

2009

Green Jobs: Survey of the Energy Industry



Relevant Trends, Opportunities, Projections & Resources

Presented by the Association of Energy Engineers

Profile of Respondents

Survey Results

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Job Titles & Resources

Green Jobs: Survey of the Energy Industry

The Association of Energy Engineers (AEE), a nonprofit professional society of over 9,500 members, issued a survey to its members to determine the need for Green Jobs, Energy Industry Potential and Salary Data. The results represented are based on 978 responses and are outlined in this report. AEE was founded in 1977 and its mission is “to promote the scientific and educational interests of those engaged in the energy industry and to foster action for sustainable development.”

Profile of Respondents

- Eighty-seven percent (87%) have graduated from a four-year accredited college.
- Thirty-nine percent (39%) have a post-graduate degree from an accredited college.
- Thirty-seven percent (37%) are registered Professional Engineers (P.E.s) or Architects.
- Seventy-nine percent (79%) are Certified in one or more of the following categories:

1. Certified Energy Manager (CEM®)
2. Energy Manager in Training (EMIT®)
3. Certified Sustainable Development Professional (CSDP®)
4. Certified Green Building Engineer (GBE®)
5. Business Energy Professional (BEP®)
6. Certified Lighting Efficiency Professional (CLEP®)
7. Certified Power Quality Professional (CPQ®)
8. Certified Building Commissioning Professional (CBCP®)
9. Distributed Generation Certified Professional (DGCP®)
10. Certified Measurement and Verification Professional (CMVP)
11. Certified Demand-Side Measurement Professional (CDSM®)
12. Certified Cogeneration Professional (CCP®)
13. Certified Energy Procurement Professional (CEP®)
14. Certified Indoor Air Quality Professional in Training (CIAQT®)
15. Certified Testing, Adjusting Balancing Professional (CTAB®)
16. Certified Geo-Exchange Designer (CGD®)
17. Certified Carbon Reduction Manager (CRM®)

Section One: Green Jobs

There is a growing demand for energy efficiency, green collar and renewable energy professionals in light of the following trends:

1. Survey Results

- Forty-one percent (41%) of the energy professionals who were surveyed plan to retire in the next ten years.
- Seventy-two percent (72%) of energy professionals indicate a heightened shortage of qualified professionals in the energy efficiency and renewable energy fields in the next five years.
- Seventy percent (70%) of energy professionals indicate a need for national and state training for "Green Jobs" to address job shortages that are impairing growth in green industries, such as energy efficient buildings and construction, renewables, electric power, smart grid, energy efficient vehicles and biofuels development.

2. The American Recovery and Reinvestment Act of 2009 (ARRA) will fund:

A) Energy Efficiency

- \$3.1 billion for State Energy Programs which will encourage states to improve building energy improvement and retrofits.
- \$5 billion for weatherization of low income housing.
- \$4.5 billion for Green Federal Buildings.
- \$3.6 billion for the Department of Defense for energy efficient projects and facilities upgrade.
- \$3.2 billion for Energy Efficiency and Conservation Block Grants to help state and local governments implement energy efficiency.
- \$500 million dollars for job training, and programs to prepare individuals for careers in energy efficiency and renewable energy.

According to the Alliance to Save Energy, the energy efficiency measures will create 100,000 or more new energy jobs in the next two years. www.ase.org

B) Solar Energy

The American Recovery and Reinvestment Act contains provisions for:

- **Renewable Energy Grant Program:** Offers Department of Energy grants equal to thirty percent (30%) of the cost of solar projects started in the next two years, including large-scale utility projects. This is a critical alternative to solar tax credits that are not functioning as Congress intended in the current economic climate.
- **Loan Guarantee Program:** Creates a new, streamlined loan guarantee program to support financing of renewable energy systems, including solar energy technology.
- **Manufacturing Investment Credit:** Creates a thirty percent (30%) investment tax credit for facilities engaged in the manufacture of renewable energy property or equipment.

