

Practices and Procedures Evaluation: Site Visit Quality Assurance

Final Report

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Draft Report

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Executive Summary

Efficiency Nova Scotia (ENS) engaged Research Into Action (“the evaluation team”) to assess the effectiveness of its site visit quality assurance (QA) practices and procedures. Working collaboratively with ENS, Research Into Action identified five overarching issues to address in assessing ENS’s QA site visit practices and procedures.

- › How effective is the QA program’s site visit management, both for visits conducted internally and visits conducted by contractors?
- › How effective are the QA program’s site visit practices and procedures, both for visits conducted internally and visits conducted by contractors?
- › How effectively do QA site visits conducted by ENS staff, and QA site visits conducted by contractors, serve their intended purpose?
- › How do QA site visit practices, procedures, and findings contribute to the QA program’s continuous improvement?
- › How can ENS’s internal and contracted QA site visit management, practices, and procedures be strengthened to meet the desired outcomes as outlined in the QA manual? How can ENS use best practices to improve its QA site visit management, practices, and procedures?

For this study the evaluation team examined ENS documents to familiarize themselves with QA site visit practices and procedures and interviewed 8 ENS staff members, 3 contracted inspectors, and 3 program administrators at external organizations.

Key findings are described below and organized by QA site visit management, site visit guidelines, and the effectiveness of site visit practices and procedures. The study’s conclusions and recommendations follow the findings.

QA Site Visit Management

The current management structure strongly supports the goals of QA site inspections. When asked about the effectiveness of the management structure, respondents consistently reported the current structure supports the key goals of QA site inspections.

Still, QA site visits would benefit from centralized oversight. Interviews revealed that no single person is currently charged with overseeing the QA site visit function. Most ENS staff thought more centralized oversight would benefit the QA site visit efforts.

QA site visits could benefit from a more standardized, data-driven approach. QA committee members and some program managers called for a more standardized template and data collection methods. Two of the three other organizations the research team spoke with have a designated staff person who oversees QA site visits across several programs in addition to other responsibilities.

Site Visit Guidelines

All ENS programs have written QA site visit guidelines, though the guidelines are housed in different types of documents including in their program manuals, a spreadsheet, and in the request-for-proposals (RFP) they issue to inspectors. ENS respondents described the guidelines as having one specific and very important piece of information: the number of QA site visits each inspector must conduct annually for each program. In other regards, they said, the guidelines are rather general and perhaps incomplete. Two of the other program administrators have written QA site visit guidelines; the third does not.

ENS's QA site visit guidelines are too general to align with the more detailed QA Framework Manual. Nonetheless, QA site visit activities accomplish several of the Framework Manual's stated QA objectives, and are poised to accomplish others in the future.

Contracted inspectors consistently use ENS-specified processes and procedures to guide their QA site visits. All contracted inspectors were confident they understand and follow ENS's site visit guidelines.

ENS programs generally complete the targeted number of inspections each year, though the pace of inspections fluctuates based on resource availability. The committee is monitoring whether programs meet their targets; thus far, most programs have met their goals. Several ENS respondents observed, however, that the number of site visits scheduled each month varies depending on when projects are completed, staff workloads, ENS and external inspector knowledge about when participants are less busy (and therefore more likely to be receptive to an inspection), and the complexity of projects.

Most programs have established processes for updating QA site visit practices and guidelines. Updates usually occur annually when program managers update their program manuals or when they prepare a new RFP for inspection services. Significant program changes or issues can also trigger updates.

Effectiveness of Site Visit Practices and Procedures

ENS staff and inspectors agree the programs conduct appropriate numbers of site visits and use appropriate sampling approaches. The ENS Evaluation Manager determines the number of QA site visits needed for each program component each year by calculating a statistically valid sample size based on component-specific parameters. Program managers generally randomly select sites for QA visits, but also include "red flag" projects and projects that exceed a specified savings threshold.

Most ENS program managers currently do not use site visit findings to determine the future number of inspections for each DA or SO, but plan to do so in the future. Other program administrators use inspection findings to determine the future number of visits required for each contractor.

The experiences of other program administrators suggest additional ways ENS could reduce the number of onsite QA inspections—and associated staff time and budgets-- in the future. One program administrator, for example, explained that their organization forgoes onsite QA inspections and instead uses "desk" or "phone" inspections for equipment that consistently passes inspection.

ENS respondents reported budgets for QA site visits are sufficient but several expressed concern over future QA site visit budgets and current and future QA site visit staffing levels.

ENS may be able to reduce the number of site visit refusals and cancelations by increasing communication with customers. Inspectors sense that customers are sometimes suspicious when an inspector initially reaches out to request a site visit. One inspector suggested customers' concerns could be alleviated, and more customers might agree to QA site visits, if ENS were to send a mass email reminder about inspections closer to the time inspectors would contact them.

Service Delivery Managers and program managers have the information they need from site visits to assess DAs' and SOs' performance. The program managers unanimously reported that all of the information inspectors gather during QA site visits is relevant to their programs.

However, several ENS staff would like to see QA site visit data reported consistently and to have the means to access it aggregated by DA and SO across programs.

Conclusions and Recommendations

Overall, the ENS practices and procedures for QA site visits are working well and are generally consistent with the approaches that other program administrators use. At the same time, the evaluation findings suggest they can be further improved. The following conclusions and recommendations suggest ways that ENS can enhance its QA site visit practices and procedures

Conclusion 1: Current ENS QA site visit written guidelines would be more consistent, accessible and comparable across the organization if their formats and locations were standardized. For example, some guidelines are in narrative form, while others are in spreadsheets. Some are housed in program manuals, while others are in RFPs and contracts with inspectors.

Recommendation 1-1: Improve the consistency, accessibility, and comparability of site visit guidelines through using a standardized format (for instance, either narrative or spreadsheet) and through housing them in a consistent location, preferably in the program manuals.

Conclusion 2: More detailed and similarly organized QA visit guidelines would help ensure consistent application of these activities across time and programs, and allow better tracking of how well the activities are meeting the objectives in the QA Framework Manual.

Recommendation 2-1: Develop a standard template, with instructions, to organize QA visit guidelines. The template should provide enough detail so QA activities can be replicated through successive program managers, include a table to show how QA activities align with QA Framework Manual objectives (see [Table 3-1](#)), and address QA data tracking, aggregation, analysis, and reporting.

Conclusion 3: ENS staff and other program administrators favor having a centralized QA site visit manager to provide a more coordinated and systematic approach to collecting and analyzing the results of these efforts over time and across all programs. The Central Data Management Coordinator (CDMC) position is already in place; with greater definition of its responsibilities, it can serve this function.

Recommendation 3-1: The QA Committee should flesh out the CDMC position responsibilities and pursue the steps needed to fill that position. The committee and program managers should then work with the CDMC to establish a workplan with goals, priorities, and timelines. Priorities, based on this evaluation, include developing a more standardized format, location, organization,

and level of detail and methods to aggregate, over time, QA visit results by program and DA and SO.

Conclusion 4: While not currently in place at ENS, the results of QA site visits can be effectively used as part of a continuous process to assess the quality of DA and SO performance and adjust the number of site visits needed, with the goal of reducing the number of on-site visits. Other program administrators use this strategy to better monitor underperforming DAs and SOs¹, help them improve, and to stop using their services if they do not improve. In addition, this process can be used to reduce the number of on-site visits needed for high performing DAs and SOs.

Recommendation 4-1: ENS should use QA site visit data to assess DA and SO performance for all programs. For those who fail to meet QA standards, ENS should consider more support for these entities as well as more site visits and a process to sever ties with them if performance standards are not met within a certain time frame. For those who meet or exceed QA standards, ENS should consider reducing the number QA site visits.

Recommendation 4-2: ENS could investigate using phone inspections for measures that consistently pass inspection, realize ongoing savings once installed, and are unlikely to be uninstalled by customers.

Recommendation 4-3: ENS could explore opportunities to use smart technology to inform QA at program sites. For example, one program administrator described a program in which a partner utility can inform them when smart thermostats are installed, which eliminates field inspections.

Conclusion 5: Although one of the key purposes of on-site visits is to gather customer feedback, more can be done to realize this goal. While it may not be worthwhile to make the process too formal (and perhaps more burdensome), it is possible to make it more standardized.

Recommendation 5-1: The QA Committee, working with program managers and field inspectors, should consider how to capture and share customer feedback in a more standardized way. Some methods to consider are to gather written and open-ended field notes from a subset of projects and/or to have regular meetings with key stakeholders to share customer feedback and develop any needed responses.

¹ Note: This could include increasing site visits for these organizations.

