



Executive Summary

As stipulated in the Conference Report on H.R. 4635¹, the conferees requested that the Department of Housing and Urban Development (HUD) continue to assess the accuracy and effectiveness of the Public Housing Assessment System (PHAS). Specifically, the conferees charged the Department to complete the following activities as part of this effort:

1. Implement the General Accounting Office (GAO) recommendations issued in the July 2000 report to revise their quality assurance plan in order to ensure the evaluation of the following:
 - ◆ Contractor compliance;
 - ◆ Inspector performance;
 - ◆ Inspection accuracy; and
 - ◆ Program performance.
2. Perform a statistically valid test of PHAS and conduct a thorough analysis of the results; and
3. Order an independent assessment of the methodology and results of the study from 2 above.

In response, HUD's Real Estate Assessment Center (REAC) modified the Physical Assessment Subsystem Quality Assurance Program (PASS QA Program), evaluated and reported performance against the modified program for a period of time, tested the results in a statistical study, and commissioned an independent assessment of these results.

These activities enabled HUD and the independent assessor to conclude that the inspection protocol does provide reasonably accurate, repeatable, objective, and fair results. Furthermore, the study's results also indicate that where inspection discrepancies existed, the Public Housing Agencies' physical scores were mostly higher than they should have been, due to deficiencies not observed. When scores are incorrectly elevated, it is often at the expense of the residents, who have to continue living with any unresolved deficiencies.

Background

REAC is responsible for centralizing and standardizing the way HUD evaluates the physical condition of the housing portfolio of over 3,000 Public Housing Agencies (PHAs), as well as about 29,000 multifamily properties. One of REAC's key responsibilities is to monitor and assess the physical condition of properties and PHAs in which HUD has a financial interest.

To meet this objective, HUD established a specific standard for conducting physical inspections: the *Uniform Physical Condition Standards* (UPCS). These revised standards are derived from the Department's *Housing Quality Standards* (HQS). In effect, the knowledge gained from practical implementation of the *Housing Quality Standards* and review of relevant industry standards (BOCA, UPC, NFPA, NEC)² was leveraged in developing and refining UPCS. In the end, 41 out

¹ H.R. Conf. Rep. No. 106-988 for Department of Veterans Affairs, Department of Housing and Urban Development, and Independent Agencies Appropriations Act, 2001, at page 68 (October 18, 2000).

² Building Officials Code Administrators (BOCA), Uniform Building Code (UBC), National Fire Protection Association (NFPA), National Electric Code (NEC).



of the 44 HQS elements reviewed during a HQS inspection were retained under UPCS, with a stronger focus applied to both the livability of the properties and the health and safety of its residents. The resulting inspection standard applies to both inspections completed by REAC as well as the annual unit inspections completed by the Public Housing Agencies. In this way, performance data is collected against the standard by the PHA themselves, thereby allowing the PHA to address any deficiencies prior to REAC’s independent review.

UPCS defines the process for conducting an inspection and is based on the standard that all of HUD’s inventory should be “*decent, safe, sanitary, and in good repair.*” Data from the implementation of the protocol derives a numerical score for the property based on a maximum of 100 points. Fundamentally, a PHA, and each of its properties, is initially awarded 100 points. When specific aspects of a property’s physical condition fail to meet the defined standard, point deductions are applied, where applicable.³ The four main components that define a score⁴ are listed below:

- ◆ **Inspectable Area Weight** – There are five main Inspectable Areas: *Site; Building Exterior; Building Systems; Common Areas; and Units.* Each Inspectable Area has a calculated weight based on its general importance to the inhabitability of a given property. For example, Units carry more weight than Site, since Units are where residents actually live and spend most of their time. A summary of the Area weights is as follows⁵:

◆ Site	15%
◆ Building Exterior	15%
◆ Building Systems	20%
◆ Common Areas	15%
◆ Units	35%

- ◆ **Inspectable Item Weight** – Each of the five main Inspectable Areas has Inspectable Items. For example, a kitchen is an Inspectable Item in a Unit. Each Inspectable Item is assigned a weight depending on how important that Item is to its Area. Using Units again as an example, kitchens would typically be considered to be more important than a Unit’s porch.
- ◆ **Defect and its criticality** – Each Inspectable Item has Defects that define the reportable conditions of a particular Inspectable Item. For example, a non-working stove in a Unit-kitchen is a Defect. Each Defect is assigned a criticality in reference to its importance to its specific Item. A non-working stove is an important Defect.
- ◆ **Severity**– Each Defect has one or more levels of Severity. For example, a stove that does not work at all has a higher Severity level than a stove that has a single inoperable stove-top burner.

