

Guaranteed Energy Savings Performance Contracts

Evaluation Criteria Office of Financial Management and Department for Facilities and Support Services Finance and Administration Cabinet

The Department for Facilities and Support Services ("DFSS") has been directed by the Secretary of the Finance and Administration Cabinet to review each energy management performance contract prior to execution of contract. In addition, the Office of Financial Management ("OFM") is statutorily required pursuant to KRS 56.784(3) to review and approve each energy management performance contract prior to implementation of the project. Listed below are some of the evaluation criteria taken into consideration by OFM and DFSS when providing the required approvals. OFM and DFSS reserve the right to modify these and any additional criteria given the nature, scope, and limited number of projects that are required to be reviewed under this program.

- Final certification is based upon a positive Net Present Value of the total cashflows over the term of the lease (savings less all expenses for each payment period).
- The aggregate weighted average life and associated payback period for all ESPC projects must be 12 years or less. The financing term cannot exceed the aggregate weighted average life.
- The simple payback period for each individually installed Energy Conservation Measure (ECM) must not exceed its respective useful life.
- When analyzing savings in the cashflow analysis, only Guaranteed Savings are considered. No industry standard escalated rate of inflation (generally 1% - 3%) is applied to savings to be generated. A table detailing the annual guaranteed savings over the term of the contract should be provided in the terms and conditions of the actual contract submitted to OFM (typically "Exhibit F - Savings Guarantee Measurement and Verification").
- Operational and maintenance savings shall be from actual agency records or derived from existing state contracts (i.e., master agreements).
- All fees, costs and expenditures associated with the project, i.e. maintenance, measurement, monitoring and verification fees, technical support, audit, debt service payments, etc. must be identified.
- The term, financing rate, escrow period, and amortization schedule associated with proposed financing recommendation must be identified.

Guaranteed Energy Savings Performance Contracts

Evaluation Criteria Office of Financial Management and Department for Facilities and Support Services Finance and Administration Cabinet (cont.)

- Any Capital Cost Avoidance associated with the project must be identified. Capital Cost Avoidance is defined as expenditures that were previously budgeted as a line item project in an enacted budget bill. Any savings associated with capital cost avoidance will not be considered by OFM in its analysis.
- Any Capital Outlay associated with the project must be identified.
- Any capitalized interest costs associated with lease financing must be identified.
- An anticipated draw schedule should be provided on the project to determine any escrow interest earnings.
- A schedule detailing each of the ECMs installed in the project, including installed cost, savings and simple payback periods is required for each project.
- Any new equipment installed shall have operational and maintenance cost(s) included in the analysis.
- A letter of certificate regarding the Useful Life of the project being financed must be provided.
- Payment frequency (i.e. monthly, semi-annually, quarterly...) is solely up to the user agency and its preference so long as it is on a level debt service basis.
- OFM has recommended to DFSS that bids for the financing component of the project contain a date through which the financing rate must be guaranteed. Upon expiration of the guaranteed date, DFSS, in conjunction with the Contractor (ESCO) and the applicable state agency, reserve the right to rebid the financing component of the project.
- Financing vendors must agree to the terms and conditions of the state's standard form of Master Lease Agreement.
- Level debt service is assumed over the term of the contract.

The Commonwealth of Kentucky

MASTER AGREEMENT

Master Agreement No: M-03460999

Requisition No:

IMPORTANT

Show Master Agreement number on all packages, invoices and correspondence.

Description: ES-139-04 ESPC-Corrections Sub Type: MA-Constr/Bldg Maint/Fixed

Effective Date: 07 Jan 2005 Expiration Date: 30 Aug 2005

Administered By: JIM NORDMAN
Telephone: (502) 564-3155 ext (274)

Cited Authority: 218
Issued By: KELLY HAWKINS, SEALED BID PURCHASING OFF

NORESKO LLC
ONE RESEARCH DRIVE SUITE 400 C
WESTBOROUGH MA 01581
USA

Item No	Description	Quantity	Unit	Unit Price	Total Price
0001	ESPC RFP for Corrections	0.0000	Job	\$5,015,810.00	\$5,015,810.00

Extended Description

ESPC Project
Department of Corrections
Various Locations

Project covers three facilities:
Kentucky State Reformatory.
Luther Lockett Correctional Complex.
Roederer Correctional Complex.

Additional Markings and Instructions

Phone: () - ()
Fax: () -

Phone: () - ()
Fax: () -

<This address is applicable to all line items>

<This address is applicable to all line items>

Total Amount \$5,015,810.00



LETTER OF TRANSMITTAL

	RE: KRS.56.784 Section 3	DATE 10-19-04
ATTN: Nora Marshall Office of Financial Management	All state agencies shall submit proposed guaranteed energy savings performance contracts to the Office of Financial Management for review and approval prior to contract execution.	Solicitation No. S-03460999
Submitted by Facilities & Support Services Division of Engineering & Contract Administration	ESPC Project Manager Jim Nordmann	
Project Name <u>LaGrange Facilities</u>		
Agency <u>Department of Corrections</u>		

WE ARE SENDING YOU THE FOLLOWING ITEMS, ATTACHED:

- Terms and Conditions
- ESCO proposed Financing Recommendation (s)
- Proposed Equipment List
- Scope of Work
- Documentation of Measurement and Verification Plan
- Cash Flow Analysis
- Equipment Life-Expectancy Letter from the ESCO
- Justification Letter for Term of Contract

THESE ARE TRANSMITTED AS CHECKED BELOW

- FOR REVIEW and APPROVAL
- AS REQUESTED
-

REMARKS _____

c: File

SIGNED James K Nordmann

COMMONWEALTH OF KENTUCKY
FINANCE AND ADMINISTRATION
DIVISION OF ENGINEERING AND CONTRACT ADMINISTRATION
702 CAPITOL AVE. ROOM 158, CAPITOL ANNEX, FRANKFORT, KENTUCKY 40601

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	Buyer Name Kelly C. Hawkins		

CONTRACT TERMS AND CONDITIONS

This Agreement made this day between the Commonwealth of Kentucky, Department for Facilities Management on behalf of the Department of Corrections, hereinafter referred to as Commonwealth or Owner, and NORESKO LLC., hereinafter referred to as ESCO, or Contractor, on behalf of the Department of Facilities Management, hereinafter referred to as Agency, and consists of the following:

1. Scope Of Services (Technical Requirements)

- A. **Technical Audit.** The contract terms must include the performance and presentation of results from a detailed technical audit of acceptable quality to Owner. The minimum annual energy, water and O&M cost savings and financing period will be negotiated. The technical audit must include estimates of savings for each measure. Also, the cost estimate for each measure must include an estimate of all costs including design, engineering, installation, maintenance, repairs and debt services.
- B. **Standards of Comfort.** Standards of comfort shall be defined as temperatures in occupied areas during regular hours of occupancy between 68-72 degrees F. in winter and between 70 and 75 degrees F. in summer with humidity levels between 30% and 60%. Setback temperatures are permitted in all areas at other than occupied times provided that the overall humidity levels are acceptably maintained. The ESCO shall maintain these specific standards of comfort, safety, and functionality as determined by the owner. Persistent failure to maintain the defined climate and lighting conditions will constitute a breach of contract by the ESCO.
- C. **Guaranteed Savings.** All savings projected shall be guaranteed to owner. Owner requires a guaranteed level of combined savings and improved performance approach to the project. If the project does not generate the guaranteed level of savings in any predefined reconciliation term, the ESCO shall be liable to the owner for the amount of the shortfall plus related costs, in accordance with KRS 56.770 (5). Excess savings will not be used to reimburse the ESCO for any payments made due to shortfalls in previous years. Improvements and services must result in guaranteed minimum energy and water savings option, as well as guaranteed minimum levels of occupant comfort and operations and maintenance and/or any ancillary services. A guarantee is required to equal or exceed the calculated and agreed-to savings attributable to all energy saving measures for each year during the contract period. The combined savings achieved by the installed projects must be sufficient to cover all project costs including debt service and Contractor fees, maintenance, monitoring and other services as described in Exhibit G, for the duration of the contract term. Annual savings will be verified at a specified time each year in order to determine if the ESCO's guarantee needs to be exercised.
- D. **Construction Management.** The ESCO will be required to work with current building management and maintenance personnel in order to coordinate construction and provide appropriate training in operations and maintenance of all installed improvements. No equipment or other improvements will be installed that would require Owner to hire additional personnel unless contract negotiations produce an explicit exemption for a specific installation. Maintenance responsibilities shall be proposed in detail in the contract. A professional engineer licensed in the state of Kentucky shall supervise, review, and approve all design work done in relation to this project.
- E. **Equipment Standardization.** All equipment installed that is comparable to similar equipment at other sites operated by Owner shall be of the same manufacturer for standardization of equipment agency-wide, unless accepted by Owner.
- F. **Maintenance Manuals.** At least three (3) sets of operation and maintenance manuals for each site will be provided for all equipment replacements and/or upgrades at each location. Manuals are subject to approval

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of Owner. Upon completion of the contract, the ESCO shall provide to Owner a single comprehensive schedule of necessary preventive maintenance for all installations for the five (5) years following contract close-out.

- G. **Software** – The ESCO shall provide all necessary software required for operations and monitoring of all equipment. All licensing shall be included when necessary.
- H. **Follow-up Monitoring and Maintenance Services.** Following the installation and implementation of improvements, AGENCY or their mechanical contractor shall be responsible for maintenance of the installed equipment. Specific maintenance requirements and schedules will be provided by ESCO at the end of the installation period. Maintenance requirements/schedules shall not be required to exceed manufacturers recommendations. No maintenance shall be required by the Department of Facilities Management until substantial completion of the entire project. Upon completion of the contract, ESCO shall provide to the Department of Facilities Management a single, comprehensive schedule of necessary preventive maintenance for all installations for the five (5) years following contract closeout.
- I. **Commissioning and Recommissioning of Equipment.** The ESCO will be required to initiate system operation of all equipment installed. The ESCO will verify and document the performance of all measures. Verification will include performance of all measures to meet or exceed the approved design intent. Where multiple phases of operation are included in the scope of the project, commissioning of each phase will be performed by the ESCO.
- J. **Training** - The ESCO shall be responsible for providing the training as detailed in Exhibit A Attachment Department of Facilities Management- ESPC training.

2. Scope Of Services (Owner Requirements)

- A. **Owner Inspection.** Owner shall have the right to inspect, test and approve the work conducted under this contract during construction and operation. Owner shall have the right and access to the account books, records, and other compilations of data that pertain to the performance of the provisions and requirements of this agreement. If the contract negotiations call for cost-plus or open book pricing, then the accounting books of the ESCO must be accessible by Owner. Records shall be kept on a generally recognized accounting basis, and calculations will be kept on file in legible form and retained for three (3) years after close-out. Owner retains the right to have its representative visit the site during the audit and implementation phases of the project, and to attend relevant on-site or off-site meetings of the ESCO and/or its subContractors.
- B. **Final Approval of Owner.** Owner retains final approval over the scope of work and all end-use conditions. Owner shall not be liable to make payment to the ESCO for any work performed, unless such work was approved by the Owner.
- C. **Ownership of Drawings, Reports and Materials.** All drawings, reports and materials prepared by the ESCO specifically in performance of this contract shall become the property of Owner, and will be delivered to Owner as needed or upon completion of construction. Where applicable, ESCO must provide mylar, reproducible "as built" and record drawings (or such electronic equivalents as may be agreed to with Owner) of all existing and modified conditions associated with the project, conforming to typical engineering standards. These should include architectural, mechanical, electrical, structural, and control drawings and operating manuals within 30 days of completion of installation. Drawings shall be submitted in the latest version of Autocad or Word 97 software on a CD.

