IMPLEMENTATION OF AUTOMATIC METER READING

Abstract
This report advises on the outcome of the pilot implementation of Automatic Meter Reading (AMR) and the proposed arrangements for rollout for all significant non-Housing properties in Angus Council.

RECOMMENDATION
The Committee is recommended to:

1. note the contents of this report;
2. approve the rollout of AMR for all significant non-housing council buildings funded from provisions within the Corporate Energy Budget established for Financial Year 2009/10
3. approve procurement being undertaken in accordance with Financial Regulation 16.22.4(b)(i) “the contract is required as a matter of urgency to suit the exigencies of the service” and on the basis of a single written quotation
4. instruct the Director of Corporate Services to progress the AMR rollout expeditiously and submit a further report, following two full financial years of operation, advising on the merits of continued use.

1 INTRODUCTION
It is widely recognised that managing a resource can only be undertaken effectively when its consumption is regularly monitored. This applies to the management of energy consumption in non-housing council buildings by Angus Council, yet the arrangements currently available for undertaking this task are inadequate.

The introduction of the Carbon Reduction Commitment [CRC] Obligation and the Carbon Trust Accreditation scheme have re-emphasised the benefits of regular consumption monitoring and the benefits of establishing Automatic Meter Reading [AMR]. AMR provides the regular and accurate information necessary to support the effective management of energy consumption through good housekeeping and other energy management initiatives.

This report advises on the outcome of the introduction of a pilot phase of AMR and recommends the implementation of a second and final phase in 2009/10 to establish AMR in all significant energy consuming non-housing council buildings.
2 BACKGROUND

2.1 General

Report No: 856/08, INTRODUCTION OF THE CARBON REDUCTION COMMITMENT OBLIGATION, approved by the Corporate Services Committee on the 04 September 2008, advised of the introduction of a new duty for Angus Council to participate in the scheme.

Report No 1229/08, ACCREDITATION TO THE CARBON TRUST STANDARD, approved by the Strategic Policy Committee on 09 December 2008, advised the benefits of Angus Council seeking accreditation to this new standard as part of implementing its Carbon Reduction Commitment obligation.

It particularly noted that Angus Council’s performance in the consequent league table and the bonuses or penalties that result from success in reducing carbon dioxide emissions will be dependent upon performance in three different areas:-

- **absolute metric** - the organisation's percentage emissions reductions, comparing their current annual emissions to their average emissions over the preceding rolling five years (i.e. not including the current year);

- **early action metric** - a measure to give recognition for good energy management undertaken prior to the start of the scheme;

- The metric will be based on a) the percentage of emissions covered by voluntary installed automatic metering beyond the legal minimum and b) the percentage of the organisation's emissions covered by the Energy Efficient Accreditation Scheme

- **growth metric** - designed to give recognition to organisations that are able to grow cleanly within the scheme, as well as accounting for the effects of organisational decline.

- The metric will be based on the organisations percentage reduction in emissions per unit turnover (revenue and expenditure of for public sector), comparing their current level relative to their average over the preceding rolling five years.

2.2 Meter reading arrangements

Current energy supply contracts provide meter reading data only to the minimum level required by national standards and this is seldom sufficient for the level of monitoring needed for good management.

Buildings with large consumptions are subject to monthly metering and associated billing whilst buildings with smaller consumptions are subject to quarterly billing, usually based upon estimates, with only an undertaking to produce one meter reading based bill per annum.

Given the larger number of meters installed in non-housing council buildings it has not been practical for arrangements to be established for the Energy Management Unit (EMU) to regularly inspect and record individual consumptions. However every meter is read at the end of each financial year and used to establish the actual energy consumption and cost for the end of year accounting and reporting purposes.

In addition, arrangements have been established within the Education department, as a major energy consumer, for school janitors to take regular meter readings and submit returns to the Education department. These readings are subsequently forwarded to the EMU who use the readings, in conjunction with the Education department, to:-

- monitor consumption against profile
• to identify, investigate and address significant variances

2.3 National Strategy

National strategy, in responding to the Energy End-Use Efficiency and Energy Services Directive, is in favour of the mandatory introduction of smart metering to facilitate additional commercial and environmental benefits, at a time when the financial and environmental costs of energy are of increasing concern to customers, including businesses, as explained in an extract from a consultation exercise in Appendix 1.

