

COSBEDMO22 - SQA Unit Code HG44 04

Assess and confirm project energy sources and mechanisms in built environment design management



Overview

This unit is about assessing and confirming energy sources for projects. You will need to review and interpret legislation and regulations relevant to energy planning and use. You will need to recommend and confirm to project stakeholders the most appropriate energy source for the development.

Performance criteria

You must be able to:

- P1 confirm **energy goals and priorities** for potential **developments**, both currently and in the future
- P2 identify the **purposes and requirements** for which energy is required in the **developments**
- P3 review and interpret legislation, regulations and standards relevant to energy planning and use in **developments**
- P4 identify the **factors** that need to be considered in choosing the optimum **sources of energy** for **developments**
- P5 identify the potential available alternative **sources of energy** for **developments**
- P6 assess and quantify the viability of each **source of energy** against the **factors** taking into account the views of experts and project stakeholders
- P7 select, recommend and confirm the appropriate optimum **sources of energy** which will satisfy the **development energy goals and priorities** and **factors**

Knowledge and understanding

You need to know and understand:

- K1 how to confirm **energy goals and priorities** for potential **developments**, both currently and in the future (application)
- K2 what to identify as the purposes and requirements for which energy is required in the developments (understanding)
- K3 how and why to review and interpret legislation, regulations and standards relevant to energy planning and use in **developments** (analysis)
- K4 what to identify as the **factors** that need to be considered in choosing the optimum **sources of energy** for **developments** (understanding)
- K5 what to identify as the potential available alternative **sources of energy** for **developments** (understanding)
- K6 how and why to assess and quantify the viability of each **source of energy** against the **factors** taking into account the views of experts and project stakeholders (analysis)
- K7 how and why to select the appropriate optimum **sources of energy** which will satisfy the **development energy goals and priorities** and **factors** (evaluation)
- K8 how and why to recommend the appropriate optimum **sources of energy** which will satisfy the **development energy goals and priorities** and **factors** (synthesis)
- K9 how to confirm the appropriate optimum **sources of energy** which will satisfy the **development energy goals and priorities** and **factors** (application)

Scope/range

- 1 Energy goals and priorities:
 - 1.1 energy sources and infrastructure
 - 1.2 energy consumption
 - 1.3 carbon targets
 - 1.4 use of renewable resources
 - 1.5 use of non-renewable resources
 - 1.6 energy reduction programmes
 - 1.7 heat recovery and re-use
 - 1.8 energy efficient technologies
 - 1.9 energy efficient practices
- 2 Development:
 - 2.1 new build
 - 2.2 adaptation
 - 2.3 alteration
 - 2.4 refurbishment/upgrading
 - 2.5 conservation
 - 2.6 demolition/decommission
 - 2.7 relocation
- 3 Purposes and requirements:
 - 3.1 space heating
 - 3.2 space cooling/ventilation
 - 3.3 hot water
 - 3.4 lighting
 - 3.5 power for equipment
- 4 Factors:
 - 4.1 energy availability
 - 4.2 energy distribution mechanisms efficiency and costs
 - 4.3 energy delivery mechanisms efficiency and costs
 - 4.4 energy controls efficiency and costs
 - 4.5 environmental impact and sustainability level of energy demand
 - 4.6 installation
 - 4.7 maintenance
 - 4.8 cost (including whole life costs/return on investment)

Scope/range

- 4.9 project timescales
- 4.10 energy and carbon standards and strategies
- 4.11 primary and secondary effects
- 4.12 positive and negative
- 4.13 risk and opportunity
- 4.14 development phases (design, procurement, construction & installation, operation, maintenance, demolition/ decommissioning)
- 4.15 short, medium and long-term implications
- 4.16 energy policies
- 4.17 economic policies
- 4.18 feed-in tariffs
- 4.19 payback schemes
- 4.20 grants and subsidies
- 4.21 planning & sustainable community policies
- 4.22 patterns of use
- 4.23 user preference
- 4.24 consequential improvements
- 5 Sources of energy:
 - 5.1 grid sourced fossil fuels (gas, oil, coal fired)
 - 5.2 locally sourced fossil fuels (gas, oil, coal fired)
 - 5.3 combined heat and power
 - 5.4 ground, water or air source heat pumps
 - 5.5 photovoltaics
 - 5.6 macro and micro wind
 - 5.7 solar thermal
 - 5.8 biomass/biogas
 - 5.9 hydrogen fuel cell
 - 5.10 wave and tidal power
 - 5.11 nuclear

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Developed by ConstructionSkills

Version number 1

Date Approved December 2012

Indicative review date January 2018

Validity Current

Status Original

Originating organisation ConstructionSkills

Original URN COSBEDMO22

Relevant occupations Architects; civil engineers; graphic designers; architectural technologists, town planning technicians and building surveyors

Suite Built Environment Design Management

Keywords energy; design
