



ANNEX A1 – Minimal Content Requirements for Deliverables

- **1.1 RCx Plan**
 - Minimal content requirements:
 - General Information
 - Objectives and Scope of the Project
 - Building Description
 - Energy Balance
 - Overview of Mechanical/Electrical Systems
 - Investigation Scope and Methods
 - List of Selected Systems for Investigation
 - Investigation Approach (monitoring, functional tests, etc.)
 - Deliverables Description
 - Team Members, Roles and Responsibilities
 - Schedule
- **1.2 Owner's Operating Requirements**
 - Minimal content requirements:
 - Operating Schedule for Occupancy
 - Temperature
 - Humidity
 - Pressure
 - Filtration
 - Ventilation
 - Sounds and Noise Level
 - Other
- **2.1 Diagnostic Monitoring Plan**
 - Minimal content requirements as per provided template
- **2.2 Functional Testing Plan**
 - Minimal content requirements:
 - Reason for performing tests
 - Conditions prior to testing (e.g. external temperature)
 - Instructions for test performance, safety measures
 - Procedure steps for testing and documentation
 - Procedure reinstatement of normal operation conditions
 - Material required for testing
 - Required analysis
 - Admission criteria and quality control procedure
 - Required approvals (if applicable)
 - For small buildings, a simplified test protocol can be used (brief summary of the protocol):
 - To document the performed tests and results obtained
 - To allow the operator to repeat the same test in case a recurring problem appears after project completion
 - To help avoid omissions during testing in terms of measuring, safety, etc.
- **2.3 Findings Log.** *To be regularly updated as the findings are discovered (include savings calculations)
 - Minimal content requirements:
 - Unique identifier for the measure
 - The observation that led to the measure and references to all related documents(e.g. operational tests)
 - Description of the proposed measure/solution
 - Recommendation regarding implementation (by whom)



- Planned energy savings (per commodity)
- Impact on power
- Annual savings (\$)
- Annual GHG reduction
- Estimated implementation cost (and incentives if applicable)
- Estimated maintenance cost
- Payback period
- Net present value

- **2.4 RCx Investigation Report**

- Minimal content requirements:
 - Presentation of Facility
 - Building Documentation Review
 - Utility Bill Analysis
 - Findings Log
 - Recommendations
 - Other Investigation Documentation
 - Functional test protocols and results
 - Monitoring plan and measurement results
 - Etc.

- **3.1 Implementation Plan**

- Minimal content requirements:
 - Detailed description of measures
 - Scope
 - Implementation instructions
 - Expected results/Acceptance criterias
 - Verification method
 - Implementation method and sequence
- This deliverable can be incorporated into the RCx Investigation Report

- **3.2 Specifications of selected measures (plans and specifications).**

- Provider defines scope of work for in-house staff or contractors to implement selected measures.
- Provider prepares specifications for the implementation of selected measures (plans and specifications if required).

- **3.3 Implementation Report**

- Minimal content requirements:
 - Brief description of each measure
 - Description of findings
 - Implementation status
 - Implementation summary
 - Verification results
 - Future recommendations
- This deliverable can be incorporated into the RCx Final Report



- **4.1 RCx Final Report**

- Minimal content requirements:
 - Executive Summary
 - Owner's Operating Requirements
 - Findings Log with Implementation summary
 - Implementation status
 - Verification results
 - List of additional measures for future consideration
 - Training Summary
 - Other Documentation
 - Functional test protocols and results
 - Monitoring plan and measurement results
 - Complete documentation of revised control sequences
 - Updated O&M Manuals and As-Built Documentation as required

- **4.2 Persistence Plan**

- Minimal content requirements:
 - O&M staff training recommendations
 - Ongoing Commissioning Plan
 - Description of all performance monitoring strategies
 - Energy performance monitoring
 - Operational performance monitoring with the BAS
 - **Provide an Operational Persistence Matrix (Minimal content requirements as per provided example)**
 - **Provide Calibration and Maintenance Checks for RCx (Minimal content requirements as per provided example)**
 - Instructions on how to execute O&M strategies sustaining RCx benefits
 - Recommendations in regards to the pertinence of using an automated fault detection and diagnostic tool/software
 - Frequency of persistence activities

- **4.3 Training materials**

- Training should be pervasive throughout the commissioning process. The Hand-off and Persistence Phase provides an excellent opportunity to provide focused training on the RCx process, the associated measures implemented, system optimization techniques and strategies for persistence and continuous improvement.

- **4.4 Project Hand-off/Lessons Learned Meeting**

- Hold a Lessons Learned Meeting with the Owner's building operating personnel and other Commissioning Team members. This can help the operating personnel in maintaining the performance benefits for RCx and can increase their knowledge, expanding their ability to identify and address improvement measures in the buildings in which they work.