APUC MEMBERS WORKSHOP

University of St Andrews, 17th Feb 2015

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AGENDA

1. Market Update

2. Energy Reduction Services

3 Q&A

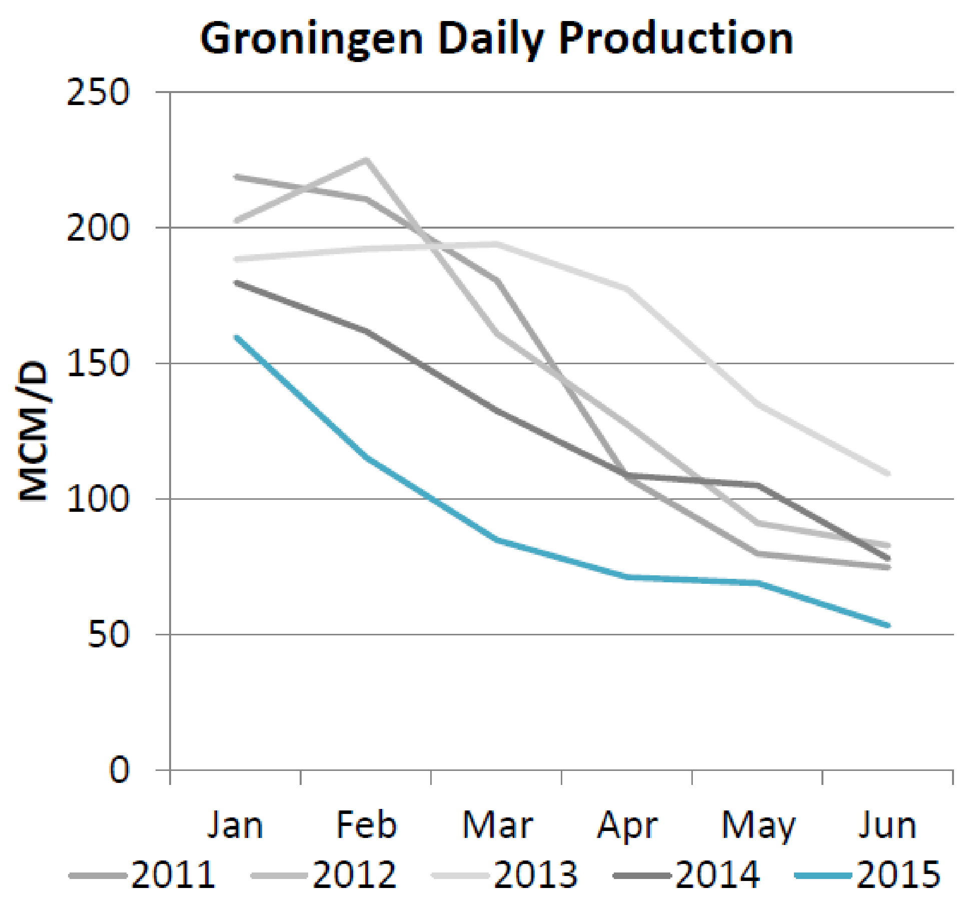
MARKET UPDATE

DUTCH GOVERNMENT ANNOUNCES GRONINGEN PRODUCTION CUTS

On Feb 9th the Dutch Government announced further production cuts at one its largest gas fields, Groningen, until July to allow for studies to take place (16.5bcm until July).

Production had already been cut by 7% from 2014 levels (announced on Dec 16th), due to the earthquakes that extracting the gas from field causes.

This led to a sharp increase in future prices across North West European gas hubs as a significant portion of supply was taken away from the market.



