000, and up to 10% if the Subcontractor cost is \$1,000 or above.
 - j. Upon completion of any heating system work, which affects the efficiency of the heating system, another steady-state efficiency test must be performed. Final documentation, descriptions of specific repairs completed, and specific costs must be provided along with invoices.
 - k. Warranty, instruction manual and Contractor contact information must be provided to the household.
- C. Procedures related to Clean and Tunes:
- a. A Clean and Tune is required when any of the following occur:
 - i. The steady state efficiency is at or below 70%
 - ii. There is evidence of smoke in ANY gas system combustion test
 - iii. The smoke reading is at or above two on any oil system.
 - iv. There is evidence of need due to neglect or damage
 - v. CO levels are over 100 ppm in the undiluted flue gas.
 - vi. The heating system appliance has not been serviced within the last three years.
 - b. Technicians performing clean and tunes must complete of the Clean and Tune Checklist and Certification Form.
- D. Procedures related to furnace filter changes
- a. Contractors may change dirty furnace filters during the course of an HP energy audit, if pricing has been pre-approved by the Program Implementation.
 - b. Contractors must note the size of the filters on the combustion efficiency tag and make household aware of replacement size and the recommended cleaning/replacement intervals.

- c. Furnace filter slots must be covered, as per BPI standards (See “Technical Standards for Certified Heating Specialists”). Covers may consist of magnetic tape or rigid rubber gaskets secured with screws on one side.
- d. Furnace filters must meet manufacturer’s specifications.
- E. Procedures related to secondary heating systems
 - a. Contractor shall note the existence of all secondary heating systems on EmPower New York forms.
 - b. Contractor shall test where appropriate the steady state efficiency and CO of all such combustion units in a dwelling.
 - c. Contractor must consider the use of secondary heating systems in terms of their interconnectivity with other systems and the dwelling as a whole.
 - d. Contractor shall make note of any health and safety concerns present, such as use of an unvented kerosene heater, or close proximity between electric space heater and flammable objects. Such concerns shall be discussed with household and remedial action taken if necessary to ensure the safety of the household.

14.4 Inspection and Service to Water Heaters Fueled by a Fossil Fuel

- A. Criteria:
 - a. Water heater is fueled by natural gas, oil or propane
 - a. Replacement or repair is the only option to ensure that dwelling meets CAZ testing requirements. Prior to making this recommendation, contractor must first explore lower-cost alternatives. See Appendix 4A - Tips and Solutions to Solve Water Heater Venting Issues
 - b. Conditions in dwelling are appropriate for change-out. (i.e., no flooding in basement, adequate space etc.)
- B. Procedures:
 - b. Contractor must perform combustion efficiency and safety tests and safety checks on all gas, propane or oil-fired water heaters as required by BPI.
 - c. Contractor shall consider options to reduce usage and ensure the health and safety of the occupants. These retrofits may include, but are not limited to:
 - i. Cleaning of burner assembly
 - ii. Repair or replacement of faulty venting system
 - iii. Repair of leaking hot water lines
 - iv. Repair or replacement of faulty fuel lines.
 - d. All gas, propane, or oil domestic hot water systems must meet criteria as outlined under Section 13.5

14.5 Programmable Thermostats

- A. Criteria for installation:
 - a. Participant owns the home.
 - b. Programmable thermostats may be installed on homes heated by electricity on any job, and on homes heated by a central fossil-fuel furnace or boiler on HP jobs.
 - c. Heating fuel usage justifies installation (greater than 1000 therms/year to heat home).

