Part A

Introduction and overview

How to reduce energy costs

Key considerations for local physical activity and sports facilities

Foreword

How to reduce energy costs for local physical activity and sports facilities.

There are many challenges arising from the current economic circumstances and the needs for operators to maintain financial and environmental sustainability.

This guidance aims to give practical support on how energy efficiency measures can reduce running costs. The suite of documents describe the range of local physical activity and sports facilities and many types of energy reduction features that are available. It also provides a worksheet tool to help analyse individual situations and develop an energy reduction action plan.

Illustrations

The references, images and links to commercial products and organisations used in this guide are intended to illustrate the range of technologies that are available on the market at 2Q2022, but should not be taken as an endorsement by Sport England of the particular products or services concerned.

Document accessibility

This document has been designed for comfortable reading at A4 and on a laptop screen, but can also be printed at A3 for large print versions. The pdf is accessible and has been tested to work with text readers.

The guidance has separately downloadable parts - see page 3 summary. They have been developed to enable readers to digest and process the information easily with illustrations and tables for quick reference.

User guide

Before using this design guidance note for any specific projects, all users should refer to the User guide to understand when and how to use the guidance as well as understanding the limitations of use.

Click here for **User guide** and other
Design and cost guidance

How this document relates to other guidance

The **How to reduce energy costs** guidance documents should be read alongside related Sport England guidance and links highlighted below:

Sport England **How to reduce energy costs** documents

Part A **Introduction and overview**

Part B Facility elements and checklist

Part C Worked examples of typical facilities

Part D Frequently asked questions (FAQs)

Part E Project worksheet

For web page Click here

Other Sport England guidance

Environmental sustainability Click here

Clubhouses Click here

Club matters Click here

Funding Click here

Contents

1.0 Introduction

The recent soaring increases in energy prices (i.e. oil, gas and electricity) are being felt in all sectors of the economy and are having major impacts on people's lives. Major global factors are at play and forecasts are for further cost rises in the near future (fact check and add reference).

This 'energy crisis' has added considerable urgency to discussions on the use of energy and the implications for wider global warming and climate change. Not least for the sport and leisure industries and perhaps most crucially, for the diverse range of small community organisations that provide for sport and physical activities at a local level. In many ways, these are the backbone of sport and leisure in the UK and include, for example, local sport clubs, village halls, and community hubs that often operate many with voluntary support, and with modest budgets and minimal financial reserves. For some, the recent energy increases will limit their offer to users and even threaten their future viability.

There will be immediate impacts from the increase in the oil, gas and electricity bills for heating and hot water, and increased costs of fuel for the operation of grounds maintenance equipment. There will also be secondary impacts, as inflationary pressures work through other parts of the economy and potentially the way the people travel and use the facilities.

This initiative looks at the ways increased energy costs can be monitored, managed and where appropriate be reduced. It suggests a logical step-by-step framework for organisations to self-assess their own individual situation and decide on appropriate action.

It discusses:

- Taking stock: Setting up a process for assessing the available data from utility bills and meter readings;
- The benefits of smart meter technologies: Improved automated energy monitoring and controls;
- Typical high-use energy areas: Identifying the high-use areas where most savings might be made;
- Developing a plan with reduction targets;
- Monitoring energy reductions: Ensuring any changes are effective and understood and supported by users.

Parts B-E provide further information and a project worksheet.

2.0 Taking stock

2.1 Diversity of facilities and use

Although there are many standardised features to be found in local physical activities and sports facilities, the overall pattern is diverse and varied. There are differences in the ages, standards of construction, types of equipment, levels of maintenance and the mix of individual elements of accommodation. An indicative overview is shown in Part B with a matrix of typical elements of accommodation. The table also shows typical headings for energy demands i.e. heating, lighting and ventilation, electrical appliances and fuel for grounds maintenance equipment.

The way the facilities are used will also have a considerable bearing on the energy use. Some facilities will be used on a continuous basis through the week, and others may be only used on a more occasional basis, for example, at weekends during the playing season.

From an energy use perspective, organisations should undertake detailed assessments of the energy they use and consider all potential options available for reducing consumption.

See Parts B and C for an accommodation matrix, typical energy needs, and mapping individual energy use.

