



TRANE®

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TRANE – Portland, OR

RFQ Response for

ENERGY SERVICE COMPANY RFQ # ODE-09-16

July 2, 2009

Presented by:
Anton B. Mogilevsky, LEED AP®
Business Development Manager
(503) 431-2516

Oregon CCB Number: 137820

Trane is an NAESCO Accredited Energy Services Company

Cover Letter

Trane is pleased to submit our qualifications to the State of Oregon Department of Energy for consideration as a qualified Energy Services Company for public work throughout the State.

Trane combines leadership in energy efficiency, service and manufacturing to offer a comprehensive approach to the way buildings work. This approach, called High Performance Building, can include facility assessments, life-cycle cost analyses and system optimization measures. The resulting plans are designed so that structures will reliably and efficiently sustain their intended functions over time. By evaluating all the systems in a building, we can make recommendations based on actual performance rather than tasks or schedules.

Our Perspective

This represents a complete change in the way we think and talk about our work, and the value we can offer you. Instead of looking at individual components, we take a much broader view—seeing the entire infrastructure of a building or campus as an essential part of the way you work.

Trane is uniquely qualified to provide these strategic services. We offer global reach and local presence, combining depth of experience with responsive, flexible service. We're also the leading manufacturer of building comfort systems. But our recommendations are always based on engineering analysis, so we can guarantee the best solutions for your actual needs.

Your Results

Every project contains opportunity and risk. By focusing on total cost of ownership, we can identify and help you manage those risks to maximize the financial value of your project. We deliver quality with world-class equipment, knowledgeable professionals, and unmatched experience in facility maintenance and monitoring. Our long-term success depends on yours.

Our goal is to present a comprehensive solution that helps you reach your long-term goals. During the initial study, we analyze several approaches to making improvements in your facilities. We then balance the opportunities we find with your financial criteria. The result is a custom solution designed for each client.

"The Proposer agrees to be bound by and will comply with the provisions of ORS 279C.870 during phase II of any awarded ESPC". "The Proposer has not discriminated and will not discriminate against minority, women or emerging small business enterprises in obtaining any required subcontracts".



Anton B. Mogilevsky
Business Development Manager

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Section B: Trane ESCO Profile

B. Trane ESCO Profile

1. General Firm Information

Firm Name: Trane U.S. Inc.

Mailing Address: One Centennial Avenue, Piscataway, NJ 08855

Physical Address: Same.

Names, Titles and Phone Numbers of two principal contact persons:

a. Anton B. Mogilevsky, Business Development Manager, 503-431-2516

b. Michael Ketcham, Project Developer, 503-477-5070

Submittal is for:

- ☒ Parent Company
☐ Subsidiary
☐ Division
☐ Branch Office

List any Division or Branch Offices that will participate in the development of the statement of qualification, in its evaluation process, or in the performance of any Services:

Name of Office: TraneOregon, an independent sales agent of Trane U.S. Inc.

Address: 7257 SW Kable Lane, Portland, OR 97224

Name and Address of Parent Company (if applicable):

Name: Trane Inc.

Address: One Centennial Avenue, Piscataway, NJ 08855

Former Name(s) of Firm (if applicable):

Name: American Standard Inc. (doing business as Trane, a division of American Standard Inc.), The Trane Company

Address: One Centennial Avenue, Piscataway, NY 08855

Oregon CCB Number: 137820 as Trane (64452 for the TraneOregon)

2. Date Prepared: March 01 through March 27, 2009

3. Type of Entity

☒ Corporation ☐ Sole Proprietorship ☐ LLC
☐ Partnership ☐ Joint Venture ☐ Other (specify)

4. Federal Employer Identification Number: 25-0900465

5. Year Firm Established: 1913

6. Five-year summary of contract dollar amounts of energy related services previews:

2008: \$128.66 M

2007: \$132.30 M

2006: \$111.41 M

2005: \$94.78 M

2004: \$52.85 M

Estimate of total value for all energy-related contracts that are currently in force with your company: \$155 Million (total value) as of March, 2009.

7. Corporate Background

a. **Years Under Present Name.** How many years has your firm been in business under its present business name? <1 as Trane US Inc Years

b. **Former Names.** Indicate all other names by which your organization has been known and the length of time known by each name.

Name: American Standard Inc. (dba Trane, a division of American Standard Inc.) 1984-2007

Name: American Radiator & Standard Sanitary Corp. 1929-1967

Name: The Trane Company 1913-1984

c. **Years in Energy Business.** How many years has your firm been providing energy-efficiency related services? 96 years. How many years your firm has offered performance contracting services? 14 years.

d. **Number of Contracts.** Indicate the number of energy savings performance contracts actually implemented by your firm. (**NOTE:** If this statement of qualification is submitted by a branch office or division of a parent company, indicate the number of projects that have been managed directly by the specific branch or division.)

Approximately 325 ESCO contracts since 1995

- e. **State Qualification.** Identify all states in which your firm is legally qualified to do business.

All 50 states.

- f. **Lawsuit Involvement.** Has your firm been involved in a construction related lawsuit (other than labor or personnel litigation) during the past five (5) years?

Trane is a large global company and, as such, becomes involved in claims, disputes, and litigation that arise in the ordinary course of its businesses. Company-wide compiled data of this scope is not readily available and this information can not be accurately ascertained without extensive and burdensome research. However, no such disputes or litigation is likely or expected to adversely affect Trane's ability to perform hereunder. *Trane's local office, TraneOregon, has not been involved in any applicable lawsuit in last 5 years.*

- g. **Construction Arbitration Involvement.** Has your firm been involved in any construction arbitration demands during the past five (5) years?

Trane is a large global company with various businesses and offices around the world. Company-wide compiled data of this scope is not readily available and this information can not be accurately ascertained without extensive and burdensome research. *Trane's local office, TraneOregon, has not been involved in any proceedings in last 5 years.*

- h. **National Labor Relations Board or Similar Involvement.** Has your firm been involved in any lawsuits, administrative proceedings or hearings initiated by the National Labor Relations Board, State of Oregon Bureau of Labor and Industries, or a similar state or federal Agency during the past five (5) years?

Trane is a large global company with various businesses and offices around the world. Company-wide compiled data of this scope is not readily available and this information can not be accurately ascertained without extensive and burdensome research. *Trane's local office, TraneOregon has not been involved in any hearings or lawsuits in last 5 years.*

- i. **OSHA-Type Proceedings.** Has your firm been involved in any lawsuits, administrative proceedings or hearings initiated by the Occupational Safety and Health Administration or a similar state or federal Agency during the past five (5) years regarding the safety of one of your firm's projects?

Trane is a large global company with various businesses and offices around the world. Company-wide compiled data of this scope is not readily available and this information can not be accurately ascertained without extensive and burdensome research. *Nonetheless, there have been no proceedings for TraneOregon in last 5 years.*

- j. **Bankruptcy Involvement.** Has your firm, or any of its parents or subsidiaries, ever had a bankruptcy petition filed in its name, voluntarily or involuntarily? **No.**

8. Financial Information

- a. **Statement of Financial Conditions.** Attach the most recent annual Statements of Financial Conditions, including balance sheet, income statement and statement of cash flows, dated within the past twelve (12) months. Provide the name, address, and the telephone number of firm(s) that prepared the Financial Statements:

Financial Statements may be found in the Trane 2007 Annual Report in **Appendix 1.**

Name: Ernst & Young LLP

Address: 5 Times Square, New York, NY 10036-6530

Phone: (212) 773-3000

- b. **Accounting Firm Information.** If these financial Agency documents were not produced in-house, indicate the name, address and phone number of the firm(s) that prepared these financial statements.
- c. **Financial Statements – Three Years.** In addition to the foregoing, ODOE may require ESCOs selected for interviews to provide their annual financial statements for each of the last three years.
- d. **Bonding Limits Information.** Attach a letter or other signed Agency documentation from a surety company authorized to transact business in Oregon stating your firm's bonding limits or capacity for this Project, including for the performance bond and payment bond required for the Phase II Design and Construction Contract.