According to the Solar Energy Industries Association a total of 119,000 jobs over the next two years will be created for solar panel installation, manufacturing components and solar power plant construction.
www.seia.org

C) Smart Grid/Advanced Battery/Energy Efficiency:

- \$30 billion will be provided for such initiatives as a new, smart power grid, advanced battery technology, and energy efficiency measures. According to the fact sheet, 500,000 energy jobs will be created. *Source: [Fact Sheet of Speaker Nancy Pelosi](#) – Wall Street Journal*

D) Growing Energy Market

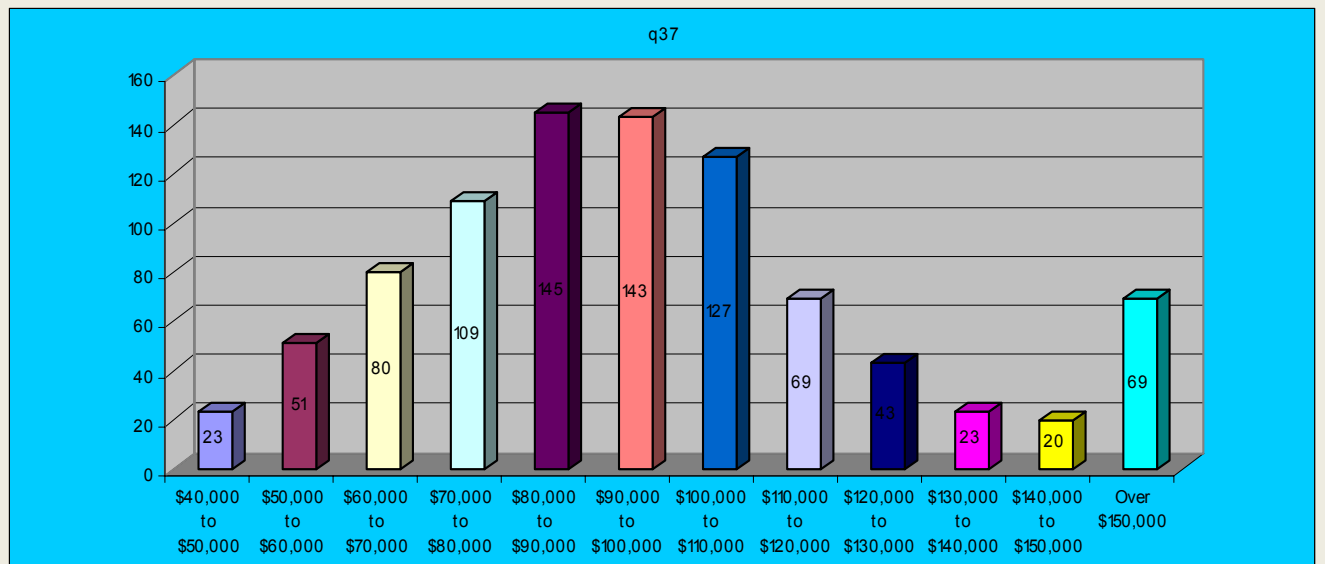
- The revenue for the energy management services market in North America in 2008 was \$20.35 billion (USD) and is projected to double to over \$40 billion (USD) by 2013 due to favorable new government legislations and increased knowledge about the benefits of energy management. *Source: [Frost & Sullivan](#)*

Section Two: Salary Survey

The information in this section is based on the salary survey conducted by the Association of Energy Engineers.