Source: TGP, analysis Thomson Reuters

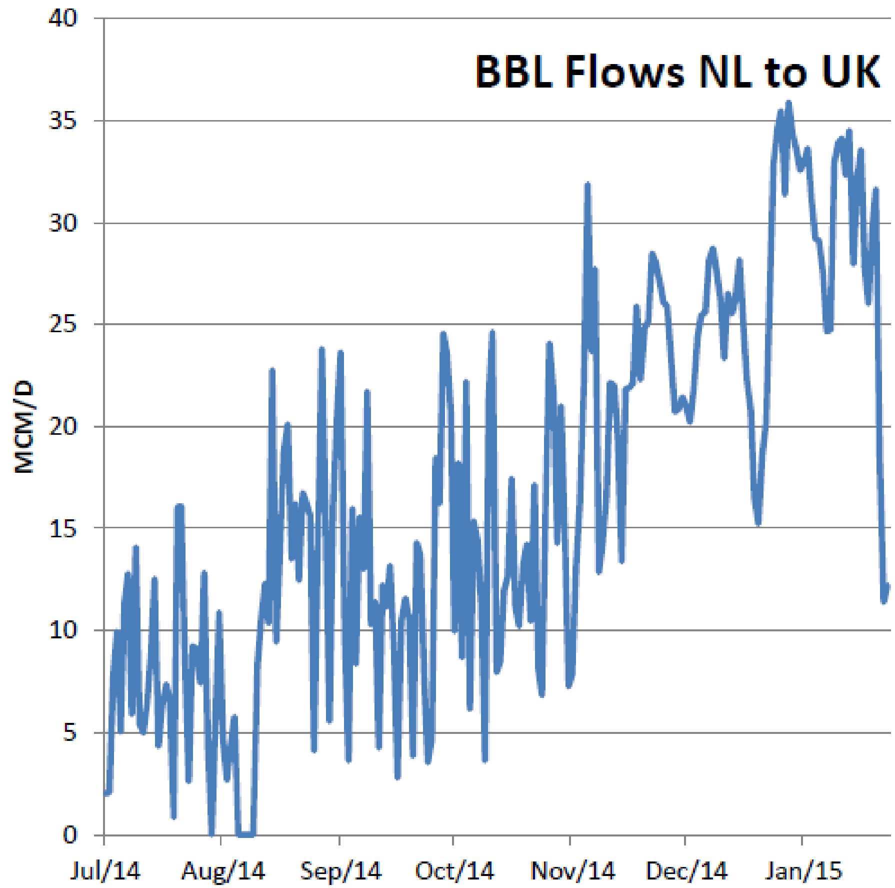
FLOWS TO UK DROP ON GRONINGEN CUTS

Flows via the BBL pipeline dropped from approx 35mcm/d from Feb 1st to 10th, to an 11mcm/d average over Feb 11th/12th.

During the same period Groningen flows dropped by 45mcm/d to approximately 180mcm/d, around 60% of Dutch production.

Lower BBL flows has seen the UK gas system struggle to balance and had to price in additional supply.

The IUK pipeline from Belgium has begun to send flows to the UK, though the price differential required is over 2ppth between the UK and Belgium.



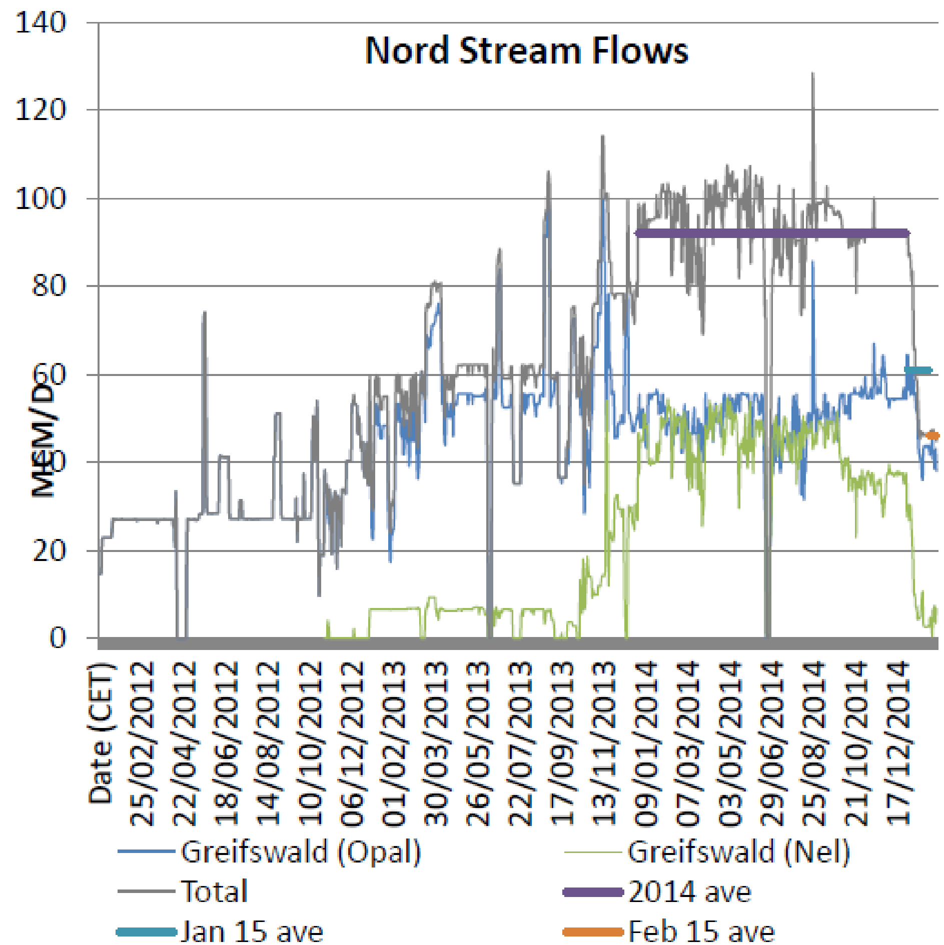
Source: Thomson Reuters

HUNT FOR ALTERNATIVE SUPPLY SOURCES

A fall in Dutch production will leave Europe looking for additional supply, especially during cold snaps or if there are supply disruptions from Norway, e.g. Due to infrastructure failures.