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- D. **Compliance.** All work completed under this contract must be in compliance with all applicable federal, state and local laws, rules and regulations such as building codes and appropriate accreditation certification and licensing standards. Work must be in accordance with sound engineering and safety practices and in compliance with all Owner regulations relative to the premises. The ESCO and its Sub-Contractors will be responsible for obtaining any and all required governmental permits, consents and authorizations, and for payment of any and all state and city required taxes and fees which result from this contract.
- E. **Handling of Hazardous Materials.** All work completed under this contract must be in compliance with all applicable federal, state and local laws, rules and regulations regarding waste disposal and treatment/disposal of any hazardous material that could result from this project. Work must also be in accordance with sound engineering and safety practices, and in compliance with all reasonable Owner rules relative to the premises. All costs associated with removal of hazardous material, as identified as part of this project, will be the responsibility of the ESCO and shall be included in the total project cost. Ownership of all hazardous materials shall remain with the Commonwealth. Coordination for all hazardous materials removal will be through Eddie Cooke, Division of Engineering. Removal of all refrigerant shall be included where applicable.
- F. **Sub-Contractor Approval.** Owner retains the right to approve any ESCO selected Sub-Contractor prior to its commencement of work on this project. Names and qualifications must be submitted at least two weeks in advance.
- G. **Applicability of O&M savings.** Any O&M cost savings related to maintenance and operation of the facilities will be rigorously reviewed and, if agreed to, will be limited to those that can be thoroughly documented and approved by Owner.
- H. **Contract Term.** The contract may be subject to annual appropriations. The duration of the contract will be mutually determined between the ESCO and the Owner based on financial factors so that a zero or positive net cash flow is realized by the Owner. The term of the contract shall not exceed the life of the energy savings generated from implementation of the energy efficiency measures financed by the contract, in accordance with KRS 56.770 (5).

3. Contractual Provisions

A. THE CONTRACT AND THE CONTRACT DOCUMENTS

- 1) The Contract: The Contract between ESCO and Department of Facilities Management consists of the Contract Documents.
- 2) The Contract Documents: Contract Documents include the RFP, Technical Energy Audit Advanced Project Development Summary, and scope of all ECM's (Energy Conservation Measures) proposed and accepted by the Owner, and other written documents, including drawings, shop drawings, and other submittals, approved by the Owner after the contract is signed.
- 3) Complete Agreement: The Contract, together with the ESCO's and Surety's performance and payment bonds for the Project, constitute the entire and exclusive agreement between Owner and Contractor with reference to the Project. The Contract supersedes any and all prior documents, discussions, communications, representations, understanding, negotiations or agreements by and between the parties. The contents of the ESCO's submissions in response to the solicitation shall become part of any final agreement between Owner and the Contractor.
- 4) Contract Interpreted As A Whole: The Contract is intended to be an integral whole and shall be

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interpreted as internally consistent. The work under this contract includes compliance to the terms of the RFP, the Contract, and the scope of the project established by the ESCO and approved by the Owner. Compliance with any one part does not constitute compliance with the entire Contract agreement.

- 5) **Provision Of All Things Required:** If the scope of work established by the ESCO and approved by the Owner requires work not specifically identified in the Contract, the ESCO shall be responsible for the unidentified work.
- 6) **Privity Only With Contractor:** Nothing contained in the resulting Contract shall create, nor be interpreted to create, privity or any other relationship whatsoever between Owner and any person except the Contractor.
- 7) **Agreed Interpretation Of Contract Terms:** When a word, term, or phrase is used in the Contract Documents, it shall be interpreted or construed first, as defined herein; second, if not defined, according to its generally accepted meaning in the construction industry; and third, if there is no generally accepted meaning in the construction industry, according to its common and customary usage. Headings are used herein solely for convenience.
- 8) **Term "Include" Intended To Be Encompassing:** "Include", "includes", or "including", as used in the Contract Documents, shall be deemed in all cases to be followed by the phrase, "without limitation".
- 9) **Use of Singular And Plural:** Words or terms used as nouns in the Contract Documents shall be inclusive of their singular and plural forms, unless the context of their usage clearly requires a contrary meaning.
- 10) **Definition Of Material Breaches Not Exhaustive:** The specification herein of any act, failure, refusal, omission, event, occurrence or condition as constituting a material breach of the Contract shall not imply that any other, non-specified act, failure, refusal, omission, event, occurrence or condition shall be deemed not to constitute a material breach of the Contract.
- 11) **Order Of Precedence:** In the event of any conflict, discrepancy, or inconsistency among any of the Contract Documents, this Contract shall control.

B. CONTRACTOR'S OBLIGATIONS

- 1) Contractor is professionally and fully qualified to act as the Contractor for the Project. A registered professional engineer must supervise, review and approve design work done under this contract. The engineer may be an employee of the ESCO and must be registered in the state of Kentucky.
- 2) All work completed under this contract must be in compliance with all applicable federal, state and local laws, rules and regulations such as building codes and appropriate accreditation certification and licensing standards. Work must be in accordance with sound engineering and safety practices and in compliance with all Owner regulations relative to the premises. The ESCO and its Sub-Contractors will be responsible for obtaining any and all required governmental permits, consents and authorizations, and for payment of any and all state and city required taxes and fees which result from this contract.
- 3) Contractor has the expertise, experience, and knowledge as well as the necessary personnel and financial capability to perform the services of this Project.
- 4) Plans and specifications relating to this project shall be approved by the Department of Housing

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Building and Construction.

- 5) Contractor assumes full responsibility to Owner for the improper acts and omissions of its Sub-Contractors or others employed or retained by Contractor in connection with the Project.
- 6) Plans and specifications relating to this Project shall be approved by the Department for Facilities Management and the Client Agency.
- 7) No asbestos or environmentally hazardous material may be installed as part of this project.

C. TERMINATION

- 1) **Termination Of Contract For Convenience Of Owner:** The Owner, for any reason whatsoever, may terminate the contract for its own convenience when it determines that such termination will be in the best interest of the Commonwealth of Kentucky. The Owner shall give written notice of such termination to the Contractor. The Contractor shall incur no further obligations in connection with the Work and the Contractor shall stop work when such termination becomes effective. The Contractor shall also terminate outstanding orders and Subcontracts. The Contractor shall settle the liabilities and claims arising out of the termination of Subcontracts and orders. The Owner may direct the Contractor to assign the Contractor right, title and interest under termination orders or Subcontracts to the Owner or its designee. The Contractor shall transfer title and deliver to the Owner such completed or partially completed Work and materials, equipment, parts, fixtures, information and Contract rights as the Contractor has. The Commonwealth shall negotiate a fair and just settlement with the Contractor in accordance with 200 KAR 5:312 Section 2. The Contractor failure to submit his termination claim shall not stay the statute of limitations under KRS 45A.260(2).
- 2) **Termination Of Contract For Cause:** If the Contractor should be adjudged as bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency or, if the Contractor does not perform the Work, or any part thereof, in a timely manner, supply adequate labor, supervisory personnel or proper equipment or materials, or if it fails to timely discharge its obligations for labor, equipment and materials, or proceeds to disobey applicable law, or otherwise commits a violation of a material provision of the resulting Contract, then the Owner, in addition to any other rights it may have against the Contractor or others, and to the extent permitted by law, may terminate the performance of the Contractor upon thirty (30) days written notice by registered mail of declaration of default and assume possession of the Project site and of all materials and equipment at the site and may complete the Work.
- 3) In the event the employment of the Contractor is terminated by the Owner for cause pursuant to this paragraph and it is subsequently determined by a Court of competent jurisdiction that such termination was without cause, such termination shall thereupon be deemed a Termination for Convenience under that paragraph and the provisions of that paragraph shall apply.
- 4) **Termination of Contract for Failure to Secure Financing:** The owner at its sole discretion may terminate the contract if the Agency or University benefited herein fails to secure financing within 45 days following the execution of the ESPC contract. The Agency or University shall furnish a Master Lease or other written proof of binding financing related to the ESPC to the Finance & Administration Cabinet, Department for Facilities and Support Services, 700 Capital Avenue, Frankfort, KY within the prescribed date above by 4:30 p.m. If the Agency or University benefited herein fails to furnish a Master Lease or other written proof of binding financing within the prescribed time, then the Commonwealth may terminate the contract. The Commonwealth will not incur any costs whatsoever as a result of termination under this paragraph including, but not limited to,

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partially completed work, labor, materials, equipment, parts, fixtures, designs, and/or drawings

D. PREVAILING WAGE LAW REQUIREMENTS

This is a Wage Rate Project. Project Number 093-B-00099-03-4. Rates as shown on attached Determination no. CR 4-26, dated November 13, 2003, for Oldham County, Kentucky.

- 1) Compliance Required on Covered Projects. In performing the Work, the Contractor and Sub-Contractors are required to comply with the wage and hour requirements prescribed by the "Act Relating to Contracts for Public Works," KRS 337.505 –337.550, except where the Contract or Subcontract meets the exemption requirements for certain public works construction projects as set forth under KRS 337.010.
- 2) Wage and Hour Requirements for Covered (Non-exempt) Projects:
 - a. On covered (non-exempt) Contracts, the Contractor and SubContractor shall pay all laborers, workmen and mechanics performing Work under this contract not less than the rate of wages set forth in the prevailing wage schedule, incorporated in the Supplemental Conditions of the Contract Documents, as determined by the Kentucky Department of Labor in accordance with the provisions of KRS 337.505 through KRS 337.550.
 - b. On covered Contracts, the Contractor shall post and keep posted in a conspicuous place or places at the site of the Work a copy or copies of prevailing rates of wages and the working hours as prescribed in the Contract Documents.
 - c. Any laborer, workman, or mechanic worked in excess of eight (8) hours per day or forty (40) hours per week, except in cases of emergency caused by fire, flood, or damage to life or property, shall be paid not less than one and one-half (1 ½) times the basic hourly rate of pay as fixed by law for all overtime worked. The determination of when an emergency exists shall be made by the public authority letting the contract as provided for by the law.
 - d. Overtime is to be computed at not less than one and one-half (1 ½) times the indicated BASE RATE for all hours worked in excess of eight (8) per day, or in excess of forty (40) per week. However KRS 337.540 permits an employee and employer to agree in writing, that the employee will be compensated at a straight time base rate for hours worked in excess of eight (8) hours in any one workday but not more than ten (10) hours worked in any one workday; if such written agreement is prior to the over eight (8) hours in a workday actually being worked, or where provided for in a collective bargaining agreement. The fringe benefit rate is to be paid for each hour worked at a straight time rate for all hours worked. This applies to all prevailing wage determinations issued by the Labor Cabinet. As a point of clarification, if no collective bargaining agreement exists, employers must have a signed agreement with each employee on each project. These agreements must be maintained at the employer's office along with the payroll records.
 - e. On covered Contracts, the Contractor and SubContractors shall keep full and accurate payroll records covering all disbursements of wages to their employees to whom they are required to pay not less than the prevailing rate of wages. Records shall indicate the hours worked each day by each employee in each classification of work and amount paid each employee for his work in each classification. Payroll records are to be maintained within the state for one year after completion of the contract. These records are to be open for inspection and transcript by the Department of Labor at any reasonable time.

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3) Apprentices

Apprentices (for all classifications of work) shall be permitted to work only under an apprenticeship agreement approved by the Kentucky Supervisor of Apprenticeship and by the Kentucky Apprenticeship Council which is recognized by the Bureau of Apprenticeship and Training, U.S. Department of Labor.