2.4 Automatic Meter Reading

Automatic Meter Reading comprises three stages:-

• Installing new pulse meters where existing meters do not have this capability, or adapting existing pulse meters, to capture the meter reading data and prepare it for transmission

• Establishing communication arrangements for the meter reading data to be transmitted to a data processing agency who then feeds the data to the associated energy supplier for billing and

• Establishing data reporting arrangements by a data processing agency who then prepares a range of reports and forwards them on a regular basis to designated Angus Council contacts, currently the EMU.

Meter reads can be undertaken at half hourly intervals allowing very detailed monitoring of consumption. This data can be used to quickly identify anomalous patterns of consumption which highlight opportunities for further detailed research, corrective action to reduce energy consumption and improved carbon dioxide emissions performance.

2.5 Automatic Meter Reading Assessment

An exercise was undertaken in 2008/09 to pilot the introduction of AMR in Angus Council to establish:

• the cost and technical arrangements needed to establish AMR

• the costs and benefits from using AMR for billing, monitoring and management purposes.

Report No 454/08, INVEST TO SAVE PROJECTS 2008/09 – PHASE 1, approved by the Corporate Services Committee on 01 May 2008, established £40,000 to support the initial phase of AMR and this was supplemented by Report 864/08, PROPERTY RENEWAL AND REPAIR FUND UPDATE OF FUNDING ARRANGEMENTS AND PLANNED PROGRAMME OF URGENT REPAIRS 2008/09 – PHASE 2, approved by the Corporate Services Committee on 04 September 2008, establishing an additional £18,000.

This funding was utilised to:

• establish 35 electricity meters and 36 gas meters replaced or adapted to capture the meter reading data

• with the approval of the Exemptions Coordinator establish a contract with IMSERV, to deliver the meter reading and data processing services

• with the approval of the Exemptions Coordinator establish a contract with IMSERV,
to deliver the processed data reporting services

as detailed in Table 1.

Currently only one company, IMServ, is able to deliver the specific meter reading, data processing and data reporting services which are the council’s current requirements. IMServ is currently the designated service provider for Scottish and Southern Energy, our present electricity and gas supplier, and would be acceptable to Business Stream, the new commercial business agent of Scottish Water. IMServ are able to continue to deliver these services should the suppliers of gas, electricity and water change as new contracts are established.

IMServ currently contracted with Angus Council through the phase1 pilot programme have advised that they can meet our target completion date of September 2009, a deadline which must be met to support the introduction of Departmental and Divisional Carbon Reduction Champions and the supporting programme of education and awareness and technical support needed to embed good housekeeping best practice at building manager level across the non-housing council estate.

It is however recognised that the market capacity to provide AMR services is building over the next two years and it is intended that Angus Council take advantage of this competition when it has become established, either directly or through the energy contract arrangements being established by Procurement Scotland.

Exemption Approval was requested at that time in accordance with Section 16.3.2b of the then current Financial Regulations, whereby the works are of a specialist nature and to the procurement being undertaken on the basis of a single written quotation. Exemption was granted in accordance with new Financial Regulation 16.22.4(b)(ii) “the services required are of a specialist nature” and to the procurement being undertaken on the basis of a single written quotation.

Table 1 Pilot Investment

<table>
<thead>
<tr>
<th>Number of Meters Covered</th>
<th>71</th>
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<tbody>
<tr>
<td>Meter replacement and adaptation</td>
<td>£6,250</td>
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<tr>
<td>Additional operating costs for smart metering facility</td>
<td>£25,355</td>
</tr>
<tr>
<td>For the 5 year period November 2008 to October 2013. Cost is equivalent to £5,071 p.a.</td>
<td></td>
</tr>
<tr>
<td>Meter reading and data processing</td>
<td>£11,475</td>
</tr>
<tr>
<td>For the 5 year period November 2008 to October 2013. Cost is equivalent to £2,295 p.a.</td>
<td></td>
</tr>
<tr>
<td>Data reporting services</td>
<td>£20,423</td>
</tr>
<tr>
<td>For the period November 2008 to October 2009 comprising the provision of 5 specific data processed reports each month for each meter. The cost is predominately a lump sum for the service irrespective of the number of meters involved and future phases of automatic meters will not materially increase this annual charge.</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>£63,503</td>
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</tbody>
</table>

Although the cost of the pilot exceeded the original budget allowance by £5,000 this extra cost has been met from the existing budget provision for energy investment. Excluding the one-off set up costs the annual running costs for the 71 meters covered by the pilot are £27,789 but this includes £20,423 which is mainly a fixed cost regardless of the number of meters involved.

