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NOTE

from:	General Secretariat of the Council
to:	Delegations
No. Cion prop.:	13943/11 ENER 283 CODEC 1406
Subject:	Proposal for a Directive of the European Parliament and of the Council on energy efficiency and repealing Directives 2004/8/EC and 2006/32/EC - Annexes

Delegations will find attached the Annexes relating to the abovementioned proposal in the form of a three-column document.

ITRE OPINION[1] *CA 3* *ANNEX 0 (new)*		
National Energy Savings Targets		
A. 2020 National Energy Saving Reference Values (in primary energy, excluding non-energy uses)		
	Maximum primary energy consumption, excluding non-energy uses in 2020 (Mtoe)	***Minimum reduction of primary energy consumption, excluding non-energy uses) in 2020 (Mtoe) (S_{2020})***
Belgium	***43.6***	***9.8***
Bulgaria	***18.6***	***3.2***
Czech Republic	***40.1***	***5.5***
Denmark	***19.2***	***0.8***
Germany	***241.2***	***58.7***
Estonia	***5.4***	***0.2***
Ireland	***15.9***	***2.8***
Greece	***33.3***	***2.7***
Spain	***131.7***	***31.1***
France	***207.5***	***68.9***
Italy	***159.8***	***49.0***
Cyprus	***2.4***	***0.4***
Latvia	***7.8***	***-1.0***
Lithuania	***8.6***	***1.1***
Luxembourg	***4.7***	***0.9***
Hungary	***26.7***	***2.9***
Malta	***0.8***	***0.1***
Netherlands	***58.0***	***17.7***
Austria	***29.2***	***7.2***
Poland	***90.1***	***19.7***
Portugal	***24.0***	***6.0***
Romania	***40.1***	***10.0***
Slovenia	***7.0***	***1.8***
Slovak Republic	***18.5***	***1.6***
Finland	***33.2***	***4.2***
Sweden	***41.4***	***14.4***
United Kingdom	***165.4***	***48.1***
EU	***1474***	***368***

[1] Provisional text of compromise amendments voted on 28 February 2012

B. Indicative trajectory

The indicative trajectory referred to in Article 3(2) shall respect the following primary energy saving path towards each Member State's 2020 target:

25%* (S_{2020}), in 2014;

50%* (S_{2020}), in 2016;

75%* (S_{2020}), in 2018;

where

S_{2020} = the energy saving for that Member State in 2020 as indicated in the right column of the table in Part A.

COMMISSION PROPOSAL	ITRE OPINION[2]	PRESIDENCY SUGGESTIONS
ANNEX I *General principles for the calculation of electricity from cogeneration*		*ANNEX I* *General principles for the calculation of electricity from cogeneration*
PART I. General principles Values used for calculation of electricity from cogeneration shall be determined on the basis of the expected or actual operation of the unit under normal conditions of use. For micro- cogeneration units the calculation may be based on certified values. (a) Electricity production from cogeneration shall be considered equal to total annual electricity production of the unit measured at the outlet of the main generators. (i) in cogeneration units of type (b), (d), (e), (f), (g) and (h) referred to in Part II with an annual overall efficiency set by Member States at a level of at least 75%, and (ii) in cogeneration units of type (a) and (c) referred to in Part II with an annual overall efficiency set by Member States at a level of at least 80%.		**PART I. General principles** Values used for calculation of electricity from cogeneration shall be determined on the basis of the expected or actual operation of the unit under normal conditions of use. For micro- cogeneration units the calculation may be based on certified values. (a) Electricity production from cogeneration shall be considered equal to total annual electricity production of the unit measured at the outlet of the main generators. (i) in cogeneration units of type (b), (d), (e), (f), (g) and (h) referred to in Part II with an annual overall efficiency set by Member States at a level of at least 75%, and (ii) in cogeneration units of type (a) and (c) referred to in Part II with an annual overall efficiency set by Member States at a level of at least 80%.
(b) In cogeneration units with an annual overall efficiency below the value referred to in paragraph (a) (i) (cogeneration units of type (b), (d), (e), (f), (g), and (h) referred to in Part II) or with an annual overall efficiency below the value referred to in paragraph (a) (ii) (cogeneration units of type (a) and (c) referred to in Part II) cogeneration is calculated according to the following formula: $E_{CHP}=H_{CHP}*C$		(b) In cogeneration units with an annual overall efficiency below the value referred to in paragraph (a) (i) (cogeneration units of type (b), (d), (e), (f), (g), and (h) referred to in Part II) or with an annual overall efficiency below the value referred to in paragraph (a) (ii) (cogeneration units of type (a) and (c) referred to in Part II) cogeneration is calculated according to the following formula: $E_{CHP}=H_{CHP}*C$

[2] Provisional text of compromise amendments voted on 28 February 2012

where:

E_{CHP} is the amount of electricity from cogeneration

C is the power to heat ratio

H_{CHP} is the amount of useful heat from cogeneration (calculated for this purpose as total heat production minus any heat produced in separate boilers or by live s team extraction from the steam generator before the turbine).

The calculation of electricity from cogeneration must be based on the actual power to heat ratio. If the actual power to heat ratio of a cogeneration unit is not known ,the following default values may be used, notably for statistical purposes, for units of type (a),(b),(c),(d) and (e) referred to in Part II provided that the calculated cogeneration electricity is less or equal to total electricity production of the unit:

Type of the unit	Default power to heat ratio, C
Combined cycle gas turbine with heat recovery	0,95
Steam back pressure turbine	0,45
Steam condensing extraction turbine	0,45
Gas turbine with heat recovery	0,55
Internal combustion engine	0,75

If Member States introduce default values for power to heat ratios for units of type (f), (g), (h), (i), (j) and (k) referred to in Part II, such default values shall be published and shall be notified to the Commission.

where:

E_{CHP} is the amount of electricity from cogeneration
C is the power to heat ratio

H_{CHP} is the amount of useful heat from cogeneration (calculated for this purpose as total heat production minus any heat produced in separate boilers or by live steam extraction from the steam generator before the turbine).

