

Gridline

Spring 2011

THE GRID AT 75

How National Grid
has kept the lights on

FOLLOW THE SUN

Cornwall's pioneering
new solar farm

RAPID RESPONSE

National Grid's
emergency bikers

SAY CHEESE

Meet the grantor making traditional
West Country Farmhouse Cheddar

PLUS: PROJECT ROUND-
UP, TREE MANAGEMENT,
WIN A SUPERCAR DRIVE

Welcome to Gridline



A very warm welcome to the spring issue of Gridline.

Sadly, this is my last issue as editor of the magazine, but I'd like to take this opportunity to thank all our readers for their support. Please do continue to send in your story ideas to my successor, who will be introduced in our next issue.

Over the past 12 months, National Grid has been celebrating the 75th anniversary of the grid. Read on page 8 about how the company has marked the 75th anniversary by launching a new hands-on learning programme with the Imagineering Foundation, which aims to enthuse school pupils with an interest in engineering and the sciences.

On page 12, we focus on one of the renewable technologies that will help the UK to move away from its reliance on fossil fuel power generation. Benbole Energy Farm in North Cornwall is one of the first large-scale solar arrays in the UK to get planning permission and it has been pioneered by grantor John Brown.

Keeping to the climate change theme, on page 14 we look at a new study, commissioned by National Grid, which indicates that tree growth is accelerating as a result of warmer, wetter weather and longer growing seasons. Find out how National Grid is taking this into account in its vegetation management policy.

Our grantor profile on page 16 focuses on Denhay Farm in West Dorset, which produces traditional West Country Farmhouse Cheddar cheese.

On page 20, there's another opportunity to win our photo competition, with this issue's prize being an exciting driver's experience day where the winner will be able to get behind the wheel of two of the world's fastest supercars.

Editor, Gridline



16

National Grid's Land and Development Group

The Land and Development Group is responsible for acquiring all rights and permissions from statutory authorities and landowners needed to install, operate and maintain National Grid's electricity and gas transmission networks. The Group acts as the main interface for landowners who have gas and electricity equipment installed on their land. Your local contacts are listed below.

Electricity and gas

- North-west and Scotland **0161 776 0706**
- South-east **01268 642 091**
- South-west **01452 316 059**
- East **0113 290 8235**.

Wayleave payments

- For information on wayleave payments, telephone the payments helpline on **0800 389 5113**.

Electricity emergency

- Emergency calls to report pylon damage to National Grid can be made on **0800 404 090**. Note the tower's number – found just below the property plate – to help crews locate it.

Electric and magnetic fields

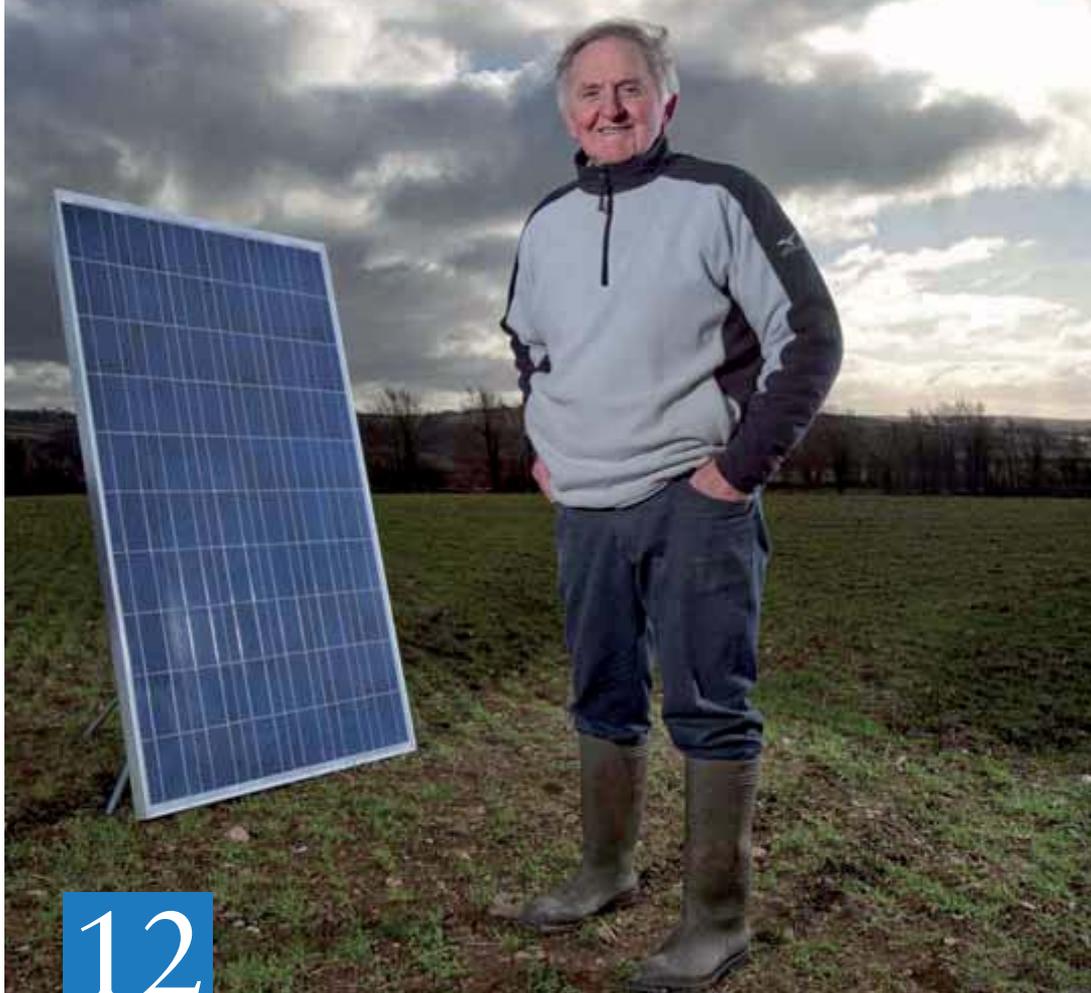
- For information on electric and magnetic fields, call the EMF information line on **08457 023 270** (local call rate). Website: www.emfs.info.