The requested bonding documentation may be found in **Appendix 2.**

9. **Attachments.** List all attachments to your SOQ created to address additional information. List attachments by number and heading here in this ESCO Profile. If a computer-generated form is used, detailed descriptions can be included in the appropriate section rather than prepared as an attachment.

| | <u>Item #</u> | <u>Heading Name</u> |
|------------------|---------------|---------------------------------|
| Attachment for # | <u>8a</u> | <u>Trane 2007 Annual Report</u> |
| Attachment for # | <u>8d</u> | <u>Sample Bond Letter</u> |
| Attachment for # | _____ | _____ |
| Attachment for # | _____ | _____ |
| Attachment for # | _____ | _____ |

Section C: Trane ESCO Qualifications and Approach to Projects

Section C: Trane ESCO Qualifications and Approach to Projects

Please provide answers to each category listed below. Number and title each answer to the corresponding category.

1. General Qualifications

- a. **Personnel Information.** Provide the following information as it relates to your general approach to a proposed Project.

- 1) **Full-Time Personnel.** Indicate the number of full-time personnel employed by your firm.

Trane employs more than 29,000 full-time personnel worldwide. Trane is the world's largest manufacturer of commercial heating, ventilating, and air conditioning equipment, and is a wholly owned subsidiary of Ingersoll Rand (NYSE: IR). With 34 plants in 10 countries, Trane holds a leading position in premium commercial, residential, institutional and industrial markets.

- 2) **Qualifications and Experience of Project Personnel.** Identify those persons or subcontractors (and if a subcontractor, the person within that subcontractor entity) who will have the primary responsibility for each task and phase of an Agency Project including technical energy analysis, engineering design, construction management, construction, training, and post-contract monitoring (the "Key Personnel"). For each of the individuals listed, indicate the following: name, title, intended role and responsibilities for the duration of the ATA, educational background, specific qualifications related to role and responsibilities, past relevant experience, number of years of relevant experience, supervisory responsibilities (if relevant to role), list of projects the individual was associated with during the last five (5) years including type of project and project cost, as well as a copy of the individual's resume.

Resume's for key personnel are found in **Appendix 3**. Following is a summary of key individuals and their experience levels:

| Name | Title | Role | Education | Experience |
|------------------|---|--|--|--|
| Anton Mogilevsky | Business Development Manager | Manages the overall business relationship & the communication process. | BS Engineering, University of Florida MS Health & Safety Management, Indiana University Trane Graduate Training Class of 87-II | 25+ years facilities engineering and construction experience |
| Vince Canino | Director, Service and Solutions, West Territory | Corporate oversight of all aspects of ESCO operations in the West | BT in Mechanical Engineering, State University of NY, Binghamton BS in Engineering Mechanics, Pennsylvania State University | 20+ years energy engineering and energy services contracting |

| | | | | |
|---------------|-------------------------------------|--|--|---|
| Stan McIntyre | VP & General Sales Manager | Oversight of sales and execution processes for TraneOregon | BS Mechanical Engineering, Oregon Institute of Technology Trane Graduate Training Class of 87-I | 25+ years contracting and engineering experience |
| Neil Maldeis | National Energy Engineering Manager | Manages the Engineering Process | BS Mechanical Engineering, University of Minnesota | 25+ years mechanical/project engineer in the building construction and energy conservation fields |
| Mike Nopp | Project Manager | Manages the construction process. | BS Mechanical Engineering, University of Idaho | 20+ years engineering and construction management experience |
| Mike Ketcham | Project Developer | Manages the TEA, Design, and M&V Processes. | BS MS Engineering, University of Colorado, Boulder | 10 years public & private sector engineering experience |

- 3) Areas of Expertise. List all areas of expertise related to potential energy and water improvements in facilities. Include specialized areas of expertise that might be relevant to an Agency Project (energy management control systems, renewable energy system application or rehabilitation, lighting design, etc.) Also describe the professional and skilled trades that your firm customarily performs with employees.

Sustainability: Trane has received recognition for supporting global sustainability and environmentally friendly practices. After earning a “Best Practice Award” from the Sustainable Buildings Industry Council (SBIC) in 2001, we earned the SBIC “Best Sustainable Practice” award for three years running, in 2003, 2004, and 2005. These prizes reflect our efforts to (1) create sustainable products, (2) promote sustainable facilities design and operation, and (3) employ environmentally sound practices in our own company operations.

Among our most prestigious honors is our recent inclusion in the Clinton Climate Initiative (CCI), which aims to reduce greenhouse-gas emissions in America’s cities. By joining this elite group as a CCI Partner, Trane was publicly recognized for our unique blend of knowledge of building systems and energy services and performance contracting.

More than 450 Trane employees are LEED Accredited Professionals.

Central Plant Improvements: Measures to increase the efficiency and reliability for central plant equipment and systems. Newer technologies provide for more efficient building temperature control and a variety of additional operating benefits. Integration of existing system components and flexibility for future modifications are consideration factors. Goals include compliance with current regulations and standards, improved reliability and increased functionality, lessening environmental impacts and simplifying or reducing the cost of maintenance and operations.

Lighting Upgrades: Trane's total solutions address facility lighting needs using industry standards and best design practices. Application of the latest technologies will most often provide significant cost avoidance savings and improvements to lighting quality in virtually every lighting situation from parking garages to clean rooms. We have extensive experience in all aspects of lighting design from extending access to natural light, daylighting controls, and high efficiency fluorescents to LED technologies.

Controls and HVAC: Trane solutions include upgrading of controls and HVAC systems throughout the facility. The emphasis is on improvements to comfort, air quality issues, control and reliability to reduce nuisance complaints and to improve efficiency.

Water Conservation: Advances in water technologies in recent years combined with significant water cost increases in many parts of the country combine to increase the impact of water conservation strategies on the total financial package. Trane conducts a complete assessment of water fixtures and upgrade options which frequently yield excellent economic opportunities consistent with our clients' energy programs.

On-going Service, Monitoring & Training: To assure that Trane's solution continues to deliver its guaranteed performance results, the project scope includes a formal, on-going service program, testing, monitoring and staff training. These post-installation services target the operability, reliability and sustainability of project performance well beyond the contract scope. Both Trane and the client work to determine the scope and responsibility for on-going service requirements, maintaining open communications throughout the contract period.

- 4) Contract Negotiations Personnel. Give the name and address of the person(s) who will have primary responsibility for contract negotiations.

Anton B. Mogilevsky, Business Development Manager, TraneOregon, 7257 SW Kable Lane, Portland, OR 97224

- 5) Subcontractors. Describe the nature of construction-related work generally conducted by subcontractors and discuss your practices in assigning particular subcontractors to particular Agency projects. Provide qualifications and experience information on firms and areas of expertise.

Trane's approach to contracting and consulting mirrors our approach to supporting building owners and end users: we develop mutually beneficial relationships for the long-term. Trane prequalifies potential subcontractors by audit and experience. Each subcontractor must complete a detailed application, meet stringent financial requirements, and have sufficient experience, licensure, insurance, and bonding capabilities in the specific trade for which they are under consideration. Trane prefers to work with local subcontractors, particularly those with site knowledge and experience. Trane gives preference to our client's preferred subcontractors if they comply with Trane's requirements such that Trane can guarantee the work. Trane's prequalification survey is available upon request.