The calculation of electricity from cogeneration must be based on the actual power to heat ratio. If the actual power to heat ratio of a cogeneration unit is not known ,the following default values may be used, notably for statistical purposes, for units of type (a),(b),(c),(d) and (e) referred to in Part II provided that the calculated cogeneration electricity is less or equal to total electricity production of the unit:

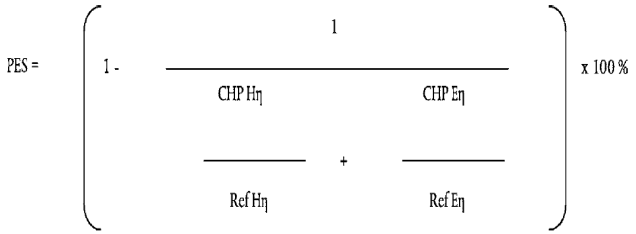
Type of the unit	Default power to heat ratio, C
Combined cycle gas turbine with heat recovery	0,95
Steam back pressure turbine	0,45
Steam condensing extraction turbine	0,45
Gas turbine with heat recovery	0,55
Internal combustion engine	0,75

If Member States introduce default values for power to heat ratios for units of type (f), (g), (h), (i), (j) and (k) referred to in Part II, such default values shall be published and shall be notified to the Commission.

(d) If a share of the energy content of the fuel input to the cogeneration process is recovered in chemicals and recycled this share can be subtracted from the fuel input before calculating the overall efficiency used in paragraphs (a) and (b).		(d) If a share of the energy content of the fuel input to the cogeneration process is recovered in chemicals and recycled this share can be subtracted from the fuel input before calculating the overall efficiency used in paragraphs (a) and (b).
(e) Member States may determine the power to heat ratio as the ratio between electricity and useful heat when operating in cogeneration mode at a lower capacity using operational data of the specific unit.		(e) Member States may determine the power to heat ratio as the ratio between electricity and useful heat when operating in cogeneration mode at a lower capacity using operational data of the specific unit.
(f) Member States may use other reporting periods than one year for the purpose of the calculations according to paragraphs (a) and (b).		(f) Member States may use other reporting periods than one year for the purpose of the calculations according to paragraphs (a) and (b).
PART II. Cogeneration technologies covered by this Directive (a) Combined cycle gas turbine with heat recovery (b) Steam backpressure turbine (c) Steam condensing extraction turbine (d) Gas turbine with heat recovery (e) Internal combustion engine (f) Microturbines (g) Stirling engines (h) Fuel cells (i) Steam engines (j) Organic Rankine cycles (k) Any other type of technology or combination thereof falling under the definition laid down in Article 2 (19).		**PART II. Cogeneration technologies covered by this Directive** (a) Combined cycle gas turbine with heat recovery (b) Steam backpressure turbine (c) Steam condensing extraction turbine (d) Gas turbine with heat recovery (e) Internal combustion engine (f) Microturbines (g) Stirling engines (h) Fuel cells (i) Steam engines (j) Organic Rankine cycles (k) Any other type of technology or combination thereof falling under the definition laid down in Article 2 (19).
PART III. Detailed principles When implementing and applying the general principles for		When implementing and applying the general principles for the calculation of electricity from

the calculation of electricity from cogeneration, Member States shall use the detailed Guidelines established by Decision 2008/952/EC[3].		cogeneration, Member States shall use the detailed Guidelines established by Decision 2008/952/EC[4].
ANNEX II ***Methodology for determining the efficiency of the cogeneration process***		***ANNEX II*** ***Methodology for determining the efficiency of the cogeneration process***
Values used for calculation of efficiency of cogeneration and primary energy savings shall be determined on the basis of the expected or actual operation of the unit under normal conditions of use. *(a) High-efficiency cogeneration* For the purpose of this Directive high-efficiency cogeneration shall fulfil the following criteria: – cogeneration production from cogeneration units shall provide primary energy savings calculated according to point (b) of at least 10 % compared with the references for separate production of heat and electricity, – production from small scale and micro cogeneration units providing primary energy savings may qualify as high-efficiency cogeneration.		Values used for calculation of efficiency of cogeneration and primary energy savings shall be determined on the basis of the expected or actual operation of the unit under normal conditions of use. *(a) High-efficiency cogeneration* For the purpose of this Directive high-efficiency cogeneration shall fulfil the following criteria: - cogeneration production from cogeneration units shall provide primary energy savings calculated according to point (b) of at least 10 % compared with the references for separate production of heat and electricity, - production from small scale and micro cogeneration units providing primary energy savings may qualify as high-efficiency cogeneration.
(b) Calculation of primary energy savings The amount of primary energy savings provided by cogeneration production defined in accordance with Annex I shall be calculated on the basis of the following formula:		*(b) Calculation of primary energy savings* The amount of primary energy savings provided by cogeneration production defined in accordance with Annex I shall be calculated on the basis of the following formula:

[3] OJ L 338, 17.12.2008, p. 55.
[4] OJ L 338, 17.12.2008, p. 55.



