PON 2309 – Attachment J

2011 New York **ENERGY STAR®** Homes

Quality Assurance
Administrative Review Process
& Field Inspection Procedures

1.0 - Introduction

This document summarizes the Quality Assurance (QA) Administrative Review Process and Field Inspection Procedures for the New York ENERGY STAR® Homes (NYESH) Program. The overall goal of this QA process is to verify that NYESH requirements are met while maintaining healthy and safe living conditions.

Overall, 15% of the NYESH project completions are field inspected through a comprehensive QA field inspection process. The QA administrative reviews and field inspections will document the following objectives are being met:

1. *Dwelling units meet NYESH requirements as outlined in PON 2309;*
2. *Dwelling units meet NYESH Health and Safety Requirements;*
3. *15% of NYESH dwelling units will be field inspected through a comprehensive QA Field Inspection Process;*
4. *Customers are reasonably satisfied with all aspects of NYESH;*
5. *Builders and Home Energy Raters are following NYESH procedures as part of the QA process;*
6. *Dwelling units not meeting all NYESH requirements will be corrected within 30 days of receipt of the Declaration of Completion (DOC) form;*
7. *QA reporting to the Program Implementer (currently Conservation Services Group) will be completed weekly;*

2.0 - Quality Assurance Procedures Overview

The NYESH QA procedures include a review of the Home Energy Rater's (Rater) energy modeling file, an interview with the customer, a detailed field inspection, feedback to Builders & Raters, documentation of all QA inspections and reporting of all QA information. The goal is to verify that the dwelling unit meets NYESH requirements. QA activities will be performed on behalf of NYSERDA by an independent 3rd party QA Contractor, currently Honeywell Utility Solutions.

2.1 – Scheduling Quality Assurance Field Inspections

The QA Contractor will access NYSERDA's CRIS database or the Program Implementer database to obtain information on homes that have recently been verified as a NYESH project. This information includes the home's address, Confirmed Home Energy Rating date, HERS score or Index, Builder information and Rater information.

NYESH has not typically obtained home buyer information of newly constructed dwelling units in time for use during the QA process. The QA Contractor may perform the following tasks:

- Obtain current incentive recipients from the New York State Builder's Association Research & Education Foundation (NYSBA-REF) though accessing the Program Implementer's database.

- Obtain NYESH home buyer addresses and phone numbers through websites.

Once home buyer information has been added to the New Construction call lists, customers are contacted by the QA Contractor's call center and QA field inspections are scheduled. The goal of this scheduling process is to uniformly inspect 15% of all Builders and Home Energy Raters within 180 days of transmittal of the NYESH Incentive Application to NYSERDA by NYSERDA's Support Contractor. Since approximately 600 Builders serve as Partners in NYESH, it is difficult to inspect 15% of the Builders that complete a small number of NYESH projects (which is the majority of the participating Builders). It is also difficult to inspect exactly 15% of the Builders and Raters that produce larger volumes of confirmed Home Energy Ratings in NYESH since the field inspection process is ultimately dependent on the owner's approval to allow the inspection to occur.

To alleviate the problems associated with obtaining owner information and variations in Builder production, QA field inspections may also occur at the time of confirmed Home Energy Rating. To accomplish this, the QA field inspector utilized information provided by Home Energy Rating Providers (Rating Providers) to contact Raters directly and obtain the test-out schedules. This process has proven very effective and minimizes the problems associated with owner no-shows and scheduling conflicts.

2.2 - Administrative Energy modeling software File Review

Once a QA field inspection is scheduled, the field inspector accesses the energy modeling software file forwarded to the Program Implementer by the Rating Provider. If the Program Implementer does not have an Energy modeling software file, the QA Contractor will obtain the file directly from the Rating Provider or Rater and electronically transmit the file to the Program Implementer. The Energy modeling software file provides the detailed attributes of the home including:

1. Conditioned floor area and volume of the home.
2. Number of stories and general type of the home (multi-family or single-family).
3. Insulation type, location, square footage and R-Values.
4. Glazing area, orientation and U-Value.
5. Blower door testing results.
6. Heating, cooling and domestic hot water system sizing and efficiencies.

In addition to the energy modeling software data, NYESH records data on other attributes of the home as submitted on the NYESH Qualification Form (Qual Form) generated by the Rater for each project. The information submitted on these forms includes:

a) Air-tightness attributes of the home.
b) Ventilation system type and controls system.
c) Heating, cooling and domestic hot water system sizing and efficiencies.
d) Duct sealing information.
e) Electrical kWh savings totals and appliance types.

The QA Contractor will have direct access to the Incentive Application form and the Home Energy Rating Certificate (HERC) from the Program Implementer. The QA Contractor may request additional documentation from the Rater or their Rating Provider, such as the United States Environmental Protection Agency's required Checklist(s) for the homes scheduled for a QA inspection and other

NYESH-required technical documentation such as the Qual Form, and verification of the Rater's satisfactory completion of the Combustion Safety Testing. The QA inspector shall verify signatures and dates of the Checklist(s) during the QA field inspection.

