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**Users' Guide to  
Green Performance Contracting**

**A  
White Paper  
by  
Leonardo Academy Inc.**

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**Working Draft  
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**This is a Leonardo Academy Inc.  
White Paper**

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## Preface

This is the April 27, 2007, working draft of the Leonardo Academy white paper on green performance contracting.

### Objectives

This white paper is being prepared and issued as a working draft with several goals in mind:

- (1) To provide guidance on incorporating sustainability into performance contracting for:
  - a. Building owners (state government, local government, and private sector) that want to include sustainability in the performance contracts for upgrading their buildings.
  - b. Performance contracting service providers that want to include sustainability in their performance contracting service offerings.
- (2) To gather input from both building owners and performance contracting service providers on any additional information that should be added, additional issues that need to be addressed, or any other improvements that need to be made to this white paper so that it provides the tools needed to put the engine of performance contracting to work on delivering sustainability in public and private buildings.

### Flexibility Included in These Documents

These documents include language that makes it easy for the user to select:

- (1) The metrics for sustainability definition and verification.

This flexibility is included to cover the range of approaches being used by state and local governments in specifications of sustainability and verification of achievement. Some have specified the use of LEED for both definition and verification of sustainability achievements; some have specified the use of LEED for definition of sustainability, but specified other methods for verifying sustainability achievements; and others have created their own definitions of sustainability and approaches to verification.
- (2) The degree of self-funding required for projects.

This flexibility is included because, on the one hand the performance contracting enabling legislation in many states requires that these projects be self-funding, and on the other hand organizations able to invest in sustainability improvements beyond what is self-funding are able to accelerate the achievement of their sustainability objectives.
- (3) Whether to use: (a) an approach that fully integrates LEED-EB and performance contracting or, (b) an approach that uses traditional performance contracting to implement LEED-EB.

Please contact Leonardo Academy if you have any comments or suggestions for this white paper. Also please contact us if your organization would like to implement green performance contracting. Leonardo Academy would like to help organizations implement green performance contracting in order to help them succeed and develop great case studies for others to follow.

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## Table of Contents

**Preface: Working Draft: Your Input is Invited**

**Section 1: How State and Local Governments Can Use Performance Contracting to Accelerate Sustainability Achievements**

**Section 2: Business Case for Sustainable Buildings**

**Section 3: Users' Guide to Green Performance Contracting for State and Local Government Buildings**

**Option A: Use Fully Integrated Approach to LEED for Existing Buildings and Performance Contracting**

**Option B: Use Expanded Performance Contracting to Implement LEED for Existing Buildings**

**Section 4: Conclusions**

**APPENDIX**

**Appendix A: Resources**

## Section 1: How State and Local Governments Can Use Performance Contracting to Accelerate Sustainability Achievements

Buildings are a major cause of environmental impacts, so buildings provide major opportunities for reducing these environmental impacts and increasing sustainability. Many government and private organizations at the international, national, state, and local levels are setting sustainability goals for themselves. To reach these sustainability goals all the traditional tools for implementing energy efficiency improvements in buildings need to be upgraded and expanded to address overall sustainability. One very important tool for delivery of energy efficiency improvements in buildings, particularly in the public sector, is performance contracting.

Performance contracting is an approach to upgrading building operating performance that allows state and local governments to use expense funding to pay for capital improvements needed to improve building performance. Because state and local government buildings frequently have difficulty making capital improvement funds available for their buildings, performance contracting removes a major barrier to state and local government entities making needed upgrades of their facilities. In some states, expanding the scope of traditional approaches to energy-saving performance contracting from its traditional energy focus to covering all components of building and site sustainability can be achieved under current laws regarding performance contracting. In other states, the legislation will need to be modified to cover this expanded scope.

This *Users' Guide to Green Performance Contracting* explains how public and private sector building owners can use green performance contracting to implement sustainability in their buildings.