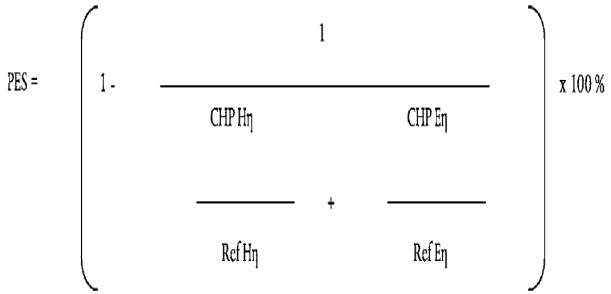
Where:
PES is primary energy savings.

CHP Hη is the heat efficiency of the cogeneration production defined as annual useful heat output divided by the fuel input used to produce the sum of useful heat output and electricity from cogeneration.

Ref Hη is the efficiency reference value for separate heat production.

CHP Eη is the electrical efficiency of the cogeneration production defined as annual electricity from cogeneration divided by the fuel input used to produce the sum of useful heat output and electricity from cogeneration. Where a cogeneration unit generates mechanical energy, the annual electricity from cogeneration may be increased by an additional element representing the amount of electricity which is equivalent to that of mechanical energy. This additional element will not create a right to issue guarantees of origin in accordance with Article 10(10).

Ref Eη is the efficiency reference value for separate electricity production.



Where:
PES is primary energy savings.
CHP Hη is the heat efficiency of the cogeneration production defined as annual useful heat output divided by the fuel input used to produce the sum of useful heat output and electricity from cogeneration.

Ref Hη is the efficiency reference value for separate heat production.

CHP Eη is the electrical efficiency of the cogeneration production defined as annual electricity from cogeneration divided by the fuel input used to produce the sum of useful heat output and electricity from cogeneration. Where a cogeneration unit generates mechanical energy, the annual electricity from cogeneration may be increased by an additional element representing the amount of electricity which is equivalent to that of mechanical energy. This additional element will not create a right to issue guarantees of origin in accordance with Article 10(10).
Ref Eη is the efficiency reference value for separate electricity production.

(c) Calculations of energy savings using alternative calculation Member States may calculate primary energy savings from a production of heat and electricity and mechanical energy as below without using Annex I to exclude the non-cogenerated heat and electricity parts of the same process. Such a production can be regarded as high-efficiency cogeneration provided it fulfils the efficiency criteria in point (a) of this Annex and, for cogeneration units with an electrical capacity larger than 25 MW, the overall efficiency is above 70%. However, specification of the quantity of electricity from cogeneration produced in such a production, for issuing a guarantee of origin and for statistical purposes, shall be determined in accordance with Annex I. If primary energy savings for a process are calculated using alternative calculation as above the primary energy savings shall be calculated using the formula in point (b) of this Annex replacing:'CHP Hη' with'Hη' and'CHP Eη' with 'Eη',where: Hη shall mean the heat efficiency of the process, defined as the annual heat output divided by the fuel input used to produce the sum of heat output and electricity output. Eη shall mean the electricity efficiency of the process, defined as the annual electricity output divided by the fuel input used to produce the sum of heat output and electricity output. Where a cogeneration unit generates mechanical energy, the annual electricity from cogeneration maybe increased by an additional element representing the amount of electricity which is equivalent to that of mechanical energy. This additional element will not create a right to issue guarantees of origin in accordance with Article 10(10).		*(c) Calculations of energy savings using alternative calculation* Member States may calculate primary energy savings from a production of heat and electricity and mechanical energy as below without using Annex I to exclude the non-cogenerated heat and electricity parts of the same process. Such a production can be regarded as high-efficiency cogeneration provided it fulfils the efficiency criteria in point (a) of this Annex and, for cogeneration units with an electrical capacity larger than 25 MW, the overall efficiency is above 70%. However, specification of the quantity of electricity from cogeneration produced in such a production, for issuing a guarantee of origin and for statistical purposes, shall be determined in accordance with Annex I. If primary energy savings for a process are calculated using alternative calculation as above the primary energy savings shall be calculated using the formula in point (b) of this Annex replacing:'CHP Hη' with'Hη' and'CHP Eη' with 'Eη',where: Hη shall mean the heat efficiency of the process, defined as the annual heat output divided by the fuel input used to produce the sum of heat output and electricity output. Eη shall mean the electricity efficiency of the process, defined as the annual electricity output divided by the fuel input used to produce the sum of heat output and electricity output. Where a cogeneration unit generates mechanical energy, the annual electricity from cogeneration maybe increased by an additional element representing the amount of electricity which is equivalent to that of mechanical energy. This additional element will not create a right to issue guarantees of origin in accordance with Article 10(10).

(d) Member States may use other reporting periods than one year for the purpose of the calculations according to points (b) and (c) of this Annex.		(d) Member States may use other reporting periods than one year for the purpose of the calculations according to points (b) and (c) of this Annex.
(e) For micro-cogeneration units the calculation of primary energy savings may be based on certified data.		(e) For micro-cogeneration units the calculation of primary energy savings may be based on certified data.
(f) *Efficiency reference values for separate production of heat and electricity* The harmonised efficiency reference values shall consist of a matrix of values differentiated by relevant factors, including year of construction and types of fuel, and must be based on a well-documented analysis taking, inter alia, into account data from operational use under realistic conditions, fuel mix and climate conditions as well as applied cogeneration technologies. The efficiency reference values for separate production of heat and electricity in accordance with the formula set out in paragraph (b) shall establish the operating efficiency of the separate heat and electricity production that cogeneration is intended to substitute. The efficiency reference values shall be calculated according to the following principles: 1. For cogeneration units as defined in Article 2(24) the comparison with separate electricity production shall be based on the principle that the same fuel categories are compared. 2. Each cogeneration unit shall be compared with the best available and economically justifiable technology for separate production of heat and electricity on the market in the year of construction of the cogeneration unit.		(f) *Efficiency reference values for separate production of heat and electricity* The harmonised efficiency reference values shall consist of a matrix of values differentiated by relevant factors, including year of construction and types of fuel, and must be based on a well-documented analysis taking, inter alia, into account data from operational use under realistic conditions, fuel mix and climate conditions as well as applied cogeneration technologies. The efficiency reference values for separate production of heat and electricity in accordance with the formula set out in paragraph (b) shall establish the operating efficiency of the separate heat and electricity production that cogeneration is intended to substitute. The efficiency reference values shall be calculated according to the following principles: 1. For cogeneration units as defined in Article 2(24) the comparison with separate electricity production shall be based on the principle that the same fuel categories are compared. 2. Each cogeneration unit shall be compared with the best available and economically justifiable technology for separate production of heat and electricity on the market in the year of construction of the cogeneration unit. 3. The efficiency reference values for