- d. Household displays the ability to properly understand and has a lifestyle that will effectively utilize the thermostat.
- e. Thermostat voltage is appropriate.
- f. Maximum one per home.
- B. Required thermostat specifications:
 - a. ENERGY STAR[®] labeled
 - b. In situations where home has a central air conditioning unit in use, thermostat has the capability to adjust cooling temperatures
 - c. Battery back-up
 - d. Large, easy to read display. In situations where household is visually impaired, Contractor must ensure that display is appropriate to household's needs.
 - e. A minimum of a 5/2-day program schedule (full 7 day program schedule is preferred)
 - f. Programming should be easy and intuitive, and must allow adequate time for inputs
 - g. Participant should be able to override program easily
 - h. Thermostat should include at minimum a full one-year warranty
 - i. Installed thermostats must be compatible with existing heating system
- C. Procedures for installation of thermostats for fossil-fuel systems:
 - a. Models must first be presented to Program Implementer and NYSERDA for review and approval.
 - b. Upon acceptance of model, thermostats may be installed during initial audit visit.
 - c. Installation must include training of an appropriate family member.
 - d. Contractor contact information must be left with the household in case questions arise.
 - e. Thermostat must be fully operational and programmed according to the family's needs before the Contractor leaves the home.
 - f. Replaced thermostats that contain mercury must be disposed of properly.
- D. Procedures regarding thermostats for electrically-heated homes:
 - a. Programmable thermostats may be installed in electrically-heated homes as part of an Electric Reduction or Home Performance work scope. These may be very effective at reducing electricity costs; however, electrically-heated homes often require thermostats in each room. Nevertheless, the cost may be moderated by replacing only the thermostats in the areas that are most frequently used; a set of 3 to 5 "line-voltage" thermostats in these areas may be an appropriate and effective application. If such an opportunity arises, Contractor may consult with Program Implementer for guidance.
 - b. Homes with electric heat pumps require a special thermostat which steps up the temperature slowly. Contractor may consult with Program Implementer regarding options.

14.6 Other Home Performance Measures

- A. Criteria:
 - a. SIR of 1.1 or greater, or demonstrated health and safety concern
 - b. Prior approval of Program Implementer
 - c. Consent of home owner

B. Procedures:

- a. Additional custom home-performance measures which may assist family may be proposed by Contractor.
- b. Digital imagery documenting pre-existing conditions will be generally required.
- c. Whenever possible, cost-effectiveness must be assessed through the use of an instrumented audit tool and analysis of household energy usage patterns.
- d. Prior to installation, Contractor must receive prior approval from Program Implementer.

Section 15: Procedures Related to Health and Safety

15.1 For all jobs;

- A. Emergency situations must be treated as per Section 5, and Appendices 2&3.
- B. Contractor is responsible to procure, maintain and calibrate Carbon Monoxide (CO) and natural gas/propane testing equipment. The Contractor must maintain calibration of instruments according to manufacturer specifications.
- C. Prior approval must be obtained for any health and safety measures with a total cost greater than \$150.
- D. On all jobs in homes with combustion appliances or attached garages, the Contractor must test the ambient air for Carbon Monoxide, in accordance with BPI procedures.
- E. In dwellings served by EmPower in which the customer is the owner of the dwelling, which have either a combustion appliance or attached garage, the Contractor must ensure that a working CO detector is present. Household must be instructed in its use, and provided with instruction manual and warranty information. CO detectors that are provided by the Contractor must meet the following criteria:
 - a. Comply with UL-2034
 - b. Employ an electro-chemical sensor
 - c. Be powered by a lithium battery
 - d. Conform to all local codes
 - e. Make, model and price must be prior-approved by Program Implementer.
- F. In homes where a non-venting dryer exists:
 - a. Workscope must include a proposal to vent the dryer to the outside in the following situations:
 - i. Customer owns home
 - ii. Customer is a tenant, and a Landlord Agreement exists which allows invasive measures.
 - b. If customer is a tenant and no Landlord Agreement exists, contractor must recommend that tenant pursue venting of dryer with landlord, and document recommendation on the Certificate of Completion.
 - c. In situations where the cost of venting the dryer outside exceeds the contract price, contractor must propose a plan and cost to the Program Implementer. Program Implementer must then determine whether to proceed.
- G. In homes where the dryer is vented by a vent that is not code-compliant, the contractor must recommend to the household that the vent be replaced with a code-compliant vent. This recommendation must be documented on the Certificate of Completion.
- H. If a contractor finds that the safety discharge pipe for the pressure relief valve on the water heater is not present, contractor must recommend that the safety discharge pipe be installed, and note such recommendation on the Certificate of Completion.
- I. In homes in which the customer is the owner of the dwelling and no working smoke detector exists, Contractor may provide the household with a smoke detector. Household must be instructed in its use, and provided with instruction manual and warranty information. The smoke detector must meet the following criteria:
 - a. Be powered by a lithium battery
 - b. Conform to all local codes
 - c. Make, model and price must be prior-approved by Program Implementer.