Gas emergency

- **0800 111 999**.

Dial before you dig

- Before carrying out any work in the vicinity of gas pipelines, overhead power lines or underground electric cables, you should contact Plant Protection on **0800 688 588** so that searches can be made to determine the exact position of any National Grid assets.



Contents

News

- 04 The Ellen MacArthur Foundation
- 05 Green corridor in London
- 06 Responding to gas emergencies

Features

SPECIAL FOCUS

08-11 National Grid celebrates its 75th anniversary with a hands-on schools programme to encourage the young engineers of the future

CASE STUDY

12-13 Cornish grantor John Brown gets the go-ahead for one of the UK's first commercial-scale solar farms

SAFETY

14-15 Maintaining safe clearances between power lines and vegetation

PROFILE

16-18 At Denhay Farm in West Dorset, West Country Farmhouse Cheddar cheese is made in the traditional way

Competition page

20 Enter Gridline's competitions to drive a supercar and for a chance to win a £150 Jessops Gift Card

Get in touch

Please contact Gridline if:

- You have any news that you think would be of interest to other grantors
- You think your business or hobby would make a good article
- You have any suggestions for topics you would like to see covered in Gridline.

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To contact Gridline, phone 01926 656 325, email gridline@uk.ngrid.com or write to the address above.

12



Photo competition

Turn to page 20 for the results of last issue's photo competition

IT'S FIRST TIME LUCKY FOR YORKSHIRE GRANTOR

Congratulations to electricity grantor Christine Oliver, of Woodhouse Farm, near Hull in East Yorkshire, who is the winner of the £150 Jessops Gift Card competition in the last issue.

"It's the first time I've entered the competition," said Christine, who runs a 360-acre mixed arable and livestock farm.

'A YEAR ON A DAIRY FARM'

Also congratulations to Christine Burgess of Dartford, Kent, and Katherine Burn of Paull, near Hull, whose entries were picked out of the hat to receive a copy of this book.

04



08



19



For more information
Tel: 01926 656 325
email: gridline@uk.ngrid.com
www.nationalgrid.com

Newsline

The latest news from **National Grid** and its nationwide grantor network



GOING THE EXTRA MILE:
Ellen MacArthur
on a trip to
South Georgia

Ellen MacArthur/Offshore Challenges Sailing Team/DPPi

Dame Ellen floats her vision for a sustainable future in the UK

NATIONAL GRID IS ONE OF THE founding partners of the Ellen MacArthur Foundation, an independent charity launched by the round-the-world yachtswoman, which works to inspire young people to rethink, redesign and build a sustainable future.

After retiring from professional sailing in September 2009, Ellen committed herself to changing attitudes towards the planet's limited natural resources.

Rather than a linear economy in which products made from increasingly expensive and scarce raw materials eventually become worn out and end up in landfill, the Foundation argues for a 'circular economy'

in which products are designed for reuse and recycling.

In an economy powered increasingly by renewables, waste becomes 'food' for another cycle or process rather than simply being thrown away.

The Foundation works with leading educational bodies to deliver classroom ideas and resources for Science, Technology, Engineering and Maths (STEM) subjects.

National Grid has provided volunteers to work as Business Ambassadors for the Foundation's ReDesign workshops for 16-18-year-olds. In a planning exercise, the participants are challenged to rethink and redesign how we might live and work at the

end of an era of cheap energy and materials. The company will also produce industry case studies for young people based on the theme of future energy.

Ellen hit the headlines in 2005 when, at the age of 24, she broke the world record for the fastest solo circumnavigation of the globe.

“ National Grid has provided volunteers to work as Business Ambassadors for the Foundation ”

Wildlife havens

A REPORT BY NATURAL England has revealed how the hard work of landowners, farmers and volunteers has transformed the fortunes of England's Sites of Special Scientific Interest (SSSI).

While only 57 per cent of SSSIs were assessed as being in favourable or recovering condition in 2003, the figure has increased to 96.5 per cent today. One of the single biggest factors in the turnaround has been grants for environmentally sensitive farming, such as Higher Level Stewardship, which benefit 45 per cent of all SSSIs.



Stanislav Krejcik/www.meloidae.com



One minute interview

Ben Smith, lands officer south-west

Background: I joined National Grid in March 2010 after previously working for a firm of chartered surveyors, mainly with utilities. I was educated in rural estate management and enjoy helping out on the local farm during harvest.

Current focus: Working as part of a large team of people, delivering new connections to generators in the south-west region.

What's the best thing about your job? The variety of work, meeting new people, being outside in the countryside and working with a great team of people in an exciting time within National Grid.

What would be your ideal job? A pilot. I enjoy flying and would love to be paid to travel the world.

Family matters: I live with my girlfriend in Gloucestershire.

Leisure time: Golf, hockey, shooting, being outside... and the odd pint!

Current CD playing in your car: The Best of Faithless – it gets you going in the morning on a long drive!

Not a lot of people know that: As a child I grew up in Nigeria and Tanzania, as my father worked for a large civil engineering firm.

Dream destination? The Cook Islands, Aitutaki to be precise!

News
IN BRIEF



NEW MILESTONE FOR GRAIN LNG TERMINAL

In early January, the 200th cargo ship to berth at National Grid's Liquefied Natural Gas importation terminal at the Isle of Grain brought the total amount of energy into the UK gas market to almost 18 million cubic metres. That's enough to supply the entire UK market for almost 50 days. The Grain facility can hold almost 1 million cubic metres of LNG.



Green corridor for London

NATIONAL GRID PROPERTY has agreed to sell a narrow strip of land at a former gasworks in East London to provide access to a groundbreaking green corridor project linking Hertfordshire to the River Thames.

The new footpath at the former Leven Road gasworks will enable pedestrians to reach the River Lea, where a planned footbridge will connect to a riverside walk on the eastern side of the river.

The 'Fatwalk' forms a wide path along the River Lea, from the Thames to the Olympic Park.