3. The efficiency reference values for cogeneration units older than 10 years of age shall be fixed on the reference values of units of 10 years of age. 4. The efficiency reference values for separate electricity production and heat production shall reflect the climatic differences between Member States.		cogeneration units older than 10 years of age shall be fixed on the reference values of units of 10 years of age. 4. The efficiency reference values for separate electricity production and heat production shall reflect the climatic differences between Member States.
ANNEX III **Energy efficiency requirements for purchasing products, services and buildings by public bodies**		**ANNEX III** **Energy efficiency requirements for purchasing products, services and buildings by public bodies**
Public bodies that purchase products, services or buildings shall: a) where a product is covered by a delegated act adopted under Directive 2010/30/EU or Commission Directive implementing Directive 92/75/EEC, purchase only the products that comply with the criterion of belonging to the highest energy efficiency class while taking into account cost-effectiveness, economical feasibility and technical suitability, as well as sufficient competition; b) where a product not covered under point a) is covered by an implementing measure under Directive 2009/125/EC adopted after the entry into force of this Directive, purchase only products that comply with energy efficiency benchmarks specified in that implementing measure; c) purchase office equipment products covered by Council Decision [2006/1005/EC[5]] that comply with energy	**CA 6A** Public bodies that purchase products, ***systems,*** services or buildings shall ***by setting energy efficiency performance requirements as technical specifications*** and taking into account cost-effectiveness ***based on a whole life-cycle analysis:*** a) where a product is covered by a delegated act adopted under Directive 2010/30/EU or Commission Directive implementing Directive 92/75/EEC, purchase only the products that comply with the criterion of belonging to the highest energy efficiency class***. Public bodies may take*** into account ***health impact,*** cost-effectiveness ***and*** economical feasibility ***by using award criteria with weighting for energy performance at least equal to the weighting accorded to price***; b) where a product not covered under point a) is covered by an implementing measure under Directive 2009/125/EC adopted after the entry into force of this Directive, purchase only products that comply with energy efficiency benchmarks specified in that implementing measure; c) purchase office equipment products covered by	Public bodies that purchase products, services or buildings shall, **taking into account cost-effectiveness, economical feasibility and other sustainability issues, technical suitability, as well as sufficient competition […]:** a) where a product is covered by a delegated act adopted under Directive 2010/30/EU or Commission Directive implementing Directive 92/75/EEC, purchase only the products that comply with the criterion of belonging to the highest energy efficiency class **possible in the light of the need to ensure sufficient competition**; b) where a product not covered under point a) is covered by an implementing measure under Directive 2009/125/EC adopted after the entry into force of this Directive, purchase only products that comply with energy efficiency benchmarks specified in that implementing measure; c) purchase office equipment products covered by Council Decision [2006/1005/EC[7]] that comply with

[5] OJ L 381, 28.12.2006, p. 24.

efficiency requirements not less demanding than those listed in Annex C of the Agreement attached to that Decision; d) purchase only tyres that comply with the criterion of having the highest fuel energy efficiency class, as defined by Regulation (EC) No 1222/2009[6]. This requirement shall not prevent public bodies from purchasing tyres with the highest wet grip class or external rolling noise class where justified by safety or public health reasons; e) require in their tenders for service contracts that service providers use, for the purposes of providing the services in question, only products that comply with the requirements referred to in points (a) to (d), when providing the services in question; f) purchase or rent only buildings that comply at least with the minimum energy performance requirements referred to in Article 4(1). Compliance with these requirements shall be verified by means of the energy performance certificates referred to in Article 11 of Directive 2010/31/EU.	Council Decision [2006/1005/EC[39]] that comply with energy efficiency requirements not less demanding than those listed in Annex C of the Agreement attached to that Decision; d) purchase only tyres that comply with the criterion of having the highest fuel energy efficiency class, as defined by Regulation (EC) No 1222/2009[40] ***when available on the market***. ***When purchasing tyres, public bodies shall take into account as well the objectives of Article 10 of Regulation (EC) No 1222/2009.*** e) require***, where appropriate,*** in their tenders for service contracts that service providers use, for the purposes of providing the services in question, only products that comply with the requirements referred to in points (a) to (d), when providing the services in question; f) purchase or ***rent*** only buildings that comply at least with the ***minimum*** energy performance requirements ***referred to in Article 4(1)***. Compliance with these requirements shall be verified by means of the energy performance certificates referred to in Article 11 of Directive 2010/31/EU. ***Point f) shall not apply to the purchase or rental of buildings officially protected as part of a designated environment or because of their special architectural or historical merit;*** ***Point f) shall also apply to the EU Institutions***	energy efficiency requirements not less demanding than those listed in Annex C of the Agreement attached to that Decision; d) purchase only tyres that comply with the criterion of having the highest fuel energy efficiency class, as defined by Regulation (EC) No 1222/2009[8]. This requirement shall not prevent public bodies from purchasing tyres with the highest wet grip class or external rolling noise class where justified by safety or public health reasons; e) require in their tenders for service contracts that service providers use, for the purposes of providing the services in question, only products that comply with the requirements referred to in points (a) to (d), when providing the services in question**. This requirement shall apply only to new products purchased by service providers partially or wholly for the purpose of providing the service in question**; f) purchase**,** or **make** new rental **agreements for,** only buildings that comply at least with the minimum energy performance requirements referred to in Article 4(1) **unless the purpose of the purchase is** **i) deep renovation or demolition;** **ii) the public body intends to re-sell the building without using it for its own purposes, or** **iii) the purpose of the purchase is to preserve it as a building officially protected as part of a designated environment, or because of their special architectural or historical merit**. Compliance with these requirements shall be verified