In addition to the information collected by NYESH, the following pages include an example of the energy modeling software ENERGY STAR Inspection Checklist report that provides the inspector with a detailed inspection checklist customized for each home:

ENERGY STAR

ENERGY STAR INSPECTION CHECKLIST

Date:	August 08, 2006	Rating No.:	2006-110
Building Name:	310 A1r	Rating Org.:	Pro One
Owner's Name:	Ichabod's Landing, LLC	Phone No.:	514-374-1289
Property	117 River Street	Rater's Name:	Tony Smith
Address:	Sleepy Hollow, OR 12567	Rater's No.:	R0079
Builder's Name:	GDC Ichabod's Landing, LLC		
Weather Site:	New York, NY	Rating Type:	Verified Condition
File Name:	11 Tony Lisanti 117 River Street Sleepy Hollow.blg	Rating Date:	7/5/2006

Building Information:

Conditioned Area (sq ft):	2651
Conditioned Volume (cubic ft):	21408
Insulated Shell Area (sq ft):	4168

Building Option Checklist:

_____ Bonus room over garage
_____ Walk-out basement
_____ Conditioned basement

*This REM model includes the above checked features. If the building being inspected includes features not checked above, please complete and attach supplemental inspection forms.

Inspections

Date	*Inspection/Phase*	*Inspector*
	Insulation/Air Sealing	
	Blower Door #1	
	Blower Door #2/Final	
	Other	

ENERGY STAR Appliances

Type	*Manufacturer*	*Model #*	*Rebate*
Refrigerator			
Dishwasher			
C. Washer			
GFX			
Central A/C			
Other			

REM/Rate - Residential Energy Analysis and Rating Software v12.2

This information does not constitute any warranty of energy cost or savings.
© 1985-2006 Architectural Energy Corporation, Boulder, Colorado.

ENERGY STAR INSPECTION CHECKLIST

310 A1r Page 2

ENERGY STAR CFL Fixtures*

Quantity	*Wattage*	*Int/Ext*

*Fixtures located in closets do not qualify for rebates.

This project as submitted, currently scores 69 with the below listed specifications.

The items below will be inspected for certification as an ENERGY STAR Home. Any deviation from these specifications should be brought to the attention of your ENERGY STAR representative, Tony Smith, as soon as possible to assure that the project will still comply with ENERGY STAR standards.

Energy
Star
Use

Ceilings:

[ ] 1. Attic: R38,FGG,X-16 (331 s.f.)
U-Value = 0.039
Name: 2ns flr Insulation Grade: I II III Face / Inset

Comments/Location_____

[ ] 2. Attic: R38,FGG,X-16 (457 s.f.)
U-Value = 0.039
Name: Loft Insulation Grade: I II III Face / Inset

Comments/Location_____

Above-Grade Walls:

[ ] 1. Wall: R13,FGA,4-16 (190 s.f.), Between conditioned space and ambient
U-Value = 0.099
Name: Lower Lvl Ex Insulation Grade: I II III Face / Inset

Comments/Location_____

[ ] 2. Wall: R19,FGA,6-16 (552 s.f.), Between conditioned space and ambient
U-Value = 0.077
Name: Lower Common Insulation Grade: I II III Face / Inset

Comments/Location_____

REM/Rate - Residential Energy Analysis and Rating Software v12.2

This information does not constitute any warranty of energy cost or savings.
© 1985-2006 Architectural Energy Corporation, Boulder, Colorado.

ENERGY STAR INSPECTION CHECKLIST

310 A1r Page 3

[ ] 3. Wall: R19,FGA,4-16 (208 s.f.), Between conditioned space and ambient
U-Value = 0.095
Name: Lower Garage Insulation Grade: I II III Face / Inset

Comments/Location_____

[ ] 4. Wall: R19,FGA,6-16 (282 s.f.), Between conditioned space and ambient
U-Value = 0.077
Name: 1st Insulation Grade: I II III Face / Inset

Comments/Location_____

[ ] 5. Wall: R19,FGA,6-16 (744 s.f.), Between cond and another cond unit (adiabatic)
U-Value = 0.077
Name: 1st Common Insulation Grade: I II III Face / Inset

Comments/Location_____

[ ] 6. Wall: R19,FGA,6-16 (282 s.f.), Between conditioned space and ambient
U-Value = 0.077
Name: 2nd Insulation Grade: I II III Face / Inset

Comments/Location_____

[ ] 7. Wall: R19,FGA,6-16 (744 s.f.), Between cond and another cond unit (adiabatic)
U-Value = 0.077
Name: 2nd Common Insulation Grade: I II III Face / Inset

Comments/Location_____

[ ] 8. Wall: R19,FGA,6-16 (460 s.f.), Between conditioned space and ambient
U-Value = 0.077
Name: Loft Insulation Grade: I II III Face / Inset

Comments/Location_____

[ ] 9. Wall: R19,FGA,6-16 (408 s.f.), Between conditioned space and attic
U-Value = 0.077
Name: Loft Common Insulation Grade: I II III Face / Inset

REM/Rate - Residential Energy Analysis and Rating Software v12.2

This information does not constitute any warranty of energy cost or savings.
© 1985-2006 Architectural Energy Corporation, Boulder, Colorado.

