Development of the Guidelines

The *High Performance Guidelines: Triangle Region Public Facilities* builds on past successes in identifying ways to improve public buildings in the Triangle region. Efforts such as the Wake County *Guidelines for Design and Construction of Energy Efficient County Facilities* illustrate a history of Triangle involvement in keeping architects, engineers, and facility managers abreast of the latest standards and techniques for achieving high performance, cost effective buildings.

Several Triangle-region local governments and school systems consciously incorporated sustainable design principles in their facilities during the 1990's. Some of these public agencies individually began to consider developing a document to guide their future design and construction projects, articulating and expanding upon these principles. Under the leadership of Triangle J Council of Governments, they joined with other local governments, school systems, and universities in the region to produce a uniform document to guide the region's design professionals and facility managers in creating high performance public facilities.

A uniform set of guidelines has the advantage of input from many professionals from many agencies. A common approach to high performance facility design across the region is easier to implement and allows the use of a uniform scale to measure high performance facility achievements. Uniformly derived performance results will aid future efforts of design professionals to learn from each other how to continue to improve their performance.

Throughout the summer and fall of 2000, over 50 professionals dedicated many hours to drafting these *Guidelines*. Among them were facility managers and other staff from 14 different public entities, representatives from 19 private architecture or engineering firms, two private contractors, a landscape architect, and an energy consultant.

The process they chose included a review of the U.S. Green Building Council's *Green Building Rating System, Version 2.0, Leadership in Energy and Environmental Design* (March 2000), more commonly referred to as *LEED*™. The Triangle professionals compared the *LEED*™ provisions to those of the City of New York's *High Performance Building Guidelines* (April 1999) and the Commonwealth of Pennsylvania's *Guidelines for Creating High-Performance Buildings* (1999). Using *LEED*™ as a model, the Triangle professionals drafted similar provisions that were of more immediate and practical application to the Triangle region. The group also developed local case studies to include in the *Guidelines*.

The resulting *Guidelines* are tailored for use in the Triangle region, but they will also prove useful elsewhere in North Carolina and in similar locales beyond the state's boundaries.

How to Use the Guidelines

The *Guidelines* are both a design guide and a means to quantify how well the high performance principles have been applied to a building's design, construction, and maintenance.

Introduction

The *Guidelines* are based on a point system. Different aspects of a high performance facility are defined, and specified point totals are awarded when they are achieved. For example, one point is assigned for increasing density on a previously-developed site, rather than building on an undeveloped site.

The *Guidelines* are written as a performance-based document that describes the type of performance expected without prescribing how this performance must be achieved. It has the flexibility to be used both with new construction and with renovation projects. It is easily applied to a variety of types of public facility construction.

The *Guidelines* are designed to be easily downloadable from a website and placed in a three-ring binder that can be updated as new case studies and resources are identified.

To get the most use out of the *Guidelines*, the design and construction professional should become conversant with the contents so that the *Guidelines* can be applied to any current project. The *Guidelines* have been crafted to encourage the design of facilities with low life-cycle costs through proper planning, design, construction, maintenance and operations, and reuse/demolition.

This document is a useful tool to help professionals exercise due diligence in designing and constructing facilities that provide healthy and safe places for employees and visitors to carry out their activities, and that cost no more to operate over their useful life than is necessary.

Point System

The point scores tallied through the use of the *Guidelines* can be employed in several ways:

- as a *goal setting tool* that provides a framework or a checklist to guide design and construction decisions;
- as a *self-evaluation tool* that provides an objective means to test alternative designs or to evaluate the nature of existing facilities;
- as a *data collection tool* that will supply a "lessons learned" database with objective project information so that the Triangle region can develop effective means to track successes and trends in the design and construction industries.

The point system is intended as a way to balance trade-offs and strategies. It allows the user to work toward the highest possible point total for a particular project as an indicator that its maximum performance has been achieved within that project's particular constraints. Comparisons of different projects based on point totals are neither intended nor valid, given that each project is comprised of a *unique* set of project specific requirements, challenges, opportunities, and constraints.

This is particularly true when applying the *Guidelines*' point totals to small projects and renovations, as many *Guidelines* topics and points will not be relevant to these projects. While the total number of points achievable may be quite low, the *Guidelines* would remain useful as the designers concentrate on achieving the maximum points for a particular project.