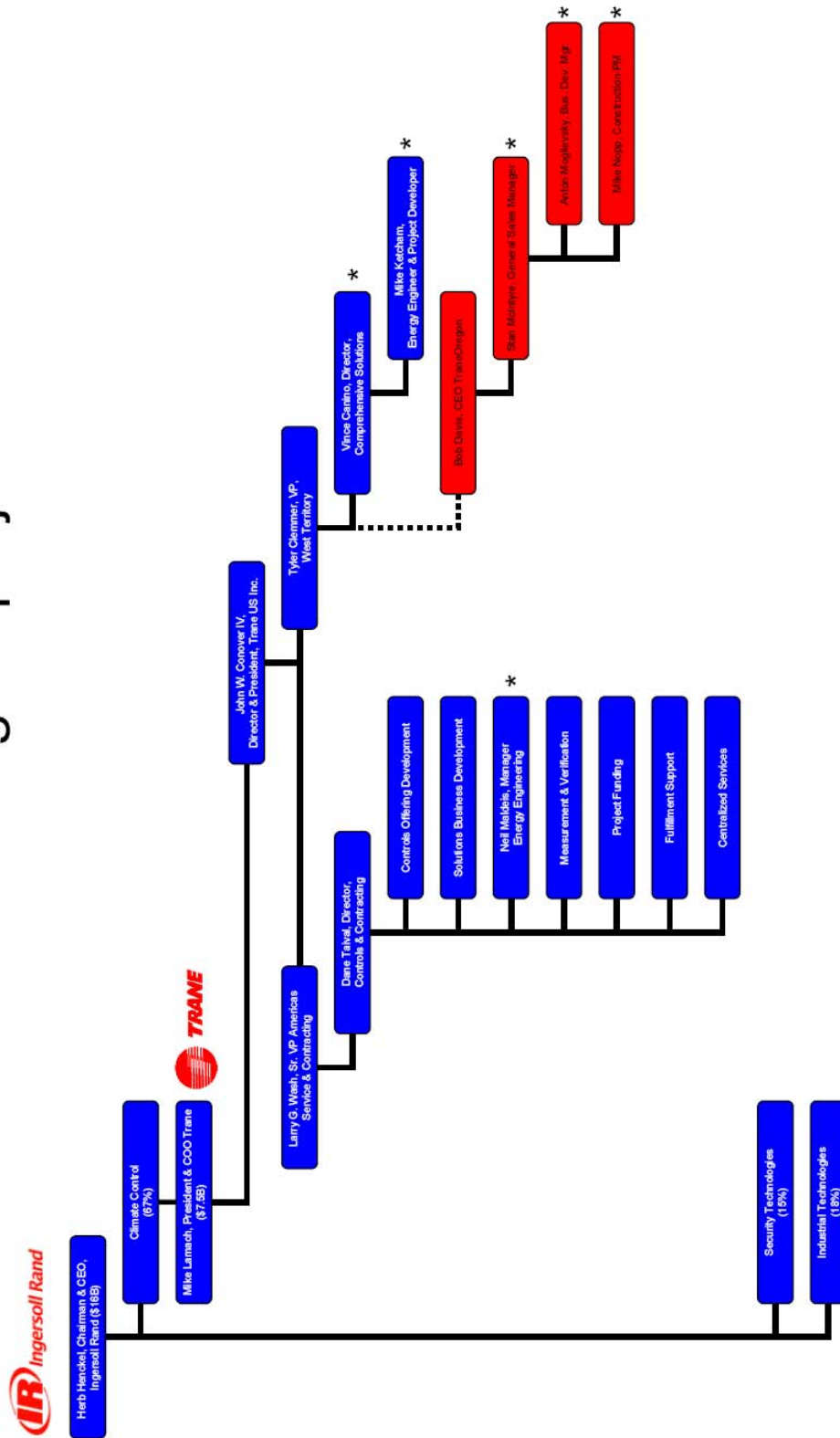
The following table describes typical third party subcontractor assignments:

| Performance Contracting Services | Direct Provider | Third Party | Not Provided |
|---|------------------------|--------------------|---------------------|
| Project Energy Study | X | | |
| Engineering Design | X | X | |
| Project Economic Analysis | X | | |
| Savings Guarantee | X | | |
| Rigging & Installation | | X | |
| Specialty Trades | | X | |
| Project Financing | | X | |
| HVAC System Training | X | | |
| Energy Management Training | X | | |
| Scheduled Maintenance Services | X | | |
| HVAC Repair Services | X | | |
| Emergency Services | X | | |
| Guarantee Monitoring | X | | |

- 6) Sub-consultants. Identify any sub-consultants ESCO plans to use for an Agency Project and categories of technical services or design-related services to be performed by sub-consultants. Provide qualifications and experience information on firms and areas of expertise.

| Name | Specialization | Qualifications | Experience / Expertise |
|------------------------|--------------------------------|---------------------------|--|
| Heinz Rudolf, FAIA | Architecture | State Licensed Architect | Principal architect on over 80 schools in the NW. Nationally recognized leader in sustainability, natural ventilation, and daylighting. |
| BOORA Architects | Architecture | State Licensed Architects | See above. Mr. Rudolf is a principal in the firm. |
| SERA Architects | Architecture | State Licensed Architects | Architectural design & planning, facility and system assessment with a focus on high performance buildings, sustainable design, and healthy indoor environments. Multiple LEED platinum and gold projects. |
| Interface Engineering | MEP Engineering, Commissioning | State Licensed Engineers | Internationally recognized MEP firm specializing in LEED and sustainability-related projects. |
| Glumac | MEP Engineering, Commissioning | State Licensed Engineers | Fully integrated MEP and commissioning agency well recognized throughout the NW for innovation and creative approach to projects. |
| Water Technology, Inc. | Aquatic Centers | State Licensed Engineers | Internationally acclaimed aquatic center experts. Integration of pool chemistry, indoor air quality, and system energy efficiency. |

Trane US Inc. – ESCO Organization for Oregon & SW Washington projects



* - Indicates a "key individual" for execution of Performance Contracting in Oregon & SW Washington

8) Key personnel references.

- a. References for each of the Key Personnel you propose for Agency Projects in your SOQ. The references should represent at least one of each of the following: Owners, Sub-consultants, Subcontractors and Architects. The references should be from projects of varying size, scope and complexity.

References for key personnel are found on the individual resumes. Resume's for these key personnel are found in **Appendix 3.**

- b. Project History. Briefly describe all energy savings performance contracts or related projects which your firm has managed within the last three (3) years. (Do not include projects/contracts managed by team members or subcontractors.)

Include the following information on each project:

- | | | |
|---------------------------------------|--------------------------------|-----------------------------------|
| 1) <u>Project Identification.</u> | 2) <u>Project Dates.</u> | 3) <u>Project Size.</u> |
| 4) <u>Project Dollar Amount.</u> | 5) <u>Source of Funds.</u> | 6) <u>Contract Terms.</u> |
| 7) <u>Technical Design Personnel.</u> | 8) <u>Project Schedule.</u> | 9) <u>List of Improvements.</u> |
| 10) <u>Projected Annual Savings.</u> | 11) <u>Guaranteed Savings.</u> | 12) <u>Actual Annual Savings.</u> |
| 13) <u>Savings Summary.</u> | 14) <u>Comments.</u> | |
- 15) References. Provide the names, addresses and current telephone numbers of three (3) owner's representatives and three (3) subcontractor or sub-consultant representatives from the projects identified in this sub-section 1(b), to be used as references to help determine any ATA award and later award of ESPCs for individual Projects. Verify that the individuals identified have had direct contact with the referenced project, and verify that the phone number is current.

Trane Summary of ESCO Projects

| | | | | | | | | | |
|-----------------------|---------|---------------------------------------|----------------------------|--------------------------|---------------------------|--------------------------|---|-----------------------|--------------------------------|
| Project Name | | Anaheim Memorial Medical Center | Columbus Schools | Ingham County | North Carolina Art Museum | Pensacola Junior College | Santa Rosa Junior College | Shelby County Schools | Strong Museum |
| Owner | | Anaheim Memorial Medical Center | Columbus School District | Ingham County Government | State of North Carolina | Pensacola Junior College | Sonoma County Junior College District | Shelby County Schools | Strong National Museum of Play |
| Vertical | | Hospital | K-12 | Government | Special Use | Higher Ed | Higher Ed | K-12 | Special Use |
| Location (City/State) | | Anaheim, CA | Columbus, WI | Mason, MI | Raleigh, NC | Pensacola, FL | Santa Rosa, CA | Columbiana, AL | Rochester, NY |
| Project Dates | Start | Jun-2002 | Jun-2000 | Jul-2005 | Sep-2005 | Nov-2006 | Feb-2004 | Oct-1995 | Jan-2004 |
| | End | Jun-2012 | Jan-2001 | Jun-2015 | Sep-2017 | Oct-2016 | Jun-2008 | Feb-2016 | April -2027 |
| Project Size | # Bldgs | 1 | 3 | 9 | 1 | 4 | 5 + 2 Pools | 29 | 1 |
| | Sq. Ft. | 217 Bed Facility | 234,000 | 770,000 | 171,870 | 1,003,845 | 155,534 | 2,100,000 | 282,000 |
| Project Size | \$ x 1K | Phase 1: \$3,819 Phase 2; \$564 | \$1,980 | \$1,594 | \$4,996 | \$6,329 | \$913 | \$12,480 | \$2,480 |
| Source of Funds | | Finova | Capital Lease / State Loan | Bond | Bank of America | Self-Funded | Self-Funded | Capital Lease | Self-Funded |
| Terms | | Turnkey project with 10-year contract | Guaranteed Savings | Guaranteed Savings | Guaranteed Savings | Guaranteed Savings | Turnkey project with 3-year Performance Guarantee | Guaranteed Savings | Guaranteed Savings |