Alternative sources include LNG, where prices are appealing but spot cargoes are not always available.

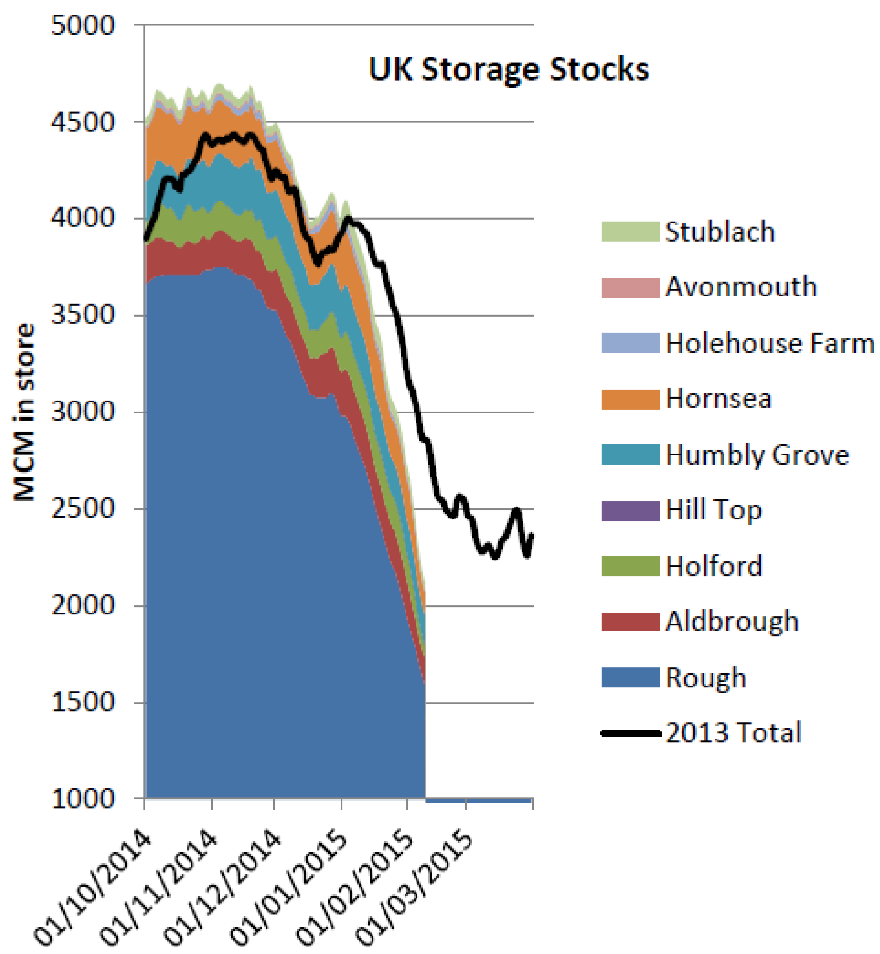
Additionally the Nord Stream pipelines, from Russia to Germany could potentially supply more – but volumes in 2015 so far have been significantly lower.



HEAVY DRAWDOWN ON STORAGE STOCKS

We started the winter with stocks over 95%. Stocks are now approximately 40% full, which equates to around 1.9bcm in store. Holehouse Farm is already empty & Holford is 17% full.

Drawdown on stocks so far this year has been stronger than the previous winters as weather has been much colder and there has been some supply disruption from Norway due to storms in the North Sea