2.2 Smart monitoring

Many people will be familiar with the roll out of smart meter technology in their own homes. The government requires energy suppliers to offer smart meters to all homes and small businesses across Great Britain by the end of 2025. The equipment gives automatic data collection and makes it much easier to understand in real time the amount of energy that is being used and the price being charged. It also allows better estimates of future bills and avoids wastage. The benefits are equally valid for sport and physical activity facilities.

See FAQs for smart meters at: https://www.smartenergygb.org/

To request a smart meter for your business, see:

https://www.smartenergygb.org/about-smart-meters/how-to-get-a-smart-meter

2.3 Internet of things (IoT)/ smart buildings

Similarly, people may be aware of smart control technology in their homes in the form of intelligent room thermostats and heating controls systems that can be accessed by their mobile phones. The technologies allow automatic detection of occupation, the automatic default to eco settings, and remote monitoring and control.

There are many products on the market, for example:

https://www.tado.com/all-en/products

https://www.hivehome.com/shop/smart-heating?icid=mname%3Amega-menu.iname%3Aall-heating

2.4 Identifying high energy use areas

Smart meters can help identify the actual consumption and help identify hidden issues and potential high energy use areas. For example, the actual costs of:

- Floodlighting a tennis court or a football pitch;
- Lighting, heating and ventilation to internal activity spaces;
- Hot water use for showers;
- Grounds maintenance materials and equipment.

See Part C for indicative use and energy profiles for a small sports pavilion and a village hall / physical activity hub.

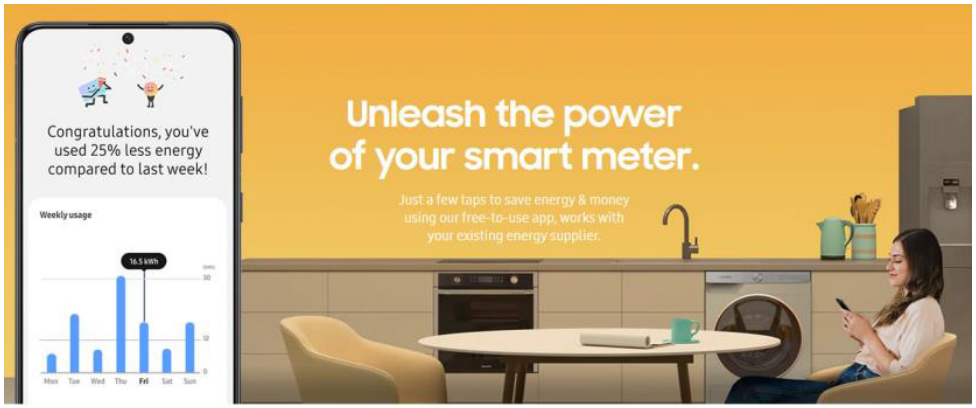
See Part C for indictative use and energy profiles.

2.5 Better controls

The use of smart technology can be extended by connecting to a mobile phone application or website. This can allow better tracking, monitoring, automated reporting and controlling of equipment from a remote location. There are also reasonably priced plug-in or clip-on devices on the market that measure the energy use of appliances or systems and give potential savings. For example:

- Smart thermostats;
- Energy-efficient LED smart bulbs;
- Wi-Fi control systems;
- Motion sensors;
- Energy monitoring plugs.

See a fuller description in Part B.



3.0 Step-by-step

3.1 4-step approach

The table below sets out a 4-step approach to understanding and managing the reduction in energy costs. It builds on the points discussed in the previous section about taking stock and understanding the individual facility.

See Part E for a template of a project worksheet to assess an individual facility.

Table A-1 4-step approach to reducing energy costs

Step	Action	Key considerations
1	**Initiate action**	Empower a person or team in the organisation to investigate and make recommendations. Create an **energy champion(s).**
2	**Install smart meter to monitor energy usage and real time costs**	Review historic data. Contact energy supplier(s) about installation of a smart meter(s) and best tariff(s). Establish an **energy benchmark.**
3	**Take regular readings and track against the program of use**	Track the daily or weekly readings to identify the **profile of use** peaks and troughs. Compare with the energy supplier's data. Consider augmenting with Internet of things (IoT) software / monitoring technology.
4	**Identify high energy use items where a % reduction might generate most savings**	Draw up a **priority list of items** and consider: • Impacts on users; • Affordability; • Operational factors; • Value for money (VFM).