The points are assigned under seven general topic headings:

- Quality Management
- Site
- Water
- Energy and Atmosphere
- Materials and Resources
- Indoor Environment
- Innovation

Within each of these seven general topics are two or more specific areas for which points are earned. For example, under the general topic Materials and Resources there are one prerequisite and eight specific areas. An example of one of these specific areas is Resource Reuse. Each of the specific areas has defined requirements that, when met, yield one or more points.

A summary checklist of all provisions in the *Guidelines* appears in Table 1 (pages I6 to I9). This checklist allows a project team to document in advance those criteria it expects will be incorporated into the facility. This checklist of targeted points should include the appointment of a project team member as the "champion" for each criterion or targeted point. The checklist can also be used to tally the total points earned at the completion of the project.

Each specific area for which points are assigned — e.g., Resource Reuse — is organized according to four subheadings.

The first is ***Intent of Requirement***, under which there is a brief statement clarifying the intent of the requirement that follows.

The second subheading is ***Requirement***, under which appear specific descriptions of what must be accomplished to merit the listed number of points. For example, under Resource Reuse, one point is assigned for specifying salvaged or refurbished materials for 2% of building materials, excluding furniture, fixtures, and equipment. An additional point is assigned for increasing this percentage to 5% and another for 10%. A number (e.g., 5.4.1) corresponds to each provision under areas for which more than one point can be earned.

The next subheading is ***Technologies and Strategies***, under which suggestions are offered regarding technologies and strategies that might be helpful to meet the requirements. Further assistance with technologies and strategies is provided in the Case Studies and Resource Appendix, which are described below.

Introduction

The final subheading is ***Deliverables***, under which is listed the documentation necessary to prove that the intent and requirements of each specific point have been met. In areas for which there is more than one point achievable, a number (e.g., 5.4.1) follows each listed deliverable to indicate the corresponding point-based requirement.

It is not possible for any one project to garner all possible points listed in the *Guidelines*. One reason is the mutually exclusive nature of some of the measures described. For example, some points are earned only if the site is a brownfield site; other points are earned by developing a previously undeveloped site in a particular manner. Some of the points are assigned only if a project is of a certain size. Other points are extremely difficult to earn because they involve new technologies. The purpose of including points for these "cutting edge" situations is to encourage innovation and to reduce the need for revising the *Guidelines* as these new technologies are further developed.

Individual local governments and school systems can tailor the *Guidelines* to their own needs by mandating the achievement of specific points on specific projects. An evaluation by the professionals developing the *Guidelines* resulted in an initial proposed minimum 35 point total to qualify a facility as "high performance." The following four-tiered system was proposed:

35 to 44 points - Bronze
45 to 53 points - Silver
54 to 72 points - Gold
73 plus points - Platinum

These rankings are proposed for an initial period only, to be reassessed after the region has had some experience with these *Guidelines*.

Process Diagram

The process diagram in Table 2 (pages I10 to I13) graphically describes the general sequence of activities that should occur during the predesign, design, construction, and occupancy phases of a project. The types of work products (for example, reports, drawings, or budgets) to be generated during a particular activity are also shown in this diagram.

Technology Examples and Case Studies

Technology examples, covering methods or design approaches related to specific requirements for earning points, are presented within the *Guidelines* immediately following the associated point. These technology examples illustrate how local professionals achieved results on North Carolina projects similar to those described in the Requirement section. The Case Studies section of the *Guidelines* contains summaries of particularly exemplary North Carolina projects with multiple high performance technologies and strategies.

Resource Appendix

The Resource Appendix includes additional important information helpful to professionals using the *Guidelines*. It contains references to other documents and to websites that are particularly rich in information relevant to high performance facilities. It also contains sources of information specific to particular sections of the *Guidelines*, including a copy of a short document regarding noise. The Resource Appendix also includes a Glossary and a table comparing the provisions of these *Guidelines* to the provisions found in *LEED*™ Version 2.0.