[6] OJ L 342, 22.12.2009, p. 46.
[7] OJ L 381, 28.12.2006, p. 24.
[8] OJ L 342, 22.12.2009, p. 46.

		by means of the energy performance certificates referred to in Article 11 of Directive 2010/31/EU.

COMMISSION PROPOSAL

ANNEX IV
Energy content of selected fuels for end use –conversion table[9]

Energy commodity	kJ (NCV)	kgoe (NCV)	kWh (NCV)
1 kg coke	28500	0,676	7,917
1 kg hard coal	17200 — 30700	0,411 — 0,733	4,778 — 8,528
1 kg brown coal briquettes	20000	0,478	5,556
1 kg black lignite	10500 — 21000	0,251 — 0,502	2,917 — 5,833
1 kg brown coal	5600 — 10500	0,134 — 0,251	1,556 — 2,917
1 kg oil shale	8000 — 9000	0,191 — 0,215	2,222 — 2,500
1 kg peat	7800 — 13800	0,186 — 0,330	2,167 — 3,833
1 kg peat briquettes	16000 — 16800	0,382 — 0,401	4,444 — 4,667
1 kg residual fuel oil (heavy oil)	40000	0,955	11,111
1 kg light fuel oil	42300	1,010	11,750
1 kg motor spirit (petrol)	44000	1,051	12,222
1 kg paraffin	40000	0,955	11,111
1 kg liquefied petroleum gas	46000	1,099	12,778
1 kg natural gas [1]	47200	1,126	13,10
1 kg liquefied natural gas	45190	1,079	12,553
1 kg wood (25 % humidity) [2]	13800	0,330	3,833
1 kg pellets/wood bricks	16800	0,401	4,667
1 kg waste	7400 — 10700	0,177 — 0,256	2,056 — 2,972
1 MJ derived heat	1000	0,024	0,278
1 kWh electrical energy	3600	0,086	1 [3]

Source: Eurostat.

[1] 93 % methane.

[9] Member States may apply different conversion factors if these can be justified.

[2] Member States may apply other values depending on the type of wood most used in the respective Member State.

[3] Applicable when energy savings are calculated in primary energy terms using a bottom-up approach based on final energy consumption. For savings in kWh electricity Member States may apply a default coefficient of 2,5. Member States may apply a different coefficient provided they can justify it.

ANNEX V **Energy efficiency obligation schemes**	**CA 7** ***Energy end-use saving schemes***	**Common methods and principles for calculating the impact of energy efficiency obligations schemes or other policy measures under Article 6, paragraphs 1, 8a and 9**
	The following are the guiding principles which shall be used by Member States when determining energy saving above those which would have occurred naturally.	
1. Measures that target short-term savings The following measures shall be considered as targeting short-term savings : a) distribution or installation of energy efficient compact fluorescent light bulbs;	1. Measures that ***do not count towards the energy saving target*** The following measures shall be ***excluded from the energy savings target referred to in Article 6*** : a) distribution or installation of compact fluorescent light bulbs; ***aa) distribution or installation of households appliances that are not classified in the highest class of the energy label or which have reached 30% market penetration;***	[…] **1. […]**
b) distribution or installation of energy efficient shower heads;	b) distribution or installation of energy efficient shower heads;	
c) energy audits;	***deleted***	
d) information campaigns.	***deleted***	
	1a. Measures that target short-term savings ***a) energy audits;*** ***b) distribution or installation of smart meters;*** ***c) fuel switching;*** ***d) information campaigns.***	
2. Calculation of energy savings	***2. Energy saving methodology***	**2. Methods for calculating energy savings for the purposes of Article 6 paragraph 1,**