E. Insurance Requirements

1) "The Contractor shall furnish the Owner with certificates evidencing the required insurance coverage prior to commencing work. Contractor shall keep up-to-date copies of such certificates on file with Owner until work is completed. Owner may require Contractor to submit policy endorsements or make complete policy copies of the required insurance.

2) Contractor shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by Contractor, its agents, representatives, employees or Sub-Contractors. The Minimum Scope of Insurance shall be as follows:

Coverage shall be at least as broad as:

- a. Insurance Services Office commercial general liability coverage ("occurrence" Form CG 0001, Ed. 10/93).
- b. Insurance Services Office Form CA 0001 (Ed. 12/93) covering automobile liability, Code 1 "any auto."
- c. Workers' compensation insurance as required by the Labor Code of the Commonwealth of Kentucky and employers liability insurance.

Contractor shall maintain limits no less than:

- d. Commercial General Liability: \$2,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage with a \$4,000,000 annual aggregate.
- e. Automobile Liability: \$500,000 combined single limit per accident for bodily injury and property damage.
- f. Workers' Compensation and Employers Liability: Workers' compensation limits required by the Labor Code of the Commonwealth of Kentucky and employers liability limits of \$1,000,000 per accident.

3) Other Insurance Provisions

The policies are to contain, or be endorsed to contain, the following provisions:

- a. Commercial General Liability and Automobile Liability Coverages: NO endorsement here or is "b" below the endorsement?
- b. Owner, its officers and employees are to be covered as additional insureds as respects: liability arising out of activities performed by or on behalf of the Contractor; general

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supervision of the work by Owner; products and completed operations of the Contractor; premises owned, occupied or used by the Contractor, or automobiles owned, leased, hired or borrowed by the Contractor. The coverage shall contain no special limitations on the scope of protection afforded to Owner, its officers or employees.

- c. The Contractor's insurance coverage shall be primary insurance as respects Owner, its officers and employees. Any self-insurance maintained by Owner shall be excess of the Contractor's insurance and shall not contribute to it.
 - d. Any failure to comply with reporting provisions of the policies shall not affect coverages provided to Owner, its officers or employees.
 - e. The Contractor's insurance shall apply separately to each additional insured against whom claim is made or suit is brought except with respect to the limits of the insurer's liability.
 - f. All Coverages. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) days' prior written notice has been given to Owner.
- 4) **Acceptability of Insurers**
Insurance is to be placed with insurers with an A.M. Best's rating of no less than A VII, authorized to write insurance in the Commonwealth of Kentucky.
 - 5) **Verification of Coverage**
The Contractor shall furnish the Owner with certificates evidencing the required insurance coverage prior to commencing work. Contractor shall keep up-to-date copies of such certificates on file with Owner until work is completed. Owner may require Contractor to submit policy endorsements.
 - 6) **Sub-Contractors**
Contractor shall include all Sub-Contractors as insureds under its policies or shall furnish separate certificates and endorsements for each subContractor. All coverages for subContractors shall be subject to all of the requirements stated herein.
 - 7) In lieu of All Builders Risk Insurance, The ESCO shall provide 100% Floater Insurance for all equipment/materials to be installed to protect against direct physical loss or damage or other common peril during shipment, storage and installation. Upon completion of installation, the ESCO shall be required to obtain a partial acceptance certificate from the Owner/Agency for the individual pieces of equipment or systems prior to release from coverage.
 - 8) The insurance coverage required by this contract shall be in compliance with the Commonwealth of Kentucky's Revised Statutes Chapter 304. Insurance coverage shall be placed with an Insurance Company holding a Certificate of Authority issued by Kentucky Department of Insurance. Insurance coverage shall be placed through a resident or non-resident Licensed Agent authorized to do business in Kentucky.
 - 9) A Certificate of Insurance or Certificates of Insurance will be submitted, the latter if the Contractor does not have both his Commercial General Liability and Automobile Liability policies with the same vendor or on the same policy.
 - 10) The Certificate of Insurance or Certificates of Insurance will have the following endorsements as

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an attachment to the Certificate or Certificates.

- 11) The Commonwealth of Kentucky, Division of Contracting and Administration will be named as an additional insured.
- 12) The policy is primary coverage and any insurance or self-insurance maintained by the Commonwealth of Kentucky shall be excess.
- 13) Any failure of the named insured to comply with the reporting provisions of the policy shall not affect coverage provided to the Commonwealth of Kentucky, its officers or employees.
- 14) All Coverages. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) days prior written notice by certified mail, return receipt requested, has been given to Owner.

F. NON-DISCRIMINATION IN EMPLOYMENT

During the performance of the Contract, the Contractor agrees as follows:

- 1) The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, age, national origin, or disability in employment. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, age, national origin, or disability in employment. Such action shall include, but not be limited to the following: employment, ungrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Contractor shall post in conspicuous places available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
- 2) The Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age, national origin or disability in employment.
- 3) The Contractor shall send to each labor union or representatives of workers with which he has a collective bargaining agreement or other contract or understanding, a notice advising the said labor union or workers' representatives of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

Failure to comply with the above nondiscrimination clause constitutes breach of Contract.

G. DISPUTE RESOLUTION

A question or act arising under the Contract which is not disposed of by agreement may be brought to the Secretary of the Finance and Administration Cabinet pursuant to KRS 45A.225 through KRS 45A.280. Actions on the Contract shall be brought in Franklin Circuit Court, Frankfort, Kentucky within one year from the date of completion specified in the Contract, notwithstanding the requirement to present Contract claims to the Secretary of the Finance and Administration Cabinet for administrative review.

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Pending final determination of any dispute hereunder, the Contractor shall proceed diligently with the performance of the Contract and in accordance with the Secretary of the Finance and Administration Cabinet's direction.

H. HOLD HARMLESS AND INDEMNIFICATION

The Contractor shall indemnify and hold the Commonwealth harmless from any and all claims, liability, damage, loss, cost and expense of every type whatsoever including, without limitation, reasonable attorneys' fees and expenses, to the extent resulting from the negligence or willful misconduct, in connection with the Contractor's performance of this Contract, including loss of use resulting therefrom, and to any and all other claims, damages, or injuries arising from the Contract, to the extent caused by the Contractor, or anyone for whose acts the Contractor may be liable, provided however, that Contractor shall not be responsible for any claims, damages, or injuries, including, without limitation, reasonable attorneys' fees and expenses which is caused by the sole negligence of the Commonwealth, nor shall Contractor be held responsible for the concurrent negligence of the Commonwealth, regardless of whether such liability, claim, damage, loss, cost or expense is caused in part by the Commonwealth. In the event the Commonwealth is alleged to be liable on account of acts or omissions, or both, of the Contractor, the Contractor shall defend such allegations and the Contractor shall bear all costs, fees and expenses of such defense, including but not limited to, all reasonable attorneys' fees and expenses, court costs, and expert witness fees and expenses.

The Contractor shall indemnify and hold harmless the Commonwealth and its affiliates, officers, directors, and employees from and against all claims, liabilities, damages, losses, costs, expenses (including reasonable attorney's fees and expenses, and fees and expenses of experts) to the extent resulting from the negligence or willful misconduct in connection with the Project by Contractor, or anyone for whose acts the Contractor may be liable, for bodily injury, including death, or damage to or loss of property, or any other type of form of loss occurring or sustained resulting from:

- a. Any violation of Contractor, its SubContractors, representatives, employees, and agents of any municipal, state, or federal laws, rules or regulations applicable to the performance of this obligations under the Contract;
- b. Environmental violations or contamination from hazardous substances, hazardous wastes and emissions or other substances or chemicals regulated by any applicable environmental laws or regulations and resulting from any willful misconduct, negligent act or omission, or legal violation by Contractor, its Sub-Contractors, Suppliers, representatives, employees, or agents;
- c. The failure of Contractor's employees, agents, representatives, Suppliers, or Sub-Contractors to obtain and maintain the required skills, licenses, certificates and permits mandated by applicable federal, state or local governing authorities with jurisdiction over construction, fabrication, environmental, health and safety matters of the Project.

To the extent permitted by Kentucky law, the Commonwealth shall indemnify, defend and hold harmless Contractor, and the agents, officers, shareholders, directors, and employees of the Contractor against all liability and loss including reasonable attorney's fees and expenses to the extent resulting from the negligence or willful misconduct in connection with the Project by the Commonwealth and agents, employees or representatives of the Commonwealth, including any injury (including death) sustained by or any damage to the property of, any person; provided, however, that the Commonwealth shall not be responsible for any injury (including death), damage or loss (including reasonable attorneys' fees and expenses) which is caused by the sole negligence of the Contractor, or anyone for whose acts the Contractor may be liable, nor shall the Commonwealth be held responsible for the concurrent negligence of

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Contractor, or anyone for whose acts the Contractor may be liable.

I. ASSIGNMENT

The Respondent shall not assign the contract in whole or in part or any payment arising therefrom without the prior written consent of the Purchasing Officer. Any purported assignment is void.

J. NOTICES

After contract award, all notices under this contract shall be deemed duly given when; (1) delivered by hand against receipt, or (2) sent by certified mail, return receipt requested, and received no later than 3 days after posting.

All notices are to be delivered to the Finance and Administration Cabinet at the address below or to such other address or party as is designated.

Commonwealth of Kentucky
 Finance and Administration Cabinet
 Division of Contracting and Engineering
 Capitol Annex Building - #158
 Frankfort, Kentucky 40601

All notices to the Contractor are to be delivered to the address below or to such other address or party as the Contractor may designate in writing:

NORESCO, LLC
 One Research Drive
 Suite 400 C
 Westborough, MA 01581

K. AUDIT PROVISION

In accordance with KRS 45A.150, the Finance and Administration Cabinet may audit the books and records of the Contractor or any Sub-Contractor under the Contract. Such books and records shall be maintained by the Contractor for a period of three (3) years from the date of final payment under the Contract and by any Sub-Contractor for a period of three (3) years from the date of final payment under any subcontract. The Contractor shall place such an audit requirement in any agreement it may have with a SubContractor under this Contract.

The Contractor shall provide to the Commonwealth, its auditors (including the Commonwealth's internal audit staff and the Commonwealth Auditor), and the Commonwealth's authorized designees and other representatives, within seventy-two (72) hours after a request made by the Commonwealth at any time, access to any facility or part of a facility which is used to provide services under this Contract, to the Contractor's (and its Sub-Contractors' and agents') personnel, and to data and records relating to the Services under this Contract. Such access shall be for the purpose of performing audits and inspections of the Contractor and its business, to verify the accuracy of the Contractor's billings to the Commonwealth under Contract. The Contractor shall provide to such auditors, inspectors and regulators any assistance that they reasonably require. All such audits will be conducted during Contractor's normal business hours and in a manner designed to avoid disruption of any of the Contractor's operations or affairs.

The Finance and Administration Cabinet may inspect the place of business of the Contractor or any Sub-Contractor under the Contract, subject to Contractor's reasonable security procedures. The Contractor shall place such an inspection requirement in any agreement it may have with a Sub-Contractor under this

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Contract.