Implementation of the AMR pilot enabled the EMU identified a number of technical difficulties which needed to be overcome i.e.:-
• identifying which meters needed to be replaced
• adapting existing meters to capture meter reading data
• establishing appropriate data transmission arrangements

This has enabled the EMU to better assess the costs associated with the full implementation of AMR.

The EMU has established the 5 specific data processed reports it requires each month and has been trialing the use of these reports for internal management purposes and for sharing with occupying departments. Typical examples are detailed in a paper, a copy of which has been placed in the member's lounge.

Regimes have been established to monitor, in detail, a range of buildings to identify consumption patterns and utilised data processed reports. The reports have identified anomalous patterns of consumption and allowed the EMU to discuss opportunities for improvement with occupying departments. They have also been used to measure detailed consumption immediately before and after good housekeeping initiatives have been implemented, thereby demonstrating the immediacy and scale of energy consumption, and carbon dioxide emissions, reduction.

A meeting was held in January 2009 with representatives of the main occupying departments to discuss the future arrangements for achieving energy consumption efficiency and carbon dioxide emissions reduction. A range of topics were covered including a briefing on AMR and examples of the types of data processed reports that can be made available as well as those produced and used during the pilot period.

The value of AMR was recognised and the future expansion of AMR coverage discussed.

2.6 Automatic Meter Reading Rollout

The Head of Property is satisfied that the AMR pilot has demonstrated the benefits of AMR and is of the opinion that Angus Council should now proceed with the full implementation of AMR for all non-housing council buildings, except for those where energy consumption is very low e.g. unmanned toilets and buildings of a commensurate size.

This roll-out is critical to support the introduction of Departmental and Divisional Carbon Reduction Champions and the supporting programme of education and awareness and technical support needed to embed good housekeeping best practice at building manager level across the non-housing council estate.

AMR will significantly improve good housekeeping performance and contribute to meeting both the 2011 12½% reduction target and the CRC targets in the future. It will also fulfil the early metric requirement.

Experience gained from the AMR pilot has allowed the EMU to estimate the additional investment required as detailed in Table 2.
Table 2  AMR Rollout – estimated costs

<table>
<thead>
<tr>
<th>Number of Meters Covered</th>
<th>279</th>
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<tbody>
<tr>
<td>Meter replacement and adaptation</td>
<td>£7,000</td>
</tr>
<tr>
<td>Additional operating costs for smart metering facility</td>
<td>£36,575</td>
</tr>
<tr>
<td>Meter reading and data processing</td>
<td>£13,200</td>
</tr>
<tr>
<td>Data reporting services</td>
<td>£20,423*</td>
</tr>
<tr>
<td>Total</td>
<td>£77,198</td>
</tr>
</tbody>
</table>

* - the is mainly a fixed cost under the IMServ charging regime which may or may not apply depending on the procurement route adopted for the proposed AMR rollout.

It is anticipated that AMR for eligible gas meters can be implemented by the end of June 2009 and for eligible electricity meters by the end of September 2009, due to hardware delivery times.

This will include the time needed to establish data processed reporting arrangements which will inform the EMU and occupying departments at both central and local levels.

All new meter installations associated with new build or major refurbishment projects shall be suitable for incorporation within the AMR scheme.

A number of potentially suitable procurement routes are now developing for future supply of AMR to the council:

- As an optional ancillary element to the national electricity supply contract, Procurement Scotland have secured AMR meter provision by Bglobal (preferred AMR provider with Scottish & Southern Energy) and SP Dataserve Limited preferred AMR provider with Scottish Power). If that met the council’s requirement, it would be available without further procurement process.