1. Introduction

1.1. Overview

Efficiency Nova Scotia (ENS) uses quality assurance (QA) site visits, along with other feedback mechanisms, including customer experience surveys, file assessments, internal documentation review, Workers Compensation Board certification reviews, and energy savings and cost assessments, as a key component of its Quality Assurance program. While the primary goal of site visits is to verify energy savings from efficiency improvements incentivized by ENS, site visits may also ensure proper installation of those improvements, and collect program feedback about program operation from customers. Thus, QA site visits help assess the quality of program delivery and identify if corrective action is needed.

ENS program managers or other ENS staff conduct the QA site visits themselves for five of the eight program components that require QA inspections. ENS contracts with external QA inspectors to perform this work for the other three program components because the external inspectors have the specialized skills needed for these program components' more involved QA activities (Table 1-1).

Table 1-1: Inspector Type by Program/Program Component*

Program	Program Component	Who Conducts Site Visits
Residential Efficient Product Rebates	Instant Savings	ENS
Existing Residential	Efficient Product Rebates	ENS
	Green Heat	ENS
Efficient Product Rebates	Business Energy Rebates	ENS
Direct Installation	Small Business Energy Solutions	ENS
Existing Residential	Home Energy Assessment	QA Inspector
Province of Nova Scotia	Home Warming	QA Inspector
New Residential	New Home Construction	QA Inspector

* The table includes only program components that receive QA site visit inspections.

ENS is planning for a Central Data Management Coordinator (CDMC) position to coordinate site visits across program components, manage and report on site-visit-related customer experience and site visit findings, and track and report Delivery Agent (DA) and Service Organization (SO) safety status. An ENS staff member, interviewed as part of this project, currently performs a small portion of this multi-dimensional role.

1.2. Research Objectives and Report Organization

ENS engaged Research Into Action (“the evaluation team”) to assess the effectiveness of its QA site visit practices and procedures. Working collaboratively with ENS, Research Into Action identified the following overarching issues and associated research questions (Table 1-2) for this study.

Table 1-2: Overarching Issues and Research Questions for the QA Site Visits Evaluation

Overarching Issues	Research Questions
I. How effective is the QA site visit management, both for visits conducted internally and visits conducted by contractors?	a. What is the management structure for QA site visits? How, if at all, does this vary by program? b. How effectively and efficiently does the management structure serve the QA site visit needs of individual energy-efficiency programs?
II. How effective are the QA site visit practices and procedures, both for visits conducted internally and visits conducted by contractors?	a. Do all relevant energy-efficiency programs have QA site visit guidelines? b. Where are QA site visit guidelines and forms/templates documented? Who has access to them? How, if at all, does this vary by program? c. How well do individual energy-efficiency programs’ QA site visit guidelines align with guidelines in the QA framework manual? d. How closely do energy-efficiency program managers follow the QA site visit guidelines? Do they follow the timelines, number of sites, site-specific data collection requirements, and other metrics described in the guidelines? Why or why not?
III. How effectively do QA site visits conducted by ENS staff, and QA site visits conducted by contractors, serve their intended purpose?	a. Is the site visit sampling approach appropriate? Are program managers conducting an appropriate number of site visits? How is (or could) the QA site visit data (be) used to reduce the number of QA site visits required in the future (e.g., for experienced DAs and SOs with strong track records)? b. How do program managers and inspectors report QA site visit findings? Where are the findings documented? How are they communicated to Service Delivery Managers and others at ENS? c. Does the data collected during QA site visits provide all the information Service Delivery Managers and others need to assess Delivery Agents’ and Service Organizations’ performance? d. Does the data collected include any extraneous information?
IV. How do QA site visit practices, procedures, and findings contribute to the QA program’s continuous improvement?	a. Do the guidelines call for periodic internal self-assessments and periodic external assessments? If so, do they suggest how to conduct such assessments? b. What is the process for updating QA site visit practices and procedures (including tracking systems)? Who is involved and what are their roles? What triggers an update? How does this vary by program?

Overarching Issues	Research Questions
V. How can ENS's internal and contracted QA site visit management, practices, and procedures be strengthened to meet the desired outcomes?	a. What challenges have staff and QA inspectors encountered with the QA program's current management, practices, and procedures?
	b. How efficiently is ENS using its resources to schedule, conduct, and report findings from site visits? How can ENS change its practices and procedures so its resources are used more efficiently?
	c. What opportunities do staff and QA inspectors see for improvement with the QA program's management, practices, and procedures?
	d. How can ENS use best practices to improve its QA site visit management, practices, and procedures?

Table 1-3 provides an outline of Chapter 3 and shows where, within the chapter, the research team addresses each of the study's research questions as listed in Table 1-2.

Table 1-3: Mapping of Report Findings and Research Questions

Report Section	Subsection	Research Questions
3.1 QA Site Visit Management Structure	3.1.1 Purpose of QA Site Visits	NA
	3.1.2 Current QA Management and Roles	I-a. What is the management structure for QA site visits? How, if at all, does this vary by program?
	3.1.2 Use of Internal Staff versus External QA Contractors	I-a. What is the management structure for QA site visits? How, if at all, does this vary by program? V-d. How can ENS use best practices to improve its QA site visit management, practices, and procedures?
	3.1.3 Effectiveness of Management Structure	I-b. How effectively and efficiently does the management structure serve QA site visit needs of individual energy-efficiency programs? III-b. How do program managers and inspectors report QA site visit findings? Where are the findings documented? How are they communicated to Service Delivery Managers and others at ENS? V-a. What challenges have staff and QA inspectors encountered with the QA program's current management, practices, and procedures? V-c. What opportunities do staff and QA inspectors see for improvement with the QA program's management, practices, and procedures? V-d. How can ENS use best practices to improve its QA site visit management, practices, and procedures?
3.2 Site Visit Guidelines	3.2.1 Program-Specific Site Visit Guidelines	II-a. Do all relevant energy-efficiency programs have QA site visit guidelines?

Report Section	Subsection	Research Questions
		II-b. Where are QA site visit guidelines and forms/templates documented? Who has access to them? How, if at all, does this vary by program? V-a. What challenges have staff and QA inspectors encountered with the QA program's current management, practices, and procedures? V-c. What opportunities do staff and QA inspectors see for improvement with the QA program's management, practices, and procedures? V-d. How can ENS use best practices to improve its QA site visit management, practices, and procedures?
	3.2.2 Alignment of Guidelines with ENS's QA Framework Manual	II-c. How well do individual energy-efficiency programs' QA site visit guidelines align with guidelines in the QA framework manual?
	3.2.3 Alignment of Guidelines with Actual Practices	II-d. How closely do energy-efficiency program managers follow the QA site visit guidelines? Do they follow the timelines, number of sites, site-specific data collection requirements, and other metrics described in the guidelines? Why or why not?
	3.2.4 Practice and Procedure Updates	IV-b. What is the process for updating QA site visit practices and procedures (including tracking systems)? Who is involved and what are their roles? What triggers an update? How does this vary by program? IV-a. Do the guidelines call for periodic internal self-assessments and periodic external assessments? If so, do they suggest how to conduct such assessments?
3.3 Effectiveness of Site Visit Practices and Procedures	3.3.1 Site Visit Sampling	III-a. Is the site visit sampling approach appropriate? Are program managers conducting an appropriate number of site visits? How is (or could) the QA site visit data (be) used to reduce the number of QA site visits required in the future (e.g., for experienced DAs and SOs with strong track records)? V-c. What opportunities do staff and QA inspectors see for improvement with the QA program's management, practices, and procedures? V-d. How can ENS use best practices to improve its QA site visit management, practices, and procedures?
	3.3.2 Site Visit Planning and Implementation	V-b. How efficiently is ENS using its resources to schedule, conduct, and report findings from site visits? How can ENS change its practices and procedures so its resources are used more efficiently? V-a. What challenges have staff and QA inspectors encountered with the QA program's current management, practices, and procedures? V-c. What opportunities do staff and QA inspectors see for improvement with the QA program's management, practices, and procedures?

Report Section	Subsection	Research Questions
		V-d. How can ENS use best practices to improve its QA site visit management, practices, and procedures?
	3.3.3 Data Collection to Inform DA/SO Assessments	III-c. Does the data collected during QA site visits provide all the information Service Delivery Managers and others need to assess Delivery Agents' and Service Organizations' performance? III-d. Does the data collected include any extraneous information? V-c. What opportunities do staff and QA inspectors see for improvement with the QA program's management, practices, and procedures? V-d. How can ENS use best practices to improve its QA site visit management, practices, and procedures?

Chapter 2 of this report describes the methodology the evaluation team used to address the research questions, while Chapter 3 presents findings from the evaluation team's research. Finally, Chapter 4 provides conclusions and recommendations based on the evaluation's findings. The appendices to this report include a list of the documents reviewed for this evaluation and the interview guides used to conduct the research.

2. Methods

This section describes the four sources of information that the Research Into Action evaluation team used to inform this research.

