BNM M03: Electric Motors Government Standards Evidence Base 2009: Policy Scenario

Version 1.1

This Briefing Note and referenced information is a public consultation document and will be used to inform Government decisions. The information and analysis forms part of the Evidence Base created by Defra's Market Transformation Programme.

1 Introduction

- The Policy Scenario is a projection of what would happen if a defined set of new product-specific and related cross-cutting policies were implemented. The policies in the Policy Scenario have not yet been agreed or funded but represent those policies which are expected to be introduced as well as likely future revisions to existing policies and, in some cases, novel policy options. These policies aim to improve the average efficiency of products in the stock through a variety of mechanisms (e.g. minimum standards, product information and labelling, procurement, incentives) and thus reduce energy consumption and carbon emissions resulting from to these products.

- As product policy is considered within the context of climate change policy, the UK government considers policies with a net UK costs of up to around £20 per tonne of CO2 saved (compared to the reference scenario). The ambition level, at a minimum, matches the Least Life Cycle Cost (LLCC) level to society of increased energy efficiency of products.

- The costs for each policy, where known, are also included, separated out for government, consumer and industry.

1.1 Product definition

- Electric motors are machines that convert electrical energy into mechanical energy for powering various types of equipment. There are many motor designs available on the market, which range in size from a few watts (W) through to several megawatts (MW). Electric motors considered by MTP include those typically used in industry and commercial applications and that are applied to pumps, fans, compressors, materials handling, lifting and hoisting and other applications.

- The primary motor types considered under the Government Standards include AC induction, DC, permanent magnet, and switched reluctance designs. The range considered includes motors:
    - in the size range 0.75 – 400kW
    - with a rated voltage (U_N) up to 1000V.

- Electric motor efficiency is defined as the ratio of electrical input power supplied to the motor to the mechanical output power delivered at the motor shaft. The International Electrotechnical Commission (IEC) labelling standard IEC 60034-30 classifies fixed speed AC induction motors into four efficiency classes, namely IE1 through IE4, where IE1 is the least efficient and IE4 the most efficient. This standard supersedes the CEMEP (Comité Européen de Constructeurs de Machines Electriques et d'Electronique de Puissance) motor labelling scheme where motors were labelled EFF3 through EFF1, where EFF3 was the least efficient and EFF1 the most efficient. The EFF1 and IE2 classes are roughly equivalent.

- Government Standards also cover electric motor controls, and specifically variable speed drives (VSDs) (also known as adjustable speed drives (ASDs)). These adapt the electrical power supplied to the electric motor in order to control the mechanical power output according to the characteristics of the load being driven by the motor.

2 Scenario outputs

- The outputs of the Policy Scenario are provided in Table 1 and Table 2.