ENERGY STAR INSPECTION CHECKLIST

310 A1r Page 4

Comments/Location_____

Windows and Skylights:
Window-to-Wall Area Ratio: 0.10

[ ] 1. Window: Marvin Integrity (40 s.f., West), U-Value: 0.310, SHGC: 0.300
For windows without labeled U-factors, describe features:
Name: LL Orientation: West

Comments/Location_____

[ ] 2. Window: Marvin Integrity (4 s.f., East), U-Value: 0.310, SHGC: 0.300
For windows without labeled U-factors, describe features:
Name: LL Orientation: East

Comments/Location_____

[ ] 3. Window: Marvin Integrity (40 s.f., West), U-Value: 0.310, SHGC: 0.300
For windows without labeled U-factors, describe features:
Name: 1st Orientation: West

Comments/Location_____

[ ] 4. Window: Marvin Integrity (32 s.f., East), U-Value: 0.310, SHGC: 0.300
For windows without labeled U-factors, describe features:
Name: 1st Orientation: East

Comments/Location_____

[ ] 5. Window: Marvin Integrity (40 s.f., West), U-Value: 0.310, SHGC: 0.300
For windows without labeled U-factors, describe features:
Name: 2nd Orientation: West

Comments/Location_____

[ ] 6. Window: Marvin Integrity (32 s.f., East), U-Value: 0.310, SHGC: 0.300
For windows without labeled U-factors, describe features:
Name: 2nd Orientation: East

Comments/Location_____

[ ] 7. Window: Marvin Integrity (30 s.f., West), U-Value: 0.310, SHGC: 0.300

REM/Rate - Residential Energy Analysis and Rating Software v12.2

This information does not constitute any warranty of energy cost or savings.
© 1985-2006 Architectural Energy Corporation, Boulder, Colorado.

ENERGY STAR INSPECTION CHECKLIST

310 A1r Page 5

For windows without labeled U-factors, describe features:
Name: Loft Orientation: West

Comments/Location_____

[ ] 8. Window: Marvin Integrity (20 s.f., East), U-Value: 0.310, SHGC: 0.300
For windows without labeled U-factors, describe features:
Name: Loft Orientation: East

Comments/Location_____

Doors:

[ ] 1. Door: R5 steel insul (7 s.f.), R-Value 5.0

Comments/Location_____

[ ] 2. Door: R5 steel insul (7 s.f.), R-Value 5.0

Comments/Location_____

[ ] 3. Door: R5 steel insul (18 s.f.), R-Value 5.0

Comments/Location_____

Frame Floors:

[ ] 1. Floor: R30,FGA,12-16 (190 s.f.), Between conditioned space and garage
U-Value = 0.039
Name: 1st Floor Insulation Grade: I II III Face / Inset

Comments/Location_____

Foundation Walls:

[ ] 1. Wall: R5E (96 s.f.), Between conditioned space and ambient/ground
R-0.0 interior continuous insulation, R-0.0 interior cavity insulation, R-5.0 exterior insulation.
Name: Lower Level Insulation Grade: I II III Face / Inset

Comments/Location_____

[ ] 2. Wall: R5E (104 s.f.), Between conditioned space and garage/ground
R-0.0 interior continuous insulation, R-0.0 interior cavity insulation, R-5.0 exterior insulation.
Name: Lower Level Insulation Grade: I II III Face / Inset

REM/Rate - Residential Energy Analysis and Rating Software v12.2

This information does not constitute any warranty of energy cost or savings.
© 1985-2006 Architectural Energy Corporation, Boulder, Colorado.

ENERGY STAR INSPECTION CHECKLIST

310 A1r Page 6

Comments/Location_____

Slab Floors:

[ ] 1. Slab: R10P,R10U,2W (459 s.f.)
R-10.0 perimeter insulation, R-10.0 under slab insulation.
Name: Lower Level Insulation Grade: I II III Face / Inset

Comments/Location_____

Rim and Band Joists:

[ ] 1. Joist: 1st/LwrLvl (51 s.f.), Between conditioned space and ambient
R-0.0 continuous insulation, R-19.0 cavity insulation.
Name: 1st/LwrLvl Insulation Grade: I II III Face / Inset

Comments/Location_____

[ ] 2. Joist: 1st/Garage (28 s.f.), Between conditioned space and garage
R-0.0 continuous insulation, R-19.0 cavity insulation.
Name: 1st/Garage Insulation Grade: I II III Face / Inset

Comments/Location_____

[ ] 3. Joist: 2nd/1st (35 s.f.), Between conditioned space and ambient
R-0.0 continuous insulation, R-19.0 cavity insulation.
Name: 2nd/1st Insulation Grade: I II III Face / Inset

Comments/Location_____

[ ] 4. Joist: Loft/2nd (35 s.f.), Between conditioned space and ambient
R-0.0 continuous insulation, R-19.0 cavity insulation.
Name: Loft/2nd Insulation Grade: I II III Face / Inset

Comments/Location_____

Mechanical Equipment:

[ ] 1. Heating: Fuel-fired hydronic distribution, Natural gas, 92.0 AFUE.

Make and Model Number:_____

[ ] 2. Water Heating: Integrated, Natural gas, 0.81 EF.

REM/Rate - Residential Energy Analysis and Rating Software v12.2

This information does not constitute any warranty of energy cost or savings.
© 1985-2006 Architectural Energy Corporation, Boulder, Colorado.