³ 78 Public Housing properties have received a score of 100 under implementation of UPCS during the period covering the second round of inspections (9/30/99-6/30/00).

⁴ For a detailed description of scoring refer to the Federal Register (6/28/00 Page 39988 – Vol. 65, No. 125).

⁵ These are “nominal” weights. If, for example, there are no Common Areas, the points would get reallocated, as follows: Site: 17.6; Building Exterior 17.6, Building Systems 23.5, Units 41.3.



HUD developed the Area, Item, and Defect weights plus the criticalities, based on professional advice from a wide spectrum of knowledgeable people, including:

- ◆ Professionals Engineers who have experience assessing the physical condition of properties;
- ◆ Qualified representatives from the Housing and Public Housing Industries; and
- ◆ HUD inspection and engineering professionals

When scoring is applied, if enough areas of the property fail to meet the standard, the property as a whole is defined as not being “*decent, safe, sanitary, and in a good state of repair*”. From the individual property score data, a PHA also receives a physical designation based on the weighted average⁶ scores of its properties.

As may be seen, the role of the inspector from a quality perspective becomes more apparent, because a property and/or a PHA’s physical score may be artificially high if an inspector fails to record defects. Accordingly, REAC developed the PASS QA Program to ensure the accuracy of inspection scores through proper application of the inspection protocol. Another quality component of REAC’s inspection program is the Technical Review process. If an inspection has been completed and approved by HUD, and the PHA determines that there are certain errors in the inspection report, the PHA has the opportunity to request a review of the inspection. If the submittal is acceptable, HUD will restore the relevant point deductions. Through the implementation of these processes, REAC and HUD can ensure successful implementation of PHAS.

Conference Report on H.R. 4635

The conferees requested that the Department take certain actions to assess the accuracy and effectiveness of the PHAS, taking into consideration the recommendations made by the GAO in its July 2000 report. The Conference Report on H.R. 4635 released on October 18, 2000 reads as follows:

The conferees remain troubled by the Department’s implementation of the ‘Public Housing Assessment System’ (PHAS). The system has had problems with the reliability of the inspections, the training and skills of some contract inspectors, and the effectiveness of quality assurance measures. Accordingly, the conferees direct HUD to continue to assess the accuracy and effectiveness of the PHAS system and to take whatever remedial steps may be needed, including implementing the recommendations made by GAO in its July 2000 report. Specifically, the conferees direct HUD to revise its April 2000 quality assurance plan to ensure that quality assurance activities it contains will provide HUD with the information it needs to evaluate (1) inspection contractors’ compliance with provisions in their contracts and quality control program, (2) inspectors’ performance in applying HUD’s inspection protocol, (3) the accuracy of the inspections and resulting scores, and (4) the performance of the program as

⁶ PHA Physical PHAS Indicator scores are derived from a PHA’s individual property scores and weighted by the number of units for a given property. For example, a PHA with 2 properties (75 units at property A, and 25 units at property B) would receive 75% its PHAS Physical Indicator score based on the score of property A and 25% from property B’s score.



indicated by the precision and replicability of the inspection protocol. Further, the conferees direct HUD to perform a statistically valid test of PHAS [physical inspections], conduct a thorough analysis of the results, and have the methodology and results reviewed by an independent expert. The Department should provide a report to the Committees on Appropriations by March 1, 2001, that describes the results of these reviews and the steps taken to improve the accuracy and reliability of PHAS.