Eventually, the London Thames Gateway Development Corporation envisages that pedestrians and cyclists will be able to travel as far north as

Ware in Hertfordshire – a total distance of 41km.

In April, National Grid will start remediation works on part of the Leven Road site contaminated by tars resulting from the manufacturing of town gas in the last century.

"Subject to gaining the relevant permissions, the aim is to remove the contaminated material by barge and ship it to a landfill site on the Thames," said regeneration project manager Paul Mantell.

"Not only will this minimise traffic disruption to local people, but it will also reduce the carbon footprint of the project."

“Eventually... pedestrians and cyclists will be able to travel as far north as Ware in Hertfordshire”

HELPING HAND FOR COMMUNITY CENTRE

A charity in Shipley, Yorkshire, has received a timely £5,000 boost from National Grid as a gesture of goodwill towards the community for disruption during underground cable repairs in the town.

Kirkgate Studios and Workshops provides community art and education facilities, and offers positive opportunities for vulnerable and disadvantaged people. The donation will be spent on repairs to a classroom including insulation, secondary glazing and decoration.



FAST RESPONSE: Tom Foy, one of a pool of first call operatives qualified to ride the powerful BMW motorbikes

First on the scene

TOM FOY IS ONE OF NATIONAL Grid’s team of first call operatives (FCOs), who use powerful motorbikes to weave through the often congested streets of London to reach gas emergencies fast.

National Grid currently has two BMW 1200 RT-P motorbikes working from its Fulham and Goswell Road (Islington) depots. The specification is standard police issue except that the ‘blues and twos’ light and siren have been replaced by an orange beacon.

PUBLIC EVENTS

“The bikes come into their own when large public events take place, such as the London Marathon, State Opening of Parliament or Notting Hill Carnival,” said Tom.

“During the Pope’s visit last summer, I was called out to a gas leak at Clarence House on the main route the cavalcade would be taking. Security was a real issue and we had just 30 minutes to find and fix the leak before the Pope would have to be

re-routed, causing disruption and major disappointment for the waiting crowds.

“Luckily, it was a relatively easy repair job, as the leak was from an old gas street lamp. The fix was made and the event passed off without further incident and as planned,” said Tom.

OLYMPIC GAMES

The bikes carry normal gas-detection equipment, but more complex jobs or follow-on work are supported by van-based operatives. Riders are equipped with satnav, hands-free phones and laptop computers to access and record the incident details.

“We’re planning to use the bikes for the upcoming Royal Wedding and 2012 Olympic Games,” said Simon Lees, Gas Distribution network manager for North London.

“The fact that some streets will be designated Olympic Lanes will cause some traffic movement restrictions, and we’re considering adding more bikes to the fleet to help us get around.”

What to do if you smell gas

- **TURN OFF GAS** – Turn off the meter at the valve unless meter is located in a basement or cellar. If there is a smell of gas in the basement or cellar evacuate the building
- **EXTINGUISH ALL NAKED FLAMES** – Don’t smoke or strike matches
- **DO NOT TOUCH ELECTRICAL SWITCHES** – Turning on or off can ignite escaping gas
- **OPEN WINDOWS AND DOORS** – This gets rid of gas by ventilating the property
- **CALL 0800 111 999** – 24 hours a day, 365 days a year.

Project watch

A round-up of recently completed, current and forthcoming projects around the country

1 ROSS-ON-WYE CABLE REPLACEMENT

WHEN: February 2011-2015

WHY: It is proposed to replace a section of high-voltage underground cable between cable sealing end compounds at Brelston Green and Walford, near Ross-on-Wye, with approximately 2.8km of new cables capable of carrying increased load.

WHAT: The cables were laid in the 1960s in order to minimise impact on the Area of Outstanding Natural Beauty and the nearby setting of Goodrich Castle. The project team will replace the existing six cables with 12 new cables to deliver the required power, while also upgrading the circuit capacity to satisfy future growing demand on the system.

2 FIDDLER'S FERRY TO FRODSHAM OVERHEAD LINE

WHEN: April-July 2011

WHY: A major refurbishment of the line is underway. Although currently operating at 275kV, the new insulators will be capable of operating at 400kV in readiness for the upgrading of the so-called Mersey Ring in 2013/2014.

WHAT: The 9.2km overhead line route runs in a westerly direction from Fiddler's Ferry Power Station across the River Mersey and Manchester Ship Canal before oversailing industrial areas, the M56, railways and the Daresbury Express Way. The final sections pass through residential areas of Runcorn, before terminating into Frodsham. The route also crosses a Site of Special Scientific Interest (SSSI).

3 WESTERN HVDC SUBSEA CABLE

WHEN: Public consultation began February 2011

WHY: National Grid and Scottish Power are working jointly to deliver a High Voltage Direct Circuit (HVDC) link from Scotland to England and Wales. The proposed new 2,000-megawatt subsea link would enable the transfer of large volumes of energy from Scotland. It would bypass an existing 'pinch point' in the transmission system, and connect new renewable energy sources in Scotland.

WHAT: The proposed subsea cable would run from Hunterston in Ayrshire, on the west of Scotland, through the Irish Sea to the Wirral peninsula on Merseyside. From there it would travel across the Wirral to Connah's Quay in North Wales. Consultations are in progress with affected communities.

4 NORWICH TO WALPOLE LINE REFURBISHMENT

WHEN: April-November 2011

WHY: National Grid is refurbishing the 400kV overhead transmission line from Walpole substation, near Wisbech, to Norwich substation, south of the city. The work will enable National Grid to increase the capacity of the network in East Anglia, which will be important in securing future energy supplies.

WHAT: The line is 84km long and features a total of 224 towers. The route is also being upgraded from two circuits to three circuits. The power lines oversail four railway lines, a 180-metre crossing of the Great Ouse river, and its flood channel, and numerous roads.



A young boy with short brown hair, wearing a blue jacket, is focused on working on a circuit board. He is using a soldering iron, which is emitting a bright yellow light. The background is blurred, showing what appears to be a workshop or classroom setting with various tools and equipment.

