Delmarva Power C&I Energy Savings Program

Retro-Commissioning for Existing Buildings
and
Enhanced Commissioning for New Construction

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RETRO-COMMISSIONING FOR EXISTING BUILDINGS AND ENHANCED COMMISSIONING FOR NEW CONSTRUCTION INCENTIVES

TECHNICAL RESOURCE MANUAL

1.0 INTRODUCTION

Retro-Commissioning for Existing Building and Enhanced Commissioning for New Construction incentive programs are designed to promote energy efficiency in new and existing buildings. The goal of the incentive programs is to reduce electrical consumption and usage in these buildings. Each of the incentives has a unique focus:

- **Retro-Commissioning (RCx) for Existing Buildings** provides incentives for four incentive phases of the retro-commissioning process: (1) Development of a Retro-Commissioning Plan, (2) Executing the Retro-Commissioning Plan (3) Implementation of Retro-Commissioning Recommended Measures and (4) Continuing Commissioning to ensure that measures are performing as they should.

- **Enhanced Commissioning (ECx) for New Construction** provides two incentive phases that support enhanced commissioning, which goes above beyond the basic requirements of fundamental commissioning. The phases include: (1) Commissioning Design Review and Systems Manual, and (2) Commissioning Verification, Training, and Final Systems Manual.

The table below shows 3-year savings goals, total program budget, and incentives budget for the combined incentives in the three utility service territories:

<table>
<thead>
<tr>
<th>Utility</th>
<th>Net Savings Goals (MWh/yr)</th>
<th>Total Budget ($)</th>
<th>Incentives Budget ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delmarva Power -- MD</td>
<td>9,774</td>
<td>654,188</td>
<td>433,753</td>
</tr>
</tbody>
</table>

**Participation Requirements**

The Delmarva Power Commercial & Industrial (C&I) Energy Savings Program is for all Delmarva Power Maryland commercial and industrial customers. Delmarva Power has approved a number of RCx and ECx Trade Allies (aka Service Providers) to assist Delmarva Power Customers in fulfilling the requirements for Retro-Commissioning (RCx) and Enhanced Commissioning (ECx) Incentives. Trade Allies can act as the Customer’s Authorized Provider and therefore can submit applications on the Customer’s behalf. The Customer is ultimately the responsible party to the Delmarva Power C&I Energy Savings Program. Customers wishing to use a Service Provider who is not currently recognized by the program must ensure that the Service Provider successfully completes the RCx or ECx Trade Ally Application and is approved by the Program before starting any work.
2.0 RETRO-COMMISSIONING FOR EXISTING BUILDINGS INCENTIVE

Introduction
The Retro-Commissioning (RCx) for Existing Buildings Incentive helps Delmarva Power's commercial and industrial (C&I) customers determine energy usage in their facilities, identify energy-saving opportunities, and optimize their existing systems. Approved RCx Trade Allies examine all of the building’s major energy-using systems for cost-effective savings opportunities, but the primary focus is on HVAC and control systems.

What is Retro-Commissioning?
Retro-Commissioning (RCx) is a systematic process that optimizes energy use and overall energy efficiency in an existing building over a sustained period. In addition to improving operational inefficiencies that yield energy savings, the RCx process also provides non-energy benefits such as improved comfort, enhanced air quality, and reduced occupant complaints. This incentive is designed to encourage a comprehensive review and implementation of as many improvements as possible.

Incentive Phases
The RCx process includes multiple phases. At the end of each phase, the customer must prepare and submit a report for review and approval by a Delmarva Power C&I Energy Savings Program (Delmarva Power Program) before an incentive payment is made. The required contents of these reports are described in detail in subsequent sections of this document. In addition, a training component, included in each phase, focuses on measures taken to manage energy usage—whether operations and control measures or capital improvements.

RCx Criteria
The most cost-effective energy savings will likely result from larger customers within certain types of buildings—specifically, buildings that meet the following criteria:

- Higher-than-average electrical intensity (kWh/sq.ft.), based on an analysis using the EPA Portfolio Manager software or DOE CBECS Data.¹
- Greater than 2 years old (this requirement recognizes that buildings less than 2 years old may not have the requisite full year of utility data that reflect a “fully occupied” building and consistent operating pattern).
- A minimum of 75,000 sq. ft. of conditioned space.
- While not a requirement, the presence of an energy management system (EMS) with or without direct digital controls (DDCs).
- Mechanical equipment in relatively good condition.²
- Unusually high number of occupant comfort complaints.
- Some demonstration that senior management is committed to spending at least $15,000 on Retro-Commissioning activities and following through on recommendations.