REAC Response

In response to GAO's recommendations and in accordance with the language in the Conference report, REAC has:

- ◆ Modified the April 2000 PASS QA Plan to ensure that it provides the information needed to evaluate the four QA levels of contractor compliance, inspector performance, inspection accuracy and resulting scores, and program performance (See ***Exhibit I***, PASS QA Plan – July 2000);
- ◆ Evaluated the activities and results of the PASS QA Plan for the period of July to December 2000 (See ***Exhibit II***, Report to Congress: PASS QA Program Report – February 2001);
- ◆ Completed a statistically valid study to characterize and quantify the repeatability and consistency of the REAC physical inspection protocol (See ***Exhibit III***, Report to Conferees: REAC Physical Inspection Study and Results – March 2001); and
- ◆ Commissioned an independent assessment of the methodology and results for the above study (See ***Exhibit IV***, Report to Conferees: Independent Assessment of REAC Physical Inspection Study and Results – March 2001).

Each of the activities and associated reports corresponds directly to the recommendations and directives issued by the GAO and the conferees. Each exhibit contained in this submittal is summarized below.

Exhibit I - PASS QA Plan

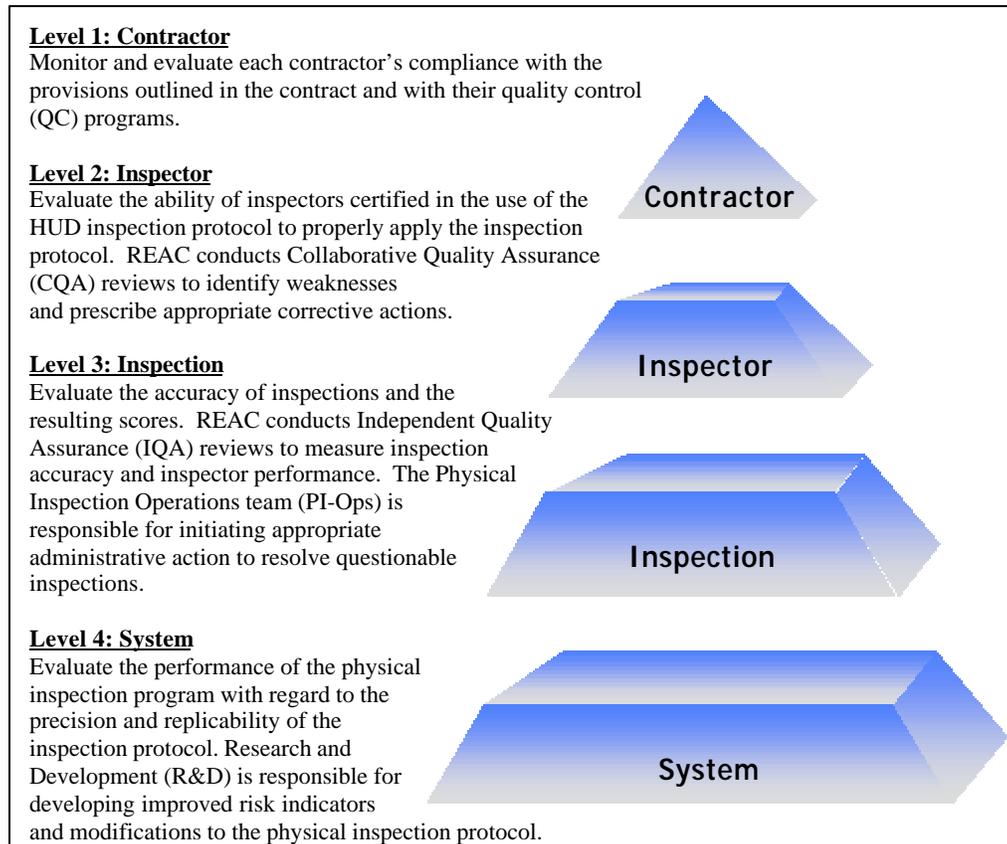
The goal of REAC's PASS QA Program is to ensure the accuracy of the inspection scores through proper application of the inspection protocol. REAC developed the PASS QA Plan to monitor contractor and inspector performance, and to test inspection results for precision, replicability, and completeness. In accordance with the recommendations issued by the GAO, REAC modified the April 2000 PASS QA Plan to ensure that the necessary information and program metrics are distributed among the different levels and available for evaluation purposes.