The Power of learning

Over the past 12 months, National Grid has celebrated the 75th anniversary of the electricity transmission system and the role its engineers have played keeping the lights on. But with the popular image of engineering currently at a low ebb, the challenge is to attract the talented young engineers who will take the next step in the energy revolution

TO HELP CELEBRATE 75 YEARS OF electricity transmission in the UK, National Grid has teamed up with the Imagineering Foundation, an independent charity, to offer 75 schools the opportunity to take part in a free National Grid Energy Challenge – Grid@75 Challenge.

The Imagineering Foundation was formed 12 years ago by a group of engineers in Coventry, determined to do their bit to attract more young people towards a career in engineering.

At first sight, a class of schoolchildren learning about electrical circuits may seem to have little bearing on the enormous challenges of upgrading the nation’s gas and electricity energy infrastructure. But, said Richard Earp, National Grid’s education and skills manager, it has never been more important to instil an enthusiasm for science and engineering at a young age.

PERIOD OF EXPANSION

“We are in a period of huge expansion in which we need to rewire the country to connect more renewable energy, combat climate change and replace ageing assets,” said Richard. “Our workforce is also ageing and we will need an estimated 1,000 engineers by the end of the decade.

“It has become increasingly difficult to attract the right quantity and quality of recruits to the business. A report commissioned by National Grid in 2009, entitled Engineering Our Future, revealed that many young people are deterred from following an engineering career by negative perceptions of the job.”

The report found a pervasive view that engineers are people who fix things, rather than professionals with the ability to design complex processes and run highly technical operations. More worryingly, teachers were doing little to counteract the stereotypes.

“Clearly, as a company, we need to get out more and show young people what this exciting profession is all about,” said Richard. “We have a very good news story to tell – there are jobs, but they’re for people with Science, Technology, Engineering and

“As a company, we need to get out more and show young people what this exciting profession is all about”



Maths (STEM) skills.”

The Grid@75 Challenge provides an opportunity for children in primary schools (from ages 9 to 11) and secondary schools (up to A level) to explore the world of science and engineering in a fun hands-on way, learning about the grid and being enthused with a lasting interest in the subject.

WORKING MODEL GRID

The sessions relate to part of the core curriculum, and are designed to enrich and reinforce classroom teaching.

The challenge events take place at the Jaguar Land Rover Partnership Centre at Gaydon in Warwickshire, and are led by volunteers from Imagineering.

During the three-hour session, the students construct a working model grid system with towers. A transformer supplies grid voltage to the transmission cables and, at the other end, a substation changes the voltage to supply lighting power to a model house.

HANDS-ON: A group of Year 10 students from Bishop Ullathorne school in Coventry

“Older students learn how switching on light bulbs in the model house causes the frequency to drop, and they can measure the voltage levels on the line,” said course tutor Peter Lock.

In addition to holding events at fairs and exhibitions, the Foundation also runs Imagineering Clubs at primary and secondary schools. These take place after school hours with an emphasis on engineering within a STEM context. Some 30 National Grid volunteers are among those involved in leading sessions.

“Besides the aim of encouraging an interest in engineering and science, the hope is that the students come away from the session thinking that perhaps they should take their energy a bit less for granted,” said Richard.

“After all, energy-related issues will continue to have an important impact throughout their adult lives.”

For more information on Grid@75...

i go to National Grid’s dedicated website for the 75th anniversary at www.nationalgrid75.com. Contact the Imagineering Foundation on 01926 643 497 or email schools@jaguarlandrover.com. Also view their website at www.imagineering.org.uk/news/



Working with you

Maintaining constructive relationships with the landowners who host the company's assets is key to the safe operation and security of the gas and electricity transmission networks. National Grid's lands officers (previously known as wayleave officers) have liaised with grantors since the electricity grid was built 75 years ago. Here, two of their number provide an insight into the role



1935

The national 132kV transmission 'gridiron' is born

1950

A 12-year project for a 275kV supergrid begins, requiring 4,000 miles of new lines



1963

Lines are brought down by heavy snow and ice, line gangs work around the clock in temperatures as low as -15°C to make repairs

1976

Construction begins of the pumped storage station at Dinorwig in Snowdonia, capable of producing 1,300MW of power

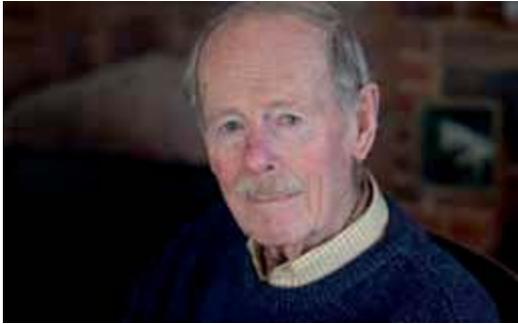
1939-45

Despite bomb damage in major cities, the grid enables power supplies to be maintained

1957

The Central Electricity Generating Board (CEGB) comes into being





Lionel Roberts

Service years: 1958-1991

“I JOINED THE CENTRAL Electricity Generating Board as a wayleave officer after seeing an advert in Farmer’s Weekly seeking recruits for a massive expansion of the electricity supply industry.

“Shortly afterwards I became a grantor myself, when one of the new overhead lines came through the family farm.

“The late 1950s and 60s were a tremendously exciting time. It was hoped the 275kV supergrid would put an end to post-war power cuts, and some remote rural areas were being connected for the first time.

“Later, I was heavily involved in consents for the groundbreaking 400kV supergrid.

“There was a great variety to the work. For example, I co-ordinated land access permissions for the new Dungeness power station and

a new convertor station for the UK’s first cross-channel HVDC cable. I also liaised with the RSPB on a project to investigate bird strikes on migratory routes.

“A lot of communication was done face-to-face in those days. My patch included Kent and parts of East Sussex, and I made many lasting friendships with landowners. I still keep in touch with some to this day.

“Working from home, as I did, my daily routine involved a telephone call to divisional HQ at Kingston-on-Thames to pick up any messages.

“There were no mobile phones or emails back then!”

“The late 1950s and 60s were a tremendously exciting time”



Darren Kempson

Service years: 2008-present

“MY MOTHER WAS A wayleave officer for National Grid back in the 1990s and from quite a young age, I decided I wanted to go into the same line of work.