2.1. Document Review

The evaluation team initially examined ENS documents to familiarize themselves with QA site visit practices and procedures. These documents included ENS's QA framework manual, QA reports, QA surveys, supplier performance documents, and the QA procedures evaluation. Appendix A provides a full list of the program documents consulted.

2.2. ENS Staff Interviews

ENS evaluation staff recommended that the evaluation team conduct interviews with ENS staff who play a role in QA site visits:

- › Four QA committee members, including the person performing a portion of the CDMC role, and 2 Service Delivery Managers (SDMs)
- › Four program managers, two who contract with outside organizations for their programs' QA site visits and two who conduct the site visits with ENS staff

The interviews explored how ENS manages, implements, reports, and uses findings from QA site visits, including similarities and differences between programs that use internal staff and those that contract with outside QA Inspectors. The interviews were conducted in September 2018 and averaged about 45 minutes in length. The evaluation team used NVivo and Microsoft Excel to analyze data from the staff interviews. Appendix B contains the ENS staff interview guide.

2.3. QA Inspector Interviews

The evaluation team interviewed three QA inspectors. The team gathered in-depth information about inspector interactions with the QA program including site visit goals, practices and procedures, QA site visit guidelines, ENS support for contracted QA site visits, and successes, challenges and opportunities for future improvement.

Research Into Action conducted the QA inspector interviews in October 2018. The interviews averaged roughly 60 minutes in length. The team used NVivo and Microsoft Excel to analyze the inspector interviews. Appendix C contains the QA inspector interview guide.

2.4. Other Program Administrator Interviews

The team interviewed staff involved with QA site visits from three other energy program administrators:

- › Energy Trust of Oregon (Energy Trust) – a senior program manager in the residential group whose job focuses on operational procedures and protocols to facilitate incentive payments and processing.
- › Saskatchewan Power – a manager of commercial programs, including the commercial lighting and refrigeration incentive programs.
- › Vermont Energy Investment Corporation (on behalf of Efficiency Vermont) – a program manager for their flagship program Home Performance with Energy Star.

Notably, QA procedures varied substantially among the organizations. Energy Trust has mature energy efficiency programs: the organization has been delivering programs for 15 years. Its approach to QA is heavily data-driven, specified, and focused on savings. It relies on smart technologies, not site visits, to determine installation rates and energy savings.

Saskatchewan Power uses a less formal, less data-driven approach. While they have established procedures, they do not have written site visit guidelines, and they do not rely on site visit findings to adjust the future number of site visits.

Efficiency Vermont is situated somewhere between the other two organizations. They rely on site visits, use a data-driven approach, and have a QA manager who analyzes trends in the site visit data and provides this feedback to the program manager.

These interviews explored how the other organizations manage, conduct, report, and act on their QA inspections. The evaluation team conducted the interviews in November 2018; each averaged approximately 45 minutes in length. They used *NVivo* and *Microsoft Excel* to analyze the interviews. Appendix D contains the interview guide for other program administrators.

3. Findings

This chapter summarizes Research Into Action’s findings regarding ENS QA site visit practices and procedures, based on the evaluation team’s interviews with ENS staff, QA inspectors, and other program administrators. The chapter covers these overarching issues:

1. QA Site visit management
2. Site visit guidelines and implementation
3. Effectiveness of site visit practices and procedures

The evaluation team sought to identify differences between programs that use ENS staff and programs that use external inspectors throughout the analysis and found differences only in some QA site visit implementation details, as described below.

3.1. QA Site Visit Management Structure

The sections below first describes the ENS QA site visit management structure and then discusses its effectiveness.

3.1.1. Purposes of QA Site Visits

ENS staff and other program administrators conduct QA site visits for similar reasons that are essential to organizational success, as described below. QA visits:

- › Ensure energy savings are realized by confirming the installation of eligible qualifying efficiency measures
- › Ensure customers receive rebates for equipment that is actually installed; and
- › Gather customer perspectives about programs first-hand, since they serve as an in-person link between customers and program administrators.

3.1.2. Current QA Management and Roles

ENS program managers develop the protocols for QA site visits, oversee their quality and quantity, ensure reported equipment matches installed equipment, ensure site visits are performed on time, and that the program is on budget. The responsibilities of program managers regarding site visits did not vary substantially by program. One program manager added they use a staff member or “QA specialist” to manage the scheduling and administration of site visits while another said they review the QA data and create QA site visit reports.

QA committee members reported they discuss the results of site visits and customer experience; they look for trends that indicate opportunities for QA process improvements for specific programs and for the organization overall.

The SDMs² interviewed also serve as QA Committee members. They oversee a suite of programs and are responsible for ensuring the program components meet energy-savings targets and are cost-effective.

ENS respondents indicated the Central Data Management Coordinator (CDMC) role is still being established. The current staff person who performs aspects of the CDMC role is also a QA committee member. This person collects data from programs and sends it to Corporate Research Associates (CRA) for processing. When CRA sends it back, they file it on the company's F: drive. Respondents indicated the CDMC will likely have broader responsibilities in the future.

3.1.3. Use of Internal Staff versus External QA Contractors

The use of internal staff or external inspectors for QA site visits vary, with each approach having its own benefits. All ENS program managers said they were satisfied with the approach they use. Program managers who use internal staff find it beneficial to have someone who understands ENS and the program more intimately. In addition, they say it provides an opportunity for staff to learn more about the program through speaking with customers directly. Program managers who use external inspectors prefer this approach for two reasons: they do not have enough internal staff to do the visits, and external inspectors are very experienced and have inspections as their primary focus.

The other program administrators also varied in their use of internal or external staff, with two using an internal person for QA inspections and the third using both internal staff and external inspectors. The program administrator that used both said program needs drive this choice.

All three QA inspectors described their key roles as scheduling, conducting, and reporting on the QA site visits. One also said they track the visits and analyze the results. All were satisfied with the current approach to QA site visits, adding that they especially appreciated the flexibility they have to schedule visits and plan their routes. They all reported the survey system made it easy to record their findings, although one said he found some redundancy in the questions. All agreed the ENS staff they work with are accessible and helpful. For example, when asked about the support provided by ENS, one inspector noted that if they have any questions about anything, the ENS turnaround is quick. They usually get an answer within a day if it's not urgent, and if it is urgent, they usually reach someone right away.

3.1.4. Effectiveness of Management Structure

The current management structure strongly supports the goals of ENS QA site visits. When asked about the effectiveness of the management structure for site visits, respondents consistently reported it supports the key goals that ENS has for QA site inspections: ensuring energy savings are realized, high quality installations, and the opportunity to interact with customers. Interviews indicate that program managers are clear and knowledgeable about their QA site visit responsibilities; the staff and external inspectors who conduct site visits are established and knowledgeable about site visit requirements and procedures; and ENS has a QA committee that reviews QA results and discusses possible improvements.

Still, QA site visits likely would benefit from centralized oversight. Interviews revealed that no single person is currently charged with overseeing the QA site visit function. Most ENS staff thought more

² One SDM respondent recently transitioned to another position and no longer serves as an SDM.

centralized oversight would benefit the QA site visit efforts. In particular, QA committee members thought oversight across all programs would help ENS identify cross-program efficiencies and other opportunities for improvement. One ENS employee suggested this centralized oversight might include tracking site visits across all programs.

QA site visits could benefit from a more standardized, data-driven approach. QA committee members and some program managers called for a more standardized template and data collection methods for site visits. One QA committee member thought it would be beneficial to get QA site visit documentation and data into a more centralized and standardized form that one person manages, analyzes, and interprets. They added that the responsibilities for this individual could also involve centralizing program processes.

Despite the general sentiment that more oversight and coordination would benefit QA site visit practices, one program manager cautioned that more oversight may reduce the flexibility needed to do the best job for each individual program and that it may be difficult to standardize procedures and reporting across programs. A QA committee member noted there is a diverse array of QA activities, with differences in delivery and the range of complexity in completing site visits depending upon the program.

Two of the three other organizations the research team spoke with have a designated staff person who oversees QA site visits across several programs in addition to other responsibilities. In one case, the respondent reported that they have a person who oversees all QA functions across programs. In the second, the program manager reported that they are responsible for oversight of their program's site visits, but the organization has a QA manager who manages all QA data. The third respondent said each program handles management of their own QA site visits.

3.2. Site Visit Guidelines

The sections below discuss the various formats that QA site visit guidelines take, how ENS's guidelines align with the organization's QA Framework Manual and actual inspector practice, and guideline update practices.

3.2.1. Program-Specific Site Visit Guidelines

All ENS programs have written QA site visit guidelines in different document formats. Standardizing the document format may be beneficial to ENS. Two ENS program managers said their programs' QA site visit guidelines are in their program manuals. A third program manager maintains their QA site visit guidelines in a spreadsheet, and the fourth manager said their program guidelines are in the request-for-proposals (RFP) they issue to inspectors. One of the program managers mentioned that only staff working on their program have access to their guidelines. Another ENS respondent suggested that the CDMC could potentially improve each program's guidelines by putting them all into a standardized format.