¹ EPA Portfolio Manager: http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager#rate;
DOE CBECS: http://www.eia.doe.gov/emeu/cbecs/

² Mechanical equipment must have a demonstrable portion of its useful life remaining in order to be a good candidate for RCx and the optimizing strategies it entails. Equipment with little or no useful life remaining is a better candidate for replacement, which may be covered under the Prescriptive, HVAC, and Custom Incentives.
While all non-residential buildings are eligible for RCx, the incentive targets office buildings, hotels, hospitals, schools and universities, malls, and large retail stores.

**RCx Measures**

RCx typically involves reviewing and enhancing the performance of existing equipment. For example, a measure may consist of modifying a control system’s programming and perhaps adding one or more sensors and/or circuit-control devices. RCx identifies low-cost/no-cost improvement projects for implementation. An RCx analysis should also identify energy efficiency measures requiring capital improvements that may be eligible for other Delmarva Power C&I incentives.3

Savings are calculated individually for each Energy Efficiency Measure (EEM) and then summed to obtain the total savings for the project, with an adjustment made for interactions among measures that would increase or decrease savings. In addition, a report is generated for each phase of the RCx process. These reports contain the information specified below (Section 2.2) for each phase of the RCx process.

Only building components that affect electricity usage and demand are considered for incentives. Examples include HVAC systems and energy management systems, including lighting control systems. (Generally, lighting equipment will not be part of the RCx review, although recommendations on how to control lighting energy usage will be included in the review.)

2.1 **OBJECTIVES OF THE DELMARVA POWER RETRO-COMMISSIONING INCENTIVES**

The objectives of Retro-Commissioning are to:

- Develop a comprehensive operation and maintenance plan that:
  - Meets the business objectives and constraints of the facility owners or managers.
  - Will be implemented.
- Develop a comprehensive and acceptable facility energy efficiency plan that includes:
  - A prioritized list of low-cost/no-cost measures that would lead to electricity savings.
  - A prioritized list of potential future capital investment projects that could lead to substantial electricity savings.
  - An education and training component for building operations personnel on how to operate the building efficiently, focusing particularly on O&M changes implemented during the Retro-Commissioning project.
- Identify peak load shaving options that can be implemented during peak periods.
- Reduce customer operating costs during peak and off-peak periods.
- Develop a plan to educate and train the building personnel how to operate the building efficiently.
- Document findings and develop an action plan to implement recommended measures that reduce electricity usage.

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3 All commissioning work will adhere to recognized industry standards for commissioning developed by ASHRAE, the Building Commissioning Association, Association of Energy Engineers, the International Performance Measurement & Verification Protocol Committee, and other recognized standards. Commissioning companies shall employ certified (or equivalent) commissioning Trade Allies for this work; see Appendix for certifying agencies.
2.2 KEY ELEMENTS OF RETRO-COMMISSIONING INCENTIVE PHASES

Retro-Commissioning is divided into four phases. All incentive phases require pre-approval to qualify for an incentive. If the requirements of any given phase have been completed without pre-approval, the customer is not eligible for an incentive for that phase. The customer is still able to participate in a subsequent incentive phase as long as the prerequisites of the prior phase have been met. The customer may submit the required documentation for all completed phases and apply for the subsequent phase not yet begun.

For example, if the Delmarva Power customer has already developed an RCx Plan that meets all Phase I requirements, the customer can submit the proper documentation required for Phase I for pre-approval of Phase II. Once Phase II has been pre-approved, the customer can proceed with all other incentive phases.

In brief, customers who have completed some RCx phases without prior approval can still qualify for incentives under subsequent phases by using the following process:

• Determine which phase you are currently in by reviewing the requirements listed in this manual.
• Submit the report(s) for all prior phases that you have completed, along with an application for pre-approval of the subsequent phase incentive.
• Once you are pre-approved, you may begin RCx activities for the appropriate incentive phase.

To earn any of the RCx incentives, the customer must submit an application to the Program Office. Delmarva Power reviews all applications and approves or denies participation at its sole discretion.

Phase I - Development of a Retro-Commissioning (RCx) Plan

The success of any Retro-Commissioning project hinges on the development of an effective Retro-Commissioning Plan. With a good plan in place, the RCx Trade Ally will be more successful in uncovering energy waste, occupant discomfort, and deficient maintenance and operational items.