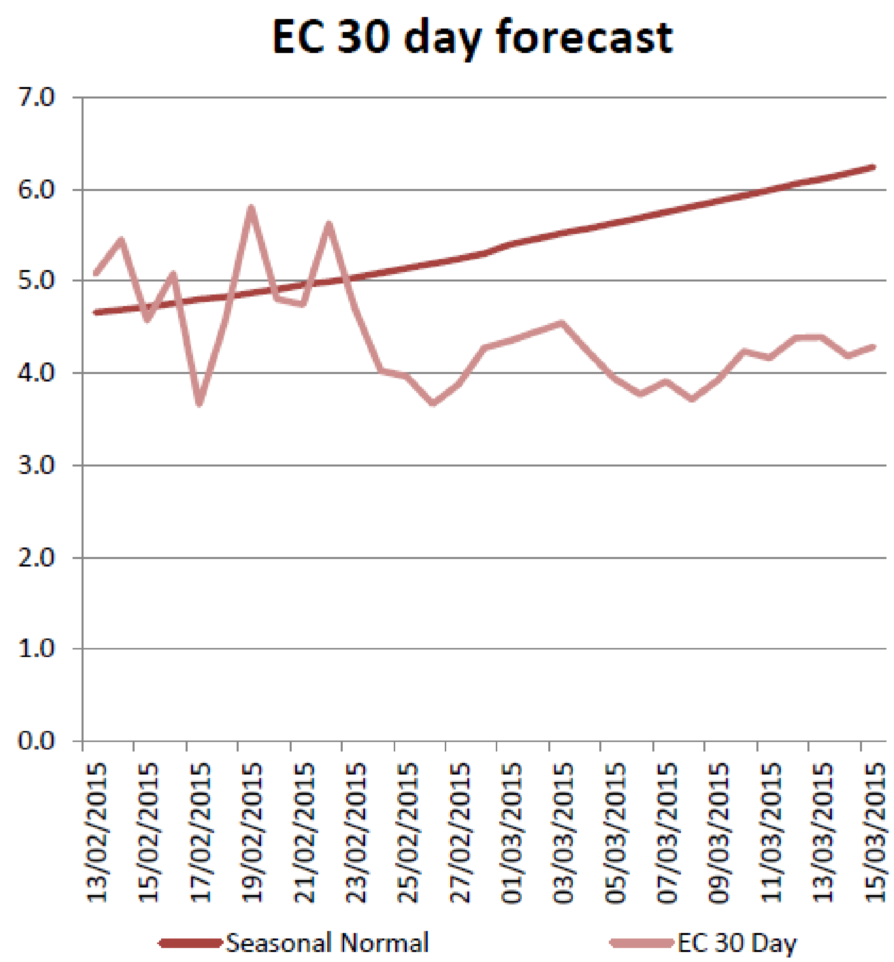


MARCH FORECASTS HINT AT MORE COLD WEATHER TO COME

Medium range forecasts are suggesting colder weather across Belgium, Netherlands and the UK for the latter half of February and into March.

These forecasts are less certain, but an element of risk premium of cold weather will be priced into futures, especially as storage stocks become more depleted.

Shorter range forecasts are suggesting a move above seasonal normal after a period of cooler weather.