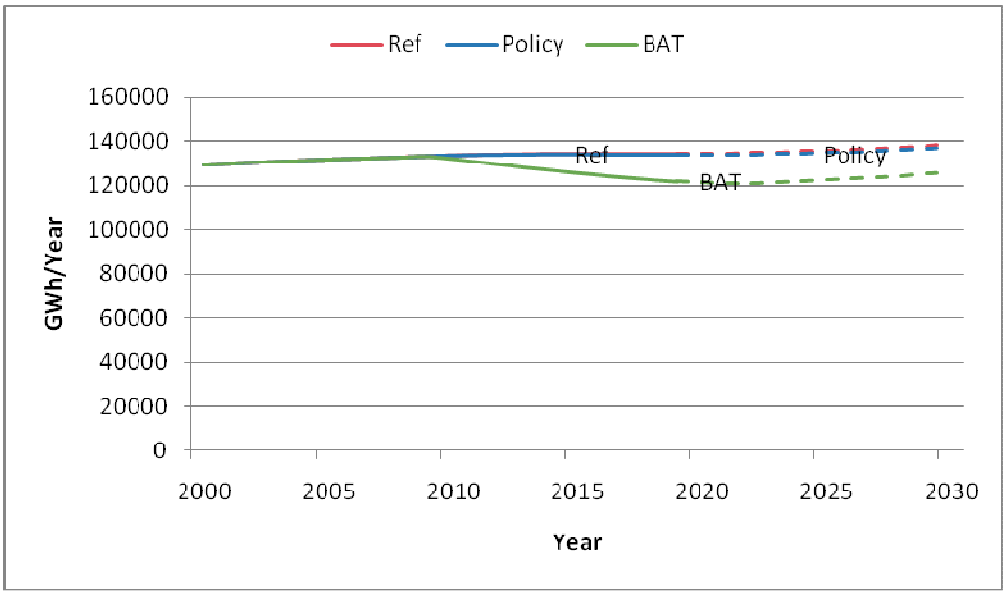

Figure 1 Total energy consumption, all electric motors (0.75 – 400 kW)

Table 1 Policy Scenario summary energy consumption[1] and savings and carbon emissions[2] and savings, all electric motors (0.75 – 400 kW)

	2009	2020	2030
Energy Consumption (GWh)			
PM&SR-more-than-30	0	850	2810
Induct-3to4	22070	21260	20400
Induct-5to11	45040	43890	42300
Induct-15to30	10000	9800	9480
Induct-37to132	35010	34560	33560
Induct-075to2	9040	8630	8240
Induct-150to400	530	530	520
AC&DC-075to30	2220	2380	2550
AC&DC-more-than-30	9390	10090	10810
PM&SR-075to30	10	2000	6600
TOTAL	**133320**	**133980**	**137260**
Energy Savings (GWh)	**2009**	**2020**	**2030**
PM&SR-more-than-30	0	-450[3]	-1630
Induct-3to4	0	390	1280
Induct-5to11	0	790	2620
Induct-15to30	0	180	580
Induct-37to132	0	610	2020
Induct-075to2	0	160	520
Induct-150to400	0	10	30
AC&DC-075to30	0	0	0
AC&DC-more-than-30	0	0	0
PM&SR-075to30	0	-1070	-3830
TOTAL	**0**	**620**	**1590**

[1] Energy consumption figures for the non-domestic sector in the 2009/2010 Product policy analysis and projections document 'Saving energy through better products and appliances' were scaled down to match DECC projections for overall energy demand (www.decc.gov.uk/en/content/cms/statistics/publications/dukes/dukes.aspx).

MTP data represents the best currently available information based on a bottom-up modelling approach. MTP's data is the basis for detailed energy calculations in the 2009/2010 Product policy analysis and projections document. However, DECC projections indicate that overall energy demand in the non-domestic sector is lower than projected by MTP's detailed models. MTP has assumed that the differences between the DECC overall projections and its detailed bottom-up projections are due to incomplete data on the following inputs for some of its non-domestic products:

- existing product stock;
- existing product efficiency;
- product usage.

The energy consumption figures in these GSBNs have **not** been scaled down, in order to enable constructive stakeholder comment on the MTP input data, and therefore differ from the ones presented in the 2009/2010 Product policy analysis and projections document.

[2] Refer to BNXS01 Carbon Dioxide Emission Factors for UK Energy Use for more details on factors used.

[3] As usage switches to the more efficient motor types energy use in these classes increases but overall energy usage reduces

	2009	2020	2030
CO_2 Emissions ($MtCO_2$)	**2009**	**2020**	**2030**
PM&SR-more-than-30	0.00	0.37	1.21
Induct-3to4	9.49	9.14	8.77
Induct-5to11	19.37	18.87	18.19
Induct-15to30	4.30	4.21	4.08
Induct-37to132	15.06	14.86	14.43
Induct-075to2	3.89	3.71	3.54
Induct-150to400	0.23	0.23	0.22
AC&DC-075to30	0.95	1.02	1.10
AC&DC-more-than-30	4.04	4.34	4.65
PM&SR-075to30	0.01	0.86	2.84
TOTAL	**57.33**	**57.61**	**59.02**
CO_2 Emissions Savings ($MtCO_2$)	**2009**	**2020**	**2030**
PM&SR-more-than-30	0.00	-0.12[i]	-0.701
Induct-3to4	0.00	0.17	0.55
Induct-5to11	0.00	0.34	1.13
Induct-15to30	0.00	0.08	0.25
Induct-37to132	0.00	0.26	0.87
Induct-075to2	0.00	0.07	0.23
Induct-150to400	0.00	0.00	0.01
AC&DC-075to30	0.00	0.00	0.00
AC&DC-more-than-30	0.00	0.00	0.00
PM&SR-075to30	0.00	-0.46	-1.65
TOTAL	**0.00**	**0.27**	**0.68**