Pre-Approval Process
To receive pre-approval to begin Phase I, the customer must submit an application for Phase I, along with a copy of the Phase I proposed scope of work and projected cost for the development of the Retro-Commissioning Plan.

Phase I Deliverable- RCx Plan
Upon review and approval from the Program Office, the RCx Plan development begins. Elements that must be included in the final Retro-Commissioning Plan are:

1. Title Page and Table of Contents
2. Executive Summary of the findings
3. Introduction section, including names and contact information for the Building Owner, Building Manager, and RCx Trade Ally
4. Building and Energy Systems Description, including an equipment list and equipment capacities (e.g., tons, horsepower, amps, volts, gpm, cfm)
5. Energy Baseline, Energy Star Rating, including at least 1 year (3 years preferred) of actual monthly electricity and fuel usage data
6. Operations and Maintenance Review
7. Operational Scheduling of major systems
8. Documented evidence of any energy use reductions resulting from immediate changes made in Phase I
9. A list of systems and equipment, and possible Energy Efficiency Measures (EEMs), to be investigated in Phase II. Follow ASHRAE guidelines for a Level I energy audit⁴
10. Scope of work and budget for Phase II - Detailed Investigative Stage

Final Approval for Incentive
After the plan is completed, the customer submits a Final RCx Plan, an invoice for the work performed, and a signed statement that the work was completed. Once the Program Office has received this documentation, an incentive payment is awarded and held until confirmation that Phase II requirements have been met. If the customer completes Phase I, but does not proceed to complete Phase II, the incentive award may be forfeited, at Delmarva Power’s sole discretion.

Phase II – Executing the Retro-Commissioning Plan -- Detailed Investigative Stage

Pre-Approval Process
The approval of the Final RCx Plan from Phase I will serve as the pre-approval for Phase II. During Phase II, the scope of work identified in Phase I must be implemented. This will include extensive monitoring of the equipment parameters and engineering calculations of expected energy reductions.

Phase II Deliverable- RCx Investigation Report
Elements that must be included in the Retro-Commissioning Investigation Report are:

1. Title Page and Table of Contents
2. Executive Summary of the findings
3. Introduction section, including names and contact information for the Building Owner, Building Manager, and RCx Trade Ally
4. Detailed building and energy systems description, including more accurate estimates (relative to Phase I) of the equipment usage profiles
5. Detailed operations and maintenance review
6. Documentation of O&M refresher training for facility O&M staff
7. Detailed operational scheduling of the major systems
8. Documented evidence of any energy use reductions resulting from immediate changes made in Phase II
9. A list of EEMs identified for implementation, including costs, electricity savings estimates, and payback periods. Follow ASHRAE guidelines for a Level II energy audit.⁵
   • Description
   • Projected Costs
   • Projected Savings
   • Simple Payback
   • Total of Low-Cost/No-Cost Items
   • Total of Major Capital Items
   • Assessment of the Existing Equipment Over-Sizing and Recommendations for Right-Sizing when HVAC equipment needs replacement, including, but not limited to recommended capital items

⁴ American Society of Heating, Refrigeration and Air Conditioning Engineers - Procedures for Commercial Building Energy Audits
⁵ American Society of Heating, Refrigeration and Air Conditioning Engineers - Procedures for Commercial Building Energy Audits
10. Scope of work and budget for Phase III – Implementation Stage

**Final Approval for Incentive**
To qualify for an incentive, the customer submits the completed RCx Investigation Report, an invoice for the services provided, and a signed statement that the work was completed.

**Phase III - Implementation of Retro-Commissioning Recommended Measures**

**Pre-Approval**
The approval of the Final RCx Investigation Report from Phase II will serve as the pre-approval for Phase III. During Phase III, the recommended measures identified in Phase II will be implemented, including the low-cost/no-cost measures. (Capital measures that meet the customer's financial requirements could also be implemented. Note that Phase III does not pay an incentive for capital measures, however other incentives may be available for capital project implementation.)