ENS respondents described the guidelines as having one specific and very important piece of information: the number of QA site visits each inspector must conduct annually for each program. In other regards, they described the guidelines as rather general and perhaps incomplete.

The external inspectors, who often work on multiple programs, said they reference different types of documents to find guidelines for different programs: the guidelines for some programs are in RFPs, the guidelines for other programs are in their contracts with ENS, and the guidelines for still other programs are in spreadsheets or program manuals.

Two of the other program administrators have written QA site visit guidelines; the third does not. The two administrators with documented guidelines reported their guidelines are contained within program manuals.

3.2.2. Alignment of Guidelines with ENS's QA Framework Manual

ENS's various QA site visit guidelines, while too general to align with the objectives in the more detailed QA Framework Manual, accomplish several of the manual's stated QA objectives and are poised to accomplish others. Table 3-1 shows how ENS's site visit guidelines match the Framework's stated objectives.

Table 3-1: Alignment of QA Site Visit Activities with QA Objectives

QA Objective (from Framework Manual)	Objective Accomplished Through QA Site Visit Guidelines?	How QA Site Visit Guidelines Meet Manual Objectives
Identify quality customer experience, quality work, quality documentation, safety, energy savings and costs	Yes	Informal onsite discussions provide opportunities for customers to voice questions and concerns and for gaining insight into customer experience Inspectors check efficiency measures are installed Although not required, inspectors tell the customer or their ENS contact if they observe a safety issue
Provide direction and clarity on the delivery of QA across programs	Not yet	Centralizing QA site visit oversight could provide clarity across programs
Identify areas for continual process improvement	Yes	Review of site visit data identifies opportunities for DA, SO, and program improvements
Reduce risk associated with evaluation and verification	Yes	Verifying installation of efficiency measures reduces risk of incorrect savings estimates
Address DAs and SOs not meeting expectations and recognize those who are performing to a high standard	Partial	One program provides additional education and support to contractors not meeting expectations, others may do so in the future

QA Objective (from Framework Manual)	Objective Accomplished Through QA Site Visit Guidelines?	How QA Site Visit Guidelines Meet Manual Objectives
Base decisions on the analysis of factual information and data	Partial	All programs plan to base future site visit targets on prior site visit findings (see Section 3.3.1)
Deliver products and services that meet what customers, electricity rate payers, and the provincial government want, need, expect, and are willing to pay for	Partial	Informal onsite discussions during the QA process provide opportunities for customers to voice questions and concerns

3.2.3. Alignment of Guidelines with Actual Practices

Contracted inspectors consistently use ENS-specified processes and procedures to guide their QA site visits. All contracted inspectors were confident they understand and follow ENS’s site visit guidelines. Program managers who use outside inspectors do so, in part, because of their single focus on QA and their high level of expertise.

ENS programs generally complete the targeted number of inspections each year, though the pace of inspections fluctuates based on resource availability. A QA committee member mentioned that ENS started setting program-specific QA site visit targets in 2018. The committee is monitoring whether programs meet their targets; thus far, most programs have met their goals.

Several ENS respondents observed, however, that the number of site visits scheduled each month varies depending on when projects are completed, staff workloads, ENS and external inspector knowledge about when participants are less busy (and therefore more likely to be receptive to an inspection), and the complexity of projects.

3.2.4. Practice and Procedure Updates

Most programs have established processes for updating QA site visit practices and guidelines. The managers of three programs that use internal ENS inspectors update their QA site visit practices and guidelines annually when they update their program manuals. The fourth manager, who contracts with an external inspector to conduct QA site visits, updates the program’s site visit practices and guidelines when they prepare a new RFP for inspection services.

Program managers make updates if significant program changes or issues occur. One QA committee member emphasized the importance of responsiveness: that is, updating QA processes to ensure they are as effective as possible given current circumstances. Program managers also recognize the importance of responsiveness. For example, one manager said that if program incentives or delivery mechanisms change, they update the program’s QA practices to reflect those changes. Another respondent explained that if they identify an issue affecting multiple DAs or SOs, they revise QA site visit processes to address the issue.

The two other program administrators who use written guidelines reported they update them every year or every two years. The interviews did not address interim adjustments due to program changes or issues.

3.3. Effectiveness of Site Visit Practices and Procedures

The evaluation team provides details about effectiveness of ENS's site visit sampling, site visit planning and implementation, and data collection in the following subsections.

3.3.1. Site Visit Sampling

All ENS staff and inspectors agree ENS programs conduct appropriate numbers of site visits. ENS staff explained that the ENS Evaluation Manager determines the number of QA site visits needed for each program component each year by calculating a statistically valid sample size based on expected annual program (component) participation, the number of DAs and/or SOs involved with the program component, and the distribution of participants by DA/SO, aiming for 90% confidence, with a 10% margin of error, in the QA site data. Table 3-2 shows the targeted number of annual site visits by program component for 2018.

Most ENS program managers currently do not use site visit findings to determine the future number of inspections for each DA or SO, but plan to do so in the future. Five ENS staff (of 6 respondents) reported that program managers do not currently factor historic site visit data into decisions about the future number of site visits to perform by DA or SO. Instead, staff explained that they allocate site visits to DAs and SOs in proportion to the number of sites where DAs and SOs have completed projects. The one ENS program manager who currently uses site visit data to assess DA/SO performance requires more site visits for DAs/SOs whose work has demonstrated deficiencies.

Table 3-2: Annual Number of Site Visits by Program Component

Program	Program Component	Targeted Number of Site Visits per Year	Who Conducts Site Visits
Residential Efficient Product Rebates	Instant Savings	49 store visits and 20 events	ENS
Existing Residential	Efficient Product Rebates	67	ENS
	Green Heat	50	ENS
Efficient Product Rebates	Business Energy Rebates	50	ENS
Direct Installation	Small Business Energy Solutions	87	ENS
Existing Residential	Home Energy Assessment	124	QA Inspector
Province of Nova Scotia	Home Warming	160	QA Inspector
New Residential	New Home Construction	61	QA Inspector

Other program administrators adjust the number of inspections based upon inspection findings for each contractor, which can result in greater efficiencies. One administrator reported they reduce the number of QA inspections for contractors who they find consistently meet or exceed program standards. Doing so, the administrator explained, saves their organizations time and budget without reducing their confidence in reported energy savings.

The other two program administrators also use site visit data to identify contractors whose projects do not comply with program standards. The administrators offer these contractors additional support and education to help bring them into compliance, while also increasing the number of their sites receiving inspections. If a contractor consistently fails to meet program standards even with additional support and education, the program administrators said they would end their relationship with the contractor.

Most ENS program managers and one QA committee member stated that they hope to use past site visit data in the future for this purpose. Similar to other program administrators, they would like to reduce the number of site visits for DAs and SOs who consistently demonstrate they do high-quality work and increase visits and educational support for DAs and SOs who consistently demonstrate poor work. At least one outside inspector concurred, despite that fact that he would do less business. He noted they find inspections are often not needed for home energy-efficiency upgrades, since so many are completed properly.

The experiences of other program administrators suggest additional ways ENS could reduce the number of onsite QA inspections—and associated staff time and budgets-- in the future. One program administrator explained that their organization forgoes onsite QA inspections and instead uses “desk” or “phone” inspections for equipment that consistently passes inspection. Rather than spending time traveling from one customer installation to another, the inspector conducts desk inspections by asking a sample of customers a series of questions via telephone to verify the equipment was, in fact, installed.

The administrator uses another resource-efficient approach to verify installations for its thermostat program. In lieu of visiting customer homes, the organization sends the electric utility a list of thermostat serial numbers (from customer rebate applications). Using remote sensing equipment, the utility checks which listed thermostats are active, and then informs the program administrator about the thermostats that are and are not in operation. The program administrator uses the utility’s feedback to identify the customers to whom it will send thermostat rebates.

ENS staff and inspectors reported programs use appropriate sampling approaches. ENS staff explained that program managers generally randomly select sites for QA visits. However, ENS, like two other program administrators, does not stick strictly to random sampling. ENS and one of the other administrators intentionally include all projects they identify as “red flags” in the site visit sample. A project triggers a red flag if program staff find something unusual or concerning in the project application, or if the DA/SO alerts program staff to an issue or concern. The DA/SO must rectify any issues the inspector identifies during the site visit before ENS (or the other administrator) issues a rebate.

One ENS program manager, and one of the other program administrators, also inspect all projects that exceed a specified savings threshold. The ENS program manager clarified that although they prioritize projects with larger kilowatt-hour savings, they ensure smaller projects are included in the sample.