“I joined the company three years ago and have just completed the two-year National Grid Land Officer Diploma at Harper Adams Agricultural University College in Shropshire. The course gives an insight into farming best practice and the issues that landowners face.

“I like the fact that working as a lands officer is not a conventional desk-based job, and I enjoy meeting people from different walks of life and backgrounds.

“Most lands officers today work in rural areas, but because I’m based in London, my main focus has been on urban projects, both gas distribution

“I enjoy meeting people from different walks of life and backgrounds”

and electricity transmission.

“An interesting project was negotiating access rights for borehole investigations in advance of a project to build three new electricity cable tunnels to reinforce power supplies to the capital.

“A trend since privatisation in 1990 has been the increasing amount of consultation with landholders and other affected parties prior to major projects.

“It’s a great time to be at National Grid, helping the nation to meet climate change and energy security targets. I’m proud to be playing my part.”

1990

The electricity industry is privatised and National Grid is formed as a company, with shares owned by the 12 regional electricity companies



2003

The Second Yorkshire Line is commissioned after 13 years in development

2008

Transmission cables beneath the Olympic site are commissioned following the removal of overhead power lines and the construction of a 6km-long tunnel

1986

The Great Storm hits part of Britain. More than 15 million trees are toppled, bringing down power lines

2001

New electricity trading arrangements (NETA) enable the transformation to a market-led electricity industry

2002

National Grid and Lattice Group plc merge to form National Grid Transco plc

2005

National Grid becomes the single name for the whole business

2010

The World Cup, and TV pick-ups surge as England go out of the World Cup (again)

Going solar

Cornish landowner John Brown is helping to combat increasing energy prices, predicted shortfalls in energy generation and rising CO₂ emissions by pioneering one of the first commercial-scale solar farms

WHAT IS LIKELY TO BE CORNWALL'S first operational solar energy farm on agricultural land has been granted planning permission.

The go-ahead was given in December 2010 for a 1.8MW solar array at Benbole Farm near Wadebridge – the town that acts as a gateway to the area's tourist heartland.

More than 7,600 photovoltaic solar panels will be installed in an eight-acre field owned by electricity grantor John Brown, whose land is crossed by National Grid's Indian Queens to Taunton 400kV overhead power line.

Cornwall receives more hours of sunshine than any other county. Benbole Energy Farm will produce enough energy to provide electricity for around 750 homes in the villages of St Kew and St Mabyn, near Bodmin.

The £5 million array is being developed

by Silicon Vineyard, a consortium of local companies including the commercial arm of the University of Exeter and a renewables specialist, Renewable Energy Cooperative (R-ECO), based in Penzance.

A former professional footballer for Bristol Rovers, John retired early to concentrate on the family's dairy business, until the introduction of milk quotas in the 1980s made it unprofitable.

IDEAL SITE FOR SOLAR

Instead, he rented out parts of his land for arable crops, and in 1993 diversified further by constructing the nine-hole St Kew Highway Golf Course on a parcel of adjoining land. Later ventures included a farm shop and a motorhome park.

"Last April, I investigated using a wind turbine to power compact electric cars for use by tourists to explore the narrow



Cornish roads," said John.

It turned out the site is ideally suited to solar, being relatively flat, away from urban and conservation areas, and only 1.6 miles from a grid connection at an 11kV substation.

"At the time, Feed-in-Tariffs (FiTs) were being introduced to encourage the take-up of renewable generation," said John. "The rates for solar looked very attractive."

The scheme requires licensed electricity suppliers to pay a tariff to small-scale (up to 5MW) generators for electricity generated, whether or not the electricity is exported to the grid or used on-site.

For solar farms like Benbole, the payments

"The aim is that Cornish-based workers will deliver many aspects of the solar farm construction"



GREEN ENERGY: An artist's impression of how the energy farm will look



BRIGHT FUTURE:
John and his wife Fay
at the site of what
will become Benbole
Energy Farm

It's a fact

According to energy regulator Ofgem, the FiT payments encouraged 42.5MW of PV capacity to be installed in 2010 – more than 10 times the rate in 2009.

are scaled at 29.3p per kilowatt-hour (kWh) produced, with an additional export tariff to the network payable at 3p per kWh.

Providing a 10 per cent rate of return, the payments are guaranteed for 25 years and index linked. John will also receive a rent from the developer for the lease of the land.

SITE PLANNING

However, time is running out to lock into the tariffs before they reduce in April 2012 (to new applicants) by around seven per cent.

Construction of the solar farm begins in the spring and staged export of electricity to the network starts in the summer, in advance

of the upgrade of the local network needed to operate at full capacity.

“A huge effort went into the design and planning of the site,” said Abe Cambridge, technical director at Silicon Vineyard.

“Four years’ meteorological data relating to the microclimate of the site was analysed. The field receives 50 per cent more sun after midday, which dictated that the panels should be positioned to face south-west.”

The non-reflective panels sit on a racking system three metres above the ground and they will be screened from view by a traditional Cornish hedge field margin.

The angle of the panels will be manually adjusted seasonally to track the sun, while the farm’s resident flock of geese will graze the grass underneath the racking.

“The aim is that Cornish-based workers will deliver many aspects of the solar farm construction and some components will be sourced from local businesses,” said John.

What makes the ideal solar farm site?

- Flat or gently sloping ground, facing south-east to south-west
 - Close to 11kV substation
 - An open site without trees or woodland, which can cause shadows
- Should not be in a conservation area such as an SSSI, AONB or National Heritage Site
 - Stable ground
 - Suitable access to the site
 - Preferably no rights of way.