**Phase III Customer Responsibilities and Deliverable – RCx Implementation Report**
In Phase III, the customer must:
1. Complete an application form and submit it with a copy of the Phase III Implementation Plan—including a description of the EEMs to be implemented for review and preapproval. (If the customer participated in Phase II, reapplication will not be necessary, though the Implementation Plan will still be required.)
2. Implement the findings of the Phase II study, including all low-cost/no-cost items that meet the customer's financial criteria.
3. Evaluate major capital items for future implementation, and implement those that meet the customer’s financial criteria, taking advantage of incentives from other Delmarva Power Energy Efficiency Incentives, where possible.
4. Prepare an RCx Implementation Report on the projects completed. Report elements must include:
   - Title Page and Table of Contents
   - Executive Summary of the findings
   - Introduction section, including names and contact information for the Building Owner, Building Manager, and RCx Trade Ally
   - List of EEMs implemented, providing copies of invoices for the work performed. For each EEM implemented, provide:
     - Cost of implementation
     - Estimated annual electricity savings and demand reductions
   - Results/documentation of training of O&M staff associated with each EEM
   - A plan for future capital energy efficiency projects and/or an accounting of projects completed
5. Contract with an approved RCx Trade Ally for commissioning of the improvements to ensure that the implementation stage has been completed properly and the energy savings persist.

**Final Approval for Incentive**
To qualify for an incentive, the customer submits the RCx Implementation Report, an invoice for RCx Trade Ally services, and a signed statement indicating that the scope of work was completed. Incentives in this Phase are available only for measures that reduce electricity usage or demand.
Phase IV - Continuing Commissioning

Continuing commissioning, which occurs after the initial commissioning process, helps ensure that the equipment performs at optimum levels over an extended period of time.

Pre-Approval

The customer completes and submits an application form, a copy of the continuing commissioning contract (or other methods of achieving continuing commissioning), and a plan for continuing commissioning. (If the customer participated in Phase III, reapplication will not be necessary, although the contract and Continuing Commissioning Plan will be.)

The continuing commissioning contract must include, at minimum, two walkthrough reviews scheduled at 3 months and 6 months after the final commissioning of the implementation phase. The RCx Trade Ally will provide a report after each review is completed, noting the observed conditions and energy performance of the improvements over time (provide trend data). The contract shall also include additional training of the Operations and Maintenance staff on the energy systems wherever electricity savings have been compromised by staff actions.

Two alternative methods of meeting continuing commissioning requirements are: (1) the installation of self-diagnostic software to continuously monitor the systems and report discrepancies or (2) continuous monitoring of the operations of the Energy Management System from a central station that will notify the responsible party if any problems are detected.

Phase IV Deliverable - Continuing Commissioning Report

Elements that must be included in the Continuing Commissioning Report are:

- Title Page and Table of Contents
- Executive Summary of the findings
- Introduction section, including names and contact information for the Building Owner, Building Manager, and RCx Trade Ally
  - A detailed description of the continuing commissioning activities
- Description of training performed
- A copy of the contract
- Electricity savings resulting from corrective actions taken during continuing commissioning

Final Approval for Incentive

To qualify for an incentive, the customer must submit the Continuing Commissioning Report and an invoice for continuing commissioning services performed.
2.3 RETRO-COMMISSIONING: A REVIEW OF THE INCENTIVE APPROVAL AND PAYMENT PROCESS

As a further aid to customers, the following discussion summarizes what is required under each of the four Retro-Commissioning phases—the “steps to approval” and the phased incentive payments.

Phase I – Development of a Retro-Commissioning (RCx) Plan

The Retro-Commissioning (RCx) Plan is required before an incentive is paid for Phase I. An engineer in the Delmarva Power Program Office formally reviews the plan, and it is either approved or returned to the customer with a written explanation of what modifications are needed. When modifications are required, the revision number and date are noted on the cover, new signatures are affixed, and the Retro-Commissioning Plan is resubmitted.

Steps to Approval
1. Complete the RCx Incentive Application and select Phase I.
2. Submit the application to the Delmarva Power C&I Energy Savings Program.
3. Upon notice of pre-approval from the Program, the customer can start Phase I: Development of a Retro-Commissioning (RCx) Plan.
4. Once Phase I requirements are met, the RCx Trade Ally submits the Phase I Report to the Program for final approval.
5. If approved, the Delmarva Power customer receives a preliminary incentive payment of a maximum of $4,000 or $0.02/square foot (of building conditioned space), whichever is less, not to exceed 50% of the costs. (This incentive will be held in reserve for the customer until Phase II is completed.)