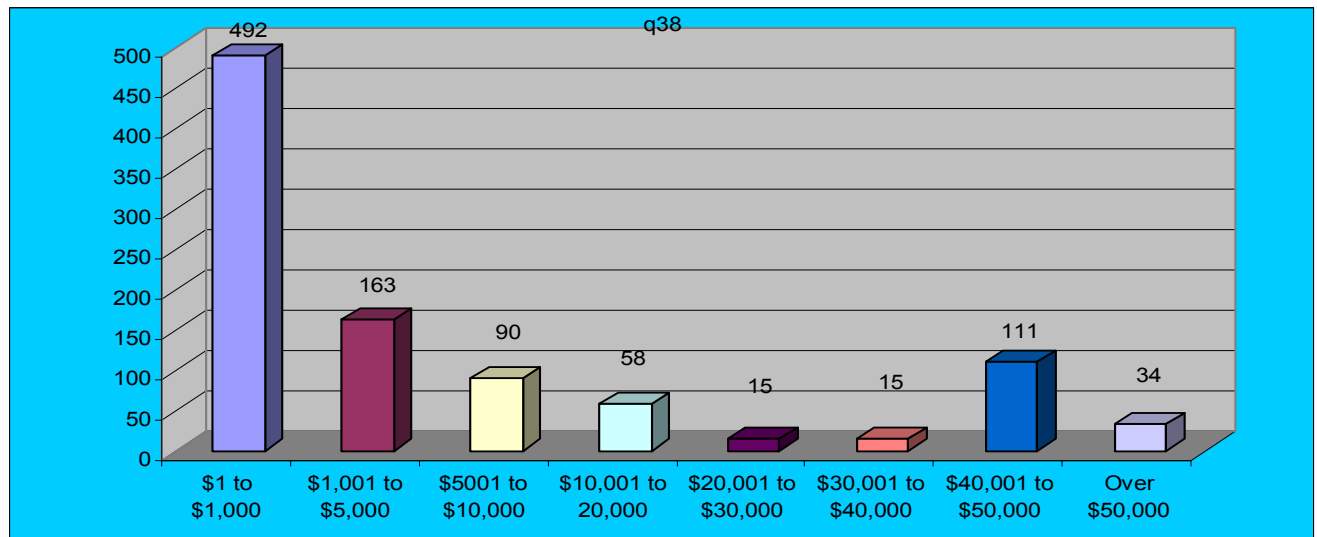
1. Salary

The salary is for full time employment and excludes bonus, overtime and fees from secondary employment. Salaries are effective as of January 1, 2009:



***Average salary was approximately: \$95,864.75 USD**

2. Bonus- Bonuses received in by respondents:



***Average additional income – bonus was approximately: \$10,187.63 (USD)**

3. Years of Experience of Energy Professionals

0-5 Years: 11%
6-10 Years: 7%
11-15 Years: 7%
16-20 Years: 14%
21-25 Years: 19%
26-30 Years: 20%
31-35 Years: 12%
Over 36 Years: 10%

4. Locations of Employment

Northeast: 28%
Mid-Atlantic and Southeast: 21%
Northern Mid-West: 18%
Southern Mid-West: 18%
West and Pacific Northwest: 15%

[Section Three: Employment Opportunities & Papers](#)

The Association of Energy Engineers maintains a career web site detailing energy, green, sustainable and power positions and jobs available as well as a resume databank with individuals seeking employment. Details are indicated at <http://www.aeecenter.org/jobs>

There is also access to an energy industry dictionary of terms, free access to energy – green white papers, industry news portal, as well as professional reference books. www.energyvortex.com

[Section Four: Training Opportunities](#)

The Association of Energy Engineers offers a variety of professional training and re-training programs including:

- Training Seminars, Conferences & Industry Networking (Energy, Sustainability, Energy Auditing, Power, Green Facilities, Certification Programs)
 - www.aeecenter.org/realtime (Online training seminars)
 - <https://www.aeecenter.org/seminars/calendar.htm> (Live seminar training)
 - www.aeecenter.org/shows (Energy Industry Conferences & Networking Events)

Training Partnerships:

The Association of Energy Engineers is currently working with a cross-section of accredited institutions, organizations and Universities to offer additional energy management, green, sustainable, renewables and industry training programs. Featured programs include:

UC DAVIS EXTENSION

CONTINUING AND PROFESSIONAL EDUCATION

The Association of Energy Engineers (AEE) has a Memorandum of Understanding with UC Davis University Extension (UCDE) to advance the knowledge and professionalism in the field of energy management. As an adjunct to the Certified Energy Manager (CEM®) and Business Energy Professional (BEP® program) AEE pleased to be an official sponsor of the **U.C. Davis University Energy Resource Management Certificate program**. This initiative aims at enhancing student's involvement and increases their role in the growing energy management discipline. The course will serve as a solid foundation for students to move towards obtaining their CEM or BEP Certification. For more information on the U.C. Davis certificate program [CLICK HERE](#). UC Davis Extension is the professional and continuing education branch of UC Davis and is a link to the many resources students can only get from the University of California.



The Clean Energy & Renewable Energy Project Feasibility Analysis Training Series. AEE is adding a series of nine courses focusing on Clean Energy/Renewable Energy Project Feasibility Analysis to its 24/7 Online Seminar Program via training partnership with Willis College. Included in each of these courses is an in-depth overview of relevant technologies and projects, system costs, implementation savings, and design considerations, as well as theory on using related tools to conduct a project feasibility analysis. To learn more about these courses [click here](#).