3.3.2. Site Visit Planning and Implementation

ENS's current QA site visit budgets are sufficient; some staff are concerned about current staffing levels as well as about future budgets and staffing. ENS staff stated that QA site visit budgets are adequate. However, some ENS staff indicated that the staffing levels, and the use of internal staff time, could be a concern for some programs. Several noted that although staff recognize the importance of QA inspections, the in-house staff who serve as inspectors sometimes have difficulty finding time to conduct inspections along with their other responsibilities.

Four ENS staff also expressed concern for the future: as program participation grows, the need for additional QA inspections—and therefore additional QA inspectors and budget—will necessarily grow too. They suggested programs that use ENS staff as inspectors would have to add staff to keep up with the increased demand for inspections. One staff noted that post-inspection reporting, rather than the site visits themselves, takes the greatest amount of time.

Scheduling back-to-back inspections at sites that are geographically close to one another saves program resources. All of the contracted inspectors, and nearly all ENS staff who conduct site visits, said the distance between sites is an important scheduling consideration given the Nova Scotia's spread-out population. The three contracted inspectors said they schedule site visits themselves so they can cost-effectively conduct inspections based on location. One of the other program administrators the evaluation team interviewed, also a provincial organization, similarly strives to schedule site visits by location.

ENS may be able to reduce the number of site visit refusals and cancelations by improving how it informs customers about inspection requirements. One inspector said ENS customer-facing program documentation could highlight ENS inspections needs more. All three inspectors sense that customers are sometimes suspicious when an inspector reaches out to request a site visit. Further, the inspectors reported customers do not always understand what to expect from an inspection. One inspector estimated that about 30% of customers either do not return calls requesting an inspection appointment or refuse an inspection. One inspector suggested customers' concerns could be alleviated, and more customers might agree to QA site visits, if ENS could send email reminders to customers. Such an "official" email would notify customers an inspector may be contacting them, explain what to expect from a QA site visit, and increase the inspector's credibility.

One of the other program administrators the evaluation team spoke with suggested making rebates for large projects contingent on completed QA inspections.

3.3.3. Data Collection to Inform DA/SO Assessments

Service Delivery Managers and program managers are able to assess DA and SO performance based on the information from site visits. Three program managers and one SDM said they use site visit findings regarding customer satisfaction and the quality of equipment installations to assess DA and SO performance. These ENS staff use the data to inform outreach and education to contractors (3 mentions), and remind service organizations about the issues inspectors identified at their project sites (1 mention).

As discussed in Section 3.3.1 above, only one program manager currently uses site visit data to determine the future numbers of inspections for each DA and SO. The other program managers report the site visit data will support them using the data for this purpose to in the future.

QA site visit data reporting does not include any extraneous information. All program managers agree that the information inspectors gather during QA site visits are relevant to their programs.

Several ENS staff would like to see QA site visit data reported consistently, aggregated by DA and SO across programs, and easily accessible. One ENS respondent suggested ENS develop a QA dashboard to help identify trends in DA and SO performance over time. This type of reporting could lead to more efficient DA and SO assessments, which could ultimately lead to program improvements.

4. Conclusions and Recommendations

Overall, the ENS practices and procedures for QA site visits are working well and are generally consistent with the approaches that other program administrators use. At the same time, the evaluation findings suggest they can be further improved. The following conclusions and recommendations suggest ways that ENS can enhance its QA site visit practices and procedures

Conclusion 1: Current ENS QA site visit written guidelines would be more consistent, accessible and comparable across the organization if their formats and locations were standardized. For example, some guidelines are in narrative form, while others are in spreadsheets. Some are housed in program manuals, while others are in RFPs and contracts with inspectors.

Recommendation 1-1: Improve the consistency, accessibility, and comparability of site visit guidelines through using a standardized format (for instance, either narrative or spreadsheet) and through housing them in a consistent location, preferably in the program manuals.

Conclusion 2: More detailed and similarly organized QA visit guidelines would help ensure consistent application of these activities across time and programs, and allow better tracking of how well the activities are meeting the objectives in the QA Framework Manual.

Recommendation 2-1: Develop a standard template, with instructions, to organize QA visit guidelines. The template should provide enough detail so QA activities can be replicated through successive program managers, include a table to show how QA activities align with QA Framework Manual objectives (see Table 3-1), and address QA data tracking, aggregation, analysis, and reporting.

Conclusion 3: ENS staff and other program administrators favor having a centralized QA site visit manager to provide a more coordinated and systematic approach to collecting and analyzing the results of these efforts over time and across all programs. The CDMC position is already in place; with greater definition of its responsibilities, it can serve this function.

Recommendation 3-1: The QA Committee should flesh out the CDMC position responsibilities and pursue the steps needed to fill that position. The committee and program managers should then work with the CDMC to establish a workplan with goals, priorities, and timelines. Priorities, based on this evaluation, include developing a more standardized format, location, organization, and level of detail and methods to aggregate, over time, QA visit results by program and DA and SO.

Conclusion 4: While not currently in place at ENS, the results of QA site visits can be effectively used as part of a continuous process to assess the quality of DA and SO performance and adjust the number of site visits needed, with the goal of reducing the number of on-site visits. Other program administrators use this strategy to better monitor underperforming DAs and SOs³, help them improve, and to stop

³ Note: This could include increasing site visits for these organizations.

using their services if they do not improve. In addition, this process can be used to reduce the number of on-site visits needed for high performing DAs and SOs.

Recommendation 4-1: ENS should use QA site visit data to assess DA and SO performance for all programs. For those who fail to meet QA standards, ENS should consider more support for these entities as well as more site visits and a process to sever ties with them if performance standards are not met within a certain time frame. For those who meet or exceed QA standards, ENS should consider reducing the number QA site visits.

Recommendation 4-2: ENS could investigate using phone inspections for measures that consistently pass inspection, realize ongoing savings once installed, and are unlikely to be uninstalled by customers.

Recommendation 4-3: ENS could explore opportunities to use smart technology to inform QA at program sites. For example, one program administrator described a program in which a partner utility can inform them when smart thermostats are installed, which eliminates field inspections.

Conclusion 5: Although one of the key purposes of on-site visits is to gather customer feedback, more can be done to realize this goal. While it may not be worthwhile to make the process too formal (and perhaps more burdensome), it is possible to make it more standardized.

Recommendation 5-1: The QA Committee, working with program managers and field inspectors, should consider how to capture and share customer feedback in a more standardized way. Some methods to consider are to gather written and open-ended field notes from a subset of projects and/or to have regular meetings with key stakeholders to share customer feedback and develop any needed responses.

Appendix A. ENS Documents Reviewed for this Study

- › Efficiency Nova Scotia. *Appendix A Residential Programs Evaluation Criteria* spreadsheet. 2017.
- › Efficiency Nova Scotia. *General Participation Agreement*. August, 2017.
- › Efficiency Nova Scotia. *Program Delivery Quality Assurance Framework Manual*. June, 2017.
- › Efficiency Nova Scotia. *QA Supplier Performance Elements*. ND.
- › Efficiency Nova Scotia. *Quality Assurance Procedures Evaluation*. ND.
- › Efficiency Nova Scotia. *SAMPLE: Home Energy Assessment Program Experience QA Survey—Final*. 2014.
- › Efficiency Nova Scotia. *SAMPLE: Home Energy Assessment QA Site Visit Survey--Final*. ND.
- › Efficiency Nova Scotia. *SAMPLE: Homewarming Supplier Performance Quarterly Report*. Trinity Maintenance Solutions. Covers July to September, 2015.
- › Efficiency Nova Scotia. *SAMPLE_Q2: Green Heat & Solar QA Report* spreadsheet. ND.
- › Efficiency Nova Scotia. *Supplier Performance Metric Program Manual*. Submitted by Kraig Porter. October 29, 2015.

Appendix B. ENS Staff Interview Guide

Introduction

Thanks for taking the time to talk today. I work for Research Into Action and as you know, we are working with ENS to evaluate your Quality Assurance (QA) practices and procedures for site visits. We are interviewing key staff, like you, so we can learn more about how ENS's QA site visits work, the effectiveness and efficiency of site visit practices and procedures, and ways in which these practices and procedures could be improved.

Our talk will take about 45 to 60 minutes.

Q-I. Before we start, I want to mention that we often use quotes from our interviews – without names attached – in our reports to ENS. We use these quotes to illustrate key points and make the reports more interesting and readable. Would you like us to:

1. Quote you anonymously
2. Quote you anonymously and provide you an opportunity to review and approve the quotes before we use them
3. Not quote you at all

Everything you say is confidential. We won't share our notes from the conversation unless we are legally required to, and we will not report findings in a way that would identify any individual respondent. I'll be taking notes as we talk, but I'd also like to record the call, just to help with my notetaking. Is that OK with you?

If you want to refer me to specific documents to answer any of my questions, that's great – I'm happy to look things up if I know where to get the information.

Do you have any questions before we get started?