Three other related white papers have also been prepared by Leonardo Academy:

- ✓ Model Procurement and Contracting Documents for Green Performance Contracting
- ✓ Model State Enabling Legislation for Green Performance Contracting
- ✓ Green Strategies for Public Benefit Funds and Utility Incentive Programs

## Section 2: Business Case for Sustainable Buildings

There is a strong business case for making new and existing buildings sustainable, and green performance contracting is a great tool for overcoming any first-cost barriers to doing so. See Section 3 of this white paper for more information on how performance contracting overcomes barriers in both new buildings still being designed and in existing buildings.

Sustainable building practices yield a variety of benefits including:

- Lower energy costs
- Lower water costs
- Lower waste disposal costs
- Lower environmental and emissions costs
- Lower operations and maintenance costs
- Increased productivity of building occupants
- Increased health of building occupants
- Higher building valuations (Rule of Thumb: Buildings increase in value eight to ten times the operational savings<sup>1</sup>)
- Positive impacts on the local and global environment from reductions in resource use, emissions, water use, and waste disposal

Achieving sustainable building performance in existing buildings can be done at reasonable costs. Many changes consist of improved operations with little or no capital costs. If needed, system or building upgrades can be spread out over time and implemented when capital dollars become available. Employing integrated design, a central element of green building philosophy, allows high benefits at low cost by achieving synergies between disciplines and between technologies. A June 2000 Study by Xenergy for the City of Portland, *Green City Buildings Applying the LEED™ Rating System*, found a 15% life-cycle savings associated with bringing three existing standard buildings up to LEED certification levels.<sup>2</sup> Direct life-cycle cost savings of 13% to 16% resulted from increased productivity of building occupants, energy and water efficiency cost savings, and cost savings from use of salvaged material.

Sustainable buildings also increase the safety, health, and productivity of building occupants. Many daylighting studies have established direct links between facility features and improved student health and performance.<sup>3, 4, 5</sup> Positive productivity benefits have also been shown in other building types. The Building Investment Decision Support (BIDS) program at the Center for Building Performance at Carnegie Mellon University carried out an investigation of the impact of sustainable building characteristics on building occupant productivity. This analysis reviewed over 1,000 studies that relate technical characteristics of buildings to tenant responses. From these 1000 studies, 90 of the most rigorous studies on the productivity impacts from green and high-performance building designs were identified. These 90 studies show that increases in tenant control over

<sup>1</sup> Cooper, Glen. *Valuation Rules of Thumb, Why and how they are used*. BizBuySell article, 2002. 26 May 2006 <[http://www.bizbuysell.com/guide/b\\_value\\_1.htm](http://www.bizbuysell.com/guide/b_value_1.htm)>

<sup>2</sup> *Green City Buildings Applying the LEED™ Rating System*. Prepared for the City of Portland by Xenergy Inc. and Sera Architects, June 13, 2000. 14 June 2006 <<http://www.sustainableportland.org/CityLEED.pdf>>

<sup>3</sup> Nicklas, Michael H. and Gary B. Bailey. *Student Performance in Daylit Schools; Analysis of Performance of Students in of Daylit Schools*. Raleigh, NC. Innovative Design Report, 1996. 31 January 2006 <<http://www.innovativedesign.net/pdf/studentperformance.pdf>>

<sup>4</sup> Heschong Mahone Group. *Daylighting in Schools, Additional Analysis, Detailed Report*. Fair Oaks, CA: New Buildings Institute, 2001.

<sup>5</sup> Hathaway, Hargreaves, Thompson, and Novitsky. *A Study Into the Effects of Light on Children of Elementary School Age – A Case of Daylight Robbery*. Alberta, Canada: Jan. 1992. Policy and Planning Branch, Planning and Information Services Division, Alberta Education.

ventilation, temperature, and lighting resulted in indoor environmental quality health and productivity cost benefits ranging from 0.5% to 34% in green-certified buildings.<sup>6</sup>

Numerous studies also indicate that cost premiums for new sustainable buildings are lower than perceived. An economic analysis study, *The Costs and Financial Benefits of Building Green*,<sup>7</sup> concludes that sustainable design can be incorporated into a new structure with little or no increase in construction costs, and that the financial benefits of green buildings are over ten times the average initial investment. The study states that industry perception of green new building costs is considerably higher than the actual cost premiums and that, in practice, premiums are slightly less than 2%, or \$3 to \$5 per square foot. The cost increase is attributed mainly to increased architectural and engineering design time, modeling, and time needed to institute sustainable building practices. As green design becomes more embedded in these professions, the cost for providing these services should decrease. It was also shown in the study that higher up-front costs for high-efficiency lighting, window, and mechanical systems are outweighed by reduced life-cycle costs. Energy savings alone often exceed the average increased cost associated with constructing new green buildings.