L. CHANGES AND MODIFICATIONS TO CONTRACT

No modification or change of any provision in this Contract shall be made, or construed to have been made, unless such modification is mutually agreed to in writing by the Contractor and the Commonwealth, and incorporated as a written amendment to the Contract and processed through the Division of Contracting and Administration and approved by Finance and Administration Cabinet prior to the effective date of such modification or change pursuant to KRS 45A.210(1) and 200 KAR 5:311. Memoranda of understanding, written clarification and correspondence shall not be construed as amendments to the Contract. The contract must also contain a mutually acceptable clause whereby unanticipated changes in facility use, occupancy, schedule and/or utility rates can be accommodated in a fair manner agreeable to both parties. The ESCO's proposed method for adjusting the energy use baseline should be identified in the RFP response and listed in a schedule to the contract.

M. PERFORMANCE AND PAYMENT BONDS REQUIREMENTS

The Contractor shall furnish performance and payment bonds to the Owner. The Contractor shall furnish a performance bond satisfactory to the Owner in an amount equal to 100% of the contract amount as security for the faithful performance of the Contract. The Contractor shall also furnish a payment bond satisfactory to the Owner in an amount equal to 100% of the contract amount for the protection of all persons performing labor or furnishing materials, equipment or supplies for the Contractor or his Sub-Contractor for the performance of the Work provided for in the Contract, including security for payment of all unemployment contributions which become due and payable under Kentucky Unemployment Insurance Law.

Each bond furnished by the Contractor shall incorporate by reference the terms of the Contract as fully as though they were set forth verbatim in such bonds.

The insurance coverage required by the contract documents shall be in compliance with the laws of the Commonwealth of Kentucky and shall be placed with a licensed resident or non-resident agent who represents insurance companies authorized to do business in Kentucky.

Unless the project is exempt from the prevailing wage requirements of KRS 337.505-337.550, the Contractor's bond (s) shall include a provision as will guarantee the faithful performance and payment of the prevailing hourly wage as set forth in the schedule incorporated in the Contract.

In no event and in no manner shall coverage under the Performance and Payment Bond extend to the Energy Savings Guarantee, as set forth in Exhibit "F" Savings Guarantee Measurement and Verification, or any related provisions.

N. ENERGY SAVINGS GUARANTEE BOND

An Energy Savings Guarantee Bond shall not be required under this contract.

O. WARRANTY

Contractor hereby warrants to Owner that all materials furnished by Contractor, if any, and all workmanship performed by Contractor in connection with the Project, shall be in accordance with the general industry standards of the mechanical and electrical construction industry; shall be performed in a

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competent, good and workmanlike manner and in compliance with the Contract Documents, and all pertinent laws, rules and regulations; and shall be free from any and all faults or defects in material and workmanship. Contractor shall promptly remedy any and all defective materials or workmanship furnished by Contractor or any Sub-Contractor upon receipt of written notice thereof from Owner. If required by Owner, Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment used in connection with the Project

The warranty set forth herein shall continue to be effective for a period of one (1) year following Owner's acceptance or beneficial use of each ECM, acceptance of a particular Facility, or acceptance of the Project, whichever comes first. Owner shall give Contractor written notice of all defective work, specifically detailing the deficiencies to be corrected, and Contractor shall repair or otherwise remedy such defective work in an expeditious manner.

To the extent possible, Contractor shall assign to Owner all warranties that Contractor receives from its vendors and/or Sub-contractors for any materials or equipment, which are or are to become permanent features of the Project, which shall be in addition to the other warranties provided herein.

P. TITLE AND RISK OF LOSS

Risk of Loss for all equipment and materials provided by Contractor or any Sub-contractor shall transfer to Owner upon installation and acceptance of such equipment and materials to Owner's Facilities. Title to a Measure shall vest with the Owner upon installation, acceptance, and approving payment to the Contractor. It is the intent of all parties that any transfer of title to Owner pursuant to this Contract shall occur automatically without the necessity of any bill of sale, certificate of title, or other instrument of conveyance beyond the partial certificate of acceptance. The Owner shall be responsible for operating and maintaining all Measures that are installed. Owner shall also be responsible for any real or personal property taxes related to the Measures.

Q. LIMITATION OF LIABILITY

The total liability of Contractor on all claims, whether in contract, warranty, tort, strict liability, indemnity, or otherwise, arising out of the performance of this Agreement, shall not exceed the Contract Price, unless the claim is covered by an insurance policy obtained by Contractor under section E, in which event Contractor's total liability shall not exceed the greater of the Contract Price or the amount of insurance protection provided by Contractor's insurance company. NOTWITHSTANDING ANY OTHER PROVISIONS HEREIN TO THE CONTRARY, IN NO EVENT SHALL CONTRACTOR BE LIABLE FOR INDIRECT, CONSEQUENTIAL, SPECIAL, SPECULATIVE, PUNITIVE, OR REMOTE DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR REVENUE, COST OF CAPITAL, AND DOWN TIME COST.

R. INDEPENDENT CONTRACTOR

It is understood and agreed by the parties hereto that Contractor shall perform the Project according to its own means and methods and shall for all purposes be an independent contractor. All persons employed by Contractor in connection with the Project shall be paid directly by Contractor, and shall be subject to Contractor's orders and supervision.

S. WAIVER

The failure of either party hereto to insist upon strict performance of any of the provisions of this Contract or to take advantage of any of its rights hereunder shall not be construed as a waiver of any such provision or the relinquishment of any such rights unless such waiver is in writing and signed by both parties.

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T. REMEDIES CUMULATIVE

Each remedy provided for by the Contract shall be cumulative and in addition to every other remedy provided for herein, by law or in equity.

Upon the occurrence of a default, hereunder, either party, or its assignee, may, at its option, exercise any right, remedy, or privilege which may be available to it under applicable law, including the right to (i) proceed by appropriate court action to enforce the terms of this Contract, and (ii) recover damage for breach of this Contract. Notwithstanding the exercise of any right, remedy or privilege, the parties shall remain liable for all covenants and indemnities under this Contract.

U. THE SERVICES AGREEMENT

1. The Services and Exclusions. Within 410 days from the date this Agreement has been fully executed by ESCO and Owner, ESCO shall have designed and substantially completed installation of the equipment and performance of the services described in Exhibits A and B (hereinafter "Substantial Completion") at the Premises identified in Exhibit A hereto. ESCO's obligation hereunder is limited to performing the services as defined herein.
2. Invoicing and Payment. General. ESCO will invoice Owner for Project costs and measurement and verification services on a monthly basis according to Exhibit "C" and commencing upon the Date of Final Completion for all modifications to all buildings comprising the Project. Payment in full shall be within 30 working days of receipt and approval, and Owner shall make payment to ESCO at the following address:

NORESKO, LLC
One Research Drive
Suite 400 C
Westborough, MA 01581

Payments shall be made in accordance with KRS 45.453 and 45.454.

3. Energy Savings Guarantee. The energy savings guaranteed under this Contract are set forth in Exhibit "F" and specifically referenced in the sub-exhibits thereto. To determine energy savings for purposes of the Contract, all buildings comprising the Project and to which energy savings modifications are made shall be considered in the aggregate.
4. Sections and Exhibits. This Contract consists of Sections "A" through "H" and the following Exhibits, which are attached hereto and incorporated herein by this reference:

Exhibit A: Scope of Work
Exhibit B: Proposed Equipment List
Exhibit C: Progress and Payment Schedule
Exhibit D: Insurance and Bonds
Exhibit E: Progress Forms
Exhibit F: Savings Guarantee Measurement & Verification
Exhibit G: Support Services Agreement
Exhibit H: Prevailing Wage

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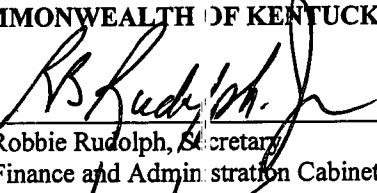
IN WITNESS WHEREOF, the duly authorized representatives of the parties have each executed this Agreement as indicated below:

NORESCO, LLC

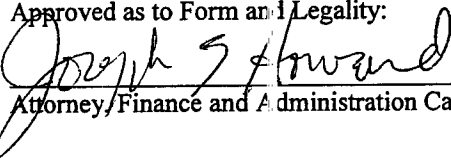
By: 
 Joseph E. O'Brien
 President

Date: 12-31-04

COMMONWEALTH OF KENTUCKY

By: 
 Robbie Rudolph, Secretary
 Finance and Administration Cabinet

Date: 1/06/05

Approved as to Form and Legality:

 Attorney, Finance and Administration Cabinet

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EXHIBIT A

SCOPE OF WORK

The following pages provide detailed descriptions for the work to be performed for each Energy Conservation Measure at each of the facilities addressed in this project.

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ECM 01 – Lighting System Improvements
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DETAILED ECM DESCRIPTION

Proposed System:

In order to optimize the overall electric savings and provide standardized lamps and ballasts, NORESKO proposes to optimize the existing lighting systems in the La Grange correctional facilities. This work will include installing new energy efficient lighting fixtures, as well as modifying the existing fluorescent fixtures to increase their efficiency. In areas where light levels are currently not up to code, we will add or modify fixtures to bring light levels up to required minimums. NORESKO will also consolidate the wide range of lamp types currently used by the complex. This standardization of lamp types corresponds to a significant decrease in maintenance costs for the lighting systems.

All existing T-12 fluorescent fixtures will be replaced or retrofit with low-mercury T-8 lamps and electronic T8 ballasts. NORESKO will replace fixtures containing eight-foot lamps with fixtures containing four-foot lamps, thereby reducing the number of lamp types needing to be inventoried at each location. The four-foot T-8 lamp has a longer lamp life than eight-foot lamps (20,000-30,000 hours versus 12,000-15,000 hours), is more economical to purchase, and is easier to store. This retrofit will offer improved lighting quality and will eliminate PCB-contaminating ballasts and T-12 lamps containing mercury.

New compact fluorescent or linear fluorescent fixtures will replace the incandescent lights. Fluorescent lighting lasts 12-25 times longer than typical incandescent lamps, has excellent color rendition, and uses about one-half to one-tenth the energy to produce the same light output.

HID fixtures located in interior areas such as gymnasiums will be replaced with new T5 fluorescent fixtures.

NORESKO will replace existing fluorescent and incandescent exit signs with new LED signs backed with a 20-year warranty.

Following is a brief description of the work to be undertaken at each facility. A detailed room-by-room audit report can be found in the Appendix.

Offices/Hallways

- Recessed 2' x 4' troffers containing three (3) T12 lamps and magnetic ballasts will be retrofitted with two (2) T8 lamps, a white powder coat reflector, lamp centering kit and a new electronic ballast.
- Recessed 2' x 4' troffers containing four (4) T12 lamps and magnetic ballasts will be

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retrofitted with two (2) T8 lamps, a white powder coat reflector, lamp centering kit and a new electronic ballast.

- Recessed 2' x 2' troffers containing two (2) U-bend T12 lamps and magnetic ballasts will be retrofitted with two (2) 2' T8 lamps, a white powder coat reflector, lamp centering kit and a new electronic ballast.
- Wrap fixtures containing two (2) T12 lamps and magnetic ballasts will be retrofitted with two (2) T8 lamps and low-power electronic ballasts.
- Industrial fixtures containing two (2) T12 lamps and magnetic ballasts will be retrofitted with two (2) T8 lamps and low-power electronic ballasts.
- Incandescent fixtures will be replaced with new fixtures containing one (1) or two (2) T8 lamps and electronic ballasts.
- Exit signs containing incandescent or compact fluorescent lamps will be replaced with new LED exit signs.
- Occupancy sensors will be installed in office and classroom areas where feasible.