ENERGY STAR INSPECTION CHECKLIST

310 A1r Page 7

Make and Model Number:_____

[ ] 3. Cooling: Air conditioner, Electric, 14.0 SEER.

Make and Model Number:_____

Mechanical Ventilation System:

[ ] Mechanical ventilation system rated for, and capable of, providing continuous ventilation.
System shall include automatic timing controls.
System type: Exhaust Only

System description(make): _____

Air Leakage Control:

[ ] House is air-sealed so as to achieve 1628.00 CFM50 or less. (Max CFM50 is: 1628)
Blower Door Results:_____ CFM50

Total Duct Leakage to Outdoors: N/A

Duct Insulation:

[ ] Ducts in conditioned space must be insulated to R-8.0.
[ ] Ducts in conditioned space must be insulated to R-8.0.

NOTES TO FIELD (ENERGY STAR Use Only)

_____

_____

_____

_____

_____

REM/Rate - Residential Energy Analysis and Rating Software v12.2

This information does not constitute any warranty of energy cost or savings.
© 1985-2006 Architectural Energy Corporation, Boulder, Colorado.

3.0 - Field Inspection Procedures

Field inspection procedures include the selection and scheduling of specific field inspections, conducting the actual field inspections, documentation of the findings of the field inspection, providing feedback to Builders and Raters on specific measures that need to be brought into compliance, and providing summary information to NYSERDA and the Program Implementer on QA inspection results of all of the projects that have been inspected.

3.1- FIELD INSPECTION PROJECT SELECTION PROCESS

The QA Contractor conducts detailed field inspections on a percentage of all projects. The selection criteria used to determine specific inspections places an emphasis on Builders or Raters new to NYESH, Builders or Raters that have a history of completing jobs that do not fully meet NYESH standards, the home's HERS score or Index, and Builders or Raters that are very actively involved in NYESH on a monthly basis.

To accurately determine the number of QA inspections that need to be completed for each Builder or Rater, completed inspection data is compared to NYESH project completions to determine where inspections are needed. Builders or Raters active in NYSEH with low QA inspection percentages are priorities for future QA inspection targets. These inspection percentages are reported to NYSERDA in each monthly report.

3.2- FIELD INSPECTION TECHNICAL ASSESSMENT

The field inspection begins with the field inspector providing a brief introduction to the customer as to their name, position, procedures for the inspection and a general overview of the testing to be completed. The inspector will also provide an overview of NYESH, answer any questions the customer may have, determine if the customer has any specific concerns about their home and how they can contact NYESH staff in the future if necessary. The inspector will ask the customer to complete and sign the Energy Information Release Form to authorize release of fuel/energy bills for evaluation of energy savings. The inspector will forward the completed form to the Program Implementer for inputting into the database.

After the customer has been given an overview of the field inspection process by the field inspector, the technical aspects of the field inspection are completed. The technical aspects of the field inspection process include:

1. A Complete Exterior Visual Inspection (i.e., chimneys, ventilation, roofing, siding, windows, foundation, obstructions and landscaping)
2. A Complete Interior Inspection (i.e., visual inspections, place home under winter conditions, test Carbon Monoxide (CO) levels, set up Blower Door)
3. A Complete Basement Inspection (i.e., visual inspections of condition, insulation levels and distribution system, measure CO in Combustion Appliance Zone (CAZ), gas leak detection, combustion efficiency testing, Worst Case Depressurization)
4. Conduct Testing Diagnostics (i.e., Blower Door and Duct Blaster Tests)
5. Complete Building Shell Inspection (i.e., insulation levels in walls, attics, floors, windows and doors)
6. Complete Appliance Testing and Lighting Inspections (i.e., CFL's, fixtures, refrigerators, dishwashers, clothes washers)
7. Verification of all energy aspects of the building were installed as modeled in the Energy modeling software file.

The following provides more detail on the technical aspects of the field inspection process:

Exterior Inspection

a) Full exterior inspection including building measurements, required schematic, and notes on type and condition of structural components including chimneys, ventilation, roofing, siding, windows, foundation, obstructions, and landscaping.

b) Calibration of CO detector and exterior measurement of CO.

c) Leak inspection of gas pipe entering building.

Interior Inspection

a) Place home under wintertime conditions (i.e. closing windows, doors, fireplace dampers, etc.).

b) Measure the ambient level of CO throughout the living space.

c) Perform a complete interior inspection of the home. Document any concerns about the structure including signs of moisture, mold, existing damage, or issues that could affect your testing or future treatments including locations of all exhaust fans.

d) If the home is safe (i.e. ambient CO levels are less than 35 PPM) and a shell leakage test can be performed (the test will not adversely affect the home) set up the blower door in a proper location.