| | | | | | | | | | |
|--|--|--|--|--|--|--|---|--|---|
| Tech. Design Person (also serves as Sub. Ref.) | | Mr. Michael Gilmore, Donn C. Gilmore & Assoc., Inc. 714.639.1429 | Trane US, Inc. Mr. Neil Maldeis | Mr. Craig Trierweiler Matrix 517-487-2511 | Mr. Michael Edmondson Edmondson Engineers, P.A. 919.544.1936 | Mr. Lung-Sing Wong, PE Servidyne Systems, LLC 800.241.8996 | Mr. Tony Costa Costa Engineers 707.252.9177 | Mr. Dan Blackman Edmonds Engineering 205.988.2069 | Mr. Allen Casey, President M/E Engineering, P.C. 585.288.5590 |
| On Schedule (Y/N) | | No | Yes | Yes | Yes | In process | No | Yes | Yes |
| List of Improvements | | *1 | *2 | *3 | *4 | *5 | *6 | *7 | *8 |
| Required to Pay? (Y/N) | | No | No | No | No | No | No | No | No |
| Owner Reference | | Richard Whitney Executive Dir. Support Services 714.999.5253 | Mark Jansen Superintendent 920.623.5950 | Rick Terrill, Director Ingham County 517.676.7310 | Mr. Michael Hughes State Const. Project Manager 919.807.4100 | Walt Winter Dir. Physical Plant & Services 850.484.1903 | Jay Carpenter Executive Director | Tom Ferguson Assistant Superintendent of Operations 205.682.7000 | Lyle Beach Chief Financial Officer 585.263.2700 |
| Secondary Reference (subcontract or) | | | Mr. Tim Neitzel Air Temperature Services Madison, WI 608.257.2600 | | | | | | |
| Notes | | **1 | | | **2. | | **3. | **4. | **5. |
| | | | | | | | | | |
| | | Anaheim | Columbus | Ingham | NC Art | Pensacola JC | Santa Rosa | Shelby CS | Strong Museum |
| Guaranteed Annual Savings | | NA | Save 227,907 kWh, 1240 kW demand, 24,253 CCF | Save 2,980,716 kWh+ 5643 kW demand, | Save \$553,260 energy + \$25,129 CA | Save 4,383,208 kWh, 161,977 Therms, 3634 | Save \$88,301 x (Load Factor) | Save 1,209,351 kWh, 31,651 Therms, 843 | Save 1,515,246 kWh, 3061 kW, -21527 |

| | | | | | | | | | |
|------------------------------|--|----|--|--|--------------------------------------|-----------------------------|--|---|--|
| | | | gas, for a total of \$27,782 saved. | \$40,000 in CA, add \$13786 in therms (17630 therms), save \$172,238 total | | kW, \$ 659,000 total | | kW, \$510,007 total | Therms plus \$35,840 CA, \$70,960 total |
| Actual Annual Savings, Yr. 1 | | NA | Saved 293,867 kWh, 1495 kW, 36,206 CCF | Saved 3,241,814 kWh, 5796 kW demand, add 16,120 therms. | Saved \$567,719 energy + \$25,129 CA | NA (project not yet in M&V) | Produced 1,447,854 kWh saving a net \$57,914. (Exceeded goal due to low load factor) | Saved 5,761,377 kWh, 12,854 kW, 99,396 therms. | Saved 158195 kWh, 3089 kW, -152,866 therms |
| Actual Annual Savings, Yr. 2 | | NA | Saved 291,208 kWh, 1495 kW, 35,185 CCF | Saved 3,235,358 kWh, 5794 kW demand, add 17,303 therms. | NA | NA | Produced 1,947,000 kWh, Saved \$77,880 (exceeded goal due to low load factor) | Saved 5,378,682 kWh, 11,986 kW, 71,554 therms. | NA |
| Actual Annual Savings, Yr. 3 | | NA | Saved 292,897 kWh, 1495 kW, 35,834 CCF | NA | NA | NA | NA | Saved 4,956,562 kWh, 11,187 kW, 125,204 therms. | NA |
| Actual Annual Savings, Yr. 4 | | NA | NA | NA | NA | NA | NA | Saved 4,812,968 kWh, 13,100 kW, 151,058 therms. | NA |
| | | | | | | | | | |

*1. Anaheim Memorial Medical Center. Provide emergency chiller on temporary basis, quickly obtain OSHPOD approval, remove and replace existing central utilities without any service interruptions. Replace chillers & cooling tower, replace boilers, replace CUB roof, provide & install new CUB controls, extend controls to facility, add controls to isolation rooms.

*2. Columbus Schools. Lighting retrofits, provide new 5,300 square foot addition, high efficiency lighting retrofits, install low-flow plumbing fixtures, install high efficiency modular boilers, install thermal pane windows, install lighting fixtures and computerized control strategies. Provide air

distribution improvements and direct digital controls. Provide new building management system and training. Provide single-point responsibility of construction and 10-year guarantee.

*3. Ingham County. Provide individual zone control of HVAC & lighting based on occupancy & demand. Eliminate steam blocks. Lighting retrofits & control. Install window glazing. Control upgrades & installation. Facility-wide building automation system with remote access and centralized facility control. HVAC system upgrades.

*4. North Carolina Art Museum. Provide adjustable constant volume conversion, high-pressure humidification, lighting retrofits, Direct Digital Controls (DDC) upgrade, boiler replacements, chiller replacements, cooling tower replacement, pumping system replacements, water conservation, energy management system installation, system optimization, long-term maintenance and service, and on-going and training.

*5. Pensacola Junior College. Provide back-up gas system, central plant improvements, new chilled water systems, primary/secondary pumping systems and controls, install auxiliary systems, DDC control system installation and modifications. Expansion of CW loop, conversion of constant volume air handlings systems to VAV systems, lab hood exhaust.

*6. Santa Rosa Junior College. Installation of two (2) 140-kW Hess Microgen units, installation of two (2) 80-ton absorption chillers, and necessary cogeneration plant ancillaries (exhaust, direct digital controls, building management system and training), single point responsibility of construction and a 3-year minimum uptime performance guarantee.

*7. Shelby County Schools. Geo-thermal heat pump installation, lighting retrofits, Direct Digital Controls (DDC) upgrade, energy management system installation, boiler tune-up and modification, service and training, packaged rooftop installation, chiller replacement, thermal window installation, utility rate optimization and reduction.

*8. Strong Museum. Construction management, hybrid chilled water system, building automation system, LEED Compliant Building Design, systems commissioning, total construction, performance and maintenance responsibility.

**1. What started as a performance contract was converted to a turnkey construction project when the M&V and guarantee portion was deleted, reducing the owner's cost. Trane provided full installation, a service agreement, and training under a 10-year term.

**2. The North Carolina Museum of Art is home to a grand collection of treasures worth in excess of 1-billion dollars. Understanding and properly managing temperature and humidity control is critical to preserving these artifacts.

**3. The Sonoma County Junior College District is one of the largest single college districts in the country, serving approximately 40,000 students each semester within a 1,600 square mile service region that is bordered to the west by the Pacific Ocean, to the east by Napa and Lake counties, and extending from southern Mendocino County to the northern tip of Marin County.

**4. Shelby County Schools is one of the fastest growing school districts in Alabama. The district consists of 28 schools and one administrative building, encompassing 2.1 million square feet.

**5. Strong Museum in Rochester, New York is a renowned institution founded on the personal collections of Margaret Woodbury Strong, reflecting her innate sense of fun and fascination with the commonplace objects of daily life. Since the 1980s, the museum has continually expanded its collection and offerings, hosting a variety of interactive children's exhibits that encourage learning, creativity and discovery. Editors at Child magazine rated Strong "one of the top ten children's museums in the nation," and Family Fun magazine readers voted Strong "one of three most family-friendly museums in the northeast."