Roles and Responsibilities

These first questions are about your role and responsibilities.

[ALL]

Q1. Let's start with a bit about yourself. Can you please tell me your title and briefly describe your role and responsibilities [at ENS]? *[If not already answered]* And what is your role with regard to quality assurance (QA) site visits? *[Probe if needed]* Do you schedule site visits? Perform site visits? Track site visits?

[ALL]

Q2. Have your responsibilities changed in the last year with respect to QA site visits? If so, how? *[Probe if needed]* For example, have you scheduled/conducted/tracked more or less site visits over the last year than you did in earlier years? In what other ways, if any, has your role changed with regard to QA site visits?

[ALL]

Q3. What are the roles and responsibilities of the person/people involved with this QA site visit oversight? Who is in charge of the oversight of QA site visits across all ENS programs? [*Probes if current oversight is minimal*] Do you think more oversight/coordination would be helpful? Why? What experience, background, and skills would like to see in the person overseeing QA site visits?

[CDMC]

Q4. [*If not already answered*] What will your QA site visit-related responsibilities be once you fully take on the role of Central Data Management Coordinator, or CDMC?

[CDMC]

Q5. When do you expect to fully take on the role of CDMC? What needs to happen before you can assume that role?

[QACs]

Q6. What is the QA committee's current role with regard to QA site visits? How has that changed over the past year? How, if at all, do you expect it to change over the next two years?

[QACs]

Q7. I understand that ENS is planning for a Central Data Management Coordinator, or CDMC, to oversee QA site visits, among the CDMC's other responsibilities. When do you expect the CDMC to take on that role? What needs to happen before the CDMC can assume that role?

QA Site Visit Goals, and Overview of Practices and Procedures

[ALL]

Q8. How would you describe the goals of QA site visits? What purpose do the site visits serve [*If PM, "your program"*]??

Now I'd like to learn more about the QA site visit process.

[PMs]

Q9. Please briefly describe how QA site visits work for your program. [*Probe if needed*] Who conducts the site visits—ENS staff or an outside contractor? What steps are involved and who is responsible for each step? How many site visits are performed? What are you looking for during the site visits?

[PMs]

Q10. Why does your program conduct site visits with [FROM Q9: ENS STAFF/AN OUTSIDE CONTRACTOR]? Do you think using [FROM Q9: ENS STAFF/AN OUTSIDE CONTRACTOR] is the most effective and efficient way to conduct the site visits or would another approach be better? Why do you say that?

[QACs]

Q11. Please briefly describe the QA site visit process at ENS. How does the process vary among programs that use ENS staff and programs that use outside contractors to conduct the visits?

[QACs]

Q12. Do you think it's more effective and efficient for the programs to conduct QA site visits with ENS staff or with outside contractors? Why do you say that?

QA Site Visit Guidelines

Now I'd like to talk about QA site visit guidelines.

[PMs]

Q13. Do you have QA site visit guidelines for your program? [IF NO, SKIP TO Q22; IF YES, CONTINUE] What information do they contain? [*Probe for sampling approach--number of site visits, site selection process, frequency/pacing of site visits—and data collection and reporting requirements.*]

[PMs]

Q14. [IF Q13=YES] Do the QA site visit guidelines address how to cost-effectively schedule and perform site visits? How, if at all, do you try to minimize costs when you are scheduling or performing site visits? [*Probe about: logistics, time management, and coordination with other programs.*]

[PMs]

Q15. [IF Q13=YES] Where are the guidelines documented? Who is aware of these guidelines and where they are stored?

[QACs]

Q16. [IF Q13=YES] Which of ENS's programs have their own program-specific QA site visit guidelines? Which do not? [*For programs that have guidelines*] What information do they contain? [*Probe for sampling approach--number of site visits, site selection process, frequency/pacing of site visits—and data collection and reporting requirements.*]

[ALL]

Q17. [IF Q13=YES, OR SOME PROGRAMS MENTIONED IN Q16] How effectively do you think the guidelines describe QA site visit procedures and requirements? Do they contain all needed information? Why do you say that? [*Probe for sampling approach--number of site visits, site selection process, frequency/pacing of site visits—and data collection and reporting requirements.*]

[PMs]

Q18. [IF Q13=YES, OR SOME PROGRAMS MENTIONED IN Q16] How closely do you follow these guidelines? Which aspects do you generally adhere to? Which aspects do you generally not adhere to? Why? [*Probe for sampling approach-- number of site visits, site selection process, frequency/pacing of site visits—and data collection and reporting requirements.*]

[QACs]

Q19. [IF Q13=YES, OR SOME PROGRAMS MENTIONED IN Q16] How closely do program managers follow these guidelines? Which aspects do program managers generally adhere to? Which aspects do program managers generally not adhere to? Why? [*Probe for sampling approach--*

number of site visits, site selection process, frequency/pacing of site visits—and data collection and reporting requirements.]

[ALL]

Q20. [IF Q13=YES, OR SOME PROGRAMS MENTIONED IN Q16] Do you, or does someone else at ENS, review the guidelines periodically? *[If so]* Do the guidelines suggest how to conduct these reviews?

[ALL]

Q21. [IF Q13=YES, OR SOME PROGRAMS MENTIONED IN Q16] What, if anything, would you like to change in the guidelines? Why? *[Probe for sampling approach--number of site visits, site selection process, frequency/pacing of site visits—and data collection and reporting requirements.]*

[ALL]

Q22. [IF NEEDED--FOR EXAMPLE, IF Q13=NO, NO PROGRAMS ARE MENTIONED IN Q16, OR GUIDELINES DO NOT ADDRESS ALL SITE VISIT ELEMENTS] How do *[If PM, "you"; if not PM, "program managers"]* decide how many site visits to conduct? How do *[If PM, "you"; if not PM, "program managers"]* decide the frequency (e.g., monthly) of site visits?

Q23. [IF NEEDED--FOR EXAMPLE, IF Q13=NO, NO PROGRAMS ARE MENTIONED IN Q16, OR GUIDELINES DO NOT ADDRESS ALL SITE VISIT ELEMENTS] How do *[If PM, "you"; if not PM, "program managers"]* decide which sites to visit?

Q24. [IF NEEDED--FOR EXAMPLE, IF Q13=NO, NO PROGRAMS ARE MENTIONED IN Q16, OR GUIDELINES DO NOT ADDRESS ALL SITE VISIT ELEMENTS] How do *[If PM, "you"; if not PM, "program managers"]* decide what data to collect, what data to report, and to whom you will report it?

[ALL]

Q25. Are you aware of a process for updating QA site visit practices, procedures, and tracking systems? *[If so]* Can you describe that process? *[If needed]* Who is involved in the process, and what are their roles? What motivates an update?

Internal Resources for QA Site Visits

[ALL]

Q26. How adequate are the staffing levels for QA site visits given *[If PM, "your program's"; if not PM, "ENS's"]* sampling, scheduling, data collection, and reporting needs? Why do you say that?

[ALL]

Q27. How adequate is the budget for QA site visits? Why do you say that?

[ALL]

Q28. What training do people receive to prepare them for performing QA site visits? *[If needed]* For example, do they shadow someone with experience, read site visit guidelines, or receive any other training? *[Ask all]* How adequate is that training? Why do you say that?

[ALL]

Q29. *[If any resources in Q26, Q27, or Q28 are not adequate, probe]* Do the current staffing levels, budget, training, or other resources constrain the QA site visits *[If PM, "you"; if not PM, "ENS"]*

can conduct? In what ways are QA site visits constrained? [*Probes: perform fewer visits than required/desirable, perform shorter site visits, site visits performed by different staff*]

[ALL]

Q30. [*If any resources in Q26, Q27, or Q28 are not adequate*] What additional resources [*If PM, “do you”; if not PM, “does ENS”*] currently need and for what purposes?

QA Site Visit Effectiveness at Serving Intended Purpose

I’d like to shift gears a bit and talk about how ENS uses QA site visits results.

[ALL]

Q31. Who reports QA site visit findings? Where are the findings documented? How are they communicated and to whom?

[ALL]

Q32. How, if at all, could the process of reporting findings be improved? [*If needed*] For example, could communication channels be simplified? Does the data collected include any unnecessary or irrelevant information?

[ALL]

Q33. How do you use QA site visit findings? [*If needed*] How, if at all, do you use findings from QA site visits to inform program changes or improvements? Can you describe any examples of how you used the findings to improve [*If PM, “your”; if not PM, “a”*] program?

[SDMs and PMs with contracted DAs or SOs]

Q34. [*If not already addressed*] Does the data collected during QA site visits provide you with all the information you need to assess Delivery Agents’ and Service Organizations’ performances? [*If not*] What additional information do you need?

[ALL]

Q35. [*If not already addressed*] What effect, if any, do site visit findings have on determining the future number of site visits that will be performed for DAs and SOs? [*Probe*] Are fewer site visits required for experienced DAs or SOs with strong track records?