Table 2 Summary cost and benefits[4] data, all electric motors (0.75 – 400 kW)

	Average annual energy savings (£m)	Average annual product & policy cost increases (£m)	Net Benefit 2009-2030 (£m)	Cost Effectiveness (traded) (£/tCO_2)
All motors	56	9	715	-85.20

[4] Refer to BNXS26 Rationale for Policy Cost Estimates used in MTP Policy Briefs for further details on factors used.

3 Future potential policy & measures

Table 3 Future potential policies & measures, Policy Scenario

Policy name	Period in force	Description	Impact	Cost	Justification
Enhanced Capital Allowances		Note that ECAs in principle follow the top % of the market at any point in time. The current ECA scheme covers single speed AC induction motors, integrated motor drive units, variable speed drives and switched reluctance drives. It is unknown what future products or efficiencies will be included in revisions of the Energy Technology List (ETL).	ECAs, like all tax reliefs, are kept under review. There is potential for future revision of ECAs to reflect technology development and qualifying products		
EU Ecodesign for Energy related Products directive (ErP)	2017-2030	Future revision of ErP is expected to extend the scope to include permanent magnet (PM) motors and raise the levels further to IE4 motors (the current benchmark) or else IE3 motors equipped with a VSD by 2022.	Only IE4 motors or IE3 motors which are equipped with a VSD can remain on the market,	The cost premium of IE4 motors over IE3 motors is up to 15%. Overall the price premiums are offset by up to 10% price reductions due to increased sales volumes. No impact due to VSD's as VSD's these are likely to be installed for other reasons.	Follows structure of current ErP measure, with standards raised another efficiency level. PM motors are expected to be well established by 2017 and therefore included under ErP

Policy name	Period in force	Description	Impact	Cost	Justification
Government Quick Wins Scheme	2008 - 2030	In April 2011 the minimum performance criteria for induction motors are expected to be lifted to IE3 levels. In April 2015 the minimum performance criteria for all variable speed drives and for all motors are expected to be set at IE4 levels	Limited impact, as it is not a mandatory requirement. Anticipated to affect less than 5% of the market.	The cost premium of IE3 motors over IE2 motors is up to 15%. The cost premium of IE3 motors over IE2 motors is up to 15%.	Aligns with introduction of ErP measures and stimulates the top end of the market post introduction of ErP
Building Regulations; Part L (in England and Wales and equivalent in Scotland and Northern Ireland)	2010-2030	Revision is expected to recommend the use of variable speed drives on variable duty pumping systems in buildings	Limited impact, as it is not a mandatory requirement	The cost premium of a VSD is between 80% & 120% of the cost of the motor.	Consistent with future requirements for pumping systems in buildings

Table 4a: Test Standards

Test Standard name	Date in force	Description	Comments
IEC 60034-2-1	Sept 2008	Globally harmonised test standard for motors including AC induction motors. Supersedes IEC60034-2 and includes more accurate measurement methods	Used in support of the IEC labelling standard (IEC 60034-30), ErP and the ECA scheme
IEC 60034-XX	2012 (estimate)	Will be used in the energy performance measurement of variable speed drives	Will be used in support of defining IE4 performance levels for variable speed motors and future ErP requirements.

3.1 Policy timeline

- The following policy timeline identifies when policies come into effect, including future revisions.

Policy name	Current specification in force	2009	2010	2011	2012	2013	2014	2015	2016-2020	2021-2025	2026-2030
Government Quick Wins Scheme	2001			Criteria for induction motors lifted to IE3 levels				Minimum performance criteria for all variable speed drives and for all motors are set at IE4 levels			
EU Ecodesign for Energy related Products directive (ErP)	2011								Minimum levels for AC induction motors 0.75-375kW set at IE3 levels unless with VSD		
Building Regulations	2006		Recommend use of variable speed drives on variable duty pumping systems in buildings								

4 Efficiency & sales weighting

4.1 Summary

- Table 4 presents a summary of typical efficiencies per efficiency class of electric motors when grouped by motor type and size range.