In a second study, Matthiessen and Moris selected 45 library, laboratory, and academic classroom projects that were designed with a goal of meeting some level of the USGBC's LEED-NC certification, and compared them to 93 non-LEED buildings with similar program types.<sup>8</sup> Their comparison found that, although the standard deviation in dollars per square foot cost for each category (LEED-seeking and non-LEED) was quite high, there is such a wide variation in building costs that there was no significant difference in the construction costs for LEED-seeking versus non-LEED buildings in any of the categories. The data also showed that a majority of the LEED-seeking buildings had original budgets that were set without regard to sustainable design, and received no supplemental funds to support sustainable goals. LEED projects that received additional funding to reach sustainability goals usually received funding only for specific enhancements, such as photovoltaic systems, typically in the range of 0–3% of initial budget. Matthiessen and Moris concluded that many projects can achieve sustainable design within their initial budget, or with very small supplemental funding.

Another study released in October 2002 by the David and Lucille Packard Foundation found that with each increasing level of LEED sustainability for their Los Altos Project, short-term costs increased, but long-term costs decreased dramatically.<sup>9</sup> As green construction techniques and building equipment become more mainstream, the small premium for green building will only decrease.

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<sup>6</sup> Carnegie Mellon University Department of Architecture. Building Investment Decision Support Tool. 2002. Available at: <http://www.arc.cmu.edu/cbpd/>.

<sup>7</sup> Kats, Greg, et al. *The Costs and Financial Benefits of Building Green: A Report to California's Sustainable Building Task Force*. Sustainable Building Task Force, 2003. 27 January 2006 <<http://www.usgbc.org/Docs/News/News477.pdf>>

<sup>8</sup> Matthiessen, L. F. and P. Moris. *Costing Green: A Comprehensive Cost Database and Budgeting Methodology*. Davis Langedon Adamson Report, 2004. 31 January 2006 <<http://www.davislangdon.com/pdf/USA/2004CostingGreen.pdf>>

<sup>9</sup> David and Lucille Packard Foundation. *Building for Sustainability: Six Scenarios for the David and Lucille Packard Foundation Los Altos Project*. October 2002.

## Section 3: Users' Guide to Green Performance Contracting for State and Local Government Buildings

Green performance contracting provides several key benefits for building owners:

- ✓ It provides comprehensive integrated solutions to building sustainability improvements.
- ✓ It allows building owners to pay for building sustainability improvements, including capital improvements, with funds in the organization's expense budget.

Green performance contracting can address a wide variety of building and infrastructure improvements:

- ✓ Energy efficiency improvements
- ✓ Water efficiency improvements
- ✓ Waste reduction improvements
- ✓ Building improvements
- ✓ Site improvements
- ✓ Infrastructure improvements
- ✓ Comprehensive sustainability improvements

The only limit on the scope of a performance contract is finding a package for improvements that the building and site owner and the service contractor feel meets both the improvement objectives and the financial requirements of the building owner in terms of the time required to pay off the loan used to pay for the project. The project development process requires some balancing of choices between short- and long-term payback measures to produce an overall payback period that is short enough to meet the building owner's requirements.