Cells/Dormitories

- Surface-mounted 1' x 4' box fixtures containing three (3) T12 lamps and magnetic ballasts will be retrofitted with three (3) T8 lamps and low-power electronic ballasts.
- Recessed 1' x 4' troffers containing two (2) T12 lamps and magnetic ballasts will be retrofitted with two (2) T8 lamps and low-power electronic ballasts.
- Recessed 2' x 4' troffers containing two (2) T12 lamps and magnetic ballasts will be retrofitted with two (2) T8 lamps and low-power electronic ballasts.
- Incandescent fixtures will be replaced with new vandal-resistant fixtures containing one (1) or two (2) T8 lamps and electronic ballasts.
- Exit signs containing incandescent or compact fluorescent lamps will be replaced with new LED exit signs.

Common Areas

(Kitchen, Dining, Gyms, Shops, etc.)

- Recessed 2' x 4' troffers containing three (3) T12 lamps and magnetic ballasts will be retrofitted with two (2) T8 lamps, a white powder coat reflector, lamp centering kit and a new electronic ballast.
- Recessed 2' x 4' troffers containing four (4) T12 lamps and magnetic ballasts will be retrofitted with two (2) T8 lamps, a white powder coat reflector, lamp centering kit and a new electronic ballast.
- Recessed 2' x 2' troffers containing two (2) U-bend T12 lamps and magnetic ballasts will be retrofitted with two (2) 2' T8 lamps, a white powder coat reflector, lamp centering kit and a new electronic ballast.
- Wrap fixtures containing two (2) T12 lamps and magnetic ballasts will be retrofitted with two (2) T8 lamps and low-power electronic ballasts.
- Industrial fixtures containing two (2) T12 lamps and magnetic ballasts will be retrofitted with

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- two (2) T8 lamps and low-power electronic ballasts.
- Incandescent fixtures will be replaced with new fixtures containing one (1) or two (2) T8 lamps and electronic ballasts.
- The 400-watt metal halide high bay fixtures in Gyms & Classrooms will be replaced with new fixtures containing four (4) T5 lamps and an electronic ballast.
- Exit signs containing incandescent or compact fluorescent lamps will be replaced with new LED exit signs.

EQUIPMENT INFORMATION

One or more of the following corporations will manufacture the proposed lighting equipment:

Lamps:

- **Phillips Lighting Co.**, 200 Franklin Square Dr., Somerset, NJ, 08875, (908) 563-3000.
- **Osram-Sylvania Inc.**, 100 Endicott St., Danvers, MA, 01923, (800) 544-4828.
- **SLI Lighting Products, Inc.**, 122 Laurel St., Mullins, SC, 29574, (800) 922-6693.

Ballasts:

- **Howard Industries, Inc.** PO Box 1590, Laurel, MS 39444 (800) 956-3456.
- **Osram-Sylvania Inc.**, 100 Endicott St., Danvers, MA, 01923, (800) 544-4828.
- **Advance Transformer Co.**, 10275 West Higgins, Rosemont, IL, 60018, (708) 390-5109.
- **Motorola Lighting**, 887 Deerfield Parkway, Buffalo Grove, IL, 60089, (847) 215-6300.
- **Universal Lighting Technologies**, 26 Century Blvd. Suite 500 Nashville TN, 37214-3683, (800) 262-4272.

Occupancy Sensors:

- **Hubbell Incorporated**, 185 Plains Road, Milford, CT 06460 (203) 882-4800.
- **Watt Stopper**, 2800 De La Cruz Blvd., Santa Clara, CA 95050 (408) 988-5331.

Fixtures:

- **Metal Optics**, 2011 W. Rundberg Lane, Austin, TX, (512) 832-0025.
- **Mercury Lighting Co.**, 20 Audrey Place, Fairfield, NJ, 07004, (201) 244-9444.
- **Thomas Lighting (Daybrite)**, Commercial & Industrial Div., 1015 S. Green St., Tupelo, MS, 38802, (601) 842-7212.
- **Crescent Lighting**, 120 East Gloucester Pike, Barrington, NJ, 08007, (609) 546-5000.
- **Tristar Lighting Company**, 1957 Pioneer Rd., Building A1, Huntingdon Valley, PA 19006, (215) 442-9771.
- **Paragon Enterprises, Inc.**, 623 Brakke Drive, Hudson, WI 54016 (715) 381-2971.
- **Lithonia Hi-Tek**, PO Box 72, Crawfordsville, IN, 47933, (317) 362-1837.

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- **Simkar Lighting Products**, 601 East Cayuga Street, Philadelphia, PA 19120, (215) 831-7700.

Reflectors:

- **Metal Optics**, 2011 W. Rundberg Lane, Austin, TX, (512) 832-0025.
- **Reflect-A-Light**, U.S. 17 North, Route 6, Box 800, Palatka, FL , 32177, (904)-328-1580.
- **Energy Planning Associates** 148 Maritime Drive, Sanford, FL 32771 (888) 302-8920.

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ECM 02 – Energy Management System

DETAILED ECM DESCRIPTION

Proposed System:

NORESCO proposes to install a distributed control EMS that will be connected throughout the individual buildings of each campus. The scope of work for each facility will be as follows:

Kentucky State Reformatory

The existing pneumatic control devices (valves and damper actuators, etc.) will be reused as much as possible by the new system. These end devices will be thoroughly inspected during construction and repaired or replaced as necessary to ensure proper operation.

All existing pneumatic control panels – as well as the older electric control panels in Dorms 1, 9, 4, and 6 – will be removed and replaced with new DDC control panels. The existing Invensys and Barber-Coleman DDC panels in Dorm 10, Nursing Care, and CMTU will be upgraded to the latest software revisions to ensure proper communications with the rest of the network.

The individual DDC panels will then be tied into the existing Ethernet communication network in each building. Using the campus-wide Ethernet, it will then be possible for the individual building controllers to communicate back to a central location, allowing facility maintenance personnel to monitor and control systems throughout each campus from a common workstation. It is expected that a Windows-based PC workstation will be installed in Chief Engineer John Sewell's office, although the new operator interface can be installed anywhere on campus.

Equipment to be controlled by the proposed EMS is summarized below.

- Dorm 3: (4) air handlers, (1) chiller, (1) heat exchanger, and (4) pumps
- Dorm 5: (4) air handlers, (1) chiller, (1) heat exchanger, and (4) pumps
- Dorm 11: (4) air handlers, (1) chiller, (1) heat exchanger, and (4) pumps
- Dorm 4: (4) air handlers and (4) condensing units
- Dorm 6: (4) air handlers and (4) condensing units
- Dorm 1: (2) air handlers and (2) condensing units
- Dorm 9: (2) air handlers and (2) condensing units
- Dorm 7: (2) air handlers, (1) chiller, (1) heat exchanger, and (4) pumps
- Dorm 10: all equipment controlled by existing DDC panel

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- NCF: all equipment controlled by existing DDC panel
- CPTU: all equipment controlled by existing DDC panel

Luther Luckett Correctional Complex

The existing pneumatic terminal devices (valves, damper actuators, etc.) on this campus are in extremely poor condition, and will therefore be removed and replaced with new electronic devices as part of this project.

All existing pneumatic control panels will also be removed and replaced with new DDC control panels. The existing Invensys DDC panels in Dorms 7D and 7E will be upgraded to the latest software revisions to ensure proper communications with the rest of the network. The Barber-Coleman panel in the SMU building will be evaluated and upgraded or replaced as necessary.

The individual DDC panels will then be tied into the existing Ethernet communication network in each building. Buildings 3A-E are on a separate network which does not communicate with the main campus Ethernet. For this reason, new communications wiring will be run to the mechanical spaces in these buildings and tied back to the main campus network.

Using the campus-wide Ethernet, it will then be possible for the individual building controllers to communicate back to a central location, allowing facility maintenance personnel to monitor and control systems throughout each campus from a common workstation. It is expected that a Windows-based PC workstation will be installed in Chief Engineer Bobby McDonald's office, although the new operator interface can be installed anywhere on campus.

Equipment to be controlled by the proposed EMS is summarized below.

- Building 1: (2) air handlers, (1) chiller, (1) cooling tower, and (4) pumps
- Building 2: (2) air handlers
- Building 3A: (3) air handlers and (1) booster pump
- Building 3B: (3) air handlers and (1) booster pump
- Building 3C: (3) air handlers and (1) booster pump
- Building 3D: (3) air handlers and (1) booster pump
- Building 3E: (1) air handler and (1) booster pump
- Building 4A: (2) air handlers
- Building 4B: (2) air handlers
- Building 4C: (1) chiller, (1) cooling tower, and (4) pumps
- Building 5A: (2) air handlers
- Building 5B: (2) air handlers

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- Dorm 7A: (4) new air handlers
- Dorm 7B: (4) new air handlers
- Dorm 7C: (4) new air handlers, (1) chiller, (1) cooling tower, and (4) pumps
- Dorm 7D: all equipment controlled by existing DDC panel
- Dorm 7E: all equipment controlled by existing DDC panel
- SMU: all equipment controlled by existing DDC panel

Roederer Correctional Complex

The existing control systems at Roederer Correctional Complex are already very comprehensive. However, there is currently no way to communicate remotely with all of the disparate systems on the campus. NORESKO proposes to install a "gateway" control unit at each existing control panel on the RCC campus. The gateway units will allow each panel to communicate through the campus Ethernet network using a common language.

As part of our comprehensive approach to this project, NORESKO will also perform a complete investigation of the existing control sequences at all three campuses. We will ensure that the existing sequences are being followed as they were designed, and we will make any changes necessary to optimize the efficient control of the systems.

The existing WattMaster panel in Unit 2 is a low-end control system with little communication capability, and will therefore be replaced with a new DDC control panel. In addition, a new DDC panel will also be installed in the Unit 4 dormitory to control the three small air handlers in that building.

Similar to the other two campuses, it will then be possible for the individual building controllers to communicate back to a central location. It is expected that a Windows-based PC workstation will be installed in Chief Engineer Fazlollah Montazer's office, although the new operator interface can be installed anywhere on campus.

Equipment to be controlled by the proposed EMS is summarized below.

- Old Admin Bldg: all equipment controlled by existing DDC panel
- Medical: all equipment controlled by existing DDC panel
- Kitchen: all equipment controlled by existing DDC panel
- Unit 1: all equipment controlled by existing DDC panel
- Unit 2: all equipment controlled by existing DDC panel
- Unit 3: all equipment controlled by existing DDC panel
- Unit 4: (3) air handlers, (3) condensing units
- Unit 5: all equipment controlled by existing DDC panel

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Strategies Implemented

The new energy management system will be supplied with all necessary software to achieve the control strategies outlined below, as well as to provide alarm and reporting functions. The following are some of the proposed control sequences that will be used to save energy and reduce operating costs.

HVAC Equipment Optimization:

The ability to centrally monitor building temperatures and control HVAC equipment allows for the runtimes of air handlers, pumps, and miscellaneous equipment to be minimized while still providing adequate building space temperatures. Fan systems serving office spaces and other support areas, for example, can be shut down at night and cycled to maintain a lower setback temperature. A centralized control system will also maximize the maintenance staff's ability to respond to temperature and equipment alarms or heating/cooling problems in general.

Unoccupied Zone Temperature Reset:

Significant energy savings will result from resetting zone temperature setpoints in office spaces and other support areas during unoccupied periods. Assuming a current heating setpoint of 70°F in all areas, it is expected that temperatures can be setback to 62°F in unoccupied support areas from approximately 6pm until 6am. Similarly, assuming a current cooling setpoint of 72°F in all areas, it is expected that temperatures in unoccupied areas can be set forward to 82°F during the same period. Fan, heating, and cooling systems will operate fewer hours to maintain a smaller temperature difference between setpoint and ambient conditions.