3.2 Role of an energy champion(s)

An early step will be to empower a person(s) in the organisation to take a lead and act as an **energy champion**. They will be the point of contact and advocate for developing and adopting energy-efficiency measures. It is important that they have a good understanding of the organisation's ethos and some basic financial accounting skills.

The role will involve:

- Reviewing the current situation;
- Establish a benchmark for gauging future progress;
- Regular reviews of data and trends;
- Developing options for improvements;
- Engaging with the management team;
- Communicating to users, membership and the management.

See Sport England Clubhouse Guidance Note 4: Sustainability for section on reduced consumption available at:

https://www.sportengland.org/guidance-and-support/facilities-and-planning/design-and-cost-guidance/clubhouses

3.3 Smart meter technology

Smart meters automatically collect and transmit energy data to energy suppliers (gas, electicity and water) and can help customers more easily understand and manage their consumptions. The information can be displayed on a dedicated monitor or be viewed through a computer or mobile phone app. They give a real time view, avoid estimated bills, and can also help identify hidden operational issues such as the reason for higher than desired energy costs. They can also reveal the causes of more frequent equipment repair and replacement.

Energy suppliers are obligated to rolling out to households and small businesses free of charge. See: https://www.smartenergygb.org/ .

Smart meter technology is also available for heating oil systems. See: https://www.smartoilgauge.com/ .

Smart meter technology can help:

- Save money on energy bills;
- Identify energy waste;
- Increase operational efficiency;
- Increase awareness of energy use among users;
- Increase ability to manage and monitor energy use;
- Become more environmentally friendly.

4.0 Plan of action

4.1 A framework for assessing costs

Table A-2 overleaf suggests a framework for considering options for reducing energy costs together with a list of typical examples.

There are four strategy options outlined as follows:

- Strategy 1 covers user actions or changes in user behaviours that can be taken with minimum or no capital costs. Examples include turning down the control settings or simply turning off key items of equipment;
- Strategies 2 and 3 provide examples of upgrades to control systems and the replacement of inefficient items of equipment or appliances that will incur low or medium cost but would be justifiable financially in terms of the overall energy that can be saved over a period of time;
- Strategy 4 gives examples of medium to higher cost refurbishment works to the buildings or sports facility.

In all cases, it is important that the potential impacts on users are properly considered. The energy champion can play a useful consultation role to gaining agreement for a chosen line of action.

In all cases, it is important that the potential impacts on users are properly considered. The energy champion can play a useful consultation role to gaining agreement for a chosen line of action.

Table A-2 Energy assessment framework

Strategy	Capital cost implications	Action	Example features
1. Use/ behaviour	None - minimum	**Turn down or turn off?**	• Sport floodlighting: Can lux levels be safely reduced? Or start times be changed? Check with NGBs? • External lighting: Can levels be safely reduced? • Space heating and ventilation: Can settings be safely reduced? • Shorter and cooler showers: Can temperatures and times of use be reduced? • Space heating: Can some areas be switched off?
2. Upgrade	Minimum - low	**Improved controls**	• PIR lighting controls: Turn lights on when people are detected and off when there is no activity? • Intelligent programming: Automatic start and finish times? • Remote monitoring and controls: Easier management and supervision?
3. Replace	Low – medium	**Replace inefficient equipment and appliances**	• Catering equipment: Are all appliances energy efficiency A-rated? • LED Lighting: Are all lights upgraded? • Boiler and heating systems: Should they be replaced?
4. Refurbish	Medium – high	**Building refurbishment**	• Improved insulation, ventilation and air tightness: How can the building be upgraded? • Phasing: consider options for quick fix and longer-term improvements?

4.2 Diverse factors

There are likely to be important differences between one facility and the next, even though at first sight there seem to be similarities.

The factors below can all come into play:

- Location and microclimate;
- Site layout and orientation;
- The accommodation mix (see Part B);
- Age and types of building or pitch construction;
- Energy use profile (electricity from grid or self-generation plus heating oil, motor fuel, gas from grid or bottled supply);
- Specifics of the energy supply contracts;
- Equipment and specification.