- J. In homes where the customer is a tenant, and either a CO or smoke detector is needed, Contractor must inform tenant, and document notification on the Certificate of Completion.
- K. If the Contractor identifies Health and Safety concerns beyond the scope of EmPower New York the Contractor must notify the building owner the concerns exist. In presenting health and safety concerns, it is crucial that Contractor state these concerns appropriately. Conditions must be described objectively; it is important that Contractors make no statements based on judgments beyond their own expertise.

15.2 On Home Performance jobs:

- A. The Contractor must follow BPI procedures for Health and Safety as outlined in "Building Performance Institute Technical Standards for Certified Building Analyst I" (www.bpi.org). This includes, but is not limited to;
 - a. Testing of gas lines for leaks. Exact locations of leaks must be noted on audit paperwork. Photographs can serve as useful documentation.
- B. No Home Performance measures that reduce air movement may be implemented in a home with an unvented dryer. This includes air sealing and insulation.
- C. In the event that an unvented space heater exists in the home, unvented space heaters must be disconnected and the fuel supply line capped as a prerequisite to all Home Performance measures that impact air movement in the home, including attic and wall insulation and air sealing. EmPower will not reimburse for these measures in homes where connected or un-capped un-vented gas or liquid-fueled space heaters are in place. Contractors may, however, proceed with electric reduction or other measures which do not affect air leakage rates. In addition, the following steps must be taken when an unvented gas- or liquid-fueled space heater is found in the residence:
 - a. Inhabitants must be educated as to the dangers of CO and the correct use of the space heater.
 - b. The contractor should explore options for eliminating usage, such as installation of a vented space heater or repairs to a primary heating system. The viability of the project will then be evaluated on the basis of the combined health and safety and Home Performance costs.
 - c. If the Contractor disables the space heater, this must be noted on the Certificate of Completion under Section A, and in CRIS, along with a recommendation that the customer does not reconnect the space heaters.
 - d. If a household refuses to eliminate use of the space heater, the contractor must document his/her recommendation that the space heater be removed on the Certificate of Completion, and make a note in CRIS.
 - e. Contractor must follow BPI requirements for CAZ testing. Additional fees for such testing may only be charged in situations where the insulation work is subcontracted, with prior approval of the Program Implementer.
 - f. See Section 11.3-I for notes regarding CAZ testing in multi-family units.

15.3 On Electric Reduction jobs:

- A. Gas leak testing is not required. However, if a gas leak is suspected, contractor must follow procedures as outlined in Appendixes 2 & 3.
- B. Combustion Appliance Zone (CAZ) testing is only required in situations in which the contractor performs measures which impact air movement in the home, such as the

installation of a natural gas-fueled hot water tank or dryer, or if a dryer has been vented to the outdoors. If such testing requires a return visit to the home, an additional fee may be charged. Prior approval from the Program Implementer must be obtained.

Section 16: Energy Education

16.1 Criteria

- A. In-home energy education is mandatory for all EmPower New YorkSM audits, unless household member is unwilling or unable to participate.