AEE has teamed up with the University of Wisconsin -Madison Engineering Professional Development Department to offer Fundamentals of Lighting Efficiency training seminar on a real-time, online basis. Presented in a series of six two-hour time modules, this program is designed to provide comprehensive professional training in the design and application of energy-effective lighting systems, with emphasis on: Evaluating lighting systems through effective audits, Achieving energy-effective lighting systems with high regard to lighting quality and occupants, Examining the latest lighting products for your applications, Performing lighting calculations to obtain proper light levels, Evaluating and implementing effective lighting control strategies, Reviewing environmental impacts of lighting efficiency projects, Calculating and documenting savings achieved through lighting improvements, Assuring compliance with building energy codes, and Implementing effective lighting maintenance practices. For more information on this programs, please refer to [online training here](#).



AEE Partners the Green Building Engineer Certification (GBE™) Program with US EPA ENERGY STAR Challenge. AEE's participation in the ENERGY STAR Challenge – Build a Better World 10% at a Time is a natural extension of AEE's efforts to encourage its members to reduce energy usage in buildings by 10% or more. AEE is committed to provide training and certification opportunities to help the profession meet the ENERGY STAR Challenge ahead. To find a Professional Engineer (P.E.) and/or GBE, please refer to EPA's online directory: http://www.energystar.gov/index.cfm?fuseaction=PE_DIRECTORY



U.S. Green Building Council

The Association of Energy Engineers is a qualified education provider under the U.S. Green Building Council educational program and its programs are featured in the [GREENBUILD 365 course catalogue](#). Whether you are a design, construction or real estate professional, an educator or student, or a LEED AP, Greenbuild365's rich variety of educational offerings will inform your journey from novice to expert and beyond. Information on a broad range of green building topics is available in formats tailored to your knowledge level and preferred learning style, whether you're looking for in-person interaction, online courses you can take in the comfort of your own home, or do-it-yourself research through an extensive online media library.



The Georgia Tech Enterprise Innovation Institute works with Georgia enterprises to help them compete nationally and internationally. By calling on the resources of Georgia Tech – one of the world's leading engineering, technology and research universities – our team can keep you current with the leading research, methods, technology and more in your industry. The Certified Energy Manager (CEM) Program is recognized by the [Georgia Tech Enterprise Innovation Institute](#) and they have several faculty on staff with CEM Certification.

Section Five: Green Jobs, Energy Jobs & Titles

There are many currently many “green collar” jobs which exist in the current marketplace. The job titles listed below are typical energy, sustainable, green, environmental and industry jobs based on the actual survey responses of AEE members and participants of AEE programs. These are some of the hot growth areas for professional entering or transitioning into the energy – green field.

A

Account Manager/Executive
Account Manager – Building
Automation Systems Sales
Advisor for Management and Energy
Agency Energy and Environmental
Manager

Application Engineer/Technician
Architect
Auditor
Automated Controls Technician

B

Building Automation Systems Engineer
Building Consultant/Engineer
Building Control Specialist
Building Energy Engineer
Building Energy Analyst

Building Services Engineer
Business Development Manager
Business Services Engineer
Business Unit Energy Services

C

Campus Energy Manager
Carbon Consultant
Carbon Reduction Manager
Central Plant Engineering Manager
Certified Energy Manager
Certified Geothermal Designer
Chief of Energy Engineering
Certified Energy Auditor
Chief Operations and Maintenance
Chiller Team Manager
Civil Engineer
Climate Change Consultant
Climate Initiative Program Director
Cogeneration Manager
Command Utility Energy Engineer
Commercial Engineering Manager
Commercial and Industrial Energy
Services Engineer

Commercial Energy Management
Consultant
Commissioning Manager
Commissioning Engineer
Commissioning Technician
Commercial/Industrial Services Manager
Compressed Air Specialist
Conservation Engineer
Conservation Program Engineer
Construction Manager
Construction Manager/Designer
Construction Project Manager
Construction Services Manager
Construction/Facilities Manager
Consultant
Consulting Engineer
Controls and Commissioning Manager
Controls and Energy
Controls Engineer

Controls Manager
Controls Specialist
Coordinator of Environmental Services
Coordinator of Infrastructure
Coordinator of Energy Management
Coordinator of Residential Energy Programs
Corporate Director Engineering and Construction
Corporate Director of Energy Management
Corporate Director of Energy and Environmental Services

Corporate Director Plant Operations
Corporate Energy Coordinator
Corporate Energy Director
Corporate Energy Management Leader
Corporate Energy Manager
Corporate Facilities/Energy manager
Corporate Facilities Manager
Corporate Facilities Engineer
Corporate Manager of Building Operations
Corporate Project Manager
Corporate Utilities Manager