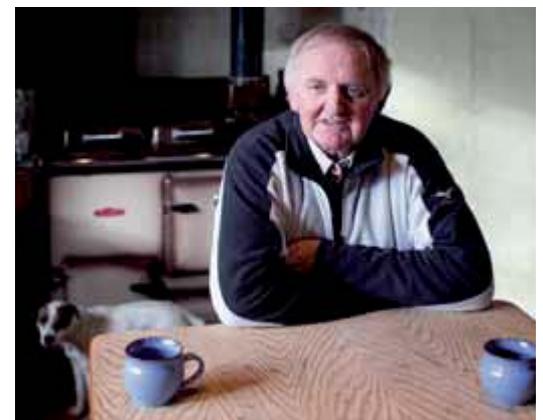
A community trust will administer projects aimed at combating fuel poverty and increasing energy efficiency. It is likely that a proportion of panels will be installed free of charge on local residences, with the FiT payments recycled to the trust to reinvest.

Large-scale projects such as Benbole could help to reduce the cost of PV panels for everyone. That’s because increased sales of panels drive efficiencies in the manufacturing process, which are passed on in lower prices.

“Within about five years there could be grid parity, which is where the cost of solar energy is competitive with conventional grid-supplied energy from fossil fuel plants,” said Abe. “Subsidies wouldn’t be needed and a lot more people would opt for renewable solar-generated energy.”

For more information...

i on Feed-in-Tariffs go to www.decc.gov.uk/ and follow the links. To find out more on Silicon Vineyard go to www.siliconvineyard.co.uk.



Seeing the WOOD for the trees

An investigation into how climate change affects tree growth is providing National Grid with the information it needs to maintain the safe operation of its electricity networks



**LINE
MANAGEMENT:**
Maintaining
clearances is vital
for the security of
energy supplies

A STUDY CARRIED OUT ON BEHALF of National Grid and four Distribution Network Operators indicates that trees are growing faster as a result of warmer, wetter conditions caused by climate change.

The four-year project, undertaken by environmental consultancy ADAS, began in 2008 and is the first of its kind to investigate the effect of climate change on tree growth patterns for UK utilities. More than 1,600 sites are being surveyed, including some 200 spans on National Grid's high-voltage transmission network.

The legacy of past greenhouse gas emissions is predicted to impact on our climate for decades, irrespective of carbon-reduction initiatives, so there is a clear need to plan for future unavoidable consequences.

National Grid and its partners are looking at a number of potential impacts on essential infrastructure of warmer, summer temperatures, raised sea levels, higher rainfall, and more frequent and severe storms.

The ADAS study analysed data on current growth rates collected from the survey sites, and cross-referenced it with 40 years of weather information, together with climate change projections from the United Kingdom Climate Impacts Programme, to predict growth rates in 2020 and 2050.

INCREASED GROWING RATES

The data is being used to map 21 bioclimatic zones in the UK with distinct soil, rainfall and temperature characteristics.

“Our early findings indicate growth rates could increase by as much as 30 per cent in parts of the south-east by 2020 as a result of increased rainfall, higher temperatures and a longer growing season,” said Steve Humphries, principal scientist at ADAS.

But there are also wide variations within the findings, ranging from up to two metres growth in parts of the south by 2020 to just 30cm, for example, in the Scottish Borders.

“The study doesn't aim to suggest how vegetation management strategies should evolve, but it provides more certainty about future climate change scenarios, which we can build into our future planning,” said Matthew Murphy, National Grid's lead engineer for vegetation management.

“At this stage, it's too early to say whether we are already doing enough, or need to do more. A potential benefit is that bioclimatic mapping may help us to fine-tune vegetation management so that we can visit certain sites less often.”

Maintaining safety clearances near power



TASK FORCE:

National Grid's contractors carry out vegetation management under 22,000 spans



lines is something that National Grid takes very seriously, and the company invests millions of pounds annually on surveying and cutting trees near its lines.

Vegetation is normally removed to around eight metres from an overhead line. The figure includes the minimum safety distance

advised by the Energy Networks Association, plus an estimated three-year growth.

An allowance for conductor 'sag' must also be made. Sag can vary according to the type of conductor, length of span, loading and ambient air temperatures.

If a tree branch gets too close to a line, there's a danger of an electrical current arcing across, risking a loss of supply, fire, or the tree conducting electricity to the ground.

RISK-BASED ASSESSMENT

Each year, around half the 22,000 spans in the 7,000km transmission network are surveyed by National Grid's vegetation management contractor Fountains.

The proximity of the two nearest trees under a line is measured, an accurate sag allowance is made by the National Grid IT system, and from this a cutting plan is

ADVICE FOR GRANTORS

- Contact National Grid if any part of a tree you are working on comes within (or if felled could fall within) about 15 metres of a power line
- Only low-height and slow-growing species should be planted underneath power lines
- National Grid asks grantors for permission to cut back vegetation to within about eight metres of a line
- Contact your local lands officer before planting underneath a line, or within two metres of a tower
- Access to towers must be maintained for maintenance
- Don't plant trees over or within three metres of an underground electricity cable.

prioritised. Trees are usually cut on a three-to-four-year cycle according to need.

Over the past two years, National Grid has carried out additional risk-based assessment of so-called side-screen trees, which run parallel to overhead lines.

The programme was launched in response to new legislation in January 2009, which places extra responsibilities on network operators to reduce the potential for trees falling on to lines and interrupting power supplies in storms.

Data relating to a variety of factors is collected during the side-screen survey, including falling clearance, tree species and condition. The surveys also aim to identify trees that are dead, dying or diseased.

Further information, such as average wind speed and direction at the site, is also used by National Grid's IT systems to help prioritise cutting programmes.

Far from felling everything within falling distance, the surveyors seek to identify side-screen trees that pose the greatest risk. The nearest tree may not, for example, be as great a threat as one further away that is damaged or is a faster-growing species.

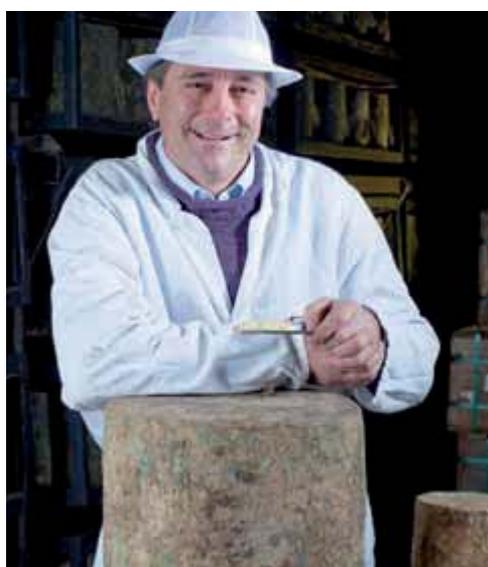
To date, side-screen trees on some 4,600 spans have been surveyed and for more than three years, there have been no major power interruptions from trees falling on to power lines during storms.