- Buying Solutions (the supply agency arm of the Office of Government Commerce) is putting in place an AMR framework agreement to be available to the UK public sector for later in the year. Again, this is available to the council without further procurement process other than a mini competition to achieve the best provision.

- Given the development of market capacity to supply AMR (it is notable that the pre-qualification stage of the Buying Solutions framework received over 70 expressions of interest), the council could seek its own tenders for this supply.

It will be necessary, in the future, to determine the most appropriate procurement route for continuation of AMR provision after evaluation of the options and technical / operational compatibility / interface issues around using multiple systems.

However the Corporate Services Committee is requested to approve procurement being undertaken in accordance with Financial Regulation 16.22.4(b)(i) “the contract is required as a matter of urgency to suit the exigencies of the service” and on the basis of a single written quotation.

3  FINANCIAL IMPLICATIONS

The estimated cost, £77,198, of the AMR rollout detailed in this report can be contained within
the provisions established within the Corporate Energy Budget established for Financial Year 2009/10.

The estimated ongoing costs of AMR, as detailed in Table 3, will be contained within the provisions established within the Corporate Energy Budgets established for future financial years. This assumes AMR covers 350 meters (71 from the pilot plus 279 in the rollout).

Table 3 Estimated Ongoing Annual Costs

<table>
<thead>
<tr>
<th>Number of Meters Covered</th>
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<tr>
<td>Additional operating costs for smart metering facility</td>
<td>£41,646</td>
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<tr>
<td>Adjusted to accommodate the annualised payment already funded for the AMR pilot</td>
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<tr>
<td>Meter reading and data(^1) processing</td>
<td>£15,495</td>
</tr>
<tr>
<td>Adjusted to accommodate the annualised payment already funded for the AMR pilot</td>
<td></td>
</tr>
<tr>
<td>Data reporting services(^2)</td>
<td>£20,423</td>
</tr>
<tr>
<td>Annual Cost</td>
<td></td>
</tr>
<tr>
<td>Gross annual cost</td>
<td>£77,564</td>
</tr>
<tr>
<td>Energy contract saving(^3)</td>
<td>£22,050</td>
</tr>
<tr>
<td>Net annual cost(^4)</td>
<td>£55,514</td>
</tr>
<tr>
<td>£158.61 per meter p.a. or 43p per day</td>
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</tr>
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</table>

In addition to the expected savings on the energy contract (£22,050) further savings in staff time valued at £13,500 are expected from the AMR rollout as outlined in notes 3 and 4 below. Savings through more

Notes:

1. Establishing AMR will support the introduction of electronic billing by enabling more accurate monitoring of consumption with the ability to accurately validate invoices. This will ably support the consequent savings to Angus Council due to reduced billing charges, an estimated saving of ~£45,000+ p.a. independently of the estimated saving through good housekeeping.

2. Data reporting services will provide key information to building managers and employees and enable the delivery good housekeeping practices at £20,423/350=£58.35 per meter p.a. or 16p per meter per day. Existing Property Energy Management Unit resources are inadequate for undertaking processing and reporting for all non-Housing properties.

3. The current energy supply contracts include a charge for meter reading, on site, of £63 per meter p.a. x 350 meters= £22,050 p.a. It is anticipated that this cost could be saved and used to offset the ongoing cost of AMR. Monthly meter reading by local employees has been estimated to cost ~£11,500 p.a. in lost resource. Conducting regular half hourly meter reading by local employees would be impractical and would cost significantly more.

4. The Property Energy Management Unit currently takes a final meter reading for every meter at the end of March to inform the final energy invoices and also the accrued position as part of the End of Year process. This is costs ~ £2,000 to complete, including travel and would not be needed under AMR.

Implementation of AMR will achieve financial savings for the Council. These, based on the outcome of AMR trials by the Carbon Trust, are currently estimated to be 5% at minimum, ~£177,000 provided good housekeeping and other associated energy saving initiatives are implemented and maintained utilising the data processed reports. Disregarding the minor set-up costs, these savings will therefore offset the net running costs for a period of ~3.19 years, £177,000/£55,514.
4 HUMAN RIGHTS ACT IMPLICATIONS
There are no Human Rights Act implications specific to this report.