Dormitory Zone Temperature Reset:

Although dormitory areas throughout the three campuses must be conditioned 24 hours per day, some energy savings will result from resetting zone temperature heating setpoints for a few hours in the middle of the night. Assuming a current heating setpoint of 70°F in all areas, it is expected that temperatures can be setback to 68°F from approximately 11pm until 5am. Space cooling setpoints will not be adjusted, as humidity can be a problem in dormitory spaces.

Optimum Start/Stop of HVAC Equipment - Using optimum start/stop programming, each building zone will be individually controlled to provide the optimum morning warm-up (or cool down) based on outside temperatures and inside zone temperatures. During unoccupied hours the software will track the rate of heat loss or heat gain and then utilize this data to decide when equipment will be started in order to reach the desired indoor temperatures before the first occupants arrive in the morning. Similarly, the system will determine the optimum time to shut down equipment in order to maintain indoor conditions until the last occupants leave.

The new Energy Management System will be integrated with the existing control systems. The system will provide improved occupant comfort and increased reliability, and will achieve savings through the increased operating efficiency of the HVAC systems under its control.

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EQUIPMENT INFORMATION

Because NORESKO is an independent energy services provider, we are not tied to any particular equipment manufacturer. NORESKO has completed projects with most of the major players in the building controls industry, including Siemens, Andover Controls, Johnson Controls, NOVAR, and Invensys.

The pricing contained in this proposal is based on installation of an I/A® Series Building Automation System as manufactured by Invensys Building Systems, Inc., and installed by Melco Industries, Inc. We have worked with your local Melco Industries representatives and believe that we have designed an appropriate control system for the DOC facilities.

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ECM 3 – Water Conservation Measures

DETAILED ECM DESCRIPTION

Proposed System:

NORESCO proposes to replace all plumbing fixtures in the La Grange correctional facilities with new low flow fixtures and, where applicable, new ICON control systems. The ICON system includes its own valve assemblies that replace existing high-maintenance fixtures, and which have the ability to be controlled by the ICON electronic control package. Once installed, the electronics will monitor the number of flushes per flush valve, and allow only a pre-set number of flushes per hour, if desired. This ability to “lock out” excessive flushing will almost eliminate the maintenance and security issues of clogged pipes, flooded cells, etc. In addition, the ICON system reduces the use of the flush valve diaphragms, as well as greatly reducing high maintenance replacements used in all current plumbing fixtures. With no metering diaphragms, the cost of parts replacement, and the labor to perform the work, is greatly reduced.

In each of the plumbing chases, the water closet valves and activation buttons will be removed and replaced as part of this program. Existing toilet flush valves will be replaced with ICON Flush Valves. The ICON valve is similar to, and operates like, a swing-check solenoid valve. This allows for precise control of the flow and the timing of each flush. The valve also includes a manual override feature to enable staff to flush toilets by bypassing electronic control in the event of power loss or for troubleshooting. The advanced flushing mechanism of the ICON valve allows the use of 1.6-gallons of high-velocity water to effectively flush waste in either 3.5 or 5.0-gallon fixtures.

The ICON valves will be installed in the same locations as the existing flush valves. In addition, the existing lavatory sink and shower valves will also be replaced with ICON valves. The solenoid coil and plunger for the Water Closet, Shower and Lavatory valves shall be interchangeable to reduce part requirements.

The existing flush activation buttons, lavatory sink activation buttons, and shower activation buttons will be removed and replaced with ICON activation buttons. ICON activation buttons are stainless steel and are pressure sensitive activated. The buttons have no mechanical moving parts, are completely waterproof, and nearly vandal-proof. The self-calibrating sensor buttons will then be connected to an ICON electronics package in each plumbing chase.

This electronics package will control and interface with the flush valves and lav/shower activation valves. This will allow the staff to completely control the usage of the plumbing fixtures. The factory-default control sequence for a typical water closet is as follows: When the inmate pushes the activation button once, the flush cycle will occur immediately. If the button is activated again within 5 minutes, it will flush immediately again. If the button is activated a third time in the 5-minute time span, the microprocessor will disable the activation of the flush valve for up to a one-hour lock out period (staff adjustable). Repeated pressure on the button

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during this period will not engage the flush valve until lock out period has elapsed.

The existing commercial-grade water closet fixtures in these facilities will not be retrofitted with the ICON product, but will instead be replaced with new wall-mounted commercial china and low-flow flushometers.

The tables on the following page summarize the quantities of plumbing fixtures that were identified during our detailed survey of the La Grange correctional facilities.

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Summary of Fixtures Identified for Replacement/Retrofit

Kentucky State Reformatory				
Bldg/Unit	Toilets	Urinal	Sink	Shower
Dorm 1	8	4	12	8
Dorm 2	scheduled to be torn down			
Dorm 3	12	4	12	12
Dorm 4	8	4	12	8
Dorm 5	12	4	12	12
Dorm 6	8	4	12	8
Dorm 7	130	0	130	16
Dorm 8	scheduled to be torn down			
Dorm 9	8	4	12	8
Dorm 10	5	0	8	6
Dorm 11	12	4	12	12
Vocational	10	6	11	0
Academic	2	0	2	0
Gym	1	1	1	0
R/O Unit	7	0	7	2
Visiting	3	0	3	0
Segregation	130	0	130	10
Kitchen	4	1	2	0
NCF	30	8	30	0
CPTU	150	0	150	30
Administration	8	4	8	0
Tower/2nd	4	2	4	0
Tower/3rd	2	0	2	0
Tower/4th	2	0	2	0
Tower/5-10	12	6	12	6
TOTALS	568	56	586	138

Luther Luckett Correctional Complex				
Bldg/Unit	Toilets	Urinal	Sink	Shower
Bldg 2 Cap. Office	1	0	1	0
Bldg 2 KCPC	1	0	1	0
Bldg 3A	16	0	16	3
3B	26	0	26	3
3C	26	0	26	3
3D	26	0	26	3
3E	9	0	9	1
4A Property	1	0	2	1
4A Medical	1	0	1	0
4A MSU	8	0	8	0
4D	1	1	1	0
4E	1	1	1	0
4F	2	0	2	0
5A	2	0	2	0
5B	1	0	1	0
5C	2	2	3	0
6 Gym	2	2	3	6
7A	7	8	17	8
7B	7	8	17	8
7C	7	8	17	8
7D	7	8	17	8
7E	7	8	17	8
SMU	4	0	44	4
TOTALS	255	46	258	64

Roederer Correctional Complex				
Bldg/Unit	Toilets	Urinal	Sink	Shower
Intake	8	0	8	3
Unit 1/A	4	2	5	7
1/B	4	2	5	7
1/C	4	2	5	7
Unit 2/D	2	2	4	3
2/E	2	2	4	3
2/F	2	2	4	3
2/G	2	2	4	3
2/H	2	2	4	3
2/I	2	2	4	3
Unit 3 (1)	2	2	4	3
3 (2)	2	2	4	3

3 (3)	2	2	4	3
3 (4)	2	2	4	3

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Roederer Correctional Complex (continued)				
Bldg/Unit	Toilets	Urinal	Sink	Shower
3 (5)	2	2	4	3
3 (6)	2	2	4	3
3 (7)	2	2	4	3
3 (8)	2	2	4	3
Unit 4	4	3	8	6
Unit 5/B1	4	0	3	4
5/B2	2	1	3	4
5/B3	2	1	3	4
5/B4	2	1	3	4
5/B5	2	1	3	4
5/B6	2	1	3	4
5/B7	2	1	3	4
5/B8	2	1	3	4
5/Admin	5	1	6	2
TOTALS	75	45	117	106

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EQUIPMENT INFORMATION

Existing exposed commercial-grade flushometers and lavatory faucets will be replaced with low-flow units manufactured by Zurn, or approved equal. New commercial china will be manufactured by American Standard, or equal. New low-flow showerheads will be manufactured by Niagara, or equal.

Existing concealed flush valves and lavatory and shower valve components will be replaced with new flush valves and control components manufactured by ICON Systems, Inc. The ICON system was chosen for the correctional facilities for several reasons:

1. ICON offers a retrofit that provides both water and maintenance savings designed specifically for correctional institutions;
2. The products can reduce gallons per flush of existing water closets, without the need to replace the fixtures at a significant added cost;
3. The products have been evaluated by correctional staff around the country, and are favored as the retrofit product of choice.

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ECM 4 – Steam Heating System Renovation at KSR Administration
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DETAILED ECM DESCRIPTION

Proposed System:

In order to improve space conditions and reduce energy consumption in the KSR Administration Building, NORESKO proposes to renovate the existing steam heating system through the installation of new self-contained thermostatic valves on the existing radiators.

The existing manual radiator control valves will be removed and new self-contained radiator thermostats will be installed in their place. Each radiator thermostat consists of a thermostatic element and a valve body. Within the element there is a bellows capsule that contains a small amount of liquid and the saturated vapor of that liquid.

On rising room temperature, some of the liquid in the bellows evaporates. This causes vapor pressure in the bellows to rise, closing the valve and shutting off steam flow to the radiator. On falling room temperature, the opposite process takes place: Some of the vapor again becomes liquid, the vapor pressure falls, and valve opens to allow steam flow to the radiator.

This modulation is performed automatically by the radiator thermostat as frequently as is necessary to maintain the setpoint temperature. Raising or lowering the room setpoint is accomplished by manually adjusting the setting knob on the thermostat.

In addition to the above work, NORESKO will also insulate all exposed steam and condensate piping throughout the facility. This will further reduce the overheating conditions in the Administration Building, resulting in additional energy savings.

EQUIPMENT INFORMATION

NORESKO proposes to install self-contained thermostatic radiator valves manufactured by Danfoss, Myson, or approved equal.

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ECM 5 – Ozone Laundry System at KSR

DETAILED DESCRIPTION

Proposed System:

NORESCO proposes to install an Ozone Laundry System in the central laundry at the La Grange correctional facilities. A separate ozone generator will be provided for each facility. The ozone will be delivered to each washer/extractor by means of a side-arm. A new air compressor will also be provided at each facility to furnish control air for the ozone system.

Ozone is a compound in which three atoms of oxygen are combined to form the molecule O₃. It is a strong, naturally occurring oxidizing and disinfecting agent.

Ozone laundry systems inject the appropriate levels of ozone in cold water throughout the wash process. Ozone reacts very rapidly, cleaning by dividing the organic molecules in the water and causing soils to break away from the fabric and disintegrate. The oxidation power of ozone sterilizes and deodorizes more effectively, less expensively and more reliably than chlorine. Ozone then reverts to oxygen, leaving no chemical residual.

When applied properly, an ozone laundry system benefits the facility in the following ways:

- It reduces the number of wash cycles, lowering water and sewer costs;
- It reduces the amount of chemicals used;
- It reduces the cycle time, which saves electric energy;
- It reduces the amount of hot water used, which saves thermal energy;
- It reduces the amount of chlorine needed, which extends fabric life;
- It improves the washing efficiency, resulting in more loads washed per shift; and
- It makes linens and garments cleaner and brighter.

The proposed ozone laundry system will not completely eliminate the use of chemicals and hot water. However, reducing the number of wash cycles and improving the effectiveness of the chemicals will reduce both chemical and hot water usage.