The calculation of energy savings in national energy efficiency obligation schemes shall take into account the lifetime of measures. Where no national values for lifetimes are fixed the default values in point 4 shall apply.		**paragraph 8a and paragraph 9, points (b), (c), (d), (e) and (f)**
Obligated parties may use one or more of the following methods for calculating energy savings for the purposes of Article 6(2):	Obligated parties may use one or more of the following methods for calculating energy savings for the purposes of Article 6(2):	**Obligated , participating or entrusted parties or implementing public authorities may use one or more of the following methods for calculating energy savings […]:**
a) engineering estimates;	***a) Deemed savings, by reference to the results of previous independently monitored energy improvements in similar installations. The principles set out in point 3 shall apply when determining deemed savings. The generic approach is termed "ex-ante";***	**a) Deemed savings, by reference to the results of previous independently monitored energy improvements in similar installations. The generic approach is termed "ex-ante";**
b) metering;	***b) Metered savings, whereby the savings from the installation of a measure, or package of measures, is determined by recording the actual reduction in energy use, taking due account of factors such as occupancy, production levels and the weather which may affect consumption. The generic approach is termed "ex-post".***	**b) Metered savings, whereby the savings from the installation of a measure, or package of measures, is determined by recording the actual reduction in energy use, taking due account of factors such as additionality, occupancy, production levels and the weather which may affect consumption. The generic approach is termed "ex-post".**
c) standard values and lifetimes that Member States have adopted on a clear and sound basis. Such values shall be notified to the Commission. The Commission may request that such values are modified, where they are likely to distort competition or where they show less ambition than the default values and lifetimes in points 3 and 4.	***c) Scaled savings, whereby it may be appropriate to use engineering estimates of savings where establishing robust measured data for a specific installation is difficult or disproportionately too expensive e.g. replacing a compressor or electric motor with a different kWh rating than that for which independent information on savings has been measured.***	**c) Scaled savings, whereby […] engineering estimates of savings are used. This approach may only be used where establishing robust measured data for a specific installation is difficult or disproportionately expensive e.g. replacing a compressor or electric motor with a different kWh rating than that for which independent information on savings has been measured.**
d) the default values and lifetimes in points 3 and 4 where no national standard values and lifetimes	***d) Surveyed savings, where consumers' response to advice, information campaigns, or smart metering is***	**d) Surveyed savings, where consumers' response to advice, information campaigns,**

have been established;	***determined. This approach may only be used for savings resulting from changes in consumer behaviour. It may not be used for savings resulting from the installation of physical measures. Savings from installations should either come from the deemed saving catalogue or engineering methods. When deemed savings are chosen, the use of engineering methods are excluded.***	**labelling or certification schemes other than those stemming from the implementation of Directives 2010/30/EU and 2010/31/EU, and Regulations (EC) No 106/2008 and No 1222/2009, or smart metering is determined. This approach may only be used for savings resulting from changes in consumer behaviour. It may not be used for savings resulting from the installation of physical measures.**
	2a) Principles to apply in the calculation of energy savings ***In determining the energy saving for an energy efficiency measure, the following principles shall be respected:*** ***a) Only savings that are additional to those that would be expected from an average product placed in the market can be counted. Due account of the following shall be taken in determining the additional energy savings:*** ***i. the prevailing energy performance and energy label of fabric measures (walls, roofs, floors, windows and doors) in the existing building stock;*** ***ii. prevailing regulations relating to minimum energy performance requirements of new buildings or vehicles or the removal of certain products e.g. the banning of certain incandescent light bulbs meaning that compact fluorescent light bulbs are the norm;*** ***iii. EU minimum energy performance requirements for energy related products as defined by the EU Ecodesign Directive;*** ***iv. prevailing market sales, and sales trends, of energy consuming products in the Member State where EU energy labelling criteria exist;***	**3. […]** **In determining the energy saving for an energy efficiency measure for the purposes of Article 6 paragraphs 1, 8a and 9, points (b), (c), (d), (e) and (f), the following principles shall apply:** **a) Only energy savings from policy measures not required under EU law may be counted. In particular, credit may only be given for savings exceeding the following levels:** **i. national regulations relating to minimum energy performance requirements of new buildings following the implementation of Article 9 of Directive 2010/31/EU;** **ii. EU emission performance standards for new passenger cars and new light commercial vehicles following the implementation of Regulation (EC) No 443/2009 and Regulation (EU) No 510/2011, respectively, which make more efficient replacements the norm;** **iii. EU requirements relating to the removal from the market of certain energy related products following the implementation of implementing measures under Directive 2009/125/EC which make certain more efficient replacements the norm; and**

	b) the activities of the obligated party must be demonstrably material to the achievement of the claimed savings; *c) due allowance shall be taken of the increased amenity, or rebound effect, resulting from the installation of measures, for example increased comfort arising from insulation measures;* *d) the savings achieved in end-use can only if documented be claimed by more than one obligated party;* *e) savings achieved as a result of other local, regional, national or international policies may not be included e.g. prevailing building regulations;* *f) to account for climatic variations between regions, Member States may choose to adjust the savings to a standard value or to accord different energy savings in accord with the temperature variations between regions; the adjustment should be clarified and approved by the commission not later than three month after the implementation of this directive.* *g) where measures result in changes in consumption of more than one fuel type, due account shall be taken of the primary energy content of that fuel as defined in Annex IV;* *h) calculation of energy savings shall take into account the lifetime of measures;* *i) where measures result in the accelerated replacement of equipment, products or building components, due account shall be taken of the duration of the energy savings compared to the energy consumption of the original equipment but only for the remaining lifetime of the original equipment;* *j) actions by obligated parties, either individually or*	**iv. […]** **v. […] EU […] requirements relating to energy efficiency of industrial installations following the implementation of Directive 2010/75/EU;** **b) When calculating deemed or scaled savings the following aspects may also be taken into account:** **i. the prevailing energy performance of fabric (walls, roofs, floors, windows and doors) in the existing building stock and the average energy performance certificate level, as required by Article 12 of Directive 2010/31/EU, for the existing building stock;** **ii. prevailing market sales, and sales trends, of energy-related products covered by a delegated act adopted under Directive 2010/30/EU or implementing measure under Directive 2009/125/EC in the Member State;** **iii. prevailing energy efficiency levels of existing industrial installations of the same type nationally; and** **iv) […] increased amenity, or rebound effect, resulting from the installation of measures, for example increased comfort arising from insulation measures.** **c) to account for climatic variations between regions, Member States may choose to adjust the savings to a standard value or to accord different energy savings in accordance with the temperature variations between regions;** **d) the activities of the obligated, participating or entrusted party must be demonstrably material to the achievement of the claimed savings;** **e) savings from an individual action may not be**