Successes, Challenges, and Opportunities

To wrap-up I’d like to get your feedback about the successes and challenges of QA site visits, as well as about opportunities for the future.

[ALL]

Q36. What would you say are the greatest benefits of QA site visits to [*If PM, “your program”; If QA or CDMC, “ENS’s programs”*]?

[ALL]

Q37. What key challenges do you think QA site visits will face over the next two years? [*Probe for management, practices and procedures, reporting, and communication challenges.*]

[ALL]

Q38. What opportunities do you see for improving QA site visit processes and procedures? [*Probe for opportunities to improve management, practices and procedures, reporting, and communication.*]

[ALL]

Q39. Those are all the questions I have prepared. Is there anything else about QA site visits that you think is important for me to know?

[ALL]

Q40. Before we close, I want to check with you about using your quotes – anonymously – in our report to illustrate key points and make them more interesting and readable. Earlier, you said you'd like us to [**Response from Q-1**]. Is that still OK with you?

[*If not*] Please tell me if you:

- Agree to being quoted anonymously
- Agree to being quoted anonymously, subject to your review and approval of the quote(s)
- Do not want to be quoted

Thank you very much for your time.

Appendix C. QA Inspector Interview Guide

Introduction

Thanks for taking the time to talk today. I work for Research Into Action and, as you know, we are working with Efficiency Nova Scotia [ENS] to evaluate their Quality Assurance (QA) practices and procedures for site visits. We are interviewing key individuals, like you, so we can learn more about how ENS's QA site visits work, the effectiveness and efficiency of site visit practices and procedures, and ways in which these practices and procedures could be improved.

Our talk will take about 45 to 60 minutes.

Q-I. Before we start, I want to mention that we often use quotes from our interviews – without names attached – in our reports to ENS. We use these quotes to illustrate key points and make the reports more interesting and readable. Would you like us to:

1. Quote you anonymously
2. Quote you anonymously and provide you an opportunity to review and approve the quotes before we use them
3. Not quote you at all

Everything you say is confidential. We won't share our notes from the conversation unless we are legally required to, and we will not report findings in a way that would identify any individual respondent. I'll be taking notes as we talk, but I'd also like to record the call, just to help with my notetaking. Is that OK with you?

If you want to refer me to specific documents to answer any of my questions, that's great – I'm happy to look things up if I know where to get the information.

Do you have any questions before we get started?

Roles and Responsibilities

My first questions are about your job, the programs your company works with through ENS, and the QA site visit services your company provides.

Q1. First, what is your job title?

Q2. Can you please verify the programs for which your company provides QA inspections? We have you listed for: *[Read, then circle/mark the programs that apply]*

1. [ALL] Home Energy Assessment
2. [ALL] Home Warming
3. [RJ ROY ONLY] New Home Construction

Q3. In which geographic areas of Nova Scotia does your company provide QA inspection services for *[insert program names, in turn, as appropriate]*?

1. [ALL] Home Energy Assessment [Confirm respondents cover all geographic areas]
2. [ALL] Home Warming [Confirm Peck Home Inspections covers Cape Breton Central, Valley, South Shore and Tri-County; confirm others cover all geographic areas]
3. [RJ ROY ONLY] New Home Construction [Confirm respondent covers all geographic areas]

Q4. Who does your company work with at ENS for the *[insert individuals' names, in turn, as appropriate]* program?

1. [ALL] Home Energy Assessment
2. [ALL] Home Warming
3. [RJ ROY ONLY] New Home Construction

Q5. Now I'd like to know about your specific role with regard to QA site visits. Which of the following services do you provide as a QA inspector for *[insert program names as appropriate, then circle/mark services; record other verbatim responses]*?

1. Home Energy Assessment Schedule | Conduct | Track | Analyze | Report | Other
2. Home Warming Schedule | Conduct | Track | Analyze | Report | Other
3. New Home Construction Schedule | Conduct | Track | Analyze | Report | Other

QA Site Visit Goals, and Overview of Practices and Procedures

Q6. *[Ask once across all programs served]* How would you describe the goals or purposes of QA site visits at ENS?

Now I'd like to learn more about the QA site visit process. Since your company performs QA site visits for more than one ENS program, I will ask you about each program in turn. After we finish talking about the first program, I'll ask about the things that are the same, and the things that are different, for the second program *[read for RJ Roy]* and then for the third program. Let's start with *[insert first program name]*.

Q7. First, about how many QA site visits did your company perform for *[insert first/second/third program]* since January of 2018

Q8. Now I'd like you to walk me step-by-step through the QA site visits for *[insert first/second/third program]*. *[Probe]* Who oversees the QA process? Who schedules the site visits? Who conducts the site visits? Who tracks site visit progress—that is, whether an appointment has been scheduled for a specific home, whether an inspection has occurred, whether an inspection report has been completed, etc.--for the *[insert first program]*? Who reports the findings to ENS?

Q9. At what points in the process do you coordinate with ENS staff on the site visits for *[insert first/second/third program]*? Who do you coordinate with at ENS?

Q10. What equipment and upgrades do you inspect/address during the site visits for *[insert first/second/third program]*? What potential lost opportunities do you look for? What other issues, if any, do you look for during site visits? *[If needed: For example, health and safety issues associated with the completed work, escalated customer service issues.]*

- Q11. How do you go about collecting the data you need to assess the equipment/upgrades you inspect for *[insert first/second/third program]*? What data do you collect? How do you analyze the data? What data do you report to ENS? How frequently and in what format are your reports to ENS? To whom do you report at ENS?
- Q12. How, if at all, could the QA site visit process be improved for *[insert first/second/third program]*? *[If needed]* For example, could site visit scheduling be more efficient? Could communication channels be simplified? Does the data collected include any unnecessary or irrelevant information?

QA Site Visit Guidelines

Now I'd like to talk about QA site visit guidelines.

- Q13. What guidelines has ENS provided to you to conduct QA site visits for *[insert first/second/third program]*?
[If no guidelines, skip to Q19]
- Q14. How are the program QA site visit guidelines documented for *[insert first/second/third program]*?
- Q15. How effectively do you think the QA site visit guidelines describe QA site visit procedures and requirements for *[insert first/second/third program]*? Do they contain all information you need? Why do you say that? *[Probe for sampling approach--number of site visits, site selection process, frequency/pacing of site visits—and data collection and reporting requirements.]*
- Q16. Are there any aspects of the QA site visit guidelines that are difficult to meet or that you have difficulty adhering to? Which ones? Why? *[Probe for sampling approach-- number of site visits, site selection process, frequency/pacing of site visits—and data collection and reporting requirements.]*
- Q17. Do the QA site visit guidelines address how to cost-effectively schedule and perform site visits for *[insert first/second/third program]*? How, if at all, do you try to minimize costs for site visits? *[Probe about: logistics, time management, and coordination with other programs.]*
- Q18. What aspects of the QA site visit guidelines would you like to see improved for *[insert first/second/third program]*? Why? *[Probe about: for sampling approach--number of site visits, site selection process, frequency/pacing of site visits—and data collection and reporting requirements.]*
- Q19. *[IF Q13=NO GUIDELINES]* What practices and procedures do you follow to complete QA site visits for *[insert first/second/third program]*? *[Probe for sampling approach--number of site visits, site selection process, frequency/pacing of site visits—and data collection and reporting requirements.]*

ENS Support for Contracted QA Site Visits

- Q20. What training did your company get from ENS to prepare for performing QA site visits for *[insert first/second/third program]*? *[If needed]* For example, did you shadow someone with experience, read site visit guidelines, or receive any other training? How adequate is that training? Why do you say that? *[Probe by program]*
- Q21. How satisfied are you with the on-going level of support and resources your company receives from ENS to conduct QA site visits for *[insert first/second/third program]*? Why do you say that? *[If*

less than highly satisfied] Does the current level of support constrain the QA services you can provide? *[If so]* How? *[Probes: perform fewer visits than required or desirable, perform shorter site visits, site visits performed by different personnel]*

Q22. *[If any resources are not adequate]* What additional resources could ENS provide to your organization to support the site visits for *[insert first/second/third program]* and for what purposes? *[Probe, by program, for additional ENS staff time, training, etc.]*

Successes, Challenges, and Opportunities

To wrap-up, I'd like to get your feedback about the successes and challenges of QA site visits for *[insert first/second/third program]* as well as about opportunities for the future.

Q23. What would you say are the greatest benefits of QA site visits for *[insert first/second/third program]* to customers? How about benefits to ENS?

Q24. What opportunities do you see for improving QA site visit processes and procedures for *[insert first/second/third program]*? *[Probe for opportunities to improve management, practices and procedures, reporting, and communication.]*

Q25. Those are all the questions I have prepared. Is there anything else about QA site visits that you think is important for me to know?