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EQUIPMENT INFORMATION

NORESCO plans to install an ozone laundry system manufactured by Wet-Tech, IndustrOzone Technologies, or approved equal. The proposed system will consist of the following components:

Kentucky State Reformatory:

- (1) Wet-Tech model LB-4L ozone generator
- (1) Wet-Tech model SA-1 side arm for the 400-lb washer extractor
- (2) Wet-Tech model SA-1A side arms for the remaining washer/extractors

Roederer Correctional Complex:

- (1) Wet-Tech model LB-3S ozone generator
- (3) Wet-Tech model SA-1 side arms for the three washer/extractors

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ECM 6 – Piping Insulation

DETAILED ECM DESCRIPTION

Proposed System:

NORESCO proposes to insulate the exposed steam, condensate return, and hot water piping in the La Grange correctional facilities. The insulation will prevent the loss of heat from the pipes, thereby saving boiler energy, as well as reducing overheating conditions in adjacent spaces. This will result in improved comfort conditions and reduced fuel consumption.

The table on the following page presents an inventory of the sizes and approximate lengths of uninsulated piping identified during the energy audit.

EQUIPMENT INFORMATION

NORESCO proposes to install piping insulation as manufactured by Owens Corning, Johns Manville, or equivalent. The new insulation will be fiberglass with an all-service jacket and will be of an appropriate thickness to satisfy ASHRAE 90 and any applicable Kentucky State Codes.

Minimum Pipe Insulation Thickness (inches)				
251 – 350	2	2½	3½	3½
212 – 250	1	2	2	2
100 – 211	1	1½	2	2

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Piping Insulation Inventory					
Campus	Building	Location	Pipe Size	Contents	Length (ft)
KSR	Dorm #8	Air Handlers	1" nominal IPS	Condensate	20
KSR	Dorm #8	Air Handlers	2" nominal IPS	LP Steam	20
KSR	Dorm #8	Basement	1" nominal IPS	Condensate	4
KSR	Dorm #8	Basement	2" nominal IPS	Condensate	30
KSR	School	Penthouse	1" nominal IPS	Condensate	5
KSR	School	Penthouse	2.5" nominal IPS	LP Steam	4
KSR	School	Penthouse	1.25" nominal IPS	LP Steam	15
KSR	Dorm #11	1st floor MER	1.5" nominal IPS	Condensate	12
KSR	Dorm #11	Penthouse MER	1.25" nominal IPS	Condensate	30
KSR	Shop Areas	Main Bays	0.75" nominal IPS	LP Steam	100
KSR	Shop Areas	Main Bays	0.75" nominal IPS	Condensate	100
KSR	Dorm #3	MER	0.75" nominal IPS	Condensate	4
KSR	Dorm #3	MER	1.5" nominal IPS	Condensate	12
KSR	Dorm #2	Air Handlers	1.5" nominal IPS	Condensate	16
KSR	Dorm #2	Air Handlers	1.5" nominal IPS	LP Steam	20
KSR	Kitchen	Basement	2" nominal IPS	Hot Water	150
KSR	Kitchen	Basement	1.25" nominal IPS	Condensate	75
KSR	Kitchen	Basement	2" nominal IPS	Condensate	6
KSR	Kitchen	Dining Room	1.5" nominal IPS	Condensate	300
KSR	Dorm #10	MER	1.5" nominal IPS	Condensate	33
KSR	Dorm #10	MER	2" nominal IPS	Condensate	25
KSR	Dorm #10	MER	0.75" nominal IPS	Condensate	5
KSR	Laundry	Dryers	1" nominal IPS	LP Steam	30
KSR	Laundry	Dryers	0.75" nominal IPS	Condensate	30
KSR	Soap Plant	Warehouse	4" nominal IPS	LP Steam	35
KSR	Soap Plant	Warehouse	1" nominal IPS	LP Steam	30
KSR	Soap Plant	Warehouse	1.5" nominal IPS	Condensate	200
KSR	Kitchen	Miscellaneous	0.75" nominal IPS	LP Steam	100
KSR	Kitchen	Miscellaneous	0.75" nominal IPS	Condensate	100
LLCC	Laundry	Behind Dryers	0.75" nominal IPS	LP Steam	27
LLCC	Laundry	Behind Dryers	1" nominal IPS	LP Steam	15
LLCC	Laundry	Behind Dryers	1" nominal IPS	Condensate	62

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ECM 7 – Steam Trap Replacement

DETAILED ECM DESCRIPTION

Proposed System:

NORESCO proposes to replace all existing steam traps on the Kentucky State Reformatory campus. This measure will help to restore the existing steam heating system to its original operating condition, reducing overheating conditions and returning more condensate to the boiler plant.

During the Technical Energy Audit, a detailed steam trap survey was completed. This investigation included the following:

1. All steam traps were located, identified, and tagged with a distinctive tag and clip.
2. Each trap was tested to determine its operating condition. The method used included ultrasonic detection and visual inspection where possible.
3. A temporary yellow paper tag was attached to each FAILED trap in addition to the trap tag.
4. Notes were made of specific problems, such as water hammer, poor or improper insulation, steam leaks in piping or valves, improper installation of traps, and other steam related problems.

The results of the steam trap survey are included on the following pages. Because this initial survey was completed during the summer months, however, many of the traps were not in service. Of the roughly 200 traps identified, approximately 60 percent were in service at the time of the audit. Of those in service, approximately 13 percent were found to be blowing through.

For the purposes of the energy savings analysis, a failure rate of 10 percent was assumed for all traps. Prior to construction, a second steam trap survey will be completed during the heating season, when all traps should be active, to verify the actual number of failed traps.

In order to sustain the energy savings throughout the contract term, it will be necessary for the steam traps to be periodically inspected and checked for failure. For this reason, NORESCO will provide the KSR facilities staff with a comprehensive training program to familiarize them with the maintenance requirements of the steam traps. In addition, NORESCO will also furnish a sufficient inventory of spares to allow for one complete replacement of all traps during the contract period.

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EQUIPMENT INFORMATION

NORESCO plans to install steam traps manufactured by one or more of the following companies. If the Department of Corrections has standardized on a specific manufacturer for steam specialties, then that manufacturer will be favored for this project.

- **Spirax Sarco Inc.** • P.O.Box 119 • Allentown, PA 18105 • (215) 433-5830
- **Armstrong Intl.** • 816 Maple Street • Three Rivers, MI 49093 • (616) 273-1415
- **TLV America Corp.** • 6701-K Northpark Blvd. • Charlotte, NC 28216 • (800) 858-8727
- **Gestra Inc.** • 10 York Ave. • West Caldwell, NJ 07006 • (800) GESTRA

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TAG	LOCATION	AREA	Elevation (ft)	Manufacturer	Type	Model	Consumption (in.)	Inlet Pressure	Outlet Pressure	Application	Condition
1	Kitchen Mech Room	Right side near stairs	6	HOFF	F&T	UNK	0.75	15	0	DP	OK
2	Kitchen Mech Room	Down stairs to left above pit	7	ARM	F&T	B5	0.75	15	0	DP	OK
3	Kitchen Mech Room	On 1st water heater	5	HOFF	RAD	17C	0.5	15	0	DP	OK
4	Kitchen Mech Room	On 2nd water heater	5	HOFF	F&T	UNK	1.25	15	0	DP	OK
5	Kitchen Mech Room	On 2nd water heater	5	HOFF	RAD	17C	0.5	15	0	DP	OK
6	Kitchen Mech Room	After 2nd water heater under pipe	3	HOFF	F&T	UNK	0.75	15	0	DP	OK
7	Kitchen Mech Room	On PRV after tag 6	5	ARM	BUC	811	0.75	50	0	DP	BT
8	Kitchen Mech Room	On PRV after tag 6	3	ARM	BUC	811	0.75	50	0	DP	OK
9	Kitchen Mech Room	On PRV after tag 6	3	HOFF	F&T	UNK	0.75	15	0	DP	BT
10	Kitchen Mech Room	Up back stairs on right	5	HOFF	F&T	015H	0.75	15	0	DP	OK
11	Kitchen Mech Room	After tag 10 on right	5	HOFF	F&T	015H	0.75	15	0	DP	OS
12	Kitchen Mech Room	On left side of room near rear door	5	HOFF	F&T	015H	0.75	15	0	DP	OK
13	Kitchen Mech Room	In room to left at end of 1st room	5	HOFF	F&T	UNK	1	15	0	DP	OK
14	Kitchen Mech Room	In room to left at end of 1st room	3	ARM	BUC	800	0.75	15	0	DP	OS
15	Kitchen Mech Room	Outside of mech room	8	ARM	F&T	B3	0.75	15	0	DP	OK
16	Kitchen Laundry Room	Kitchen Laundry Room	8	HOFF	F&T	UNK	0.75	15	0	DP	OK
17	Kitchen Laundry Room	Across from laundry in storage room	8	HOFF	F&T	UNK	0.75	15	0	DP	OS
18	Kitchen Laundry Room	Across from laundry in storage room	8	HOFF	F&T	UNK	0.75	15	0	DP	OS
19	Chemical Supply room	Unit Heater	8	ARM	BUC	800	0.5	15	0	DP	OS
20	In Hallway	In hallway leading to elevator	8	HOFF	F&T	UNK	0.5	15	0	DP	OK
21	Basement of kitchen	Basement E half crawl	8	HOFF	F&T	015H	0.5	15	0	DP	OS
22	Outside of Kitchen basement	Near heater in kitchen near door 010	8	HOFF	RAD	17C	0.5	15	0	DP	OS
23	Outside of Kitchen basement	Unit heater near loading dock	8	HOFF	F&T	015H	0.75	15	0	DP	OS
24	Outside of Kitchen basement	Unit heater near loading dock	6	HOFF	F&T	015H	1	15	0	DP	OS
25	Outside of Kitchen basement	In office on right	1	HOFF	RAD	17C	0.5	15	0	DP	OS