The PASS QA Plan utilizes a risk-driven model designed to identify and mitigate the potential risks and their impact on the quality of physical inspections. The PASS QA Plan is a four-level approach that monitors and evaluates the quality of physical inspection activity. The Plan



emphasizes the accountability of its participants and the distribution of information to facilitate improvements in performance throughout the program.

As illustrated in the PASS QA model below, each level represents a distinct aspect of the physical inspection program and is identified by its focus and performance objectives.



This multi-level approach enables REAC to address the program risks at the source and to use the information gathered during the activities at one level to improve the activities at other levels.

Exhibit II - PASS QA Program Report to Congress

The PASS QA Program Report describes how REAC improved its operations and the quality of its products through the implementation of the QA Plan for the period of July to December 2000. The report discusses in detail the activities performed in support of each level of the QA Plan, the accomplishments during the period, and the exchange of information used to further improve the program.

The following table highlights the GAO recommendations and summarizes the responsive actions taken by REAC:



GAO Recommendation #1	REAC Action
<p>REAC should revise its QA plan to describe "...how the information obtained through various quality assurance procedures will be used to assess REAC's performance in meeting each of the plan's objectives..."</p>	<p>The quality assurance activities and methodologies contained in the PASS QA Plan are designed to provide information on potential risks throughout the program that may impact REAC's ability to meet its program objectives. In turn, the results obtained from QA activities are used to measure program performance against these program objectives.</p> <p>In addition, REAC has formalized and improved the exchange of information among the program participants throughout the four levels of the QA Plan. Improvements include new processes and systems that support daily and monthly exchanges of information between the operational areas within REAC as well as between REAC and its inspection contractors.</p>
GAO Recommendation #2	REAC Action
<p>REAC should revise its QA plan to describe "...how REAC's quality assurance activities relate to activities performed by the inspection contractors as part of their quality control programs..."</p>	<p>REAC is providing inspection contractors with access to data analysis results and information technology, and these contractors are providing REAC with quality control activity reports. Furthermore, REAC is conducting on-site reviews of contractor quality control programs. REAC developed a new statement of work for performance-based contracts that will require HUD approval of all contractor quality control plans.</p>
GAO Recommendation #3	REAC Action
<p>REAC should revise its QA plan to describe "...what records REAC should maintain to document its actions when poorly performing inspectors are identified during collaborative and follow-up reviews."</p>	<p>REAC modified its CQA review methodology and the tool used in the field to improve the standardization of the data collected and its ability to communicate the CQA review results with stakeholders such as inspection contractors. REAC also maintained the results of targeted follow-up reviews and Checklist review results and communicated them to the contractors.</p>
GAO Recommendation #4	REAC Action
<p>HUD should "...periodically issue reports describing the quality assurance activities that it has performed and the results of these activities."</p>	<p>The report itself describes the activities and results of the PASS QA Program between July and December 2000.</p>

REAC's accomplishments outlined in the PASS QA Program Report include the following:

- ◆ Fully implemented a four-level PASS QA Plan that allows for continuous process improvement;
- ◆ Improved the level of contract inspector's performance identified to be "outside of standard" from 12% to 2.5%;
- ◆ Re-trained and re-certified contract inspectors with the most current inspection protocol and software application;
- ◆ Emphasized the evaluation and improvement of inspector performance through 470 CQA reviews as a means of providing on-site monitoring, on-site training, and accurate inspection data; and



- ◆ Tested 100% of inspections reviewed during this period to check for consistency, proper application of the inspection protocol, and errors of logic.

The high performance achieved throughout each level of the PASS QA Plan during this period demonstrates REAC's progress in its QA operations and products, and illustrates the significance of the PASS QA Program as a means to measure inspector performance and ensure proper application of the inspection protocol.