*CA – Operational & Cost Avoidance

Section C, Part 2: Performance Contracting Approach

1. Performance Contracting Approach

- a. **Project Summary** (not to exceed 5 pages): Summarize the scope of services (auditing, project development plan design development, construction, monitoring, operations, maintenance, training, financing, etc.) that would be offered for an Agency Project. Include a brief description of your firm's approach to management and the specific benefits your firm can offer a contracting Agency, including, but not limited to general coordination of work on a Project site, as well as mobilization, construction staging, site access, vehicular circulation, pedestrian circulation, noise and etc. Include a sample Project schedule.

Trane's Project Approach

Highlights to the TRANE Approach:

- Communication, planning, innovation, and resourcefulness are our primary characteristics.
- We take a holistic approach, integrating architecture, MEP, and sustainability functions to ensure that functionality and energy conservation work fully in concert.
- We foster an environment of long-term mutually beneficial relationships with our clients, subconsultants, suppliers, and subcontractors. We understand that collaboration brings the most creative and cost effective solutions, and that when working together as a team, everybody wins.
- We have ideas and expertise, but also work hand-in-hand with our customers to develop the project our clients want and need.
- We custom select a team of professionals that most closely meet the needs of each specific project.
- We use technology to bring up-to-date detailed project information to you. We understand that your time and resources are limited and we respect that by keeping our demands of our clients' time to a minimum. We invite participation whenever the clients feel it is appropriate.
- We emphasize training and ownership. Sustainable energy results depend upon the building operators fully understanding the systems we install.

What makes Trane unique among energy services contractors is our project approach. We believe that the clients who have chosen us genuinely want to do something extraordinary -- and so do we. Our charge is to discover our clients' needs and desires for the project and then foster the environment that will help develop the vision, plan, and designs to make it a reality.

Communication is critical to every aspect of the project. It is critical to understanding our client's needs. It is critical to developing the designs for complex interdependent systems. It is critical to maintaining meaningful project schedules. It is critical to jobsite safety. It is critical to the commissioning process. And communication is the essence of the building operator training which is required to ensure sustainable results.

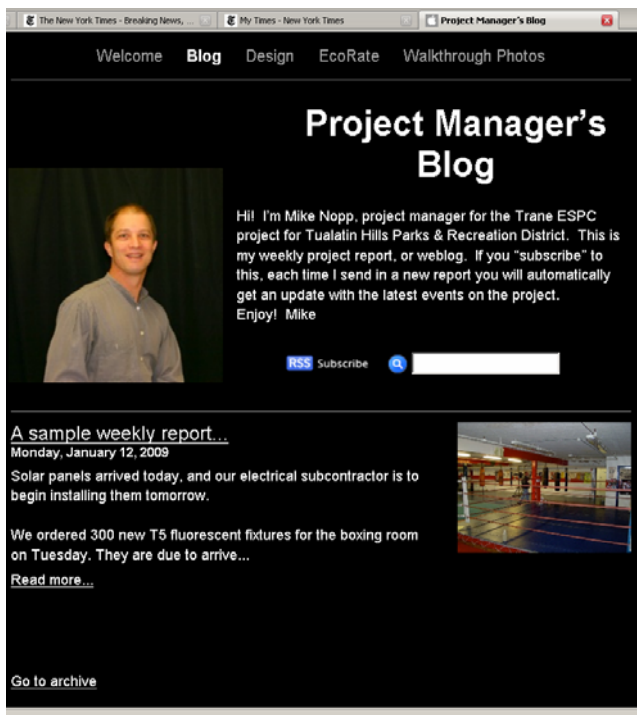
We begin by developing a communication protocol and plan. By communication protocol, we mean an agreement by all parties in the form and manner in which important project

information will be conveyed to the affected parties. For example, in most cases we have an agreement that important information is communicated in writing. We also generally ask for each organization to appoint a point-person, or project lead. In Trane's case, all important project information is communicated to the Account Manager, Trane's lead, who then distributes the information to the affected parties in his organization. When the project moves into the construction phase, Trane's Construction Project Manager will become the communication lead.

Secondly, we develop a communication plan. The communication plan discusses what information needs to be shared by whom, to whom, when, and in what manner. For example, some clients want to have the project manager publish a project schedule on a weekly basis. This would go into the plan so that everyone knows the expectation.

Thirdly, we design our communication tools to meet the protocol and plan. We like to develop project websites and customer domain names for each project (for example "[ProjectName-Energy.org](#)"). Typical website information that will be shared on the sites includes:

1. Walkthrough pictures and "before" & "after" documentation.
2. Descriptions of the ECMs identified for the project.
3. Up-to-date project schedules.
4. Project Manager's daily or weekly reports (blogs) with pictures.
5. Design documents.
6. Safety and security plans and other documents for subcontractors.
7. Commissioning plans & reports.
8. Real-time energy and water consumption data.
9. Educational resources that the client can share with concerned community stakeholders.



The second important thing about our approach after our obsession with communication is our holistic view of the client's facilities. We start at the 50,000 foot level, getting an understanding of the entire enterprise, and then we drill down into the individual campuses, facilities, and systems. It's surprising what can come about as a result of this process. We discuss this somewhat in our approach to design in section 6 with our suggestion of the Design Charrette.

Charrette [shuh-ret] – noun / verb: an intensive effort; a collaborative planning effort; a comprehensive, intensive development plan to bring transformative change. See <http://www.charretteinstitute.org/>

By gathering the architects, engineers, constructors, the clients' facilities managers and community stakeholders together we build a creative environment in which all contribute to shape the outcome. This approach will lead to the development of a Master Plan which greatly benefit our clients by defining a vision and setting direction for the work to follow.

The development of a Master Plan is one outcome of the holistic, encompassing approach. A second outcome is a set of District-Wide Facility Environmental Quality Goals. These are the standards which set the clients' expectations with regard to:

1. Energy efficiency
2. Water efficiency
3. Water quality
4. Indoor air quality
5. Comfort

These issues are interrelated, and their balance is important. If any one of these slips, the facility becomes unhealthy and the usefulness becomes seriously compromised. One size does not fit all. By setting standards and measuring performance, the client will be able to make intelligent decisions about where and when to spend additional resources as they become available.

Trane's scope for this project will include managing all aspects of the project from study to operation. The only aspect provided by others is financing. However, Trane works with a number of third party financing sources and assists our clients in finding financial partners to meet their needs.

Trane also works with the Energy Trust of Oregon, State and Federal Departments of Energy, utilities, grant-providers and many other sources to maximize the incentive dollars available for each project. (see <http://www.dsireusa.org> for some of the sources we use).

The Trane team's scope of services includes:

| Project Phase | Primary Activity |
|----------------------|---------------------------|
| Phase 1 A | ESPC Contract Negotiation |
| | TEA Contract |
| | Analysis of Utility Data |
| | Preliminary Walk-Thru |

| | |
|-----------|---|
| | Develop Suggested ECMs for Scope |
| | Communication Protocol & Plan |
| | Solicit Client Input on Desired Additional Scope & Set Master Plan thru Charrette |
| | Budgeting |
| | Computer Modeling: TRACE™ |
| | Data Logging |
| | Detailed Energy Study |
| | Preliminary Financial Report |
| | Review Financials with Owner |
| Phase 1 B | Project Development Plan |
| | Review Proposed PDP with Owner |
| Phase 2 A | Design |
| | Review Design with Owner |
| Phase 2 B | Construction |
| | Daily Site Supervision |
| | Commissioning |
| | Close-Out Documentation, O&M's, As-Builts |
| | Training |
| | Task / Punch List, Financial, Satisfaction Reviews |
| Phase 3 | Measurement & Verification |
| | Maintenance |
| | Regular reviews |

Please see **Appendix 4** for a sample project schedule.

b. **Engineering Design.** Describe your firm's general approach to the technical design of a project.

Each building system forms a part of the whole, but the systems are interdependent and the optimum design requires coordination. This is why Trane's approach is to build an environment in which collaboration thrives. Collaborative efforts produce much better results than are otherwise accomplished individually. This is the Integrated Design Approach.

We sometimes suggest beginning the process by gathering our cross-functional team with the owner's representatives for a Design Charrette. The goal of the charrette is to create a Master Plan: a vision, a design plan, and specific direction for the project. The charrette consists of our architects, engineers, project managers, members of the clients' staff plus other creative team members of our companies and additional stakeholders invited by the client. All participants contribute to the shaping of the outcome, and therefore have buy-in and support.