Green performance contracting can be used to achieve sustainability in:

- ✓ New buildings being designed and constructed
- ✓ Existing buildings

For the design and construction of new buildings, performance contracting can be used to pay for incremental sustainability improvements. In these new design and construction building situations, performance contracting is highly effective because, as the building is not yet built, the energy savings only need to pay for the incremental cost of higher-efficiency measures rather than for the whole cost, as is the case for existing buildings. For new buildings being designed, the performance baseline that higher-efficiency choices are compared to is the modeled performance of the as-designed less-efficient building plans. Applying performance contracting to buildings being designed and built is the perfect cure for pressure to "value engineer" the efficiency and sustainability out of new buildings as they are designed. In new buildings, performance contracting bridges the gap between the first-cost and life-cycle-cost perspectives by using the long-term energy savings to pay for the incremental first-cost of high-efficiency measures.

For existing buildings, green performance contracting provides the mechanism for implementing and financing the building efficiency and sustainability upgrades.

Combining performance contracting and sustainability to create green performance contracting creates a powerful tool for implementing sustainability because:

- ✓ The expensive parts of implementing sustainability are primarily the major energy efficiency improvements, and performance contracting allows these improvements to be paid for with the resulting energy savings using expense budget dollars.
- ✓ The energy savings resulting from the energy efficiency improvements that have always been the core of performance contracting are typically large enough to support the implementation of low-cost and no-cost sustainability measures.
- ✓ Once the energy efficiency improvements have been made and the low-cost and no-cost sustainability measures have been implemented, most buildings will have a high sustainability rating.

All types of organizations can use performance contracting to implement sustainability, including:

- ✓ Local government
- ✓ State government
- ✓ Federal government
- ✓ Companies
- ✓ Organizations

While in the past performance contracting has been primarily used by government entities, as building owners work to drive sustainability through their building portfolios, it is expected that the use of performance contracting by the private sector will become common.

If your organization is new to using performance contracting, it is a good idea to start by educating yourself and your organization about performance contracting.

If your organization is a private company, you can use the same procurement and contracting approaches as are used by government entities, but you are not restricted by the state laws on use of performance contracting by government entities.

If your organization is a government entity, good questions to start this exploration with are:

1. What are the laws and rules that apply to performance contracting by state and local government entities in your state?
2. Is there a state entity that helps state and local governments with this process?
3. What other state and local governments in your state are using performance contracting, and what can you learn from them?

### Good Resources on Performance Contracting:

1. The Energy Service Coalition ([www.energyservicescoalition.org](http://www.energyservicescoalition.org)), which is a nonprofit organization made up of state energy office representatives, performance contractor representatives, and others interested in performance contracting, maintains a list of links to most state statutes on performance contracting.
2. Your state energy office, in many cases, will provide information and/or support for performance contracting by state and local government organizations. To find contacts for your state energy office visit: [www.naseo.org/members/states.htm](http://www.naseo.org/members/states.htm).
3. Leonardo Academy ([www.leonardoacademy.org](http://www.leonardoacademy.org)), a nonprofit organization, has a deep understanding of performance contracting, sustainability of buildings, and the LEED rating system.
4. The National Association of Energy Service Companies ([www.naesco.org](http://www.naesco.org)) is a national trade association that has been promoting the use of performance contracting for over 20 years.

### Steps for Implementing a Green Performance Contracting Project

There are two approaches to procurement and contracting for performance contracts. One approach is the Request for Qualifications (RFQ) approach and the other is the Request for Proposals (RFP) approach.

#### *The RFQ Approach*

In the RFQ approach, the building owner issues a request for qualifications, selects a service provider, has the service provider conduct a detailed sustainability audit of the building and propose a package of measures, and then negotiates an agreement on what to include in the final package of measures and the associated cost of this package of measures.