Introduction

Table 1: Checklist

Project Name:				Date:
Checklist for *High Performance Guidelines: Triangle Region Public Facilities*				35-44 points = bronze; 45-53 points = silver; 54-72 points = gold; 73+ = platinum
	Requirement	Possible Points	Actual Points	Comments
1.0	*QUALITY MANAGEMENT*	1		
1.1	Basic Quality Management	Prerequisite	Prerequisite	
1.2	Comprehensive Building Commissioning	1		
2.0	*SITE*	19		
2.1	Erosion and Sedimentation Control	Prerequisite	Prerequisite	
2.2	Site Selection	1		
2.3	Redevelopment			
2.3.1	*Increase density on site*	1		
2.3.2	*Increase density within confines of existing structure*	1		
2.4	Brownfield Redevelopment	1		
2.5	Alternative Transportation			
2.5.1	*Alternative Transportation - Project location*	1		
2.5.2	*Alternative Transportation - Bicycle facilities*	1		
2.5.3	*Alternative Transportation - Alternative fuel vehicle parking*	1		
2.5.4	*Alternative Transportation - Preferred parking spaces*	1		
2.5.5	*Alternative Transportation - Pedestrian and bike access*	1		
2.6	Site Disturbance			
2.6.1	*Site Disturbance - Cultural landmarks*	1		
2.6.2	*Site Disturbance - Greenfield sites*	1		
2.6.3	*Site Disturbance - Reduce footprint by 30%*	1		
2.6.4	*Site Disturbance - Reduce footprint by 40%*	1		
2.7	Stormwater Management			
2.7.1	*Stormwater Management - Stormwater runoff*	1		
2.7.2	*Stormwater Management - Treatment systems*	1		
2.8	Heat Islands			
2.8.1	*Heat Islands - General measures*	1		
2.8.2	*Heat Islands - Roofing systems*	1		
2.9	Light Pollution	1		
2.10	Post-commissioning Monitoring	1		
3.0	*WATER*	9		
3.1	Water Efficient Landscaping			
3.1.1	*Water Efficient Landscaping - 50% reduction in water use*	1		
3.1.2	*Water Efficient Landscaping - 100% reduction in water use*	1		
3.2	Innovative Wastewater Technologies	1		
3.3	Water Use Reduction			
3.3.1	*Water Use Reduction - Reduce aggregate use by 20%*	1		
3.3.2	*Water Use Reduction - Reduce aggregate use by 30%*	1		
3.3.3	*Water Use Reduction - 50% potable water from rain*	1		
3.3.4	*Water Use Reduction - 75% potable water from rain*	1		

Project Name:				Date:
Checklist for *High Performance Guidelines: Triangle Region Public Facilities*				35-44 points = bronze; 45-53 points = silver; 54-72 points = gold; 73+ = platinum
	Requirement	Possible Points	Actual Points	Comments
3.3.5	*Water Use Reduction - 100% potable water from rain*	1		
3.4	**Post-commissioning Monitoring**	1		
4.0	***ENERGY AND ATMOSPHERE***	22		
4.1	**Minimum Energy Performance**	Prerequisite	Prerequisite	
4.2	**CFC Reduction in HVAC&R Equipment**	Prerequisite	Prerequisite	
4.3	**Optimal Energy Performance- New/Exist. Buildings**			
4.3.1	*Optimal Energy Performance - 20%/10%*	1		
4.3.2	*Optimal Energy Performance - 30%/20%*	3		
4.3.3	*Optimal Energy Performance -40%/30%*	2		
4.3.4	*Optimal Energy Performance - 50%/40%*	2		
4.3.5	*Optimal Energy Performance - 60%/50%*	2		
4.4	**Renewable Energy**			
4.4.1	*Renewable Energy - 5% renewable fuels*	2		
4.4.2	*Renewable Energy - 10% renewable fuels*	2		
4.4.3	*Renewable Energy - 20% renewable fuels*	2		
4.5	**Elimination of HCFCs and Halons**	1		
4.6	**Measurement & Verification**			
4.6.1	*Measurement & Verification - Staff training*	1		
4.6.2	*Measurement & Verification - Energy management plan*	1		
4.6.3	*Measurement & Verification - Follow IVMVP process*	1		
4.7	**Green Power**			
4.7.1	*Green Power - 25% by grid*	1		
4.7.2	*Green Power - 2-year contract or generation*	1		
5.0	***MATERIALS AND RESOURCES***	20		
5.1	**Storage and Collection of Recyclables**	Prerequisite	Prerequisite	
5.2	**Building Reuse**			
5.2.1	*Building Reuse - 75% of building structure and shell*	1		
5.2.2	*Building Reuse - 100% of building structure and shell*	1		
5.2.3	*Building Reuse - 100% of structure/shell & 50% of interior*	1		
5.3	**Construction Waste Management**			
5.3.1	*Construction Waste Management - Develop checklist*	1		
5.3.2	*Construction Waste Management - Waste management plan*	1		
5.3.3	*Construction Waste Management - Recycle/salvage 75% of grading and land clearing debris*	1		
5.3.4	*Construction Waste Management - Recycle/salvage 50% of construction and demolition debris*	1		
5.3.5	*Construction Waste Management - Recycle/salvage 75% of construction and demolition debris*	1		