16.2 Procedures

- A. Prior to the visit, Contractor must download from CRIS and review household information and clients' energy usage data to determine the clients' greatest reduction needs.
 - a. During the audit, Contractor must work with the appropriate household member to identify three to five energy saving actions which the household member would be willing to undertake.
 - b. At the end of the audit, Contractor must work with the household to implement an "Action Plan". Unless the household member is incapable, this action plan must be filled out by the household member, not the Contractor.
 - c. A copy of the Action Plan must be left with the client, and a copy must be submitted to the Program Implementer by the Contractor along with the energy audit invoice.
 - d. It is important that Contractor keep on hand relevant referral numbers for the Referral Network in their area, such as the Weatherization Assistance Program, Utility Collections Departments, Offices for the Aging, etc., and provide them to the households when needed.
 - e. Further details regarding the in-home energy education procedures may be found in the "EmPower New YorkSM In-Home Education Guide." The guide is included as an appendix to this manual.

Section 17: Project Completion and Invoicing

17.1 Unless alternative agreements are reached with the Program Implementer, Home Performance jobs must be completed within 120 days of Contractor referral acceptance and Electric Reduction Jobs must be completed within 60 days of Contractor referral acceptance.

17.2 Contractor must invoice within 15 business days of completion of all work by the contractor on the project.

17.3 Project test-out and sign-off

Upon completion of a project, Contractor must:

- A. Review and correct all necessary EmPower New YorkSM forms. Contractor must make sure forms are complete and legible. Please note that participant and Contractor signatures must be present on documents as required. If the participant of record is not at home to sign documents, the documents must be signed by another appropriate adult in the home. In THEIR OWN name, with a note of the relationship. For example if the bills are in the name of Frank Smith, and his wife Emily signs, she should sign as follows: "Emily Smith (wife of Frank Smith). The use of unauthorized representations of a participant's signature shall be cause for withholding of Contractor invoice payments and/or termination of the Contractor from the program.
- B. Remove all tools, materials and debris from the building and grounds daily and upon completion of work. The work site will be left in original or better condition at the completion of the work.
- C. Post-inspect all subcontracted work to ensure that work was completed to the program standards.
- D. If the Contractor is proposing that further work be completed in the home by other Contractors, the Contractor must ensure that Program Implementer is provided with all appropriate information. It is especially crucial that Appliance Exchange Application includes all relevant household data, and that all writing is legible--this form may be sent directly to the appliance vendor and used as the basis for their orders. If household is in a trailer park, it is important to note the name of the trailer park as well.
- E. If Home Performance measures have been installed, complete all test-out procedures as required by BPI.
- F. Complete a Certificate of Completion. This form must include results of test-out procedures completed on all jobs, and must be signed by the applicant or other adult member of the household. Please note that CAZ testing need not be performed on electric reduction jobs in which no fossil-fueled clothes dryer or hot water tank has been added to the dwelling.
- G. Provide household with the Contractor's contact information.
- H. If quality issues are identified by the Program Implementer or the Quality Assurance Contractor, the Contractor must make all necessary repairs.

17.4 Invoicing Requirements

Invoices may be submitted upon completion of all work performed by Contractor and any subcontractors hired by the Contractor to perform work in the dwelling. Invoices for partially-completed projects may only be submitted upon prior approval of the Program Implementer.

Upon submission of invoice, Contractor must provide:

- A. Completed EmPower New YorkSM forms as follows:
 - a. All 1-4 family jobs
 - i. Signed Owner Agreement (Owners only)
 - ii. Electric Reduction Audit Forms (2 pages)
 - iii. Certificate of Completion (all jobs in 1-to-4 family homes) signed by both applicant or other adult member of the household and contractor
 - iv. Signed Action Plan
 - v. Signed Appliance Exchange Agreement, if appropriate (not required with WAP-coordinated projects)
 - b. Additional forms for 1-4 family HP jobs
 - i. Diagnostics Worksheet
 - ii. Combustion Appliance Inspection Service Form
 - iii. Clean and Tune Form (only if Clean and Tune is performed)
 - c. See Section 10 for requirements related to Multifamily buildings.
- B. Copy of instrumented audit report
- C. WAP and Landlord investment amounts, or other leveraged funding, if applicable
- D. Copies of Subcontractor invoices, as requested by Program Implementer
- E. An invoice which includes the following:
 - a. Individual invoice number
 - b. Correct EmPower New YorkSM ID# ("D00" etc.)
 - c. Customer name (consistent with CRIS referral) and address
 - d. All Contractors must include the following statement on the invoice: "The charges on this invoice are unique to the EmPower New YorkSM program and are not charged off to any other NYSEERDA program".
 - e. Agencies participating in WAP must also include the following statement on the invoice: "Projects completed in coordination with the Weatherization Assistance Program (WAP) follow approved WAP program income policy".
 - f. Line item details of measures performed, as follows:

i. Electric reduction audit:	\$XXX
ii. 7 CFLs:	\$ XX
iii. 800 ft ² open-blow attic insulation, 6"@ \$X.XX per ft ² :	\$ XX
iv. Etc.	
 - f. Number of audit miles billed, unit cost per mile and total cost. Mileage may only be charged for the initial audit.
 - g. Make and model of replacement clothes dryers
 - h. Make, model and AFUE ratings of installed heating systems
 - i. Make, model and energy factors for all replacement water heaters
 - j. Digital images as required. (NOTE: images should be emailed rather than faxed whenever possible.)
 - k. Specific air sealing tasks performed, and price for each task

Section 18: Quality Control Procedures

- 18.1** All work funded by NYSERDA under the EmPower New York program shall be subject to inspection by the Program Implementer, NYSERDA's Quality Assurance Contractor, and NYSERDA staff. Quality Control (QC) and Quality Assurance (QA) are tools for (1) ensuring that appropriate measures are installed and operate as designed, (2) identifying training needs of Contractors, and (3) ensuring program success.
- 18.2** The EmPower New YorkSM Program Implementer is responsible for providing the appropriate technical assistance to ensure Quality Control (QC) for all aspects of the program, and to develop a system of technical and program review tasks to control the quality of program procedures and installed measures. These tasks include:
- A. Assisting NYSERDA in ensuring that Contractors participating in the program maintain appropriate credentials (insurance, BPI certifications, etc.).
 - B. Training Contractors.
 - C. Providing clear instructions and guidelines.
 - D. Appropriately referring customers to Contractors.
 - E. Reviewing work scopes and recommending approval of invoices.
 - F. Providing NYSERDA with assistance in the continued development and enhancement of guidelines, database development, and other aspects of the program.
 - G. Conducting quality control phone calls and visits to homes at percentages prescribed by NYSERDA. The inspections include pre-, in-progress and post-inspections.
 - H. Providing feedback to Contractors based on all QA and QC activities, and ensuring that any necessary remediation is completed. The Program Implementer is the primary contact with the Contractor regarding all Quality Control/Quality Assurance issues.
 - I. Providing NYSERDA with reports and providing Quality Assurance Contractor with ratings from completed QC phone calls and ratings.
- 18.3** Quality Assurance (QA) is provided by a separate Contractor retained by NYSERDA for this purpose. The current Quality Assurance Contractor is CSG. QA activities include a planned system of review procedures, conducted by the third party Contractor, to verify adherence to the adopted quality standards of the program. QA activities also include telephone surveys and on-site inspections of in-progress and completed projects.
- 18.4** In the event that a customer contacts a contractor regarding QA appointments or issues, these calls may be directed to CSG at: 1-866-277-9477.
- 18.5** The Program Implementer coordinates with the QA Contractor as needed to ensure appropriate follow-up is taken by Energy Services Contractors.
- 18.6** The Program Implementer and Quality Assurance Contractor will collaborate with EmPower Staff in developing a system for rating Contractors according to the quality of work performed. Such ratings will be available to Contractors.
- 18.7** In all situations in which work is found to fall below BPI standards, or outside of the parameters of these guidelines, the Contractor will be expected to provide timely and appropriate remedies. Failure to do so may result in rejection of invoices, suspension, or termination from the Program.

Contractors are responsible for becoming familiar with quality assurance procedures. A copy of the Quality Assurance Manual is appended to this Manual.