Basement or CAZ Inspection

a) Conduct a visual inspection of the basement area documenting age, type, condition, and fuel type for any combustion appliances including venting and distribution systems.

b) Measure ambient level of CO in the Combustion Appliance Zone (CAZ).

c) Perform gas leak detection test.

d) Perform draft measurements.

e) Measure the Baseline pressure in the CAZ with reference to outside.

f) Perform “Worst-Case” Depressurization test for the CAZ.

g) Typical “worst case depressurization” test

- All Exhaust fans on
- Bedroom doors closed (unless they have an exhaust fan)

h) Test with Basement door open and closed.

i) Test with furnace blower on AND off.

j) Each house will be different and pressures must be checked at each step of the set up process.

k) Record “Worst-Case” CAZ depressurization test results and keep house under those conditions. Record the information for the heating and domestic hot water (DHW)

systems including type, fuel, distribution, venting and condition.

Combustion Safety Tests

a) Keep the CAZ under "Worst-Case" depressurization.
b) Monitor the ambient level of CO throughout all combustion safety tests.
c) Refer to BPI and RESNET Standards for action levels and procedures based on results of combustion safety tests.
d) Test the smallest BTU appliance first (usually the water heater).
e) Turn the appliance on and evaluate spillage.
f) Measure undiluted CO levels of this appliance.
g) Measure the draft of flue gases for this appliance.
h) Keep the first appliance operating and fire the next largest combustion appliance (usually the heating system).
i) Repeat spillage, draft, and CO tests for the next appliance. Double-check the smaller appliance at this time to ensure it is still drafting properly.
j) Repeat procedure for all combustion appliances.
k) Return the house to "natural" wintertime conditions. If combustion safety tests fail under worst-case, it may be necessary to repeat these tests under natural conditions (see BPI standards).

Blower Door Test & Diagnostics

a) Keep the home under wintertime conditions and disable all combustion appliances from operating during the blower door test. Record inside and outside temperature.
b) Conduct the blower door test and record the fan and house pressure measurements and measured CFM50.
c) With the blower door running, complete an air leakage diagnostic and record the results.

Building Shell Inspection

a) Perform a visual inspection of attic and note the following:

- Existing Insulation: Material / Thickness / Condition / R-Value / Framing Detail. Record the same information all attic types (slopes, kneewalls, kneewall floors, etc.), exterior walls, basements, crawl spaces or areas that need to be addressed for the thermal boundary.
- Inspect the windows and doors noting glazing, type, condition and additional information as needed.
- Inspect heating distribution system noting condition, insulation, and (if ducts are present) potential leakage in supply and return ductwork.

Duct Leakage Testing

a) Complete a duct leakage evaluation appropriate to the expected workscope for the building and document the results (visual, a pressure pan or a duct blaster test may be appropriate here).

Lighting & Appliances

a) Evaluate interior and exterior high usage lighting in the home.
b) Verify the number of CFLs and fluorescent lights.
c) Verify that major electrical appliances meet NYESH requirements.
a) Record data on QA inspection form.

Data Collection & Building Report

a) Complete recording building information on Final Inspection Form including existing and proposed conditions.
b) Enter data into computer software to create cost and saving report for client.

The following pages include the Final Inspection Form used in the field to collect the specific technical information as observed or measured on each project. Overall, the form is designed to compare the building information as supplied by the Rater with the information as inspected in the field. This information, along with all other inspection-related forms (i.e., Gas Leak Notification and DOC forms), is transmitted electronically to the Program Implementer on a weekly basis, or more frequently if needed, in a NYSERDA-approved format.

New York ENERGY STAR® Homes Program

Quality Assurance Inspection for New Homes

2011 Final Inspection Form

Rater Name:_____ Builder Name:_____ Homeowner Name:_____

Rater Address:_____ Builder Address:_____ Homeowner Address:_____

Site #:_____ Builder Tracking #:_____ Electric Utility:_____

QA Inspector:_____ Model Home: _____Yes _____No BOPS: ____Yes ____No Date:_____

Basement Wall Insulation:	***Reported***	***Q.A. Verification***
Conditioned to Ground:	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____
Conditioned to Garage:	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____
Conditioned to Unconditioned:	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____

Areas of concern: (explain)_____

Frame Floors:	***Reported***	***Q.A. Verification***
Basement Slab:	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____
Floor over Garage:	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____
Floor over Unconditioned:	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____

Areas of concern: (explain)_____

Rim/Band Joist Space:	***Reported***	***Q.A. Verification***
First Floor Rim Joist:	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____
Second Floor Band Joist:	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____

Areas of concern: (explain)_____

Above Grade Walls:	***Reported***	***Q.A. Verification***
Conditioned to Ambiant:	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____
Conditioned to Garage:	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____
Conditioned to Attic:	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____

Areas of concern: (explain)_____

Ceilings:	***Reported***	***Q.A. Verification***
Flat Ceilings:	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____
Cathedral:	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____	Type:_____R-_____ Good:_____ Fair:_____ Poor:_____

Areas of concern: (explain)_____

Visual Inspection: *(Check if Concerned)*

_____Insulation
_____Foundation Drainage
_____Comfort Issues
_____Health/Safety Concerns
_____Ext./Int. Moisture Concerns
_____Natural Gas Leaks

_____Attic By-Passes
_____Attic Top Plates
_____Kneewall Attic
_____Basement
_____Exterior Penetrations
_____Duct Leakage

_____Windows
_____Doors
_____Other
_____Attach. Garage
_____Attic Hatch
_____Duct Sealing

Areas of concern: (explain)_____ _____
_____ _____

Blower Door:

Reported	*Q.A. Verification*
CFM 50:_____/ACH50_____	CFM 50:_____/ACH50_____
Ring:_____A_____B_____Open	Ring:_____A_____B_____Open
House Volume (cf) _____	House Volume (cf) _____
No. of Stories: _____	No. of Stories: _____

Combustion Appliance Zone:

(CAZ) Depressurization Test	*Reported* Worst Case Pressure	*Q.A. Verification* Worst Case Pressure	Required CAZ
Zone 1:_____	_____ Pascals	_____ Pascals	_____
Zone 2:_____	_____ Pascals	_____ Pascals	_____
Zone 3:_____	_____ Pascals	_____ Pascals	_____

Worst Case Spillage Test

Reported		*Q.A. Verification*	
Heating System Pre-test:	P / F	N/A	
Heating System Post-test:	P / F	Heating System Post-test:	P / F
DHW System Pre-Test:	P / F	N/A	
DHW System Post-Test:	P / F	DHW System Post-test:	P / F
Other Appliance Pre-test:	P / F	N/A	
Other Appliance Post-test:	P / F	Other Appliance Post-test:	P / F

Worst Case Draft & CO

	Reported	*Q.A. Verification*
Heating System 1	Draft_____CO_____	Draft_____CO_____
Heating System 2	Draft_____CO_____	Draft_____CO_____
DHW System	Draft_____CO_____	Draft_____CO_____
Other_____	Draft_____CO_____	Draft_____CO_____
Other_____	Draft_____CO_____	Draft_____CO_____

Combustion & Cooling Equip.

	Reported	*Q.A. Verification*
Heating System 1:	Fuel:____Oil_____NG_____LP_____Elec	Vent:_____Nat_____Ind_____Direct
Delta T:_____	Make:_____	Model #:_____
	Output:_____AFUE:_____	Dist:_____FHA_____FHW
	Dist:_____FHA_____FHW	Output:_____AFUE/HSPF_____
Heating System 2:	Fuel: ____Oil_____NG_____LP_____Elec	Vent:_____Nat_____Ind_____Direct
Delta T:_____	Make:_____	Model #:_____
	Output:_____AFUE:_____	Dist:_____FHA_____FHW
	Dist :_____FHA_____FHW	Output:_____AFUE/HSPF_____
DHW System	Fuel: ____Oil_____NG_____LP_____Elec	Vent:_____Nat_____Ind_____Direct
	Make:_____	Model #:_____
	Stoage Cap.: _____ EF:_____	Stoage Cap.: _____ EF:_____
Range:	Fuel:_____Oil_____NG_____LP____Elec	Vented to the outside: Y/N
Dryer:	Fuel:_ ___Oil_____NG_____LP____Elec	Vented to the outside: Y/N
Cooling System:	Make: _____SEER:_____	Model: _____SEER: _____
Outdoor Air Temperature_____	Cooling Capcity: _____ Btu's/hr	Cooling Capcity: _____ Btu's/hr
	Actual Air Flow: _____ CFM	Actual Air Flow: _____ CFM
	Design Air Flow: _____ CFM	Design Air Flow: _____ CFM
	Proper Charge: _____ Yes _____ No	Proper Charge: _____ Yes _____ No
		Supply Air Dry / Wet Bulb_____/_____
		Return Air Dry / Wet Bulb_____/_____

Duct System Installation:

Sq. Ft. of House: _____

Reported

Duct Sealing as Verified by:
a) Visual Inspection: _____
b) DuctBlaster @25 Pa. _____ cfm
cfm/100 sq. ft. _____

Q.A. Verification

Duct Sealing as Verified by:
a) Visual Inspection: _____
b) DuctBlaster @25 Pa. _____ cfm
cfm/100 sq. ft. _____
c) Leakage to Outside_____

Mechanical Ventilation:

Reported

Location:_____
Make:_____Model:_____
Boost Capability: Y / N
ENERGY STAR Qualified Fan: Y / N
Control Type:_____
Rated CFM:_____Tested CFM:_____
Required CFM:_____

Q.A. Verification

Location:_____
Make:_____Model:_____
Boost Capability: Y / N
ENERGY STAR Qualified Fan: Y / N
Control Type:_____
Rated CFM:_____Tested CFM:_____
Required CFM:_____

Installed E* Products

	Reported	Totals	Q.A. Verification	Totals	Model Nos.
CFLs	50kWh each	_____	50kWh each	_____	
ENERGY STAR Fixtures	75kWh each	_____	75kWh each	_____	
Refrigerator	100kWh each	_____	100kWh each	_____	_____
Dishwasher	50kWh each	_____	50kWh each	_____	_____
Clothes Washer	75kWh each	_____	75kWh each	_____	_____
Freezer	50kWh each	_____	50kWh each	_____	
ECM Motor	400kWh each	_____	400kWh each	_____	
Other	xxxkWh each	_____	xxxkWh each	_____	
	Total Savings		Total Savings		

HERS Rating:

Reported

Rating After Plan Review: _____
Final Rating: _____

Q.A. Verification

Final Rating: _____

BOPS:

Final Rating: _____

Final Rating:_____P _____F

Summary of Final Inspection:

Meets BPI H&S Standards	_____P_____F
Meets Program Standards	_____P_____F
Meets kWh Requirements	_____P_____F
Meets Ventilation Requirements	_____P_____F
Rating Sticker on Elec Panel	_____Y_____N
Plaque on House	_____Y_____N
ES Door Mat at House	_____Y_____N

Reasons for Failure/Follow-up:_____
_____
_____

Inspector's Signature: _____ Date: _____

Customer's Signature: _____ Date: _____

3.5- FIELD INSPECTION DOCUMENTATION AND REPORTING

All QA inspection information is submitted by the QA inspector. Both the onsite field inspection forms and administrative review findings are submitted along with an electronic submission weekly to the QA Manager for review and for reporting.