Phase II – Executing the Retro-Commissioning Plan -- Detailed Investigative Stage

The Retro-Commissioning Investigation Report is required before an incentive payment for Phase II. The report is formally reviewed by an engineer and either approved or returned to the customer with a written explanation of what modifications are needed. When modifications are required, the revision number and date are noted on the cover, new signatures are affixed, and the report is resubmitted.

Steps to Approval
1. Complete the RCx Incentive Application and select Phase II.
2. Submit the application to the Delmarva Power C&I Energy Savings Program.
3. Upon notice of pre-approval from the Program, the customer can start Phase II: Executing the Retro-Commissioning Plan -- Detailed Investigative Stage.
4. Once Phase II requirements are met, the RCx Trade Ally submits the Phase II Report to the Program for final approval.
5. When approved, the customer receives an incentive payment of a maximum of $12,000 or $0.06/square foot (of building conditioned space), whichever is less, not to exceed 50% of the costs. (The customer also receives incentive payment for Phase I.)

Phase III - Implementation Stage

An RCx Implementation Report is required before an incentive payment for Phase III. A staff engineer formally reviews the report, after which it is either approved or returned to the customer with a written explanation of what modifications are needed. When modifications are required, the revision number and date are noted on the cover, new signatures are affixed, and the report is resubmitted.
Steps to Approval

1. Complete the RCx Incentive Application and select Phase III.
2. Submit the application to the Delmarva Power C&I Energy Savings Program.
3. Once notice of pre-approval is received from the Program, the customer can start Phase III: Implementation Stage.
4. When Phase III requirements are met, the RCx Trade Ally submits the Phase III Report to the Program for final approval.
5. Upon approval, the customer receives an incentive payment for low-cost/no-cost measures that are not eligible for incentives through other Delmarva Power incentive programs. This phase provides $0.05 cents per square foot (conditioned space) or a maximum of $10,000 in incentives, whichever is less, not to exceed 50% of the implementation costs of electricity saving and demand reduction measures only. (Incentives are not available for measures that save other energy forms (gas, oil, etc.) that do not also save electricity.)
6. In addition, incentives may be available for capital improvement measures (e.g., Lighting, Variable Frequency Drives, Motors, HVAC, and Custom incentives), depending on the incentive rules governing improvements in these systems. Please review the eligibility requirements for this equipment and/or projects.

Phase IV - Continuing Commissioning

A Continuing Commissioning Report is required before a Phase IV incentive is paid. A staff engineer reviews the report and either approves it or returns it to the customer with a written explanation of what modifications are needed. When modifications are required, the revision number and date are noted on the cover, new signatures are affixed, and the report is resubmitted.

Steps to Approval

1. Complete the RCx Incentive Application and select Phase IV.
2. Submit the application to the Delmarva Power C&I Energy Savings Program.
3. Upon notice of pre-approval from the Program, the customer can start Phase IV: Continuing Commissioning.
4. When Phase IV requirements are met, the RCx Trade Ally submits the Phase IV Report to the Program for final approval.
5. Once approved, the customer receives an incentive payment of $0.02 cents per square foot (conditioned space) or a maximum $4,000, whichever is less, not to exceed 50% of the costs. (Half of this can be paid after the 3-month review, and half after the 6-month review, or entire incentive can be awarded upon completion of both reviews.)

END OF RETRO-COMMISSIONING SECTION
3.0 ENHANCED COMMISSIONING FOR NEW CONSTRUCTION INCENTIVE

Enhanced Commissioning (ECx) is a type of building commissioning that can provide improved energy performance above and beyond basic, or fundamental, building commissioning. ECx has become a widely accepted practice for energy efficient and “green” buildings. The decision to pursue Enhanced Commissioning must happen in the building’s design phase because it is a vital element of the design process. In order to participate, the building owner must work with an approved ECx Trade Ally. A maximum of $20,000 or 50% of the cost is available for Enhanced Commissioning services.

A key component of Enhanced Commissioning is the “right-sizing” of HVAC systems. All commissioning reports must report on efforts to size equipment properly for the needs of the building, its equipment, and its occupants. Over-sizing of HVAC equipment is strongly discouraged, primarily because over-sizing leads to less-than-ideal equipment load factors and operational performance that is well below peak efficiency. ECx Trade Allies will help the design team focus on realistic estimates of envelope, people and equipment loads when designing HVAC systems.

3.1 Enhanced Commissioning for New Construction Criteria

The Enhanced Commissioning (ECx) Incentive is designed to help new Delmarva Power commercial and industrial (C&I) customers achieve an enhanced level of quality and energy performance for their new buildings.