	together, which aim to result in lasting transformation of products, equipment, or markets to a higher level of energy efficiency are permitted; *k) in promoting the uptake of energy efficiency measures, Member States shall ensure that quality standards for products, services and installation of measures are maintained. Where such standards do not exist, Member States shall work with obligated parties to introduce them.* *The calculation of energy savings shall be revised at least each two years to take into account of regulatory and technological developments.*	**claimed by more than one […] party;** **f) calculation of energy savings shall take into account the lifetime of savings […]; and** **g) […]** **h) actions by obligated, participating or entrusted parties, either individually or together, which aim to result in lasting transformation of products, equipment, or markets to a higher level of energy efficiency are permitted; and** **i) in promoting the uptake of energy efficiency measures, Member States shall ensure that quality standards for products, services and installation of measures are maintained. Where such standards do not exist, Member States shall work with obligated, participating or entrusted parties to introduce them.** **The method for determining energy savings, including in relation to their lifetimes, shall take into account the need to fulfil the requirement in the third sentence of Article 6, paragraph 1.** **Obligated parties shall be obliged to revise the calculation of energy savings […] at least each three years to take account of regulatory and technological developments.** **3a. In determining the energy saving from policy measures applied under Article 6 paragraph 9a, point (a), the following principles shall apply:** **a) credit shall only be given for energy savings from taxation measures exceeding the minimum levels of taxation applicable to fuels as required in Directive 2003/96/EC; and** **b) recent and representative official data on**

		price elasticities shall be used for calculation of the impact; and **c) the energy savings from accompanying taxation policy instruments, including fiscal incentives or payment to a fund, shall be accounted separately.**
	2b) Notification of methodology ***Member States shall notify the Commission of their proposed detailed methodology for operation of the energy efficiency obligation schemes. Such notification shall include details of:*** ***a) obligated parties;*** ***b) target sectors;*** ***c) the level of the energy saving target;*** ***d) the duration of the obligation period;*** ***e) eligible measure categories;*** ***f) calculation methodology, including how additionality and materiality are to be determined;*** ***g) measure lifetimes;*** ***h) approach taken to address climatic variations within the Member State;*** ***i) treatment of fuels with different carbon or primary energy content;*** ***j) quality standards;*** ***k) monitoring and verification protocols;*** ***l) audit protocols.*** ***The Commission may request that methodologies are modified, where they are likely to distort competition or***	**4. Notification of methodology** **Member States shall notify the Commission of their proposed detailed methodology for operation of the energy efficiency obligation schemes and for the purposes of paragraphs 8a and 9 of Article 6. Except in the case of taxes, such notification shall include details of:** **a) obligated, participating or entrusted parties or implementing public authorities;** **b) target sectors;** **c) the level of the energy saving target or expected savings to be achieved over the whole and intermediate periods;** **d) the duration of the obligation period and intermediate periods;** **e) eligible measure categories;** **f) calculation methodology, including how additionality and materiality are to be determined;** **g) […] lifetimes of measures;** **h) approach taken to address climatic variations within the Member State;** **j) quality standards;** **k) monitoring and verification protocols and how the independence of these from the obligated,**

	where they are less rigorous than equivalent schemes in other Member States.	**participating or entrusted parties is ensured;** **l) audit protocols and** **m) how the need to fulfil the requirement in the third sentence of Article 6, paragraph 1 is taken into account.** **In the case of taxes, the notification shall include details of:** **a) target sectors and segment of taxpayers;** **b) implementing public authority;** **c) expected savings to be achieved;** **d) duration of the taxation measure and intermediate periods; and** **e) calculation methodology, including which price elasticites are used.** **[...]**
3. European default values according to equipment type **3.1. Household appliances**	***deleted***	**3.1. […]**
a. FREEZERS AND REFRIGERATOR-FREEZERS DISTINGUISHED	***deleted***	**[…]**

	refrigerator-freezers / Freezers *Class A+ Deemed savings (kWh/year): 64 / 62 **Class A+ Deemed savings (kWh/year): 76 / 73 Class A++Deemed savings (kWh/year): 129 / 123 Class A+++Deemed savings (kWh/year): 193 / 185	
b. FREEZERS AND REFRIGERATOR-FREEZERS NOT DISTINGUISHED	***deleted***	

refrigerator-freezers and freezers *Class A+ Deemed savings (kWh/year) 64 **Class A+ Deemed savings (kWh/year) 75 Class A++Deemed savings (kWh/year) 128 Class A+++Deemed savings (kWh/year) 191		
c. DOMESTIC WASHING MACHINES ***Until 30 November 2013** Class A+ deemed savings (kWh/year) 26 Class A++ deemed savings (kWh/year) 46 Class A+++ deemed savings (kWh/year) 63		
***From 1 December 2013**	***deleted***	

Class A++ deemed savings (kWh/year) 20 Class A+++ deemed savings (kWh/year) 37 *From 1 December 2013 for household washing machines with a rated capacity equal to or higher than 4 kg, the Energy Efficiency Index (EEI) shall be less than 59 (See Annex I of Commission Regulation (EU) No 1015/2010).		
d. DOMESTIC DISHWASHERS **Until 30 November 2013**** Class A+ deemed savings (kWh/year) 37 Class A++ deemed savings (kWh/year) 69 Class A+++ deemed savings (kWh/year) 97	***deleted***	
****From 1 December 2013** Class A++ deemed savings (kWh/year) 32 Class A+++ deemed savings (kWh/year) 60 **From 1 December 2013 For household dishwashers with a rated capacity equal to or higher than 11 place settings and		