- The efficiency groups (EFF3 through IE4) are aligned with the efficiency classes described in the International Electrotechnical Commission (IEC) labelling standard IEC 60034-30 for fixed speed motors and the historical CEMEP motor labelling scheme.

- A further group of variable speed motors is defined; the efficiency values presented comprise the efficiency of both the motor and associated electronic controller, and it is assumed that on average the efficiency of this combination is 6% less than the fixed speed equivalent.

- Table 5 presents the split of electric motor sales by motor type and efficiency class for the years 2009 – 2030 for AC induction and permanent magnet & switched reluctance motors. These motors account for 92% of total sales, the remaining 8% made up of 'other AC & DC motors'. Sales and efficiencies of 'other AC & DC motors' remain unchanged across the Reference, Policy and BAT scenarios.

- Table 6 presents the average efficiency of electric motors sold according to the size groupings and by key years. The average efficiency has been obtained by multiplying the distribution in sales by efficiency class for each motor type by the corresponding average efficiency of the respective motor (Table 4).

Table 4 Efficiency metrics for electric motors (0.75 – 400kW)

Motor Type	Size Range (kW)	Average Efficiency (%) (Fixed Speed Motors)					Average Efficiency (%) (Variable Speed Motors, including controllers)				
		EEF3	IE1	IE2	IE3	IE4	EEF3	IE1	IE2	IE3	IE4
AC Induction	0.75-2.2	75.3	80.0	85.2	86.9	88.4	69.3	74.0	79.2	80.9	82.4
	3-4	79.3	83.5	87.6	89.2	90.4	73.3	77.5	81.6	83.2	84.4
	5.5-11	83.0	86.8	89.6	91.1	92.1	77.0	80.8	83.6	85.1	86.1
	15-30	85.9	90.0	92.1	93.2	94.0	79.9	84.0	86.1	87.2	88.0
	37-132	88.8	93.2	94.5	95.3	95.8	82.8	87.2	88.5	89.3	89.8
	150-400	90.5	95.3	95.9	96.2	96.6	84.5	89.3	89.9	90.2	90.6
Other AC & DC	0.75-30	-	-	-	-	-	77.4	80.7	84.1	85.3	86.3
	30-400	-	-	-	-	-	83.8	87.3	88.5	89.3	89.8
Permanent Magnet & Switched Reluctance	0.75-30	-	-	-	-	-	-	-	-	85.3	86.3
	30-400	-	-	-	-	-	-	-	-	89.3	89.8

Table 5 Split of electric motor sales by efficiency class, AC induction and PM & SR motors (0.75 – 400kW), % sales

