

## **RESEARCH TOPIC ACCEPTANCE REQUEST (RTAR)**

**Title:** Utilization of Random Sampling Technology in Performing Building Commissioning

**Research Category:** Operation and Maintenance Tools

**Research Classification:** Applied

**TC/TG Priority:** 3 (TC 9.9)

**Estimated Cost:** \$125,000.00

**Other Interested TC/TGs:** 1.5; 4.1; 4.7; 4.11

**Possible Co-Funding Organizations:** NIBS (National Institute of Building Sciences); BCA (Building Commissioning Association)

**Handbook Chapters to be Affected By Results of this Project:** HVAC Applications Chapter 42 “New Building Commissioning”

### **State-of-the-Art (Background):**

The application of statistical techniques is well known in the manufacturing arena as well as many other areas. However, the application of this statistical approach to the application of Building Commissioning is new and misunderstood. Some organizations have had success in applying the technology, however, it has proved difficult to stimulate a larger segment of the profession to move toward this accepted principle: it is not necessary to test 100% of a population to determine the projected results, good or bad.

### **Advancement to the State-of-the-Art:**

The advancement of the application would be beneficial from the ease and economical benefit to the commissioning practitioners and owners of buildings. This project would build on the lessons of statistical sampling in other industries, to document and test the technique as part of the building commissioning process.

### **Justification and Value to ASHRAE:**

To provide adequate supported tested evidence the application of this statistical technique would benefit the practice of commissioning buildings and their components and systems. It is hoped that the research would lead to the development of a guide to using statistical sampling in commissioning. The guide would then become a special publication.

### **Objective :**

The objective would be to test the statistical sampling approach in three commercial buildings: small, medium, and large. The project will:

1. Develop a documented understanding of how statistical sampling is used on actual projects, i.e., document the process itself;
2. Develop a documented understanding of how non-statistical sampling is used on actual projects, i.e., document the alternative process;
3. Compare the two options and give analysis of the benefits and disadvantages of each; and
4. Make recommendations as to when and how each should be applied.