Trane will then work with the client and our team to identify the energy efficiency measures (EEMs) that meet the goals identified by the charrette process. EEMs are combined to form a project for each facility. When combining the EEMs, it is important to consider the interrelationship of the measures, how they impact the effectiveness of one another, and the overall financial and performance goals for the facilities. The resulting aggregate is the Project Development Plan (PDP).

The PDP will utilize all available data, including plans, specifications, requisite data logs, etc. to build Trace700 calibrated computer simulation models to determine the amount of guaranteed energy savings. Allowable operations and maintenance savings are also determined according to truly offset capital budgets. Design Development Drawings (~50% CDs) are then created by our architects and engineers. Trane will then seek subcontractor and vendor costs to roll-up the final project pricing and create the Final Proposal.

Once this proposal is accepted by the Customer, Our designers will complete a full set of Construction Drawings, including all schedules and specifications. During the PDP and Final engineering phases, Trane will:

- Work closely with our design consultants to develop detailed construction documents including construction drawings, mechanical schedules and mechanical detail sheets along with written specifications.
- Review the design with the client – providing Conceptual / Design Development review, as well as the 50% Design Development documentation and the final Construction Documents / Bid Documents prior to bid for construction.
- Provide As-Built Drawings once implemented and keep these drawings on file for future record keeping.
- Develop a customer-approved plan for measurement and verification of energy savings throughout the Performance Period. These plans are based off the International Performance Measurement and Verification Protocol.
- Develop and coordinate plans with the client as they relate to opportunities for the recycling, re-use or disposal of materials as part of demolition or renovation activities.
- Develop and coordinate plans with the client as they relate to Training, Staging, Security and Access, Occupant Flow, Vehicular Flow, Safety, Noise and Site Cleanliness.
- Begin the commissioning process.

- c. **Technical Energy Audit/Project Development Plan.** Describe any processes you recommend or require regarding the Technical Energy Audit/Project Development Plan. Briefly describe your approach to auditing a facility. Provide a sample of a Technical Energy Audit and Project Development Plan for a particular project. The samples should be for a comprehensive energy efficiency project that affected more than one building and two or more systems including lighting, controls, and HVAC Mechanical systems. The samples must include detailed energy and economic calculations.

Trane begins the detailed engineering study with a comprehensive site survey. Trane's approach is to conduct an exhaustive facility survey and then provide the analysis and final project designs.

Trane first holds an initial meeting with the client and all Trane team members to discuss issues related to access, hours, parking, identification, communications and other expectations. Trane will present its schedule of activities for the study phase. A single point of contact or project coordinator will be identified for the client and for Trane. The coordinator's role is to establish and manage the communication plan and activities. The emphasis is placed on minimal disruption to occupants and maximum accuracy of data collection.

Consideration will be given to installing data loggers and meters on critical use systems. If an existing energy management survey exists, it will be utilized for verifying run times, trending temperatures, etc. The feasibility of installing metering on building utilities will be researched. The collection of additional utility data may prove to be very useful in accurately modeling building energy consumption and would provide some reference in verifying savings.

Operating hours for motors, lighting, systems, chillers, heating, and other systems will be monitored and logged. Seasonal start up and shut down dates and processes will be verified. Existing efficiencies and loading of motors will be validated. Load curves will be established for existing systems with variable capacities.

Existing quantities (fixture counts), wattages, and types of lighting have to be verified, as well as any water consumption devices to be included in the study. Ballasts shall be examined for PCBs. Lighting levels shall be measured. Actual electrical consumption and demand is measured for existing fixtures. Building hours of occupancy, number of occupants and schedules and also validated and factored into the analysis.

Equipment operation and maintenance is reviewed in detail. Systems with known problems shall be examined to determine repair or replacement options. Temperature control systems shall be surveyed in detail to determine if maintenance and modifications are required.

Utility bills are examined in detail. Trends in utility consumption will be analyzed. This includes a rate analysis to verify that the correct rate schedule is being used.

Trane will conduct client staff and occupant interviews to establish any outstanding physical facility and building environment concerns.

Trane team members will investigate potential retrofit options such as system replacements and adding insulation. Trane team members will also be designing retrofit projects as determined by initial feasibility studies.

Once the survey data has been collected, the detailed analysis can start. Trane System Analyzer™ and TRACE® 700 programs or equivalent will be utilized to calculate building loads and model utility consumption. Various energy conservation measure strategies will be modeled to calculate impact on building loads and utility consumption.

Sample Technical Energy Audit is found in [Appendix 5](#), while sample Project Development Plan is found in [Appendix 6](#).

- d. **Baseline Calculation Methodology.** Describe in detail the methodology your firm normally uses to compute baseline of energy and water use as well as performance.

Baseline energy use is defined as the monthly and annual usage of each energy source used at each facility that is representative of usage with pre-retrofit equipment, operating schedules, and operational methodology. Baseline will be determined for each form of energy, including electricity, natural gas, oil, water and/or other utilities by analyzing energy usage patterns for the three most recent years, taking into account any changes in facility equipment and operations that would alter the usage during that three year period. The

baseline is developed during the investment grade energy audit. The baseline documents the pre-retrofit conditions and serves as the basis for savings measurement of post-retrofit energy usage.

We utilize utility bill analysis software including Faser 2000 and Metrix 3.0 to perform the baseline analysis. The software program is selected based on the type of utility data available and any previous software utilized by the client. The baseline is a statistical model created from a multi-year utility history or “tuning period”. The utility bill analysis program utilizes a multi-variable regression model to identify the statistical dependency of utility consumption and demand on occupancy, heating degree-days, cooling degree-days, and other variables as required. For example, the program analyzes energy use in the facility to determine the portion that is weather sensitive. Non-weather sensitive energy use is classified as “base load.” A regression coefficient is developed for the weather sensitive energy use to correspond to heating and cooling. Similar regression analysis may be used for occupied square footage, number of occupants, occupancy hours and other relevant variables.

The regression analysis provides an understanding of how the facility reacts to changes in use, occupancy, weather, and any other relevant variables. The regression coefficients representing energy use in the facility remain fixed throughout the term of the agreement and are used to derive future baseline adjustments. The baseline calculations and regression analyses will be provided to the client as part of the audit process.

- e. **Adjustment to Baseline Methodology.** Describe the method(s) used to adjust the energy, water and operations baseline due to such factors as weather and facility use changes. Describe factors that would necessitate adjustment.

The baseline may need to be modified in order to account for equipment and operational changes made at the facility. Baseline adjustments account for abnormal conditions that occurred during the guarantee year.

Possible Baseline Adjustments

- Changes in square footage of the facility
- Changes in occupancy
- Off-normal weather events
- Changes in building schedule
- Additional utility load or equipment installed in the facility (computers, etc.)
- Additional energy conservation measures

Baseline adjustment will be performed only to accurately represent changes in facility use. We will not claim savings caused by improvements or events caused by others. We will indicate the energy savings impact associated with each from baseline adjustment. The Adjusted Baseline becomes the new pre-retrofit condition, representing the energy use that would have occurred if no energy conservation measures were performed. After the adjustment, the energy savings is calculated and reported using the Adjusted Base Line.

- f. **Dollar Savings Calculations.** Describe the procedure to assign dollar values to the energy, and water, and operational savings.

Dollar savings are calculated according to formulae developed and agreed upon mutually between the client and Trane. Such formulae are selected according to the type of measurement and verification selected. In general, stipulated or point source measurements will utilize a blended rate applied directly to the savings achieved. A blended rate is one that combines all components and costs of an energy source into a single easily measured unit. For example, a blended electrical rate will combine the monthly costs of energy (kWh) and demand (kW) together to form a blended \$/kWh rate. More detailed measurements such as continuous metering will utilize actual time-of-use utility rate structures to determine actual dollar savings. Blended utility rates are calculated from actual utility bills for electricity, gas, water, oil, etc.

- g. **Guaranteed Savings Calculations.** List all procedures, formulas and methodologies including special metering or equipment, your firm will use to calculate energy and water savings. Include assumptions to be made in the calculations. Provide sample calculations for lighting, boilers, chillers, motors and drives, controls, ventilation measures.