Q26. Before we close, I want to check with you about using your quotes – anonymously – in our report to illustrate key points and make them more interesting and readable. Earlier, you said you'd like us to **[Response from Q-1]**. Is that still OK with you?

[If not] Please tell me if you:

1. Agree to being quoted anonymously
2. Agree to being quoted anonymously, subject to your review and approval of the quote(s)
3. Do not want to be quoted

Thank you very much for your time.

Appendix D. Other Organization Interview Guide

Introduction

Thanks for taking the time to talk today. I work for Research Into Action in Portland, Oregon. On behalf of our client, Efficiency Nova Scotia (ENS), we are talking with organizations like yours that conduct quality assurance (QA) site visit inspections of homes and businesses after the buildings have undergone energy-efficiency upgrades. Our goal is to provide ENS with insights about inspection best practices.

Our talk will take about 45-60 minutes, but it can be shorter if needed.

I'd like to audio record this interview so I can refer to it later to ensure the accuracy of my notes. We will use the recording internally at Research Into Action; we will not provide it to Efficiency Nova Scotia. Is it OK for me to record the interview?

- Q-I. Before we start, I want to mention that we often use quotes from our interviews – without names attached – in our reports. We use these quotes to illustrate key points and make the reports more interesting and readable. Would you like us to:
1. Quote you anonymously
 2. Quote you anonymously and provide you an opportunity to review and approve the quotes before we use them
 3. Not quote you at all

[If needed] Everything you say is confidential. We won't share our notes from the conversation unless we are legally required to, and we will not report findings in a way that would identify any individual respondent.

Do you have any questions before we get started?

Roles and Responsibilities

- Q1. Let's start with a bit about you. Can you please tell me your title and briefly describe your role and responsibilities at (organization)? How long have you been in that role?
- Q2. *[If not already addressed]* What is your role with regard to QA inspections? *[If needed]*

QA Inspection Management

- Q3. First, which of [insert organization name]’s programs receive QA inspections after energy-efficiency upgrades are made? Please briefly describe each of those programs. *[Probe for information to determine whether the organization conducts QA inspections for programs similar to these ENS programs:*
- *Home Energy Assessment: In-home assessment of the building shell and mechanical systems, EnerGuide rating, report on findings and prioritized recommendations, and rebates and financing for upgrades.*
 - *Home Warming: No-charge energy assessments and home upgrades to income-qualified homeowners.*
 - *New Home Construction: Review of building plans, customized energy-efficiency improvement recommendations, rebates for improvements, EnerGuide rating.]*
- Q4. Is there a single person or group that oversees and coordinates QA inspections across these programs? *[If so]* Please describe that person’s/group’s role and responsibilities.
- Q5. *[IF Q4 = NO SINGLE MANAGER/COORDINATOR]* How are QA inspections managed? *[Probe: for example, are they managed on a program-by program basis?]*
- Q6. What are the roles of individual program managers with respect to QA inspections?
- Q7. Do you think this is an appropriate structure for managing QA inspections? Why/not?

QA Site Visit Goals, and Overview of Practices and Procedures

- Q8. *[Ask once across all programs served]* How would you describe the overall goals or purposes of QA inspections for *[insert organization name]*?

Now I’d like to learn more about *[insert organization name]*’s QA inspection processes.

[If multiple programs] Since *[insert organization name]* performs QA site visits for more than one program, I will ask you about each program in turn. After we finish talking about the first program, I’ll ask about the things that are the same, and the things that are different, for the second program *[read if applicable]* and then for subsequent programs. Let’s start with *[insert first program name]*.

- Q9. Do *[insert organization name]*’s employees conduct the QA inspections themselves, or do you contract with outside organizations for the inspections? Do you think this is the best way to handle inspections for *[insert program name]*? Why/not?
- Q10. *[If inspections for this program are conducted by in-house staff]* Could you please walk me step-by-step through the QA site visits for *[insert program name]*? *[Probes]* Who oversees the QA process? Who schedules the site visits? Who conducts the site visits? Who tracks site visit progress—that is, whether an appointment has been scheduled for a specific home, whether an inspection has occurred, whether an inspection report has been completed, etc.--for the *[insert program name]*? Who prepares reports about the inspections?
- Q11. At what point during a project does/do the site visit(s) take place? *[Probe for different times by program type—for example, new construction or weatherization programs may have site visits before the project is complete, before drywall is installed/repaired, etc.]*

- Q12. What equipment and upgrades do inspectors examine during the site visits for *[insert program name]*? What potential lost opportunities do they look for? What other issues, if any, do they look for during site visits? *[If needed: For example, health and safety issues associated with the completed work, escalated customer service issues.]*
- Q13. What data are collected during the inspections for *[insert program name]*? What data are reported? How frequently and in what format are the reports? Who receives and reviews the reports?
- Q14. What aspects of the QA inspection processes for *[insert program name]* do you think work well? *[Probes: efficiency of inspection scheduling, communication with inspectors or customers, data collection]* Would you recommend other program administrators use these processes for similar programs? Why/not?
- Q15. What aspects of the QA inspection processes for *[insert program name]* have been challenging? *[Probes: efficiency of inspection scheduling, communication with inspectors or customers, data collection]* What can be done to avoid or overcome these types of challenges?

QA Inspection Guidelines

Let's talk now about QA inspection guidelines.

- Q16. How would you describe *[insert organization name]*'s general approach to QA inspections? *[Probe if needed]* Are there any overarching models (such as Home Performance with Energy Star or Energy Star's Energy Efficient (New) Homes) your organization follows?
- Q17. Does *[insert organization name]* have QA inspection guidelines for site visits? *[If so]* Do the same guidelines apply to all of the programs you mentioned earlier?

[If Q17 = NO GUIDELINES, SKIP TO Q25]

[If Q17 = separate guidelines for each program, say] Again, since *[insert organization name]* performs QA site visits for more than one program, I will ask you about the guidelines for each program in turn.

[If Q17 = separate guidelines for each program, ask Q18 to Q24 for first program, then repeat for program 2, etc. If there is one set of guidelines, ask Q18 to Q24 once for all programs.]

- Q18. How are the program QA site visit guidelines documented?
- Q19. Who has access to the guidelines? Who uses the guidelines?
- Q20. What topics do the guidelines cover? *[Probe for topics such as sampling approach--number of site visits, site selection process, frequency/pacing of site visits—and data collection and reporting requirements.]*
- Q21. Do the QA site visit guidelines address how to cost-effectively schedule and perform site visits for *[insert program name]*? How, if at all, do you try to minimize costs for site visits? *[Probe about: logistics, time management, and coordination with other programs.]*
- Q22. Do the QA inspection guidelines call for periodic internal self-assessments and/or periodic assessments by an outside reviewer? *[If so]* Do the guidelines specify how to conduct those assessments? *[If so]* Please describe.

- Q23. What process, if any, does the *[insert program name]* use to update its QA inspection guidelines? Who is involved and what are their roles? What triggers an update? How frequently are the guidelines updates?
- Q24. What effect, if any, do inspection findings have on determining the future number of inspections that will be performed for each contractor/builder? *[Probe]* Are fewer site visits required for experienced contractors/builders with strong track records? *[If so]* How does that work?
- Q25. *[IF Q17 = NO GUIDELINES]* What practices and procedures do you follow to complete QA inspections? *[Probe for sampling approach--number of site visits, site selection process, frequency/pacing of site visits—and data collection and reporting requirements.]*
- Q26. What advice, if any, do you have for developing effective QA inspection guidelines? *[Probe for recommendations and pitfalls in guidelines regarding sampling approach--number of site visits, site selection process, frequency/pacing of site visits—and data collection and reporting requirements.]*

Internal Resources for QA Inspections

- Q27. What training do inspectors receive to prepare them for performing QA site visits? *[If needed]* For example, do they shadow someone with experience, read site visit guidelines, or receive any other training? How, if at all, is the preparation for internal staff inspectors different from the preparation for external (contracted) inspectors?
- Q28. What recommendations, if any, do you have regarding training for inspectors?

Successes, Challenges, and Opportunities

To wrap-up I'd like to get your feedback about the general benefits of QA inspections for programs.

- Q29. What would you say are the greatest benefits of QA inspections to customers? How about benefits to *[insert organization name]*?
- Q30. Those are all the questions I have prepared. Is there anything else about *[insert organization name]*'s QA inspections that you think is important for me to know?
- Q31. Before we close, I want to check with you about using your quotes – anonymously – in our report to illustrate key points and make them more interesting and readable. Earlier, you said you'd like us to **[Response from Q-1]**. Is that still OK with you?

[If not] Please tell me if you:

1. Agree to being quoted anonymously
2. Agree to being quoted anonymously, subject to your review and approval of the quote(s)
3. Do not want to be quoted

Thank you very much for your time.