The Post-Inspection Documentation and Reporting process is summarized by the following:

1. Inspector completes the new construction Final Inspection Form.

2. The inspector determines if the deficiency is severe enough so that the home is no longer in compliance with all NYESH requirements.

3. If deficiencies are found that must be corrected immediately (project scores of F3), the inspector contacts the Builder immediately and verifies the corrective action on-site. The QA Contractor issues a DOC form to the Builder and Rater, with a copy to the NYESH Implementer, for either informational purposes (if issue was remedied on-site) or for additional corrective action not remedied on-site. After the deficiencies are remedied, the Builder or Rater will inform the Program Implementer in writing by returning the signed DOC form.

4. If the deficiencies are not urgent, the inspector contacts the Builder or Rater to discuss the results of this particular post-completion inspection and documents the discussion. The inspector provides the Builder or Rater with a written description of measures to be corrected on the DOC form. For projects with a score of F2, arrangements are to be made to remedy the situation as soon as possible. For projects with a score of F1, the Builder or Rater typically has 30 days from receipt of the DOC form to correct the deficiencies. In both cases, the Builder or Rater will inform the Program Implementer in writing by returning the signed DOC form once the repairs are completed.

5. To provide the Builder or Rater with valuable feedback, DOC forms will be issued for informational purposes to Builders and Raters for those projects with a score of P1.

6. Field inspector enters the inspection data directly into NYSERDA's CRIS database and forwards an electronic image of all inspection paperwork to the Program Implementer on a weekly basis or more frequently if needed.

For each QA inspection performed, the following list of data is documented by the QA Contractor:

- Builder Information
- Home Energy Rater Information
- Customer Name, Address and Phone Number
- Inspector's Name
- Inspection Date
- Final Home Energy Rating
- Field Inspection Summary
- Project Meets NYESH Requirements (Pass/Fail)
- Summary of Customer Interview and any Reasons for Failure
- Priority for Repair (High, Medium or Low)

- Summary of a Plan for Resolution
- Basement Wall Insulation (Type, R-Value, Installation Quality)
- Frame Floors Insulation (Type, R-Value, Installation Quality)
- Rim/Band Joist (Type, R-Value, Installation Quality)
- Above Grade Walls Insulation (Type, R-Value, Installation Quality)
- Ceiling/Attic Insulation (Type, R-Value, Installation Quality)
- Summary of Visual Inspection
- Blower Door Testing Results
- CAZ Testing Results
- Heating/Cooling/Domestic Hot Water Information (Fuel Type, Efficiency & Distribution Type)
- Heating/Cooling System Sizing Information
- Combustion Safety Testing and Results (CO, Draft & Spillage)
- Duct Sealing and Insulation Visual Inspection and Duct Testing Information
- Mechanical Ventilation Type, CFM and Control Type
- Installed ENERGY STAR appliances information

Each inspection report specifically outlines the problems that were found on the inspection and what follow-up tasks might be necessary (and at what degree of urgency they need to be followed up on).

In addition to the notification to the Builders or Raters of scheduled QA inspections, upon completion of the QA inspection the QA Contractor provides documentation and reporting that includes:

1. Completion of field inspection forms and articulation of project score (i.e., F3-P3).

2. The identification of additional training needs is to be submitted to the Program Implementer for development of supplemental customized training plans.

3. If anomalies are discovered at any time during the project inspection by the inspector regarding NYESH Compliance, NYSERDA shall be notified by receiving a copy of the DOC form.

4. If at any time the inspector identifies any immediate or urgent issues regarding technical compliance (project score of F3), the QA inspector is to contact the builder/rater immediately to have the issue remedied on-site. The QA Contractor is to notify the Program Implementer.

5. Summary information will be provided to NYSERDA and the Program Implementer through the monthly reporting process.

6. Weekly and quarterly scoring information will be provided to the Builders.

3.6 QA FIELD INSPECTION SCORING PROCESS

For NYESH projects, inspection results are scored into the following categories:

Score F3A: Project failed Expanded HERS score & interim combustion safety testing (urgent health & safety issue).	**Score F3B**: Project failed to meet Builder Option Package (BOP) & interim combustion safety testing (urgent health & safety issue).	**Score F2**: Project failed interim combustion safety testing (health & safety high priority issue).	**Score F1A**: Project failed to meet required Expanded HERS score or HERS Index per NYESH standards.	**Score F1B**: Project failed to meet Builder Option Package (BOP).