Introduction

Project Name:				Date:
Checklist for *High Performance Guidelines: Triangle Region Public Facilities*				35-44 points = bronze; 45-53 points = silver; 54-72 points = gold; 73+ = platinum
	Requirement	Possible Points	Actual Points	Comments
5.4	**Resource Reuse**			
5.4.1	*Resource Reuse - Use 2% reused material, excluding furniture, fixtures, & equipment*	1		
5.4.2	*Resource Reuse - Use 5% reused material, excluding furniture, fixtures, & equipment*	1		
5.4.3	*Resource Reuse - Use 10% reused material for furniture, fixtures, & equipment*	1		
5.5	**Recycled Content**			
5.5.1	*Recycled Content - Specify 25% of materials as 20% post-consumer recycled*	1		
5.5.2	*Recycled Content - Specify 50% of materials as 20% post-consumer recycled*	1		
5.6	**Local/Regional Materials**			
5.6.1	*Local/Regional Materials - 20% regionally manufactured materials*	1		
5.6.2	*Local/Regional Materials - 50% of regionally manufactured materials are regionally harvested*	1		
5.7	**Rapidly Renewable Materials**	1		
5.8	**Certified Wood**			
5.8.1	*Certified Wood - 10% of wood is certified*	1		
5.8.2	*Certified Wood - 50% of wood is certified*	1		
5.9	**Durable Materials**			
5.9.1	*Durable Materials - Life cycle analysis for 2 building systems*	1		
5.9.2	*Durable Materials - Life cycle analysis for 2 additional building systems*	1		
6.0	***INDOOR ENVIRONMENT***	**25**		
6.1	**Minimum IAQ Performance**	**Prerequisite**	**Prerequisite**	
6.2	**Environmental Tobacco Smoke Control**	**Prerequisite**	**Prerequisite**	
6.3	**Carbon Dioxide Monitoring**			
6.3.1	*Carbon Dioxide Monitoring - Install monitoring system*	1		
6.3.2	*Carbon Dioxide Monitoring - Tie monitoring to DDC system*	1		
6.4	**Ventilation Effectiveness**			
6.4.1	*Ventilation Effectiveness - Air change effectivenes minimum*	1		
6.4.2	*Ventilation Effectiveness - Loading dock and mechanical room ventilation*	1		
6.5	**Construction IAQ Management Plan**			
6.5.1	*Construction IAQ Management Plan - Minimum ventilation*	1		
6.5.2	*Construction IAQ Management Plan - Building flushing*	1		
6.6	**Low-emitting Materials**			
6.6.1	*Low-emitting Materials - Adhesives*	1		
6.6.2	*Low-emitting Materials - Paints and coatings*	1		
6.6.3	*Low-emitting Materials - Carpet systems*	1		
6.6.4	*Low-emitting Materials - Composite materials*	1		
6.7	**Indoor Chemical & Pollution Source Control**			
6.7.1	*Indoor Source Control - Minimize cross-contamination*	1		