Guaranteed savings are calculated according to formulae developed and agreed upon mutually between the client and Trane. Such formulae are selected according to the type of measurement and verification selected. In general, point source guarantees are straight forward utilizing a measurable efficiency variable and an agreed upon amount of runtime. For instance, pre-retrofit lighting densities (Watts / Fixture) may be measured utilizing an RMS Power Meter, and the hours that those lights operate stipulated between the client and Trane. Trane would then guarantee that the new lighting density (Watts / Fixture) being installed would be more efficient, utilizing less energy. Trane would then measure the lighting density of those new lights once installed. If the levels are less than what was guaranteed, Trane would pay out on the resulting cost difference between actual utility costs and what was guaranteed. More detailed measurements such as continuous metering would utilize regression analysis techniques approved by the International Performance Measurement and Verification Protocol (IPMVP) to calculate the guaranteed savings results. In this case, whole building meters or sub-panel meters are used depending on the type of measure being guaranteed. All guaranteed savings calculations are described in detail, negotiated, agreed to by the client and Trane and documented in the final contract.

Trane utilizes the baseline utility rates in its guarantee formulae for the duration of the contract. Trane also utilizes a safety factor in its formulae to help ensure savings are achieved year after year. The safety factor selected depends on the accuracy and detail achieved during the detailed study as well as the risk of each ECM guaranteed. The safety factor is carefully selected to balance maximum savings while maintaining assurance that all savings will be achieved.

- h. **Training Provisions.** Describe your firm's capabilities in providing technical training for an Owner's facility personnel. Describe your firm's experience on past projects and involvement in developing training manuals for facility staff.

Trane custom-designs a project-specific training protocol for each project. One such protocol for a recent Portland-area project included:

- Custom-made training manuals and electronic media.
- 2 day in-depth mechanical, control and electrical systems hands-on on-site training at the end of commissioning.

- Follow-up training semi-annually.
- Two days of owner discretionary time to be applied to training or system consultation.
- As-built diagrams and installation, operation, and maintenance manuals published in electronic form with links from the control system touch-screen computer.

Trane provides on-site and classroom training for all new systems and equipment. Trane considers training to be a key component to maintaining *our* future investment and helping our clients achieve their expected project financial goals. Further training will be carried out through local training workshops. Training will continue throughout the contract as new employees are hired or as The client requests.

A list of some of Trane's extensive National educational resources may be found at:
<http://trane.com/Commercial/Training>

Local Trane classes are taught in Spring and Fall every year in Portland. Class content ranges from industry issues to hands-on building automation and controls to equipment-specific training based on customer feedback and requests. For the current course listing visit www.TraneOregon.com/training.

We also have a wealth of print, video and software resources that provide in-depth information and training on a numerous topics from basic HVAC design and operation, to detailed technical papers on a variety of High Performance Building Issues such as Energy, Indoor Air Quality, Economics and the Environment.

- i. **Measurement and Verification Method and Sample.** Describe the methodology proposed for ongoing measurement and verification of the performance of each EEM recommended, including the frequency of such efforts. Note if an industry standard such as the *International Performance Measurement and Verification Protocol* is used and describe the preferred method. Provide three (3) sample measurement and verification reports. Describe the types of services included in the scope of work of Phase III, Measurement and Verification. Comment on Owner's maintenance staff responsibilities.

Please see **Appendix 7 through 9.**

- j. **Cost Savings Guarantee Calculations.** Describe your firm's procedures and schedule for measuring financial performance of projects. Describe how the guarantee provisions work in the event that project results vary from projections. Also describe how excess savings will be documented for Owner's benefit.

Under the Trane Performance Contracting guarantee, if calculated energy savings are less than the guaranteed amount, Trane will pay the difference. The guarantee is monitored monthly, reported quarterly, and reconciled annually. Throughout the term of your ESPC agreement, excess savings or guarantee shortfalls may be carried over from year to year.

Savings are calculated by comparing actual energy usage after project completion with a baseline. The baseline is the amount of energy the facility would have used if the project had not been implemented. We determine the baseline using pre-project utility bills, adjusting for factors that affect energy consumption such as unseasonable weather and changes in

production schedules and usage of the facility. These refinements ensure that the guarantee is fair to both the customer and Trane.

Any operational savings that are not energy-related, and are agreed to by the customer and Trane are included in the contract documentation. These could include items such as reductions to maintenance labor and materials costs.

Each year after the guarantee begins; Trane will reconcile any difference within 90 days following completion of the guarantee year. All savings generated by the project are the customer's property. In the unlikely event of a shortfall, the customer can choose to be paid by check or carry the payment over to a future guarantee period.

The measurement of savings is performed on an ongoing basis throughout the term of the project agreement. Trane provides electronic monitoring through controls systems, utility bill analysis, and preventive repair and maintenance services. The goal is to ensure that systems and equipment are operating with the system efficiency designed making adjustments as needed.

Description of Savings Measurement

Electronic monitoring consists of noting temperatures and determining schedules for operating equipment. Validation of operating schedules and control sequences will verify conditions designed to deliver savings and optimal operability. Utility bill analysis compares utility use to the established baseline. Since facility utility use is dynamic over time, baseline "adjustments" may be required periodically to derive a valid assessment of avoided costs realized from the installed measures. Baseline adjustments are typically required for building additions, occupancy changes, changes in building use, and other major changes to facilities. Monitoring reports are generated monthly to indicate whether energy consumption tracking as forecast. Issues to be address or adjustments required of the client are reported as appropriate.

Measurement Methods: Three Options

Trane offers three methods for savings measurement: continuous metering¹, point source², and stipulated³. The preferred method will depend on the type of application.

Continuous Metering Method

Trane determines the baseline energy use of the facility by analyzing all its energy-related utility bills for a three-year period before the retrofit. This includes electricity, natural gas, oil, and water. We take into account any changes in equipment and operations that may have affected energy use during this period. This allows us to develop a calibrated energy model for the facility, which becomes the tool for evaluating future energy savings.

In each month of the contract following the retrofit, Trane determines the energy savings by comparing the baseline with the actual metered value. Weather conditions and occupancy patterns are compared with the averages used in calculating the baseline. When actual

¹ "Continuous metering" corresponds to IPMVP Option C

² "Point source" = IPMVP Options A, B & D.

³ "Stipulated" = IPMVP Option A

conditions differ from the averages, correction factors are added to or subtracted from the baseline. We then calculate energy savings from this corrected baseline.

Trane calculates the dollar savings by multiplying the energy incremental rate by energy units saved. The rate set in the guarantee documentation serves as a baseline, adjusted yearly for changes such as utility rate increases and inflation as determined by the Consumer Price Index.

Point Source Method

Because many factors can affect a facility's energy use as read by utility meters, the point source method can provide a more precise picture of the real impact of a given savings strategy. As the name implies, energy use is measured directly at the point where it is consumed.

For example, when energy-saving lighting is installed, the electrical energy consumed can be measured directly at the light fixture or at the branch circuit serving only lighting systems. By measuring both pre- and post-installation variables, this method provides a focused look at specific measures.

Where applicable, the building's control system can be used to report data, ensuring that actual building operation is consistent with the plan originally developed. When discrepancies arise, this data will help Trane engineers accurately analyze and deal with problems.

Stipulated Method

The process for establishing stipulated savings is simple and straightforward. Trane calculates the projected savings, and both parties agree that the numbers are valid and will occur as a result of the project. The savings are documented in the contract, the guarantee is considered validated and no further reporting is required.

The Details

1. Description of Baseline Energy Consumption

Baseline utility (energy, fuels and water) use is defined as the monthly and annual consumption of each utility source at each building that correlates to consumption operating with current equipment/systems, operating schedule, and operating methodology. There is an established baseline for each utility being monitored. When determining the baseline, Trane analyzes consumption patterns for the most recent three-year period, accounting for any changes in facility systems and operations that might have impacted consumption during the three-year period. The baseline is developed during the comprehensive energy analysis of the facility. A computer simulation model, calibrated by using the baseline actual energy usage data defines existing conditions. The simulation model becomes the tool for evaluating savings potential for specific energy savings measures and for defining the impact of interactive relationships between measures.

2. Adjustment in Baseline Methodology

The facility consumption baseline may require modification to take into consideration for equipment/systems and operational changes made at the facility. The baseline for all utilities can be adjusted upward or downward. Changes may be the result of adjustments

to meet current building code requirements. When the utility baseline is adjusted, the forecasted savings will track with the adjusted baseline.