For more information...

i see the Health and Safety Executive (HSE) guidance note GS6 'Avoidance of danger from overhead electric power lines'.

CHEDDAR GORGEOUS

At Denhay Farm in West Dorset, handmade farmhouse cheese is made in the traditional way, using milk from the farm's own cows



TRADITION: George with one of Denhay's traditional truckles of Cheddar cheese

WITH MORE THAN 700 NAMED cheeses now produced in the UK, standing out from the crowd on supermarket shelves has never been so challenging for cheesemakers.

For Denhay Farm, a maker of West Country Farmhouse Cheddar, the strategy is to establish a point of difference based on quality, tradition and the taste of the cheese.

The farm was originally established as a corn, beef and sheep enterprise by Commander Streatfeild and Lord Hood in 1952. Farmhouse Cheddar cheesemaking started in 1959.

The farm is three miles inland from Lyme Bay, near Bridport, in the Vale of Marshwood, West Dorset, an Area of Outstanding Natural Beauty. The

rolling grasslands of the 1,900-acre farm are crossed by National Grid's 400kV overhead power line between Axminster and Chickerell.

IN OUR SOUL

The majority of Denhay Cheddar is sold as Waitrose's own-label West Country Farmhouse Cheddar, but it is also available from independent retailers, including the local Washingpool farm shop, near Bridport.

The traditional range consists of 27kg truckles of cheese and 2kg mini Dorset drums, typically bought by the catering industry, farm shops and pub outlets.

"We also started making 20kg blocks of cheese for the pre-packed supermarket sector in 1984, when we began to supply Waitrose," said George Streatfeild, who is the son of the co-founder and a director in the business. "But we continued to make the traditional rounds because it was in our soul."

Only milk from the farm's 1,000 Holstein Friesian cows goes into the cheese, so the milk can be traced right back to the animals that produce it and the homegrown feed they receive.

"People want to be confident about where their food comes from"

"Today, people want to be confident about where their food comes from and whether it was made with care for the environment and animals, as opposed to just being churned out," explained George.

West Country Farmhouse Cheddar cheese enjoys Protected Designation of Origin (PDO) status, which provides a valuable proof of the provenance and authenticity of the product.

HIGHEST QUALITY

To qualify, the cheese must originate from four counties in the West Country and make use of the region's traditional cheesemaking methods.

"It's a guarantee that the cheese remains in the care of the farm from the moment of milking until it's cut and packed for storage," said George.

The welfare of cows at Denhay is independently audited by the RSPCA Freedom Foods scheme, which certifies that the farm maintains the highest quality and animal welfare standards.

The farm also operates within Natural England's Entry Level Stewardship (ELS) scheme, with a range of measures promoting wildlife and sustainable farming.

George acknowledges that marketing a premium product – however compelling its provenance and quality – is challenging in an era of cheap food.

"Most consumers in a supermarket choose cheese on the basis of price, promotional offers and packaging, and have a limited understanding of the differences in the various styles of Cheddars," he said.

"The creamery-produced Cheddar, which many people are accustomed to, has quite a sweet, caramelised flavour, due to the continental starters





“The skill of the cheesemaker is balancing the dryness and level of acidity”

QUALITY CONTROL:
The cheese undergoes three inspections by graders during the maturation process

used. Traditional farmhouse cheese has a savoury flavour with a wonderful mellow and nutty taste.”

To address this, in March, Denhay started supplying the Waitrose Essentials range with a new medium-strength offering of cheese – a halfway house between creamery and traditional flavours.

The mild maritime climate of the Marshwood Vale is ideal for cheesemaking. The area receives about 36 inches of rain a year, and the clay soil retains moisture well, producing perfect grass.

In summer, the cows graze the grass but are also fed maize silage. In winter, when housed indoors, they eat maize and grass silage, as well as ‘crimped wheat’, a nutrient-rich fermented cereal feed produced by harvesting the crop early while the moisture content is still high.

HOMEGROWN

The cows receive extra protein and energy from soya, brewer’s grain, sugar beet and molasses. “We grow as much on the farm as possible to reduce the amount of feed we have to import,” added George.

The milk yield of the Denhay herds is 7 million litres of milk a year, producing 700 tonnes of cheese.

Farms director Simon Hill oversees the entire process from breeding, feeding and welfare to cheesemaking. Head cheesemaker Mike Reeve is only the third person to do the job since 1959.

The process starts when the milk stored overnight has that morning’s milk added and is delivered by Denhay’s own tanker to the nearby cheese house.

After pasteurisation, the milk is slowly stirred and warmed in a vat. A starter culture is added to convert sugars in the milk to acids and encourage fermentation, as well as a vegetarian rennet, which helps to coagulate the milk and separate the curds (solids) from the whey (liquids).

The whey is drained off and the curds moved to cooling trays, where they knit together. In the ‘cheddaring process’, cutting, turning and stacking of the blocks of curd helps the whey to drain off.

“The skill of the cheesemaker is balancing the dryness and level of acidity, and all the time taking samples of the PH levels in the whey to judge when the curd is ready,” explained George.

UNIQUE PROCESS

During the next stage, the springy curds are milled into smaller particles and salt is added to preserve the curd and put a brake on bacterial activity. The curd is then put either into moulds for traditional cheese truckles or rectangular moulds for blocks.

Traditional rounds are pressed for 24 hours to remove moisture, bathed in hot water and pressed again. Then they are covered in lard to form a rind, wrapped in bandage and pressed for a third time.

After removal from the moulds, the cheese is stored on wooden shelves, losing up to 10 per cent of its weight as the texture dries and matures.