	Fixed Speed Motors					Variable Speed Motors					
	AC Induction					AC Induction					
	EEF3	IE1	IE2	IE3	IE4	EEF3	IE1	IE2	IE3	IE4	Permanent Magnet & Switched Reluctance
2000	11.5	78.7	5.8	0.0	0.0	0.5	3.3	0.2	0.0	0.0	0.0
2001	7.6	80.2	7.6	0.0	0.0	0.4	3.7	0.4	0.0	0.0	0.0
2002	3.8	81.3	9.5	0.0	0.0	0.3	4.7	0.5	0.0	0.0	0.0
2003	0.9	80.0	11.0	0.0	0.0	0.1	7.0	0.9	0.0	0.0	0.0
2004	0.5	77.0	12.6	0.0	0.0	0.0	8.8	1.2	0.0	0.0	0.0
2005	0.4	72.6	15.0	0.0	0.0	0.0	10.4	1.6	0.0	0.0	0.0
2006	0.4	69.2	16.3	0.0	0.0	0.0	12.0	2.0	0.0	0.0	0.0
2007	0.4	66.8	16.8	0.0	0.0	0.0	13.6	2.4	0.0	0.0	0.0
2008	0.4	64.4	17.2	0.0	0.0	0.0	15.1	2.9	0.0	0.0	0.0
2009	0.4	63.3	17.0	0.2	0.0	0.0	15.6	3.2	0.1	0.0	0.2
2010	0.4	45.9	31.9	1.6	0.0	0.0	16.3	3.4	0.2	0.0	0.3
2011	0.2	26.8	43.7	7.0	0.0	0.0	10.1	11.4	0.4	0.0	0.5
2012	0.2	4.2	59.8	11.3	0.0	0.0	1.3	20.9	1.7	0.0	0.6
2013	0.2	4.1	55.8	14.1	0.0	0.0	1.4	20.4	3.0	0.0	1.1
2014	0.2	3.9	49.7	17.9	0.0	0.0	1.5	21.1	4.0	0.0	1.8
2015	0.2	3.6	35.6	26.1	0.2	0.0	1.7	23.4	5.9	0.0	3.3
2016	0.2	3.4	30.7	27.7	0.3	0.0	1.8	24.9	6.8	0.0	4.2
2017	0.2	3.3	3.8	53.2	0.4	0.0	1.9	24.5	7.9	0.0	4.9
2018	0.1	3.3	3.7	51.6	0.7	0.0	1.9	24.8	8.2	0.0	5.7
2019	0.1	3.2	3.7	50.9	1.0	0.0	1.9	24.4	8.3	0.0	6.3
2020	0.1	3.2	3.6	49.1	1.3	0.0	1.9	0.0	33.2	0.0	7.6
2021	0.1	3.1	3.6	48.5	1.7	0.0	1.9	0.0	33.0	0.0	8.0
2022	0.1	3.1	3.5	47.4	1.6	0.0	2.0	0.0	33.6	0.0	8.7
2023	0.1	3.0	3.5	47.0	1.6	0.0	1.9	0.0	33.4	0.0	9.5
2024	0.1	3.0	3.4	45.9	1.6	0.0	2.0	0.0	34.0	0.0	10.2
2025	0.1	3.0	3.4	45.7	1.6	0.0	2.0	0.0	33.9	0.0	10.4
2026	0.1	3.0	3.4	45.8	1.6	0.0	2.0	0.0	33.9	0.0	10.3
2027	0.1	2.9	3.3	44.8	1.5	0.0	2.0	0.0	34.6	0.0	10.7
2028	0.1	2.9	3.3	44.8	1.5	0.0	2.0	0.0	34.6	0.0	10.6
2029	0.1	2.9	3.3	44.6	1.5	0.0	2.0	0.0	34.5	0.0	11.1
2030	0.1	2.8	3.2	43.7	1.5	0.0	2.0	0.0	35.1	0.0	11.5

Table 6 Average sales-weighted electric motor efficiency by motor size

	Average Efficiency (%) - (Fixed Speed Motors)						Average Efficiency (%) - (Variable Speed Motors)									
Motor Type	**AC Induction**						**AC Induction**						**Permanent Magnet & Switched Reluctance**		**Other AC & DC**	
Motor Size Group (kW)	**0.75 -2.2**	**3-4**	**5.5-11**	**15-30**	**37-132**	**150-400**	**0.75 -2.2**	**3-4**	**5.5-11**	**15-30**	**37-132**	**150-400**	**0.75-30**	**30-400**	**0.75 -30**	**30-400**
2009	81.1	84.4	87.4	90.4	93.5	95.4	74.9	78.2	81.3	84.3	87.5	89.4	85.4	89.3	81.4	87.5
2010	82.2	85.2	88.0	90.9	93.7	95.5	75.0	78.2	81.4	84.4	87.5	89.4	85.4	89.3	81.4	87.5
2015	85.5	87.9	90.1	93.0	95.1	96.1	79.3	81.7	83.7	86.2	88.5	89.9	85.4	89.3	81.5	87.5
2020	86.5	88.8	90.7	93.0	95.1	96.1	80.5	82.9	84.8	87.1	89.1	90.1	85.4	89.3	81.5	87.5
2030	86.5	88.8	90.7	93.0	95.1	96.1	80.5	82.9	84.8	87.1	89.1	90.1	85.4	89.3	81.7	87.6