5 EQUALITIES IMPLICATIONS
The issues dealt with in this Report have been subject of consideration from an equalities perspective (as required by legislation). An equalities impact assessment is not required.

6 SINGLE OUTCOME AGREEMENT
This report contributes to the following local outcome contained within the Single Outcome Agreement for Angus:-

- The importance and benefits to society of the environment is recognised.

7 CONSULTATION
The Chief Executive, the Head of Law and Administration and the Head of Finance have been consulted in the preparation of this report.

8 CONCLUSION
The Committee is recommended to note the contents of this report; approve the rollout of AMR for all significant non-housing council buildings funded from provisions within the Corporate Energy Budget established for Financial Year 2009/10, approve procurement being undertaken in accordance with Regulation 16.22.4(b)(i) “the contract is required as a matter of urgency to suit the exigencies of the service” and on the basis of a single written quotation and instruct the Director of Corporate Services to progress the AMR rollout expeditiously and submit a further report, following two full financial years of operation, advising on the merits of continued use.

REFERENCES

<table>
<thead>
<tr>
<th>Committee</th>
<th>Date</th>
<th>Report No</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Services</td>
<td>01 May 2008</td>
<td>454/08</td>
<td>Invest to Save Projects 2008/09 – Phase 1,</td>
</tr>
<tr>
<td>Corporate Services</td>
<td>04 September 2008</td>
<td>864/08</td>
<td>Property Renewal and Repair Fund update of funding arrangements and planned programme of urgent repairs 2008/09 – Phase 2,</td>
</tr>
<tr>
<td>Corporate Services</td>
<td>04 September 2008</td>
<td>856/08</td>
<td>Introduction of the Carbon Reduction Commitment Obligation</td>
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<tr>
<td>Strategic Policy</td>
<td>09 December 2008</td>
<td>1229/08</td>
<td>Accreditation to the Carbon Trust Standard</td>
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</table>

Appendix 1 National Strategy

BACKGROUND PAPERS
No background papers, as defined by Section 50D of the Local Government (Scotland) Act 1973 (other than any containing confidential or exempt information), were relied on to any material extent in preparing the above report.
Colin McMahon
Director of Corporate Services

Property: JWP
Appendix 1 National Strategy

The primary function of gas and electricity metering is to measure consumption to allow the supplier to bill the customer. However, smart metering can offer or facilitate additional commercial and environmental benefits, at a time when the financial and environmental costs of energy are of increasing concern to customers, including businesses. Among other things, smart metering:

- allows meters to be read remotely, thus ensuring entirely accurate bills
- enables provision of time-of-use and other innovative tariffs and contracts
- promotes the use of targeted energy efficiency advice and measures
- provides information direct to customers – including by automated means – to help them understand and then reconfigure or reduce their energy use, cutting carbon emissions and saving money on fuel bills
- facilitates the introduction of renewable and microgeneration technologies.

Policy and legislation is being made not just at a national, but also an EU, level. In the latter context, Article 13.1 of the Energy End-Use Efficiency and Energy Services Directive (usually known as the Energy Services Directive) requires that:

Member States shall ensure that, in so far as it is technically possible, financially reasonable and proportionate in relation to the potential energy savings, final customers for electricity, natural gas, district heating and/or cooling and domestic hot water are provided with competitively priced individual meters that accurately reflect the final customer’s actual energy consumption and that provide information on actual time of use.

The Government’s view is that smart or advanced metering, where it is cost-effective to provide it, represents Great Britain’s approach to compliance with this part of the Directive. Where the Government finds smart or advanced metering to be cost-effective, across the market as a whole, or in clearly delineated sectors within the market, it will expect to require its introduction.

In August 2007 the Government published its consultation, “Energy Billing and Metering – Changing Customer Behaviour”. This followed publication of the Energy White Paper in 2007 which underlined the Government’s commitment to the reduction of carbon emissions and highlighted the role that consumers could play in reducing their own energy consumption.

Among other things, the consultation invited views on a proposal to require gas and electricity suppliers to install smart meters in those parts of the SME sector, above a certain usage threshold, where it is cost-effective to do so. This initiative would apply to public sector organisations including Angus Council.

The outcome of the consultation is awaited but this strategy is recognised as complementary to the Carbon Reduction Commitment strategy.