The ECx Incentive is available to buildings that meet the following criteria:

- New construction
- A minimum of 100,000 sq. ft. of conditioned space

Although all types of non-residential buildings are eligible for the ECx Incentive, marketing activities focus primarily on office buildings, hotels, hospitals, schools and universities, and large retail stores.

Savings are calculated individually for each Energy Efficiency Measure (EEM) and then summed to obtain the project’s total savings, adjusted for interactions among measures that would increase or decrease savings. In addition, an ECx Report documents all commissioning activities completed for each phase of Enhanced Commissioning.

3.2 Fundamental Commissioning Prerequisite

For new construction projects (including major additions to an existing building), incentives are available for performing Enhanced Commissioning, as defined by the U.S. Green Building Council (USGBC). To obtain ECx incentives, Fundamental Commissioning is a prerequisite. To be eligible for incentives, the building team must also contract for Enhanced Commissioning as described by the USGBC. In addition, the commissioning process must include an operations and maintenance (O&M) training element. Details are provided in LEED 2009 for New Construction and Major Renovations (or any later revision of the document) and the appropriate LEED Reference Guide - U.S. Green Building Council - www.usgbc.org.

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6 Fundamental Commissioning of Building Energy Systems and Enhanced Commissioning are defined in the LEED 2009 for New Construction and Major Renovations (or the latest revision of the document) and the appropriate LEED Reference Guide - U.S. Green Building Council - www.usgbc.org.
3.3 Pre-Approval
To be pre-approved for Phase I of Enhanced Commissioning, a customer must submit an application, along with documentation showing that a contract has been executed for Fundamental and Enhanced Commissioning.

Fundamental Commissioning consists of the following general activities (refer to USGBC for additional details on the rigor required):
- Designate an individual (who has documented certification/experience) as the Commissioning Authority (CxA).
- Ensure that CxA is independent of the design and construction management.
- CxA reports results, findings, and recommendations directly to Owner.
- Owner documents owner's project requirements.
- Develop and incorporate commissioning requirements into the construction documents.
- Develop and implement a commissioning plan.
- Verify installation and performance.
- Complete a summary commissioning report.

3.4 Enhanced Commissioning for New Construction Elements

In addition to the activities cited for Fundamental Commissioning, Enhanced Commissioning includes the follow activities/elements:
- Begin the commissioning process early in the design process and execute additional activities after systems performance verification is completed.³
- Before starting the construction documents phase, designate an independent commissioning authority (CxA), who reports directly and solely to the building owner.
- The CxA must report results, findings, and recommendations directly to the owner.

A plan for Enhanced Commissioning for New Construction should include the following:
- Title page and Table of Contents
- Executive Summary
- Introduction section, including names and contact information for the Building Owner, Building Manager, and ECx Trade Ally
- A detailed description of the planned Enhanced Commissioning activities
- Plan to ensure right-sizing of HVAC systems
- Planned training incentive
- Schedule of design and construction and ECxing activities

3.5 Enhanced Commissioning for New Construction Incentive Phases and Process

Incentives for Enhanced Commissioning are awarded in two phases, during which the customer follows a proven process for incentive approval and award (“steps to approval”) and completes phase-specific deliverables.

Phase I - Commissioning Design Review and Systems Manual: Steps to Approval
Payment of the Phase I incentive requires submission of a Design Review Report and a completed Systems Manual, along with invoicing. The customer will be paid only when a standing contract exists for Enhanced Commissioning efforts to continue through completion of construction. The steps to approval are:
• Complete the ECx Incentive Application and select Phase I.
• Submit the application and a copy of the executed contract to the Delmarva Power C&I Energy Savings Program.
• Once notice of pre-approval is received from the Program, start Phase I.
• Conduct one commissioning design review prior to the mid-construction documents phase, and incorporate changes in the construction documents, including commissioning requirements.
• Upon final approval, receive an incentive payment of $10,000 or $0.05/square foot (of building conditioned space), whichever is less, not to exceed 50% of the costs.