4.2 Data sources – efficiency & sales weighting

Table 7 Efficiency & sales weighting data sources

Year	Reference	Reference date	Author	Justification	Confidence in sources (High/Low)
2003	BSRIA UK Motor Market Survey (2003)	2004	BSRIA	Most authoritative data available	High
2009	Interpretation of expert knowledge of market.	2009	MTP expert opinion	Based on knowledge of market	Medium
1999	www.cemep.org	1999	CEMEP	Industry standard	High
2008	IEC 60034-30 Ed.1 test standard	September 2008	IEC	Motor efficiency classifications industry standard	High

Note: Historic data sources are included in BNM MO2 – Reference Scenario

4.3 Methodology & key assumptions – efficiency & sales weighting

- Methodology & key assumptions for historic data are included in BNM M02: Reference Scenario.

4.3.1 Future data

Table 8 Extrapolation & background calculations – efficiency & sales weighting

Year	Methodology & assumptions
2009-2030	Fixed speed motor efficiency values are based on the IEC 60034-30 efficiency classification system and the CEMEP labelling system. Variable speed efficiency values are aligned with the fixed speed values but assume a 6% drop in each efficiency class due to energy losses associated with variable speed drives. Weighted efficiency values are calculated using sales weighted values (based on BSRIA data) for the efficiencies in each motor size category. Motor efficiencies in each size group are assumed to remain constant over time although the sales of each efficiency class vary over time, resulting in a change in sales-weighted average efficiency of motors sold. All data are centred around the BSRIA motor Market study (2003) and growth pre and post 2003 have been extrapolated from this point, based on anecdotal evidence from the market. Sales of Permanent Magnet and switched reluctance motors will increase from less than 0.5% in 2011 to over 6% by 2020.

4.4 Data issues – efficiency & sales weighting

Table 9 Data issues – efficiency & sales weighting

Issue/risk	Approach taken/rationale
MTP does not have stock or sales data on new motor types - permanent magnet and split reluctance. There are little market data on these emerging technologies.	Expert assumptions made on sales growth rate for these motor types. It is assumed these motor types will take market share from AC induction motors.
It is anticipated that future policy measures will affect the loading on motors (e.g. improvements to pump efficiency, or buildings having higher levels in insulation), this in turn results in reduced load on motors for pumps in heating systems.	Not currently modelled, but will be considered in future modelling iterations.

5 Cost

5.1 Summary

- Table 10 and Table 11 present typical prices for fixed speed (AC induction) motors and variable speed (motor plus variable speed drive combinations) by size grouping and efficiency class for the years 2009 and 2015.

- Prices for 'other AC & DC' motors are not included because the sales levels and efficiency of these motors are assumed to remain constant between Reference and Policy Scenarios, therefore there is no additional cost occurred under the Policy Scenario for these type of motors.

Table 10 Fixed speed motor and variable speed motor (including VSD) prices, 2009

Motor Type	Size Range (kW)	Average Price (£)									
		Fixed Speed Motors					Variable Speed Motors				
		EEF3	IE1	IE2	IE3	IE4	EEF3	IE1	IE2	IE3	IE4
AC induction	0.75-2.2	116	122	163	187	206	376	382	423	447	466
	3-4	181	191	251	263	290	518	527	587	600	626
	5.5-11	356	375	477	493	542	873	892	993	1,009	1,059
	15-30	822	865	1,027	1,157	1,273	1,921	1,964	2,126	2,256	2,268
	37-132	3,162	3,328	3,581	4,483	4,931	6,514	6,681	6,934	7,836	8,284
	150-400	10,153	10,687	11,576	14,288	15,717	18,762	19,296	20,185	22,897	24,326
PM & SR	0.75-30	N/A					929				
	30-400	N/A					16,171				