Block cheeses are only pressed for one day. Wrapped in polythene to prevent mould from gaining access, they are stored between wooden slats for protection. The cheese matures for at least 10 months in the storeroom, at a temperature of 8-10°C and a humidity of 98 per cent.

Independent graders check the texture, colour, aroma and taste of the cheese three times, discarding anything that doesn’t make the grade.

At nine months, decisions are made about what to sell as mature (10-11 months), extra mature (14-15 months) or vintage (16-17 months).

The non-starter bacterial microflora in the storeroom environment – acquired over 52 years – puts a final stamp on the taste of the cheese.

“It’s our heritage and it means that even if you put our milk into another cheese house, you still wouldn’t be able to replicate the unique taste of Denhay Farmhouse Cheddar,” concluded George.

For more information...

i on Denhay West Country Farmhouse Cheddar go to www.denhay.co.uk.

Out&About

The latest news from **National Grid** and its nationwide grantor network

Land of the tigers

YORKSHIRE WILDLIFE PARK, NEAR Doncaster, is preparing to welcome two pairs of endangered Amur (Siberian) tigers to a new reserve it is constructing within its grounds.

The park – which is a National Grid gas and electricity grantor – hit the headlines last year with the dramatic rescue and transfer of 13 lions from a rundown Romanian zoo.

Two pools and a waterfall are being constructed for the water-loving tigers in their new home, which will also feature an elevated 150-metre viewing walkway for visitors.

The tigers are being sourced from other zoos and parks involved in the Amur Tiger European Breeding Programme. The first pair will move into the enclosure in the spring – a two-year-old male called Vladimar from the Highland Wildlife Park, near Inverness, and an eight-year-old tigress from Sofia Zoo, in Bulgaria.

The largest big cat in the world, the Amur tiger is threatened by habitat loss and poaching, and there are thought to be just 450 surviving in the wild.

For more information go to www.yorkshirewildlifepark.net/



NATURAL ALLIANCE

An historic agreement has been entered into by the National Trust and the RSPB to co-manage a piece of land for the first time. For the next 15 years they will share management of the Eastern Moors, on the outskirts of Sheffield, one of the major gateways to the Peak District National Park. The two conservation charities have a combined membership of around 4.6 million.



GARDEN BLOOMS

A donation of £1,000 has been made by National Grid towards the development of the Stoke Newington East Reservoir Community Garden run by the London Wildlife Trust. The gardens are close to a £775 million project involving the construction of three deep cable tunnels in London to upgrade the electricity transmission supply to the capital.

Focus turns to heat

RENEWABLE HEATING TECHNOLOGIES could be about to take off in the UK as the government prepares to reveal tariff levels for its Renewable Heat Incentive (RHI) in June.

To reach the 2020 renewable energy target, around 12 per cent of the UK's heat needs to be generated from renewable sources (currently 1 per cent).

The RHI scheme aims to bridge the gap between the cost of conventional heat systems and renewable heat systems, which are more expensive. Consumers, businesses and public sector organisations will benefit.

Eligible technologies are: biomass boilers and

stoves; air-source and ground-source heat pumps; sustainable biogas; solar thermal; use of biogas/bioliquids; and the injection of biomethane into the gas grid.

Heat production is responsible for 49 per cent of the final energy demand consumed in the UK. Rather than measuring the actual heat generated, the government will use an estimated figure to work out payments.

More details are available at:

www.energysavingtrust.org.uk/Generate-your-own-energy/Sell-your-own-energy/Renewable-Heat-Incentive.

Last Word

Contact details
Tel: 01926 656 325
Email: gridline@uk.ngrid.com
Website: www.nationalgrid.com

Your chance to enter two great competitions

Photo competition



Tree-mendously cold weather

Congratulations to Peter Warrington of Abingdon, who is the winner of last issue's photo competition on the theme of 'winter', for this stunning photo of a bank of trees during a December hoar frost.



Win £150 of photographic equipment

Enter this competition to win a £150 Jessops Gift Card.

Use the gift card in full or as part payment for goods purchased in more than 200 Jessops stores throughout the UK.

Choose from a wide range of items sold by Jessops, including digital cameras, digital photo frames, memory cards, printers, flash guns, camera bags, lenses, binoculars, and more.

Please note: gift cards can currently be used only in Jessops high-street stores and Mail Order Sales Department.

To be in with a chance of winning a Jessops Gift Card, simply answer the following question correctly:

Q HOW MANY TONNES OF CHEESE ARE PRODUCED EACH YEAR AT DENHAY FARM?

Send your answer to Gridline Jessops Competition, 23-25 Waterloo Place, Warwick Street, Leamington Spa, Warwickshire CV32 5LA. Please note you must be a grantor to enter. Closing date is 28 July 2011.



Win the drive of your life!

Enter Gridline's competition to win a Treatme driver experience

GRIDLINE HAS TEAMED UP WITH Treatme, one of the UK's leading providers of driver experience days, to offer the winner of this issue's photo competition the chance to go for a spin in the stunning Ferrari and Lamborghini Gallardo supercars.

The competition winner will be able to choose from 22 locations nationwide. The driver experience will include a session driving both cars and being a passenger in a high-speed drive by a professional driver.

The theme for this issue's photo competition is 'spring'. Just send in your selected photograph for a chance to win this great prize.

Send your photo to Gridline Photo Competition, 23-25 Waterloo Place, Warwick Street, Leamington Spa, Warwickshire CV32 5LA, or email your photo to gridline@uk.ngrid.com. Closing date is 28 July 2011. Only grantors are eligible to enter and regrettably prints cannot be returned.



ITINERARY

- Welcome and registration
- Introduction and safety briefing on the circuit and driving techniques
- A session driving a Ferrari
- A session driving a Lamborghini Gallardo
- A taster session driving a 4x4 off-road (Stafford only)
- A high-speed passenger ride
- Each instructor will give you a short debrief and complete your driver analysis form after each drive
- Collection of your driving certificate.

Restrictions:

- You must hold a full manual driving licence, be less than 6ft 6in tall and weigh less than 18.5 stone.