Project Name:				Date:
Checklist for ***High Performance Guidelines: Triangle Region Public Facilities***				35-44 points = bronze; 45-53 points = silver; 54-72 points = gold; 73+ = platinum
	Requirement	**Possible Points**	**Actual Points**	**Comments**
6.7.2	*Indoor Source Control - Good housekeeping protocols*	**1**		
6.8	**Controllability of Systems**			
6.8.1	*Controllability of Systems - Operable windows*	**1**		
6.8.2	*Controllability of Systems - Individual controls*	**1**		
6.9	**Thermal Comfort**			
6.9.1	*Thermal Comfort - Comply with ASHRAE 55-1992*	**1**		
6.9.2	*Thermal Comfort - Install Permanent Temperature and Humidity Monitoring System*	**1**		
6.10	**Daylighting and Views**			
6.10.1	*Daylighting and Views - Daylight Factor of 2%*	**1**		
6.10.2	*Daylighting and Views - Direct line of sight*	**1**		
6.11	**Contaminant Monitoring**			
6.11.1	*Contaminant Monitoring - Ozone*	**1**		
6.11.2	*Contaminant Monitoring - Radon*	**1**		
6.11.3	*Contaminant Monitoring - Nitric oxide*	**1**		
6.11.4	*Contaminant Monitoring - Sulfur dioxide*	**1**		
6.11.5	*Contaminant Monitoring - Fungus and mold*	**1**		
6.12	**Acoustic Quality**			
6.12.1	*Acoustic Quality - Low-noise building systems*	**1**		
6.12.2	*Acoustic Quality - Decibel reading*	**1**		
7.0	***INNOVATION***	**7**		
7.1	**General Innovation**			
7.1.1	*General Innovation - Level I*	**1**		
7.1.2	*General Innovation - Level II*	**1**		
7.1.3	*General Innovation - Level III*	**1**		
7.1.4	*General Innovation - Level IV*	**1**		
7.2	**Professional Training**			
7.2.1	*Professional Training - LEED certified professional*	**1**		
7.2.2	*Professional Training - Principal participant educated*	**1**		
7.2.3	*Professional Training - Distribute lessons learned*	**1**		
	TOTAL SCORE	**103**		

Introduction

Table 2: Process Diagram

1.0 PREDESIGN

1.1 Project Initiation

1. Address Issues of Sustainability in Scope of Work.
2. Anticipate Support for Sustainable Practice in Budget and Schedule.

WORK PRODUCT:
- Scope of Work
- Project Budget
- Project Schedule

1.2 Strategic Planning

1. Assemble Project Team.
2. Educate Project Team to Sustainable Design, Dev. Issues.
3. Determine if Developed Sites and/or Facilities Can Be Used Instead of New Site or Construction.
4. Develop Sustainable, Other Project Goals.
5. Develop Strategies and LCC Review, Investigate Materials to Meet Sustainable and Other Goals.
6. Develop Comprehensive Commissioning Plan.
7. Investigate Codes for Accommodation of Sustainable Goals.
8. Review Local, Regional, National Incentive Programs.
9. Develop Metrics & Other Tools to Measure, Document Sustainable Charac teristics of Project.

WORK PRODUCT:
- Sustainable Education Program and Sign-Off
- Sustainable Goals Report
- Existing Development Use Report
- Sustainable and Project Checklist
- Strategies Report
- Codes Investigation Report
- Incentives Report
- Tools and Metrics Report
- Commissioning Plan

1.3 Programming

1. Review Programming Assumptions:
- Grossing Factors
- Utilization Factors
- Space Classifications
- Furniture Standards
- Equipment Standards

2. Review Fundamentals of Project Space Program:
- Site Context
- Existing Conditions
- Security and Safety
- Community Perception and Interaction
- Circulation
- Facility Flexibility
- Future Needs
- Significant Trends

3. Develop Space Program.
4. Update Budget.
5. Update Preliminary.

WORK PRODUCT:
- Programming Assumptions Report
- Project Space Program
- Updated Checklist
- Updated Budget
- Updated Schedule

1.4 Site Selection

1. Study Site's Context.
2. Study Site's Economic, Environmental, and Social Ecologies.
3. Identify Site Characteristics Useful for Regenerative Design.
3. Evaluate a Site Using CPTED (Crime Prevention Through Environmental Design).
4. Study and Select Site Based on Sustainable Design and Development Issues.

WORK PRODUCT:
- Site Ecologies Report
- Regenerative Design Report
- Site CPTED Report
- Site Selection Report
- Updated Checklist

2.0 PREDESIGN

2.1 Design Optimization

1. Evaluate Those Sustainable and Other Project Goals for Facility Integration.
2. Develop and Evaluate Design Optimizing Strategies to Achieve Facility Integration (Economic, Environmental, Social).

WORK PRODUCT:
- Design Optimizing Strategies Report
- Updated Checklist
- Updated Budget
- Updated Schedule

2.2 Schematic Design

1. Apply, Research, and Test Design Optimizing Strategies to Schematic Design
   - Develop Two or More SD Options, If Possible.
   - Apply Metrics and Other Tools to Document and Evaluate "Sustainability" of Each Option (Computer Modeling, Material Takeoffs, Waste Generation and Recycling, LCC/LCA).
2. Investigate the Use of Passive Design Techniques for Lighting, Ventilation, Heating, and Cooling.
3. Evaluate SD for CPTED, Regenerative Design, Flexibility, Universal Design.
4. Research Sustainable Materials and Building Systems for Safety Data, Resource Cycling, LCA, Price, Availability, Warranties, Performance, Manufacturer's Reputation.
5. Start Development of Project Specifications With Regard to Sustainability (Division 1, etc.)