Appendix 1

References

Table A-3 Useful websites and documentation

Body	Subject	Documentation	Website
Sport England	**Environmental sustainability**	Environmental sustainability check list Case studies	https://www.sportengland.org/guidance-and-support/facilities-and-planning/sustainability?section=environmental_sustainability_and_sports_facilities
	Clubhouses	Design guidance notes Display panels	https://www.sportengland.org/guidance-and-support/facilities-and-planning/design-and-cost-guidance/clubhouses
	Club Matters	Creating environmentally sustainable facilities Case studies	https://www.sportenglandclubmatters.com/ https://www.sportenglandclubmatters.com/facility-development/maximising-facilities/
The British Association for Sustainable Sport (BASIS)	**Sustainable sport**	Website	https://basis.org.uk/
Department for Business, Energy & Industrial Strategy	**Energy Saving for Hospitality**	Website brochure	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/933674/ndsemic-energy-savings-hospitality.pdf
Energy Saving Trust	**Quick tips to save energy at home**	Website	https://energysavingtrust.org.uk/hub/quick-tips-to-save-energy/

Body	Subject	Documentation	Website
Centre for Sustainable energy	How much electricity am I using?	Website	https://www.cse.org.uk/advice/advice-and-support/how-much-electricity-am-i-using
	Improving energy efficiency in community buildings	Website brochure	https://www.cse.org.uk/local-energy/download/improving-energy-efficiency-in-community-buildings-197
	Energy survey pro forma	Website brochure	https://www.cse.org.uk/local-energy/download/an-energy-survey-pro-forma-76
Which	10 ways to reduce energy bills	Website	https://www.which.co.uk/reviews/cutting-your-energy-bills/article/how-to-save-on-your-energy-bill/10-ways-to-save-on-energy-bills-aX2RS8b8llMR
Shell Renewables and Energy Solutions	Clean energy	Website	https://www.inspirecleanenergy.com/blog/clean-energy-101/how-to-save-energy-at-home
Energysage	Energy conservation	Website	https://www.energysage.com/energy-efficiency/101/ways-to-save-energy/
Business Energy	Energy saving tips for sport and recreational facilities	Website	https://businessenergyquotes.com/news/energy-saving-tips-for-sport-and-recreational-facilities
	Energy saving tips for your restaurant and cafe	Website	https://businessenergyquotes.com/news/energy-saving-tips-restaurant-cafe
Carbon footprint	The Carbon Calculator – Carbon Footprint	Website	https://www.carbonfootprint.com/calculator.aspx
Footprint Calculator	Footprint Calculator – WWF	Website	https://footprint.wwf.org.uk/#/
The Carbon Trust	SME Carbon Footprint Calculator – Carbon Trust	Website	https://www.carbontrust.com/resources/sme-carbon-footprint-calculator

Appendix 2

Glossary of terms

Table A-4 Terms and definitions

Term	Definition
Affordability	The extent that the costs of a proposal can be funded within the financial constraints over a period of time.
Energy champion	A person(s) taking a lead in advocating, managing and/or monitoring reductions in energy consumption - see page 9.
Energy costs	The price charged by energy supply companies for fuels to operate buildings and equipment i.e. oil, gas, LPG, wood pellets etc.
Energy crisis	Term in current usage to describe shortages and bottlenecks in energy supplies.
Energy use profile	The patterns (or profiles) of energy usage over a period of time. Useful for identifying where a building is wasting energy.
Internet of things (IoT)	Concept of connecting everyday appliances and equipment to the internet and/or other devices to share data and give improved control. Examples include wearable fitness devices, smart microwaves, driverless cars etc.
LED Lighting	Lights that use 'light emitting diodes' (LEDs) and generally more energy efficient, longer lasting and with lower replacement costs than traditional lighting.
LPG	An abbreviation for liquefied petroleum gas. This is a type of 'liquid gas' that can be used as fuel for a variety of purposes such as powering cars or heating systems. Also referred to as butane and propane gas.
Operational factors	Matters that relate to the operation and use of building or facility.
Smart meter	Electronic energy recording device that gives greater clarity of consumption behaviour by recording energy in real-time, and reporting regularly in short intervals. They enable two-way communication between the meter and the central system.
Smart technology	An acronym for computer technology that allows 'Self-Monitoring, Analysis and Reporting Technology' and for systems to feedback and guide behaviours.
Value for money (VFM)	Term in current usage for the systematic approach to evaluating a proposal in terms of economic, efficiency, effectiveness, equity benefits. Often used as a synonym for cost effective.

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Contributors

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Sport England wishes to thank all individuals and organisations referenced or credited within this document.

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Issue tracker

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