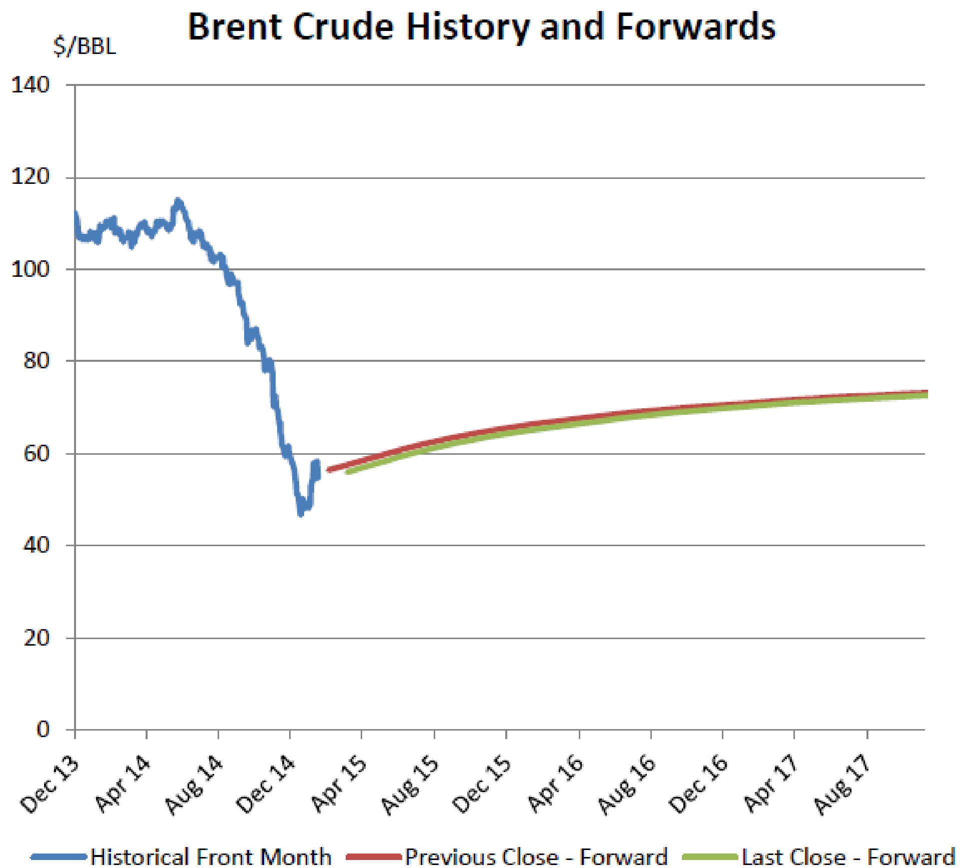


OIL PRICES BOUNCE – HOW LONG FOR?

Chronic oversupply in the oil market due to OPEC not cutting supply to defend market share, and a boom in US & Canadian shale production, combined with falling global demand due to a slow down in economic growth has seen oil prices slip.

Prices have begun to recover this month however, with an almost 30% increase as data indicates that infrastructure and exploration spending is slowing, potentially impacting future supply into the market.

This is supporting gas futures.



SUMMARY

ST

- Expectation of Dutch cuts tightening supply fundamentals adding bullish pressure to prompt contracts, especially as storage stocks become depleted and forecasts suggest a cold first half of March.

MT

- Russia-Ukraine signed a winter gas deal up until Mar-15 following disputes over how much debt is actually owed to Gazprom. The gas deal was signed on the condition of a pre-payment to Gazprom, which was discounted. However, with the current unrest escalating again, the market is concerned that Russia may reduce flows into Ukraine which would affect European supply (already impacted by Dutch production cuts until Jul-15). So the concern remains whether Ukraine are able to agree and cover its debt and pay for Russian gas at the higher price.

LT

- Longer term prices had been pulled down by extremely soft global oil prices, but the bounce in prices is providing some support to the curve

ENERGY REDUCTION SERVICES

TOTAL GAS & POWER ENERGY SERVICES

Approach

Working with trusted providers, our approach is to offer a range of products, services and technology-based solutions designed to help customers capitalise on energy efficiency, carbon reduction and on-site generation opportunities.

- AMR
- Embedded Generation
- Compliance
- Energy Efficiency

Automated Meter Reading (AMR) Services

- Meter replacement and AMR installation at no cost
- Reduced annual rental prices for new installs since April 2014
  - ✓ Remote meter reading and online access to gas meter reads and half-hourly consumption data
  - ✓ Accurate monthly invoicing - budget certainly and reduced admin
  - ✓ Energy management data and tools to cut consumption and costs
  - ✓ Less disruption from manual meter readings

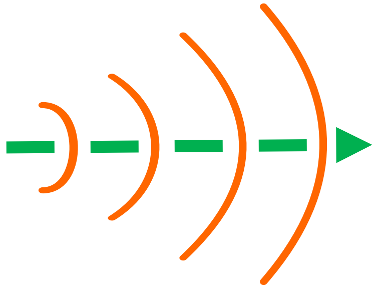
TOTAL GAS & POWER AMR SERVICE OVERVIEW

- >35,000 AMR devices installed to date – one of UK's largest non-domestic gas AMR portfolios
- Delivered in partnership with **UK Smart Metering Systems** since 2014
- Fiscal meter replacement at no cost
    - Guaranteed AMR compatibility
    - No requirement for meter pulse work
- Simple, no cost solution to older, non-pulsing meters or faulty meter pulse port
- ATEX & Zone Zero ADM logger installation
- Flexible, end-to-end project management by Total Gas & Power and UKSMS Project Team