Exhibit III – Report to Conferees: REAC Physical Inspection Study and Results

REAC conducted a scientific and statistically valid study to test the effectiveness and consistency of the physical inspection program, and documented the findings of the study. REAC designed a two-phased study which included a random sampling scheme for the selection of a set of representative properties. In the study, 224 inspections were performed at 112 properties. Two inspections were conducted at each given property by two different REAC QA and/or contract inspectors. This methodology enabled a comparison of the inspections to determine differences with respect to scores for a given property.

This study revealed that the inspection process does provide reasonably accurate, repeatable, objective, and fair results. The statistical phase evidenced the following results:

- ◆ 90% of the components that define a specific property had the same recorded observations between inspectors;
- ◆ 50% of the inspection scores were within an absolute difference of 5 points; and
- ◆ 90% of inspections were within 15 points.

The results of the study supported the value of the activities set forth in the QA Plan. The study illustrated the need to continue to focus on inspector performance as part of the PASS QA Program, and to clarify parts of the inspection protocol (as indicated by areas with a relatively low level of concurrence) by modifying definitions and providing continuous training.

The results of the study, combined with those from the PASS QA Program Report, led to the following conclusions:

- ◆ The REAC physical inspection protocol can be consistently applied in the field to provide repeatable and representative results for assessment purposes.
- ◆ The Collaborative Quality Assurance (CQA) review activity is a valuable methodology to evaluate inspector performance and provide on-site training.
- ◆ The Independent Quality Assurance (IQA) review methodology has proven to be an effective means to measure inspection accuracy and inspector performance.
- ◆ REAC's Technical Review process and the PASS QA Program ensure that owners and agents of properties receiving an improper assessment have a means for identification and subsequent resolution.



The study provided REAC appropriate data to quantify the consistency and replicability of the existing inspection protocol. Equally important, the study enabled REAC to leverage the results to further enhance the PASS QA Program and strengthen the value of REAC's assessment results.

Exhibit IV – Report to Conferees: Independent Assessment of REAC Physical Inspection Study

In accordance with the conferees report, an independent assessment of REAC's physical inspection study was commissioned to validate the methodology and results. The Louis Berger Group, which was commissioned for the assessment, evaluated the methodology and results of the REAC study. Representatives from the Louis Berger Group were present during execution of the study to observe the independence of the REAC QA inspectors during the reviews. Representatives from Louis Berger were also present to conduct independent analyses of inspector effectiveness in applying and interpreting the inspection protocol. An excerpt from the independent assessment provided in Exhibit IV is shown below:

We also agree, in general with the conclusions drawn by HUD in the report. In particular, we agree that the protocol is repeatable and fairly represents the condition of the property. More importantly, we found that the analysis demonstrates that it is possible to establish standards of performance that can be used to measure the acceptability of contract inspections in the future.

Conclusions

REAC's PASS QA Program ensures the proper application and interpretation of the inspection protocol and the accuracy of inspection scores, thereby enabling effective and successful implementation of the PHAS.

In response to GAO recommendations, and in accordance with the conferees directives, REAC modified the PASS QA Program, evaluated and reported performance against the modified program for a period of time, tested the results in a statistical study, and commissioned an independent assessment of these results. These activities enabled REAC and the independent assessment team to conclude that the inspection protocol provides reasonably accurate, repeatable, objective, and fair results. Where discrepancies existed, they typically resulted in a higher score than would have been otherwise obtained due to the fact that defects were missed. Many of the most problematic inspections from Phase I of this study were conducted by a few inspectors, who are not representative of the overall contract inspector pool. Moreover, the activities summarized in Exhibits I through IV provided valuable information to further strengthen the PASS QA Program and the quality of REAC inspections. Accordingly, REAC is in the process of addressing the following:

- ◆ **Contract Modifications** – REAC recently awarded a new contract with its inspection partners and strengthened the contract to further emphasize quality control and inspector accountability.
- ◆ **Site Modifications** – The current physical inspection system provides an effective measure against the “*decent, safe, sanitary, and in good repair*” standard. Nevertheless, the study suggests that the Inspectable Area “Site” was not as consistently applied as the other Areas. When inspection scores from this study are recalculated without Site, score differences are



reduced. As a result, REAC, in consultation with the industry, will be reviewing the Site definitions for modification, as may be appropriate.