- Step 1: Issue Request for Qualifications (RFQ) and Select Contractor
  - Issue an RFQ
  - Hold a site visit for interested contractors
  - Review responses to the RFQ and select top candidates
  - Interview top candidates (usually no more than 3)
  - Select 1 contractor to proceed
  
- Step 2: Have Contractor Conduct Detailed Sustainability Audit
  - Have contractor conduct a detailed sustainability audit (investment-grade audit)
  - Conduct a technical review of the sustainability audit (review energy and other cost-savings estimates, sustainability achievement objectives, opportunities and commitments, cost estimates, individual projects, monitoring and verification plans, and cash flow analysis projections for financing term)
  
- Step 3: Develop Performance Contract and Implement Project
  - Develop performance contract with contractor to implement project
  - Implement project
  
- Step 4: Enter Performance Delivery Period
  - Receive ongoing O&M support for performance delivery
  - Track sustainability performance
  - Receive the guaranteed level of sustainability performance

#### *The RFP Approach*

In the RFP approach, the building owner issues a request for proposals; allows all potential service providers to conduct a detailed sustainability audit of the building at their own expense and propose a package of measures, including the cost and guaranteed savings for each of these measures; selects a service provider; and decides which measures to include in the final package of measures, which determines the cost of the project and the guaranteed savings.

Step 1: Issue Request for Proposals (RFP)

- Issue RFP
- Hold a site visit for interested contractors
- Allow contractors conduct a detailed sustainability audit (investment-grade audit) at their own expense
- Request that contractors propose a package of measures and the cost and guaranteed savings of each measure

Step 2: Select Contractor

- Review proposals
- Select a service provider
- Select which of the proposed measures to include in the final package of measures to be implemented; determine cost of the project and level of guaranteed savings
- Enter into written agreement with contractor

Step 3: Have Contractor Implement Project

Step 4: Enter Performance Delivery Period

- Receive ongoing O&M support for performance delivery
- Track sustainability performance
- Receive the guaranteed level of sustainability performance

### Choices to Make When Integrating Sustainability with Performance Contracting

Two options for implementing green performance contracting are included in the companion white paper Model Procurement Documents for Green Performance Contracting:

Option A: Use Fully Integrated Approach to LEED for Existing Buildings and Performance Contracting

This option uses the LEED certification process to streamline the performance contracting process. This option can be implemented using either an RFQ approach or an RFP approach.

Option B: Use Expanded Performance Contracting to Implement LEED for Existing Buildings

This option expands the traditional approach to performance contracting to encompass implementation of LEED for Existing Buildings.

This option can be implemented using either an RFQ approach or an RFP approach.

Both options work well, and your organization should use the approach that is most comfortable for you.

Leonardo Academy believes that as experience is gained, Option A will become popular because the structure and third-party certification provided by LEED will be recognized as a tool for simplifying the green performance contracting process.

## Section 4: Conclusions

Buildings are a major cause of environmental impacts, so buildings provide major opportunities for reducing these environmental impacts and increasing sustainability. Many government and private organizations at the international, national, state, and local levels are setting sustainability goals for themselves. To reach these sustainability goals all the traditional tools for implementing energy efficiency improvements in buildings need to be upgraded and expanded to address overall sustainability. One very important tool for delivery of energy efficiency improvements in buildings, particularly in the public sector, is performance contracting.

This white paper provides guidance on how performance contracting, which is currently primarily used for implementing energy efficiency improvements in buildings, can be upgraded and expanded to address overall sustainability of buildings and sites.

Expanding energy efficiency-focused performance contracting to address overall sustainability provides two key benefits:

1. It puts these tools to work on promoting and delivering overall sustainability.
2. It puts the issue of overall sustainability to work on increasing the delivery of energy efficiency. Because overall sustainability is a big issue closely connected to image and brand for both government entities and private sector companies, selling the leadership of government entities and private sector companies on taking action to implement sustainability is frequently easier than selling them on taking action to increase energy efficiency, which is frequently viewed as a technical issue not associated with organizational brand and image.

Leonardo Academy is available to help your organization incorporate sustainability into your performance contracting initiatives. Also please give Leonardo Academy your input on your experience with using performance contracting to implement overall sustainability and let us know what you learn along the way so that we can share it with others.

## Appendix A: Resources

### Leonardo Academy Working Draft White Papers:

- ✓ Users' Guide to Green Performance Contracting (This Document)
- ✓ Model Procurement and Contracting Documents for Green Performance Contracting
- ✓ Model State Enabling Legislation for Green Performance Contracting
- ✓ Green Strategies for Public Benefit Funds and Utility Incentive Programs

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