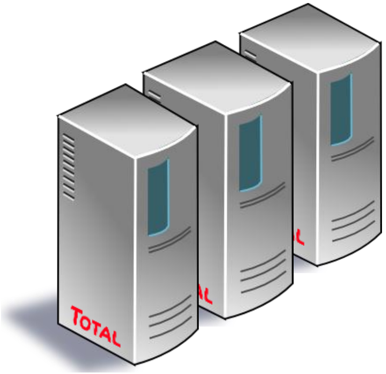
TOTAL GAS & POWER AMR SERVICE OVERVIEW

1 Gas Meter

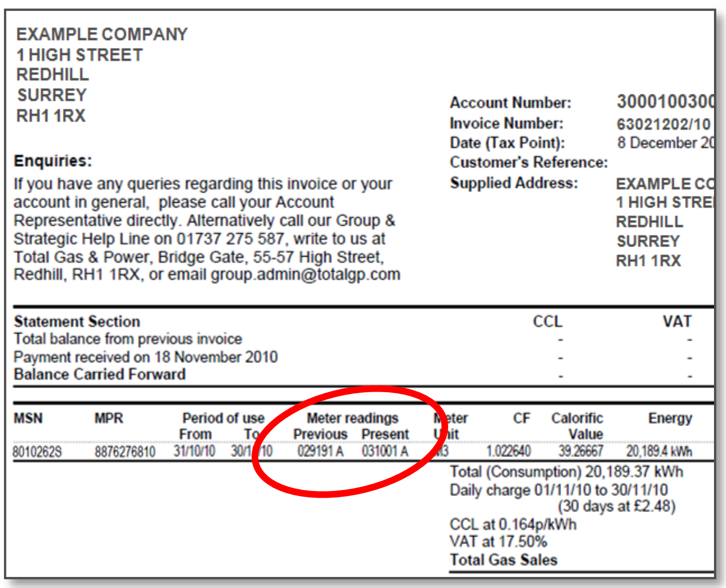
2 AMR Device



3 Mobile (GPRS) Communications



4 TGP Data Store



EXAMPLE COMPANY
1 HIGH STREET
REDHILL
SURREY
RH1 1RX

Account Number:	3000100300
Invoice Number:	63021202/10
Date (Tax Point):	8 December 20
Customer's Reference:	
Supplied Address:	EXAMPLE CO 1 HIGH STRE REDHILL SURREY RH1 1RX

Enquiries:
If you have any queries regarding this invoice or your account in general, please call your Account Representative directly. Alternatively call our Group & Strategic Help Line on 01737 275 587, write to us at Total Gas & Power, Bridge Gate, 55-57 High Street, Redhill, RH1 1RX, or email group.admin@totalgp.com

Statement Section	CCL	VAT
Total balance from previous invoice	-	-
Payment received on 18 November 2010	-	-
Balance Carried Forward	-	-

MSN	MPR	Period of use From	To	Meter readings Previous	Present	Meter Unit	CF	Calorific Value	Energy
80102629	8876276810	31/10/10	30/11/10	029191 A	031001 A	M3	1.022640	39.26667	20,189.4 kWh

Total (Consumption) 20,189.37 kWh
Daily charge 01/11/10 to 30/11/10
(30 days at £2.48)
CCL at 0.164p/kWh
VAT at 17.50%
Total Gas Sales

5 Accurate energy bills

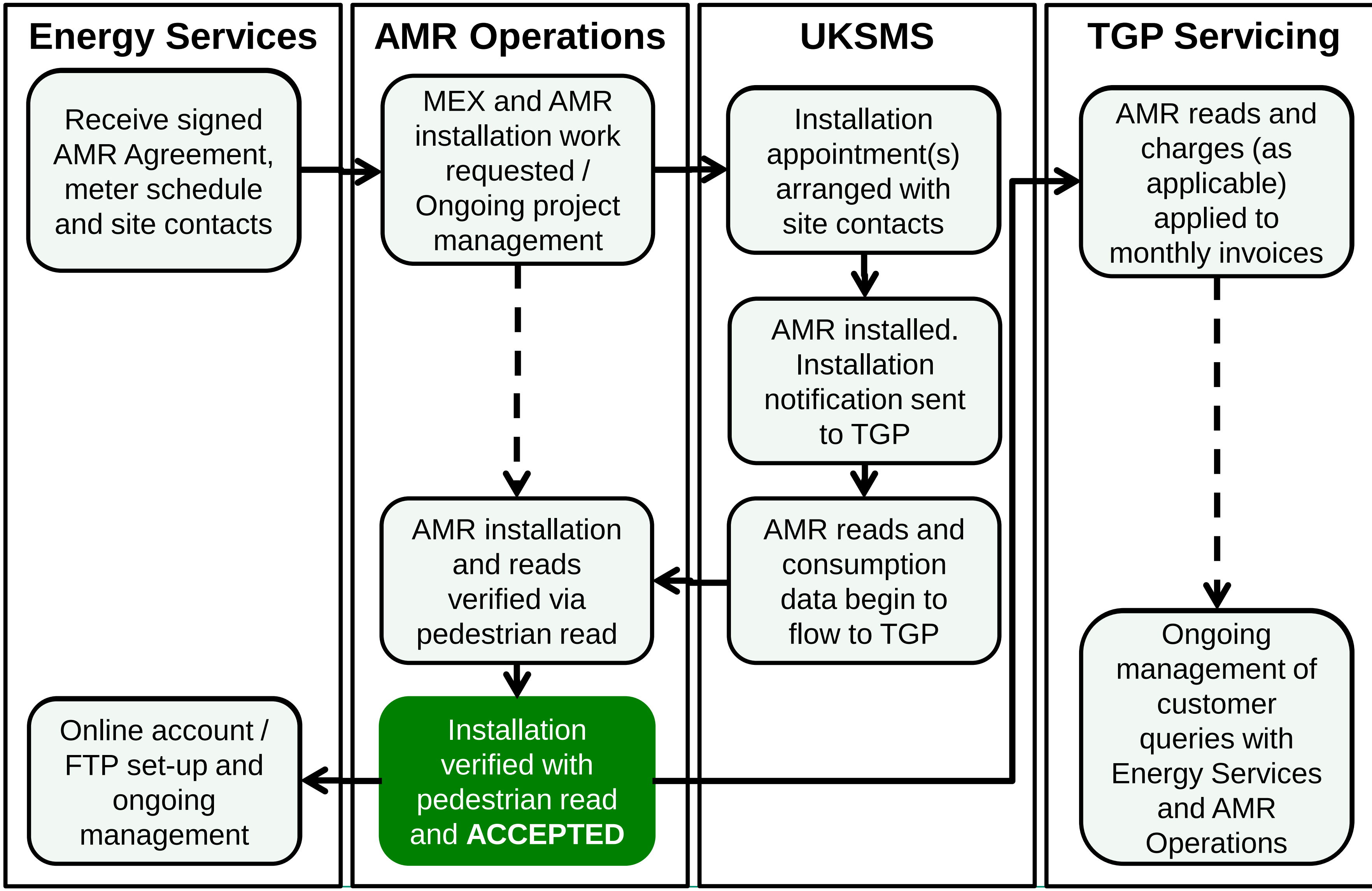
6 Readings and hourly/half-hourly energy usage information accessed via a web portal, or email/FTP data provisioning to third parties