Phase I Deliverables

Design Review Report Content Requirements:
1. Title Page and Table of Contents
2. Executive Summary of the findings
3. Introduction section, including names and contact information for the Building Owner, Building Manager, and ECx Trade Ally
4. Energy Systems Design Summary, including an equipment list showing all equipment capacities (e.g., tons, horsepower, amps, volts, gpm, cfm) and efficiency ratings
5. Energy Baseline, Energy Star Rating, based on building simulation modeling
6. Operational scheduling of major systems
7. Documentation of energy efficiency and operational features incorporated in the building design

System Manual Content Requirements:
The required systems manual should describe the owner's requirements, sequence of operations, commissioning requirements, equipment specifications, and similar items. Manual contents are to include:
1. Table of Contents
2. Introduction, purpose of the manual
3. Commissioning team and credentials
4. Owner's project requirements
5. Basis of design
6. Commissioning requirements
7. Commissioning Plan
8. Functional performance testing and results
9. Operations and maintenance requirements and training
10. Commissioning summary report
11. Appendices
   Detailed Description of Energy Systems
   English language Sequence of Operations
   Owner's O&M Manuals with submittals
   Plans and Specifications
Final Approval
Payment of this incentive will require submission of a Design Review Report and a completed Systems Manual, along with invoicing, and will only be paid in the case where a standing contract exists for Commissioning efforts to continue through completion of construction.

Phase II - Commissioning Verification, Training, and Final Systems Manual: Steps to Approval

Payment of the Phase II incentive will require submission of a **Final ECx Report, Final Design Report, and Final Systems Manual**, along with final invoicing. The customer will be paid only when a standing contract exists for Commissioning efforts to continue through completion of construction. The steps to approval are described below.

The ECx Trade Ally must:
- Review contractor submittals.
- Verify that Operations and Maintenance training is performed.
- Perform a final review of the building operations and complete the final Systems Manual with the final contractor submittals, the marked up drawing and specification set, and training materials for future building operators.
- Submit the ECx Incentive Application and a completed Enhanced Commissioning Report (including a description of the completed training efforts and a completed Final Systems Manual) to the Delmarva Power C&I Energy Savings Program.
- Once approved, receive an incentive payment of $10,000 or $0.05/square foot (of building conditioned space), whichever is less, not to exceed 50% of the costs.

Phase II Deliverable

Enhanced Commissioning Report Requirements are:
1. Title Page and Table of Contents
2. Executive Summary of the findings
3. Introduction section, including names and contact information for the Building Owner, Building Manager, and ECx Trade Ally
4. Energy Systems Final Design Summary, as-built, including an equipment list with all equipment capacities (e.g., tons, horsepower, amps, volts, gpm, cfm) and efficiency ratings
5. Energy Baseline, Energy Star Rating, based on building simulation modeling
6. Operational scheduling of major systems
7. Documentation of energy efficiency and operational features incorporated in the building design

END OF ENHANCED COMMISSIONING SECTION
APPENDIX A: COMMISSIONING CERTIFICATION ORGANIZATIONS

For both the Retro-Commissioning for Existing Buildings Incentive and the Enhanced Commissioning for New Construction Incentive, the customer’s commissioning Trade Allies must be certified by one of the organizations listed below. When a customer wishes to use a non-certified Trade Ally to perform the Retro-Commissioning or Enhanced Commissioning project, an exception to the rule may be granted only if (1) the proposed Trade Ally provides evidence of having completed similar commissioning projects for two or more buildings of at least 100,000 square feet (conditioned space) each, and (2) the Trade Ally submits at least two verifiable and satisfactory references from customers or clients who used the Trade Ally to complete the similar projects.

RESOURCES: Commissioning Certification

The following five organizations currently certify commissioning providers. Visit the organizations’ web sites for more information on their certification incentives and to obtain lists of certified commissioning provider.

- “Certified Commissioning Professional (CCP)”: Building Commissioning Association (BCA), www.bcca.org/certification/index.htm
- “Certified Commissioning Provider”: Associated Air Balancing Council Commissioning Group (ACG), www.acgcommissioning.com/membershipcertification
- “Accredited Commissioning Process Provider”: University of Wisconsin at Madison (UWM), http://epdweb.engr.wisc.edu/courses/index.lasso (use link to Building Systems and Construction to find certification training)
- “Systems Commissioning Administrator”: National Environmental Balancing Bureau (NEBB), www.nebb.org/bsccertif.htm
- “Certified Building Commissioning Professional (CBCP®)”: Association of Energy Engineers (AEE), www.aeecenter.org/certification

Source: the EPA website: http://www.energystar.gov/index.cfm?c=business.EPA_BUM_CH5_RetroComm#SS_5_2_3