Score P1: Project passed but Expanded HERS score or HERS Index does not match the tiered score in energy modeling software file.	**Score P2**: Project passed but was not labeled properly. Sticker, plaque and/or door mat was missing.	**Score P3**: Project meets or exceeds all NYESH standards.

A more detailed description of the inspection results scoring categories is as follows:

F3A – Based on the information collected during a QA inspection, this project does not meet NYESH requirements. The expanded HERS score or HERS Index does not meet NYESH standards in one or all of the following areas: mechanical equipment, mechanical ventilation, thermal envelope, building geometry (to include window glazing area, house volume and orientation) and/or electrical savings. Project also does not meet the interim combustion safety testing standards, requiring an urgent response to a health and safety issue. The QA inspector is not to leave the house until the issue is addressed and conditions are safe. The QA inspector must contact the Builder or Rater immediately, and verifies necessary corrective action is immediately addressed or corrected. The QA Contractor issues a DOC form to the Program Implementer, for either informational purposes if all issues were remedied on-site, or to be forwarded to the Builder or Rater if additional corrective action is required. The Builder or Rater will inform the Program Implementer in writing that the deficiencies have been remedied by returning the signed DOC form.

F3B – Based on the information collected during a QA inspection, this project does not meet NYESH requirements. The project fails to meet the NYESH Builder Option Package (BOP). The project also does not meet the interim combustion safety testing standards, requiring an urgent response to a health and safety issue. The QA inspector is not to leave the house until the issue is addressed and conditions are safe. The QA inspector must contact the Builder or Rater immediately, and verifies necessary corrective action is immediately addressed or corrected. The QA Contractor issues a DOC form to the Program Implementer, for either informational purposes if all issues were remedied on-site, or to be forwarded to the Builder or Rater if additional corrective action is required. The Builder or Rater will inform the Program Implementer in writing that the deficiencies have been remedied by returning the signed DOC form.

F2 – Based on the information collected during a QA inspection, this project meets NYESH requirements but does not meet the interim combustion safety testing standards (health and safety high priority issue). The Builder or Rater must be notified and arrangements made to remedy the situation as soon as possible following the inspection. In addition to speaking to the Builder or Rater, the QA inspector issues a DOC form to the Program Implementer, for either informational purposes if all issues were remedied on-site, or to be forwarded to the Builder or

Rater if additional corrective action is required. The Builder or Rater has 30 days from receipt of the DOC form to inform the Program Implementer in writing that outstanding or uncorrected deficiencies have been remedied by returning the signed DOC form.

F1A – Based on the information collected during a QA inspection, this project does not meet NYESH requirements. The expanded HERS score or HERS Index does not meet NYESH standards in one or all of the following areas: mechanical equipment, mechanical ventilation, thermal envelope, building geometry (to include window glazing area, house volume and orientation) and/or electrical savings. The QA inspector is to be given instructions for corrective action necessary to meet NYESH requirements. In addition to speaking to the Builder or Rater, the QA inspector will issues a DOC form to the Program Implementer, for either informational purposes if all issues were remedied on-site, or to be forwarded to the Builder or Rater if additional corrective action is required. The Builder or Rater has 30 days from receipt of the DOC form to inform the Program Implementer in writing that outstanding or uncorrected deficiencies have been remedied by returning the signed DOC form.

F1B – Based on the information collected during a QA inspection, this project does not meet NYESH requirements. The project fails to meet the NYESH Builder Option Package (BOP). The QA inspector is to be given instructions for corrective action necessary to meet NYESH requirements. In addition to speaking to the Builder or Rater, the QA Contractor issues a DOC form to the Program Implementer, for either informational purposes if all issues were remedied on-site, or to be forwarded to the Builder or Rater if additional corrective action is required. The Builder or Rater will inform the Program Implementer in writing that the deficiencies have been remedied by returning the signed DOC form.

P1 – Based on the information collected during a QA inspection, this project meets minimum NYESH requirements, but the expanded HERS score or HERS Index does not match the recorded rating. In addition to speaking to the Builder or Rater, the QA Contractor issues a DOC form to the Program Implementer, for informational purposes, to be forwarded to the Builder or Rater.

P2 – Based on the information collected during a QA inspection, this project meets NYESH requirements. However, the house was not properly labeled. One or all of the following is missing: rating sticker on electrical panel, plaque, and/or door mat. Builder or Rater are to be notified.

P3 – Based on the information collected during a QA inspection, this project meets or exceeds all NYESH requirements including expanded HERS score, HERS Index, or BOP; all mechanical equipment, mechanical ventilation, interim combustion safety testing, thermal envelope, building geometry (to include window glazing area, house volume and orientation), and electrical savings standards; and house is properly labeled. The Builder and Rater should continue to provide this high level of quality in all NYESH projects.

4.0 De-listing Procedure

Based on the results of each inspection, the QA Contractor informs the Builder and/or HERS Rater of deficiencies and the corrective actions that need to be taken via issuance of a DOC form. The Program Implementer's QC staff then follows up with the Builder or Rater to ensure the corrective actions taken are consistent with all NYESH procedures. If the deficiencies found during inspections are of a recurring nature or are severe in nature, the Program Implementer, as directed by NYSERDA, may implement actions to remove the Rater or Builder from NYESH.