NEW AMR SERVICE CHARGES FROM 1ST APRIL 2014

- New AMR arrangements within the national gas supply framework commenced on **1st April 2014**
- This included new AMR rates:

Service	Description	Price
Standard	▪ Meter exchange plus AMR installation ▪ Two reads per calendar month ▪ No web portal access/data provisioning	16.5p per meter per day / £60 per meter per annum
Premium	▪ Meter exchange plus AMR installation ▪ Daily Reads and Half-Hourly Data accessed via web portal or provided to via email/FTP	24.7p per meter per day / £90 per meter per annum

AMR INSTALLATION MANAGEMENT AND CUSTOMER SUPPORT



TOTAL GAS & POWER ENERGY SERVICES

Approach

Working with trusted providers, our approach is to offer a range of products, services and technology-based solutions designed to help customers capitalise on energy efficiency, carbon reduction and on-site generation opportunities.

AMR

Embedded Generation

Compliance

Energy Efficiency

Embedded Generation Services

- Biomethane & electricity purchase agreements for embedded generators (CHP, Anaerobic Digestion, Biomass/EfW, Solar, Wind)
  - ✓ Commodity purchase & Embedded benefits
  - ✓ Embedded Portfolio management with access to live prices via our unique **Julesmart** web-based platform
- Regulatory products:
  - ✓ Feed-in Tariffs (FIT) registration and ongoing payments
  - ✓ Renewables Obligation Certificate (ROC) & Levy Exemption Certificates (LEC) procurement and Contracts for Difference
- Working in partnership with **SunPower** in the UK – a 60% Total S.A. owned company

SUNPOWER™

THE WORLD'S STANDARD FOR SOLAR™

SunPower

- World-leading solar conversion efficiency
- >2 GW solar PV deployed by year-end
- Diversified portfolio: roofs to power plants
- Publicly listed on NASDAQ
- 2014: Revenue >$2.5 billion
- 6,000+ Employees
- More than 180 patents
- World class solutions

THE WORLD’S STANDARD FOR SOLAR

Highest Efficiency | Highest Reliability | Guaranteed Performance

Technology

Cell and module technology is the foundation of our world class solutions


SolarImpulse,
the first solar airplane


SBS Antarctic Expedition with snow mobile powered by SunPower modules


PlanetSolar,
World's largest solar boat

SunPower UK

- Partner network
- Residential and commercial focus
- Zero distribution or wholesale channels
- Leading technology
- Project management capability
- Experienced team
- Continued growth

SunPower in the UK

SOUTH DOWNS SOLAR

The University of Brighton's Cockcroft Building

- 43.9 KWp
- 132 SunPower E20 333w panels (20% module efficiency)
- Exceeded more than 30% of projected yield in year one
- Planned roll out on further sites across estate

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- **Compliance**
- Energy Efficiency