Table 11 Fixed speed motor and variable speed motor (including VSD) prices, 2015

Motor Type	Size Range (kW)	Average Price (£)									
		Fixed Speed Motors					Variable Speed Motors				
		EEF3	IE1	IE2	IE3	IE4	EEF3	IE1	IE2	IE3	IE4
AC Induction	0.75-2.2	116	122	146	168	185	350	356	380	402	419
	3-4	181	191	226	260	286	484	494	529	563	588
	5.5-11	356	375	429	493	543	821	840	894	958	1,007
	15-30	822	865	924	1,063	1,169	1,811	1,854	1,913	2,052	2,158
	37-132	3,162	3,328	3,402	3,912	4,304	6,179	6,345	6,420	6,930	7,321
	150-400	10,153	10,687	10,997	12,647	13,912	17,901	18,435	18,746	20,395	21,660
PM & SR	0.75-30	N/A					883				
	30-400	N/A					15,363				

5.2 Data sources – cost

Table 12 Cost data sources

Year	Reference	Reference date	Author	Justification	Confidence in sources (High/Low)
2009	Industry	Feb 2009	Industry	There are	Low

	consultation – requests for product price data.		sources	no publicly available published price data for motors or variable speed drives.	

5.3 Methodology & key assumptions – cost

5.3.1 Future analysis

Table 13 Extrapolation & background calculations – cost

Year	Methodology & assumptions
2009 - 2030	Current pricing for IE1 and IE2 motors obtained consulting with industry. Higher efficiency motors require more active materials (e.g. copper and magnetic steels) and are manufactured to tighter tolerances with a resultant increase in manufacturing cost. Prices for EFF3 motors are assumed to be 5% less than IE1, whilst IE3 assumed to be 15% higher than IE2, and IE4 assumed to be 10% higher than IE3.These prices were used in 2009 & 2010. Future prices for the higher efficiency motors (from 2015) are assumed to be 10% lower than current prices due to their significantly increased manufacturing volumes and remain constant to 2030. Between 2011 and 2014 an average of the 2010 and 2015 price was used.

5.4 Data issues – cost

Table 14 Data issues – cost

Issue/risk	Approach taken/rationale
Difficulty in obtaining cost data. There are no published data that indicate typical prices of motors; this is possibly due to the large numbers of variants in motor types and sizes	Suppliers were asked for cost data on a sample of typical motor and drive types and sizes. An average of these figures was estimated.
Variations in future prices	Motor prices are heavily influenced by variations in commodity prices (iron, steel, aluminium). A fixed price for the period 2015-2030 was assumed in order to maintain a consistent base for comparison.

5.5 Confidence level – cost

- Over time motor prices are likely to experience significant variations due to changes in raw material prices (steel, copper, aluminium); this difference in raw material cost could outweigh the difference in manufacturing costs for the different efficiency classes of motors. Consequently price variations due to this could exceed the notional price difference between the efficiency classes of electric motors.

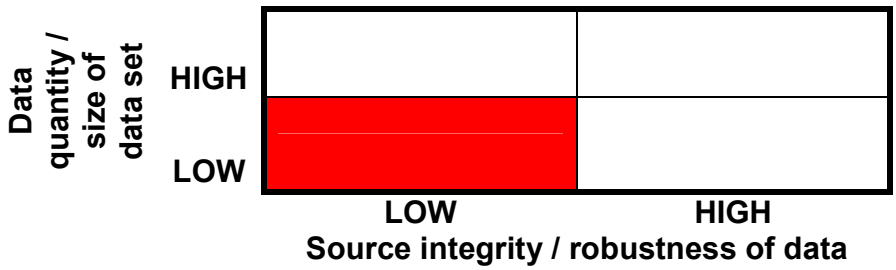

Figure 2 Confidence indicator for cost data

Related MTP information

- BNM M01: Electric Motors Government Standards Evidence Base 2009: Key Inputs
- BNM M02: Electric Motors Government Standards Evidence Base 2009: Reference Scenario
- BNM M04: Electric Motors Government Standards Evidence Base 2009: Best Available Technology (BAT) Scenario
- BNM M05: Electric Motors Government Standards Evidence Base 2009: Key Outputs

Changes from previous version

- Minor changes to the template.
- Updated cost benefit figures based on updated factors and CEI calculation.

Consultation and further information

Stakeholders are encouraged to review this document and provide suggestions that may improve the quality of information provided, email **info@mtprog.com** quoting the document reference, or call the MTP enquiry line on +44 (0) 845 600 8951.

For further information on related issues visit **http://efficient-products.defra.gov.uk**