D

Design Engineer
Design Build/Energy Engineer
Design Manager
Design/Energy Engineer
Development Engineer
Distributed Energy Manager
Distribution Standards Engineer

Demand-Side Management Coordinator
Demand-Side Management Engineer
Demand-Side Management P&E Specialist
Demand-Side Management Program Consultant

E

Electric Engineering Officer
Electric Meter Relay Technician
Electric Utility Analyst
Electric Utility Project Coordinator
Electrical & Energy Manager
Electrical & Instrument Engineer
Electrical and Controls Engineer
Electrical and Mechanical Engineer
Electrical Consultant Engineer
Electrical Coordinator
Electrical Design Engineer
Electrical Designer
Electrical and Automation Engineer
Electrical Engineer
Energy Engineer
Energy Manager
Energy & Sustainability Program Manager
Energy & Commissioning Engineer

Energy & Environment Engineer
Energy & Environmental Consultant
Energy & Environmental Manager
Energy & Sustainability Solutions Specialist
Energy & Utilities Manager
Energy & Water Resource Planner
Energy Advisor
Energy Analyst
Energy Auditor
Energy Balance Engineering
Energy Conservation Advisor
Energy Conservation Analyst
Energy Conservation Consultant
Energy Conservation Coordinator
Energy Conservation Engineer
Energy Conservation Manager
Energy Conservation Program Manager

Energy Conservation Technical Specialist
Energy Coordinator
Energy Education Specialist
Energy Efficiency Program Director/Engineer
Energy Efficiency Consultant
Energy Efficiency Coordinator
Energy Efficiency Engineer
Energy Efficiency Program Manager
Energy Efficiency Specialist
Energy Efficiency Technician Instructor
Energy Facility Manager
Energy Information Manager
Energy Management Analyst
Energy Management Consultant
Energy Management Engineer
Energy Management Quality Consultant
Energy Management Representative
Energy Management Specialist
Energy Management/Environmental System Consultant
Energy Manager
Energy Performance Analyst
Energy Plant Manager
Energy Procurement Manager
Energy Program Coordinator
Energy Program Engineer
Energy Program Manager
Energy Program Specialist
Energy Programming Technician
Energy Project Development
Energy Project Engineer
Energy Project Manager
Energy Projects Specialist
Energy Resource Conservation Specialist
Energy Resource Manager
Energy Sales Consultant
Energy Scientist
Energy Service Engineer
Energy Service Manager
Energy Service Specialist
Energy Services Account Executive
Energy Services Advisor
Energy Services Analyst
Energy Services Coordinator
Energy Services Program Consultant
Energy Services Project Developer
Energy Services Project Manager
Energy Services Representative
Energy Services Specialist
Energy Services Supervisor
Energy Solutions Analyst
Energy Solutions Consultant
Energy Solutions Manager
Energy Specialist
Energy Supply Manager
Energy Systems Engineer
Energy Technician
Energy Trader
Energy/Environmental Consultant
Energy/Mechanical Manager
Energy/Resource Conservation Program Manager
Energy/Utilities Engineer
Energy/Utilities Manager
Engineer
Engineering & Environmental Services
Engineering Analyst
Engineering and Design Supervisor
Engineering Consultant
Engineering Development Director
Engineering Director
Engineering Manager
Engineering Specialist
Engineering Technician
Engineer – Load Management
Environmental Health, Safety & Security Manager
Environmental Solutions Manager
Environmental & Utilities Manager
Environmental & Energy Manager
Environmental Consultant
Environmental Director
Environmental Engineer
Environmental Health & Safety Mgr.
Environmental Manager
Environmental Program Manager
Environmental Project Manager
Environmental Specialist
Equipment Engineer

F

Facilities & Compliance Analyst
Facilities & Maintenance Manager
Facilities and Construction Manager
Facilities Consultant
Facilities Coordinator
Facilities Design & Construction
Supervisor
Facilities Design Engineer
Facilities Electrical Engineer
Facilities Electrical Systems Coordinator
Facilities Energy Engineer
Facilities Engineer

Facilities Environmental Manager
Facilities HVAC Engineer
Facilities Manager
Facilities Operations Manager
Facilities Performance Analyst
Facilities Plant Engineer
Facilities Project Manager
Facilities Systems Specialist
Facility Energy Conservation Manager
Field Engineer
Fuel Analyst