Energy Efficiency & Carbon Reduction Compliance Services

- CRC annual statement of supply provision
- CRC management and support services
- Energy Savings Opportunity Scheme (ESOS) services
- Climate Change Agreement (CCA) Management Services
- Energy Performance of Buildings Directive compliance
  - ✓ Display Energy Certificates
  - ✓ Energy Performance Certificates
  - ✓ Air Conditioning Inspection (ACI) services

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- **Energy Efficiency**

Energy Efficiency & Carbon Reduction Compliance Services

- Delivered in partnership with NIFES Consulting Group (nifes – understanding efficiency)
- Guaranteed Savings Programme (GSP)
- Bespoke solutions:
    - Carbon and energy management advisory services
    - Energy efficiency surveys
    - Feasibility studies and technical services (energy monitoring and targeting, energy efficient technologies and renewable and low carbon generation)
    - Project management services & project funding
    - Energy management training services

GUARANTEED SAVINGS PROGRAMME

GUARANTEED SAVINGS PROGRAMME (GSP) OVERVIEW

- Structured energy & carbon reduction programme designed around the client's objectives
- Removes the risk, time and upfront investment required to deliver high performance energy solutions
- Single service provider, technology agnostic approach
- Delivers guaranteed savings
  - ✓ Low-cost/short payback (typically <2 years) measures
  - ✓ Capital intensive technologies with longer payback
- Savings measured & verified using best practice techniques

PROGRAMME FULFILMENT

Stage 1: Analyse

Stage 2: Baseline

Stage 3: Implement

Stage 4: Manage

Stage 5: Track

- ✓ Using a bespoke M&T platform, expert analysts will help to identify the highest priority sites
- ✓ A roadmap is then created of activity to maximise on returns and to deal with the least efficient sites first
- ✓ A thorough examination of energy use at the facilities to identify, quantify and report energy saving opportunities:
  - Boiler plant
  - Heating systems
  - Lighting
  - Energy control systems
  - Building fabric
  - Usage patterns
  - Out-of-hours consumption
  - Air conditioning systems
  - Refrigeration plant
  - Motors & drivers
  - Process energy usage
  - Compressed air
  - Energy distribution systems
  - Energy monitoring arrangements
  - Building user influence
  - Renewable technologies
  - Voltage optimisation
  - Maintenance & repairs

PROGRAMME FULFILMENT

Stage 1: Analyse

Stage 2: Baseline

Stage 3: Implement

Stage 4: Manage

Stage 5: Track

- ✓ Once opportunities are identified we will outline the deliverables and develop a suitable project plan
- ✓ Identification and evaluations of suitable technologies and partners
- ✓ Shortlist and compare options
- ✓ Project plan - timescales, budgets and impact
- ✓ Finalise and agree the business case

Best Infrastructure Performance:

Commercially proven solutions with the best warranties or performance guarantees to deliver the highest quality outcomes and upgrade infrastructure to drive revenue.

Best Environmental Performance:

Expert modelling of carbon reduction/savings to ensure project viability and maximise return.

Best Financial Performance:

Supplier Services Agreements for your energy efficiency solutions, repaying capital outlays through cost savings meaning projects require no upfront capex, and result in lower operational costs.

PROGRAMME FULFILMENT

Stage 1: Analyse

Stage 2: Baseline

Stage 3: Implement

Stage 4: Manage

Stage 5: Track

- ✓ Supplier Service Agreements are arranged, meaning that no capital outlay is required
- ✓ Complete technology design, specification and managed implementation across all groups of technology
- ✓ Full project management of the complete implementation is included, removing the time investment required from you, as well as the cost

PROGRAMME FULFILMENT

Stage 1: Analyse

Stage 2: Baseline

Stage 3: Implement

Stage 4: Manage

Stage 5: Track

- ✓ Effective management of your project including management of all delivery partners and wider stakeholders
- ✓ Consistent delivery against service level agreements
- ✓ Ensures that delivery partners are well informed and that the overall process runs smoothly, achieving maximum results for you

PROGRAMME FULFILMENT

Stage 1: Analyse

Stage 2: Baseline

Stage 3: Implement

Stage 4: Manage

Stage 5: Track

- ✓ Nifes' expert team will provide all of your reporting needs, including return on Investment and IPMVP accredited project tracking, detailing cumulative savings and project returns.
- ✓ Bespoke reporting for funding /supplier service agreements will also be completed.

Getting Started...

1. **MOU Agreement (Stage 1 & 2) contingent on acceptable business case approval**
2. **Project progresses through to supplier agreements (Stages 3-5)**

FURTHER INFORMATION

www.totalgp.com/energy-services

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