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TAG	LOCATION	AREA	Elevation (ft)	Manufacturer	Type	Model	Correction (in.)	Inlet Pressure	Outlet Pressure	Application	Condition
26	Kitchen	On first kettle to left	1	ARM	BUC	800	0.75	15	0	PS	OS
27	Kitchen	On first kettle to right	1	HOFF	F&T	UNK	0.75	15	0	PS	OS
28	Kitchen	On first kettle to right	2	HOFF	F&T	UNK	1	15	0	PS	OS
29	Kitchen	2nd kettle to right	2	HOFF	F&T	UNK	0.75	15	0	PS	BT
30	Kitchen	2nd kettle to left	2	HOFF	F&T	UNK	0.75	15	0	PS	OK
31	Kitchen	On 3rd kettle right	2	HOFF	F&T	UNK	0.75	15	0	PS	OK
32	Kitchen	On 3rd kettle left	2	HOFF	F&T	UNK	0.75	15	0	PS	OK
33	Kitchen	On 4th kettle left	2	HOFF	F&T	UNK	0.75	15	0	PS	OK
34	Kitchen	on 5th kettle left	2	HOFF	F&T	UNK	0.75	15	0	PS	BT
35	Kitchen	To right of kitchen in back	2	HOFF	RAD	17C	0.5	15	0	DP	OS
36	Kitchen	To right of kitchen in back	3	HOFF	RAD	17C	0.5	15	0	DP	OS
37	Kitchen	To right of kitchen in back	3	HOFF	RAD	17C	0.5	15	0	DP	OS
38	Kitchen	In Kitchen to left	3	HOFF	RAD	17C	0.5	15	0	DP	OS
39	Kitchen	In Kitchen to left	3	HOFF	RAD	17C	0.5	15	0	DP	OS
40	Kitchen	In Kitchen to left	3	HOFF	RAD	17C	0.5	15	0	DP	OS
41	Kitchen	On dishwasher	1	ARM	BUC	800	0.75	15	0	PS	OK
42	Kitchen	In dining room to right	10	ARM	F&T	B5	1.5	15	0	CL	OS
43	Kitchen	In dining room to right	10	ARM	F&T	B5	1.5	15	0	CL	OS
44	Kitchen	In dining room to left	10	ARM	F&T	B5	1.5	15	0	CL	OS
45	Kitchen	In dining room to left	10	ARM	F&T	B5	1.5	15	0	CL	OS
46	Dorm 10 Mech Room	On heat exchanger in rear	5	STE	F&T	UNK	2	15	0	DP	OK
46	Dorm 10 Mech Room	In front of heat exchanger	5	HOFF	F&T	FT53	0.75	15	0	DP	OK
48	Dorm 10 Mech Room	On water heater	5	HOFF	F&T	FT53	0.75	15	0	DP	OK
49	Dorm 2 Mech Room	Down ladder to right of room	5	DUN	F&T	31BA	2	15	0	DP	OK
50	Dorm 2 Mech Room	Back wall of heat exchanger	4	SAR	F&T	FT15	0.75	15	0	DP	BT
51	Dorm 2 Mech Room	On 1st water heater	3	HOFF	F&T	015H	1.5	15	0	DP	OK
52	Dorm 2 Mech Room	On 1st water heater	4	HOFF	RAD	8C	0.75	15	0	DP	BT
53	Dorm 2 Mech Room	On 2nd water heater	3	HOFF	F&T	015H	1.5	15	0	DP	OK
54	Dorm 2 Mech Room	On 2nd water heater	4	HOFF	RAD	17C	0.75	15	0	DP	OK
55	Dorm 2 Mech Room	Between heaters in rear	3	HOFF	F&T	UNK	1.5	15	0	DP	OK
56	Dorm 2 Upstairs	Near bathroom to right	6	ARM	F&T	B3	1.25	15	0	DP	OS
57	Dorm 2 Upstairs	After bathroom to right	6	HOFF	RAD	17C	0.5	15	0	DP	OS
58	Dorm 2 Upstairs	To left down hall to end	6	HOFF	RAD	17C	0.5	15	0	DP	OS
59	Dorm 2 Upstairs	Left beginning of hall	6	ARM	F&T	B3	1.25	15	0	DP	OS
60	Dorm 2 Upstairs	2nd floor to right	6	ARM	F&T	B3	1.25	15	0	DP	OS

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TAG	LOCATION	AREA	Elevation (ft)	Manufacturer	Type	Model	Connection (in.)	Inlet Pressure	Outlet Pressure	Application	Condition
61	Dorm 2 Upstairs	2nd floor to right	6	HOFF	RAD	17C	0.5	15	0	DP	OS
62	Dorm 2 Upstairs	2nd floor to left	6	ARM	F&T	B3	1.25	15	0	DP	OS
63	Dorm 2 Upstairs	2nd floor to left	6	HOFF	RAD	17C	0.5	15	0	DP	OS
64	Dorm 2 Upstairs	In rec room 2nd floor	3	HOFF	RAD	17C	0.5	15	0	DP	OS
65	Dorm 2 Upstairs	Upstairs on heat exchanger	3	HOFF	F&T	UNK	0.75	15	0	DP	OK
66	Dorm 2 Upstairs	Upstairs on heat exchanger	3	HOFF	F&T	UNK	1	15	0	DP	BT
67	Dorm 5 Mech Room	Behind air handler on right	3	ARM	F&T	B3	0.75	15	0	DP	OS
68	Dorm 5 Mech Room	Behind air handler on right	3	ARM	F&T	B3	0.75	15	0	DP	OS
69	Dorm 5 Mech Room	PRV station on back wall	3	ARM	BUC	800	0.75	50	0	DP	OK
70	Dorm 5 Mech Room	PRV station on back wall	3	ARM	BUC	800	0.75	50	0	DP	OK
71	Dorm 5 Mech Room	On last water heater	3	HOFF	F&T	FT53	0.5	15	0	DP	OK
72	Dorm 5 Mech Room	On last water heater	3	HOFF	F&T	UNK	1.5	15	0	DP	OK
73	Dorm 5 Mech Room	Between water heaters	3	SAR	F&T	FT15	1.25	15	0	DP	BT
74	Dorm 5 Mech Room	On 2nd water heater	3	HOFF	F&T	FT53	0.5	15	0	DP	OK
75	Dorm 5 Mech Room	On 2nd water heater	3	HOFF	F&T	UNK	1.25	15	0	DP	OS
76	Dorm 5 Mech Room	Trap 10 feet behind tag 76 on wall	2	SAR	TD	TD52	0.75	80	0	DP	OK
77	Dorm 5 Mech Room	On PRV station to right	5	HOFF	F&T	FT53	0.75	15	0	DP	OK
78	Dorm 5 Mech Room	On PRV station to right	2	SAR	TD	TD52	0.75	80	0	DP	OK
79	Dorm 5 Mech Room	On PRV station to right	2	SAR	TD	TD52	0.75	80	0	DP	BT
80	Dorm 5 Mech Room	Above condensate pump	7	ARM	F&T	B7	2	15	0	DP	OK
81	Dorm 5 Mech Room	Bottom of stairs	7	ARM	BUC	800	0.75	15	0	DP	OK
82	Dorm 5 Upstairs Mech Room	On water heater to right of room	2	DUN	F&T	UNK	2	15	0	DP	OK
83	Dorm 5 Upstairs Mech Room	To the left of tag 82	2	DUN	F&T	UNK	1.25	15	0	DP	OS
84	Dorm 5 Upstairs Mech Room	To the left of tag 82	3	DUN	F&T	UNK	1.25	15	0	DP	OS
85	Dorm 5 Upstairs Mech Room	To the left of tag 82	3	DUN	F&T	UNK	0.75	15	0	DP	OK

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TAG	LOCATION	AREA	Elevation (ft)	Manufacturer	Type	Model	Connection (in.)	Inlet Pressure	Outlet Pressure	Application	Condition
86	Dorm 5 Upstairs Mech Room	Behind water tank on right	3	ARM	BUC	800	0.75	60	0	DP	OK
87	Dorm 5 Upstairs Mech Room	Behind water tank on right	2	ARM	BUC	800	0.75	60	0	DP	BT
88	Dorm 11 Mech Room	On Heat exchanger #1	3	HOFF	F&T	UNK	0.75	15	0	DP	OS
89	Dorm 11 Mech Room	On heat exchanger #2	3	DUN	F&T	40 275	0.75	15	0	DP	OK
90	Dorm 11 Mech Room	Behind #2 heat exchanger	5	DUN	F&T	40 275	0.75	15	0	DP	OK
91	Dorm 11 Mech Room	Back side of AHU #4	2	DUN	F&T	40 275	0.75	15	0	DP	OK
92	Dorm 11 Mech Room	Back side of AHU #4	2	HOFF	F&T	015H	0.75	15	0	DP	OK
93	Dorm 7 Mech Room	Left side near generator	2	SAR	BUC	B1X	0.75	15	0	DP	BT
94	Dorm 7 Mech Room	Upstairs - straight	8	ARM	F&T	B3	0.75	15	0	DP	BT
95	Dorm 7 Mech Room	Under tag 94	2	ARM	F&T	B6	1.5	15	0	DP	OS
96	Dorm 7 Mech Room	On 1st heat exchanger	2	ARM	BUC	814	1.5	15	0	DP	OK
97	Dorm 7 Mech Room	On 2nd heat exchanger	2	ARM	BUC	814	1.5	15	0	DP	OK
98	Dorm 7 Mech Room	Back wall PRV station	2	ARM	F&T	75	0.75	15	0	DP	OK
99	Dorm 7 Mech Room	Back wall PRV station	2	ARM	F&T	B3	0.75	15	0	DP	OK
100	Dorm 8 Mech Room	On water heater near wall	2	HOFF	RAD	17C	0.75	15	0	DP	OK
101	Dorm 8 Mech Room	On water heater near wall	3	PK	BUC	UNK	1.5	15	0	DP	OS
102	Dorm 8 Mech Room	Between 1 & 2 water heater	3	HOFF	F&T	58	1.25	15	0	DP	OK
103	Dorm 8 Mech Room	On 1st water heater	3	HOFF	RAD	17C	0.75	15	0	DP	OK
104	Dorm 8 Mech Room	On 1st water heater	3	HOFF	F&T	UNK	1.25	15	0	DP	OK
105	Dorm 8 Mech Room	On back wall near 1st water heater	5	HOFF	F&T	FT53	0.75	15	0	DP	OK
106	Dorm 8 Mech Room	On back wall near 1st water heater	3	SAR	TD	TD52	0.75	60	0	DP	BT
107	Dorm 8 Mech Room	Near condensate tank	7	DUN	F&T	UNK	2	15	0	DP	OK
108	CPTU Mech Room	On first heat exchanger	3	ARM	F&T	B8	2	15	0	DP	OK
109	CPTU Mech Room	On first heat exchanger	3	ARM	F&T	B8	2	15	0	DP	OK
110	CPTU Mech Room	On second heat exchanger	3	ARM	F&T	B8	2	15	0	DP	OK

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TAG	LOCATION	AREA	Elevation (ft)	Manufacturer	Type	Model	Connection (in.)	Inlet Pressure	Outlet Pressure	Application	Condition
111	CPTU Mech Room	On second heat exchanger	3	ARM	F&T	B8	2	15	0	DP	OK
112	CPTU Mech Room	On 1st water heater	2	ARM	BUC	800	0.75	15	0	DP	OK
113	CPTU Mech Room	On second water heater	2	ARM	BUC	800	0.75	15	0	DP	OK
114	CPTU Mech Room	Above 1st water heater	9	ARM	BUC	800	0.75	15	0	DP	OK
115	Nursing Care Facility Basement	Straight through door	7	SAR	BUC	B1X	0.75	15	0	DP	OK
116	Nursing Care Facility Basement	On left side after turn on wall	5	ARM	F&T	B8	2	15	0	DP	OK
117	Nursing Care Facility Basement	Behind large red tank	5	HOFF	F&T	UNK	0.5	15	0	DP	BT
118	Nursing Care Facility Basement	Behind large red tank	4	HOFF	F&T	UNK	1.25	15	0	DP	OK
119	Nursing Care Facility Basement	In front of heat exchangers	3	SAR	BUC	B1H	0.75	40	0	DP	OK
120	Nursing Care Facility Basement	On first heat exchanger	2	ARM	F&T	B8	2	15	0	DP	OK
121	Nursing Care Facility Basement	Heat exchanger in back of room	2	ARM	F&T	B8	2	15	0	DP	OS
122	Nursing Care Facility Basement	Heat exchanger in back of room	2	ARM	F&T	B8	2	15	0	DP	OS
123	Nursing Care Facility Basement	Heat exchanger in back of room	2	ARM	F&T	B8	2	15	0	DP	OS
124	Admin Building Basement	Above room 017	6	SAR	TD	TD52	0.75	15	0	DP	OS
125	Admin Building Basement	In front of trans- room	8	HOFF	RAD	8C	0.75	15	0	DP	OS
126	Admin Building Basement	Across from trans-	8	HOFF	RAD	8C	0.75	15	0	DP	OS
127	Admin Building Basement	In transportation room	8	HOFF	RAD	8C	0.75	15	0	DP	OS
128	Admin Building Basement	In transportation room	8	HOFF	RAD	8C	0.75	15	0	DP	OS
129	Admin Building Basement	In transportation room	8	HOFF	RAD	8C	0.75	15	0	DP	OS
130	Admin Building Basement	In transportation room	8	HOFF	RAD	8C	0.75	15	0	DP	OS