WORK PRODUCT:
- Applicable Design Optimization Strategies
- SD Options
- Computer Modeling (Energy, 3D, Lighting, Structure, etc.)
- Materials and Building Systems Report
- SD CPTED Report
- SD Specification
- SD Commissioning Report
- Updated Checklist
- Updated Budget
- Updated Schedule

2.3 Design Development

1. Apply, Research, and Test Design Optimizing Strategies to Schematic Design.
2. Apply Metrics and Other Tools to Document and Evaluate "Sustainability" of Each Option (Computer Modeling, Material Takeoffs, Waste Generation and Recycling, LCC/LCA).
3. Continue Development of Other Project Specification Sections.

WORK PRODUCT:
- DD Drawing Set
- DD Specification
- Computer Modeling (Energy, 3D, Lighting, Structure, etc.)
- Materials and Building Systems Report
- DD CPTED Report
- DD Commissioning Report
- Updated Checklist
- Updated Budget
- Updated Schedule

2.4 Const. Docs./Specs

1. Develop 25%, 50%, 90%, and 100% CD Review Sets with Specifications.

WORK PRODUCT:
- CD Drawing Set
- CD Specification
- CD Commissioning Report
- Computer Modeling (Energy, 3D, Lighting, Structure, etc.)
- Updated Checklist
- Updated Budget
- Updated Schedule

3.0 CONSTRUCTION

3.1 Bidding and Award

1. Attract Contractors With Sustainable Design and Development Experience.
2. Select Contractor.
3. Ensure That Constractors and Sub-Contractors are Trained on Sustainable Design, Development, and Construction Practices.
4. Hold a Pre-Construction Meeting to Review Sustainable and Non-Sustainable Aspects of the Project.

WORK PRODUCT:
- Contractor Bids
- Contract (Performance?)
- Pre-Construction Review Report
- Updated Checklist
- Updated Budget
- Updated Schedule

3.2 Construction

1. Develop Construction Schedule That Reflects Attention to Proper Construction Activity Sequence to Avoid Pollution of Facility.
2. Establish Construction Yard and Site Access to Minimize Disruption to Ecosystem.
3. Establish and Maintain Construction Waste Management Plan.
4. Confirm Operations of Facility Systems and Materials by Commissioning Process.
5. Develop Facility Maintenance and Operations Manual:
   - Systems Operations
   - Systems Maintenance
   - Indoor Environment Quality
   - Management Plan
   - Mfg. Warrantees, Contacts
6. Develop Lessons Learned Report.

WORK PRODUCT:
- Updated Schedule
- Site Demolition and Construction Yard/ Access Plan
- Construction Waste Management Plan
- Scheduled Commissioning Reports
- Facility Operations and Maintenance Manual
- Lessons Learned Report
- Updated Checklist

4.0 OCCUPANCY

4.1 Start-Up	4.2 M&O	4.3 Life-Cycle End Use	For Facility Reuse Go To Predesign Process
1. Complete Facility Commissioning and Issue Construction Commissioning Manual. 2. Educate and Train Maintenance and Operations Staff. 3. Educate (and Train) Facility Occupants About Sustainable and Non-Sustainable Facility Goals and Facility Features. 4. Develop and Maintain a Start-Up Manual.	1. Use Facility Maintenance and Operations to Initiate Proper Operations and Maintenance of Facility. 2. Develop and Maintain Post-Occupancy Log to Document Periodic Post Occupancy Facility Inspections. 3. Schedule Periodic Post-Occupancy Commissioning Evaluations to Augment Ongoing Facility M&O Process.	1. Review Options for Reuse, Deconstruction, Salvage. Develop Implementation Plan for Reuse/Salvage. 2. Develop End Use Report.	
WORK PRODUCT: • Construction Commissioning Manual • Start-Up Manual	WORK PRODUCT: • M&O Reports • Post Occupancy Facilities Inspections. • Scheduled Post-Occupancy Commissioning Evaluations	WORK PRODUCT: • End Use Report	