G

Gas & Energy Coordinator
Gas Management Service Analyst
Gas Supply & Technology Engineer
General Engineer
Geo-Exchange Designer
Geothermal Operations Manager
Geothermal Designer
Global Commodity Manager-Energy
Global Director Energy & Sustainability
Global Director – Energy & Plant
Services

Global Energy & Climate Change
Program
Global Energy Director
Global Energy Manager
Global Energy Program Manager
Global Energy Solutions Manager
Global Environmental Engineer
Global Energy Manager
Green Building Engineer
Greenhouse Gas Lead Assessor

H

Health and Safety Manager
Health, Safety, and Environmental
Manager
HVAC Design Engineer
HVAC Designer
HVAC Engineer

HVAC Facilities Manager
HVAC Services Manager
HVAC Systems Engineer
HVAC Technician
Hydro Geologist

I

Indoor Environmental Consultant
Industrial Engineer
Industrial Gas Engineer
Infrastructure Engineer

Installation Energy Manager
Installation Manager
Intelligent Building Specialist

L

LEED AP
LEED Performance Assurance Engineer
Lighting Consultant

Lighting Design Specialist
Lighting Engineer
Load Analyst

M

Maintenance Engineer
Maintenance Manager
Maintenance Planner
Manager of Energy Initiatives
Measurement & Verification Engineer
Measurement & Verification Specialist
Mechanical Design Engineer

Mechanical Designer
Mechanical Engineer
Mechanical Operations Manager
Mechanical Project Engineer
Mechanical Systems Engineer
Mechanical Utilities Engineer

N

National Energy Manager
National Energy Services Manager

National Energy Solutions Specialist

O

Operations & Energy Manager
Operations & Maintenance Engineer
Operations Analyst

Operations Engineer
Operations Manager

P

Performance Assurance Consultant
Performance Assurance Engineer
Performance Assurance Specialist
Performance Contract Engineer
Performance Contracting Energy
Engineer
Performance Engineer
Performance Manager
Plant Engineer
Plant Manager
Pollution Prevention Engineer
Power Application Engineer
Power Management Applications
Engineer
Power Optimization Engineer

Power Plant Manager
Power Quality Engineer
Power Quality Specialist
Power Resources Manager
Power Systems Engineer
Power Utilization Engineer
Power, Energy & Environmental Market
Manager
Procurement Analyst
Procurement Manager (Electric & Gas)
Product Manager
Product Manager – Energy
Production Engineer
Professional Engineer
Program Analyst

Program Director
Program Director - Energy
Program Manager
Program Manager – Corporate Energy Services
Program Manager – Energy Services
Program Manager – Renewable Energy
Project Analyst
Project Coordinator
Project Development Engineer

Project Developer
Project Director
Project Energy Engineer
Project Energy Manager
Project Engineer
Project Manager
Purchasing Director
Purchasing Manager
Purchasing Specialist

Q

Quality Control Manager

Quality Engineer

R

Refrigeration Engineer
Reliability Engineer
Renewable Energy Business Manager
Renewable Energy Consultant

Resource Conservation Engineer
Resource Conservation Manager
Resource Efficiency Manager
Retro-commissioning Engineer

S

Safety & Environmental Coordinator
Shipboard Resource Efficiency Manager
Smart Grid Engineer
Solar Energy Engineer
Solar Energy Systems Designer
Solution Design Specialist
Solution Development Engineer
Staff Engineer
Staff Research Engineer
State Energy Manager
Storm water Planning & Engineer
Supervisor
Strategic Energy Analyst
Surveillance Coordinator, Work Control

Sustainable Development Professional
Sustainability Coordinator
Sustainability Engineer
Sustainability Leader
Sustainability Manager
Sustainable Building Analyst
Sustainable Building Technologist
Sustainable Design Specialist
Sustainable Development Coordinator
Sustainable Solutions Engineer
System Applications Engineer
System Control Operator
Systems Analyst
Systems Engineer

T

Technical Advisor
Technical Analyst
Technical Consultant
Technical Director
Technical Engineer

Technical Facilities Assistant
Technical Manager
Technical Solutions Engineer
Technical Specialist
Test and Balance Engineer

U

Utilities and Energy Director
Utilities Engineer
Utilities Manager

Utility Analyst
Utility Conservation Representative

W

Waste Reduction Consultant
Wastewater Engineer
Water & Energy Management Specialist
Wind Power Engineer

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