3. *Procedure for Calculating Energy Savings*

Trane forecasts utility savings by comparing the baseline or adjusted baseline consumption, monthly weather impact (adjustment for degree days), monthly occupancy patterns, current utility rates, and the validated simulation model. The model that defines the pre-retrofit condition projects the impact of the measures, then the actual measured performance is compared to yield actual annual savings.

4. *Methodology to Assign Dollar Value to Savings*

Dollar savings are calculated by multiplying the utility unit cost at incremental rate (e.g., \$/kWh, \$/Therm) by the reduction in units consumed for that period. Adjustments are made each year to this incremental rate that considers rate changes or increases. There are a number of methods for accomplishing this — for example, the Consumer Price Index is an acceptable multiplier, or calculating with an actual increase in the utility rate structure will provide accurate results. The client and Trane will agree on the methodology and jointly approve the adjustment method in the guarantee contract documents.

Trane will work with the client throughout the term of the agreement as a resource for reducing operating costs. Trane's Monitoring and Verification provides the tools, training, communication, and accountability required to promote utility risk management throughout the term of the agreement.

k. ESCO Fee Calculation. Describe your methods for calculating your firm's fees. Describe the specific services for which your firm would be paid over the contract term.

Trane's fee will be a mutually agreed upon markup and overhead percentage of project costs according to a gross maximum price (GMP) developed for the project. Trane's markups and overheads are lower than industry standards for the purpose of developing long term relationships with its customer. The markup and overhead are calculated according to a percentage of project costs. During development of the project, Trane and the client will also mutually agree on a yearly fee to cover the cost of ongoing measurement and verification. This fee varies depending on the type and complexity of the measurement and verification protocol agreed to by the client and Trane as well as the required amount of reporting. This fee however is applied strictly to this cost only.

l. Open Book Pricing. Describe your firm's approach and experience in providing open-book pricing.

All fees and costs are presented in an open-book format and explicitly broken. Costs that are broken out include, but are not limited to, sub-contractor costs, material costs, engineering and architectural costs, permitting costs, waste disposal costs, project management costs, startup and commissioning costs, mobilization, taxes, bonds, insurance, overhead and profit and annual measurement and verification costs. All costs are presented on their original documentation (i.e. actual subcontractor quotes, materials, etc) for the client to review.

- m. **Billing and Invoices.** Describe your standard billing procedures and attach a sample invoice.

Trane invoices all projects based on a percentage complete method. Invoices are generated once per month (usually around 20th) however date can be negotiated. Invoices will be accompanied with conditional lien waivers as needed. Invoices will list the percent the job is complete to date with total contract amount, prior payments and current payment due. Please see a sample invoice in **Appendix 10**.

- n. **ECM Vendors.** Describe the product vendors your firm uses for projects and how the vendors are chosen.

Trane's supply chain is managed, measured, and controlled using Six Sigma defect measurement and prevention tools. The supply-chain process is structured with customer benefits in mind. All suppliers must pass our evaluation for financial disclosure and stability, meet the requirements of our scorecard and metrics, and use a Six Sigma approach. All suppliers must also read and comply with our written code of conduct. Vendors are selected on the basis of **best total value delivered to the project.**

- o. **Provision of Insurance and Performance/Payment Bond(s).** Describe the levels and types of all insurance policies applicable to and available for an ESPC Project. Describe the firm's performance and payment bonding capacity. (See requirements in **Sections 5.01 E** and **5.02 B.8.d** above).

Trane has the scale to perform projects of all sizes (ranging from under \$40,000 to \$50,000,000 bonding capacity per project) and has performed Performance Contracting projects of both national and international scale.

- p. **Provision of Warranties.** State the nature and term of all warranties that would apply to a Project.

Typical construction project warranties of one year parts & labor generally apply to ESCO projects; however, custom warranties are available if requested.

Upon completion of each system installation and prior to Final Acceptance, Trane shall provide the client with a copy of all manufacturers' equipment warranty documents for parts and systems installed as part of the Energy Savings Performance Contract (ESPC). Trane will administer the Warranty for Trane Equipment and workmanship in accordance with Trane's standard Warranty terms.

- q. **Sustainability.** Describe your experience in construction site recycling and consideration of life cycle cost analysis factors in selecting equipment and materials.

Trane views it's responsibilities toward environmental stewardship very seriously. As part of its proven track record of environmental responsibility, Trane has never been cited by the State of Oregon, DEQ or the Federal EPA. Trane maintains a safe and ecologically sound environment by focusing on three key areas:

- Recycling (all waste materials separated onsite into separate bins)

- Re-use / Reclamation of Existing Products / Materials
- Proper Disposal (when a recycling / re-use opportunity does not exist)

Trane's approach to recycling and re-use as part of this contract includes the following:

- Before starting construction, renovation or demolition activities Trane will contact the local building and permitting authority for regulatory information and compliance requirements.
- Trane will develop a Recycling Plan with The client to insure optimal use of materials available for recovery, re-use, or recycling.
- Trane will dispose of job site solid waste materials that do not have an immediate re-use / recycling purpose in the appropriate "Inert" landfills (landfills that manage concrete, asphalt, masonry, ceramics, glass, aluminum, and stainless steel) or "Limited Purpose" landfills (landfills available to accept other types of wastes including industrial waste, demolition waste, problem waste, and wood waste).
- Trane will comply fully with Federal EPA, OSHA and local regulations in regard to material handling and the disposal of waste materials.

Trane's approach to selecting equipment and materials is thus:

- Trane's Performance Contracts utilize a design basis that ensures equipment and materials are selected that result in the lowest life-cycle costs.
 - Equipment and materials are selected to be durable, require low maintenance and incorporate features to ensure that maintenance requirements are easily facilitated.
- All costs are considered in the life-cycle analysis, including equipment life, capital purchases / loans, maintenance, operations, energy, inflation, interest rates, escalation, capital expenditure offset, testing / permitting, etc.

Involvement: The leading national and global organization promoting and verifying the sustainability of facilities is the U.S. Green Building Council (USGBC), based in Washington, D.C. Trane has supported this group and participated in its many activities and programs, both on a local and national level. We dedicate our technical expertise to the LEED New Construction Core Committee and the USGBC Technical Committee, among other council groups.



Our USGBC involvement affects every facet of Trane's Comprehensive Solutions delivery and our Performance Contracting services. We have been involved in numerous building projects that have applied for or earned LEED certification. Our central and local field offices employ close to 100 LEED Accredited Professionals. This designation is a new but recognized benchmark for competency and knowledge of green building techniques. Our local offices are aligned with USGBC chapters across the country to better serve facility owners and support ESPC project opportunities.

Trane products can provide points toward LEED Silver, Gold and Platinum project ratings: Our centrifugal chillers have such low refrigerant leak rates that USGBC will provide a credit toward the project LEED rating if that equipment is used.

Awards: Trane has received recognition for supporting global sustainability and environmentally friendly practices. After earning a "Best Practice Award" from the Sustainable Buildings Industry Council (SBIC) in 2001, we earned the SBIC "Best Sustainable Practice" award for three



years running, in 2003, 2004, and 2005. These prizes reflect our efforts to (1) create sustainable products, (2) promote sustainable facilities design and operation, and (3) employ environmentally sound practices in our own company operations.

Among our most prestigious honors is our recent inclusion in the Clinton Climate Initiative (CCI), which aims to reduce greenhouse-gas emissions in America's cities. By joining this elite group as a CCI Partner, Trane was publicly recognized for our unique blend of knowledge of building systems and energy services and performance contracting.

Yet our track record in this regard is far longer. Trane earned an "EPA Climate Protection Award" more than a decade ago, in 1998. This national honor recognized our leadership in engineering super-efficient chillers, which use refrigerants that deplete less ozone. Our products also effectively protect against refrigerant leaks, allowing us to offer Trane's "Leak Tight" Guarantee. This capability was formally recognized recently when the USGBC allowed a LEED credit toward project certification based on our low leak rates.

Trane's projects have also earned awards, including three buildings that attained "Earth Day Building Award" status from a coalition including the EPA. The World Wildlife Fund has bestowed a "Gifts to the Earth" Award to Trane, too.

While these laurels are important to us, we don't rest on them.
We work every day to advance the industry through our ESPC projects,
and achieve better results for our customers.