<table>
<tr>
<td>household dishwashers with a rated capacity of 10 place settings and a width higher than 45 cm, the Energy Efficiency Index (EEI) shall be less than 63 (see COMMISSION REGULATION (EU) No 1016/2010 Annex I)</td>
<td></td>
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</tr>
<tr>
<td>3.2. Residential Lighting
Unitary energy savings GLS[10] to CFL 16 kWh/year
Unitary energy savings GLS[11] to LED 17 kWh/year</td>
<td>deleted</td>
<td></td>
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<tr>
<td>4. Default lifetimes
<table>
<tr><td>Energy efficiency improvement measure through replacement of component</td><td>Default lifetime in years</td></tr>
<tr><td>Boiler - condensing</td><td>20</td></tr>
<tr><td>Boiler – direct evacuation</td><td>20</td></tr>
<tr><td>Burners, oil and gas</td><td>10</td></tr>
<tr><td>Control equipment</td><td>15-20</td></tr>
<tr><td>Control system – central</td><td>15-25</td></tr>
<tr><td>Control system – room control</td><td>15-25</td></tr>
<tr><td>Heating control: Control valves, automatic</td><td>10</td></tr>
<tr><td>Meters</td><td>10</td></tr>
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<td>4. […]</td>
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<td><u>[...]</u></td>
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<tr>
<td></td>
<td>CA 8
ANNEX V a
<u>Minimum criteria to be included in energy audits and</u></td>
<td></td>
</tr>
</table>

[10] General Lighting Service or tungsten filament lamps
[11] General Lighting Service or tungsten filament lamps

	energy management systems	
	The energy audits and energy management systems referred to in Article 7, shall observe the following guiding principles: ***1. contain a clear energy policy at enterprise and site level, with action plans that include investments, budgets and operations, together with clear lines of responsibility and accountabilities for energy consumption and improved energy performance, reaching into top management levels;***	
	2. have clearly defined objectives designed to improve and maintain the energy performance of enterprises as well as households at economically optimal levels while respecting environmental loads and technical feasibility. Energy audits for small and medium-sized enterprises (SMEs) and households are normally less complex than those for larger enterprises and larger buildings. However, the general quality criteria set out in this annex apply equally well to the energy audits for SMEs and households;	
	3. be based on up-to-date measured operational data on energy consumption and load profiles (for electricity), storable for historical analysis and for tracking performance. The audits shall have scopes based on energy flows into and out of the overall system boundaries of the enterprises, sites and buildings in question; they shall thus include total site energy consumption, as well as individual process, service and technical equipment and system consumption, together with classes of energy (steam, fuel, electricity), as well as past, current and projected energy and operational costs; data shall be adjusted for extraneous influences such as weather conditions, industrial throughput, etc.;	

	4. build, whenever possible, on life-cycle cost analysis (LCCA), instead of Simple Payback Periods (SPP), in order to take account inter alia of long-term savings, residual values of long-term investments and discount rates; ***The selection and dimensioning of all new and replacement energy-using equipment, processes and other energy-saving measures shall include economic, behavioural and technical analysis, as well as proposals and plans for follow-ups and verification of the impacts of measures once they are implemented. Other possible non-energy gains, such as productivity increases and lower maintenance costs shall also be reported, as well as technical interactions and synergies between combined measures.***	
	6. Energy audits and energy management systems and their recommendations shall build on reviews of enterprise, building, site, system and process status, comparing these to applicable benchmarking and best practice schemes, as well as to continually updated lists of Best Available Techniques (BAT in IPPC brefs, for example) for the sector and sub-sector in question.	
	7. Measures currently used or proposed to improve energy performance shall in no way compromise existing health and safety regulations such as indoor climate and fire safety during implementation, operation and occupancy, or other regulatory constraints.	
	8.The use of EN ISO 50001 (Energy Management Systems)or pr EN 16247-1 (energy Audits) may be recognized as a means of fulfilling the requirements set out in Article 7 of this Directive, provided the standard's application in enterprises and buildings also meets the criteria set out in paragraphs 1 – 12 of this	

	Annex.	
	The energy audits shall also: ***1. be representative in order to collect reliable and relevant data and replicable, as well as proportionate, traceable and verifiable. Member States shall put in place a scheme to assure and check their quality and to impose sanctions if needed;***	
	2. be of sufficient quality and include detailed and validated economic calculations for the proposed measures so as to provide potential investors (internal and external) and fiscal and financial authorities with clear information on potential savings, cash flows and net present values of the measures and packages of measures proposed, and the technical and financial risks involved.	
	CA 7 ***ANNEX V b*** ***Minimum requirements for measurement and verification of energy savings under Article 6***	
	1. The energy savings potential is to be calculated per sector.	
	2. Savings effects are to be calculated per suggested measure under a bottom up approach, distinguishing between existing, new and planned measures.	
	3. The total savings effects of all measures are to be correlated to the national target, in line with the applied sectoral structure.	
	4. Annual savings are monitored based on statistical data and compared to the target.	
	5. When the monitoring shows deviations from the path for target achievement, measures are to be monitored	

	individually and adjusted accordingly.	
ANNEX VI **Minimum requirements for metering of individual energy consumption and the frequency of billing based on actual consumption**	**CA 9** ***Minimum requirements for metering of individual energy consumption and the frequency of billing information based on actual consumption***	**ANNEX VI** **Minimum requirements for metering of individual energy consumption and the frequency of billing based on actual consumption**
1. Minimum requirements for metering of individual energy consumption **1.1. Individual meters** When an individual meter is installed, Member States shall ensure that it is connected to an interface which provides secure communication to the final customer, enabling the meter to export private metrological data to the final customer or a third party designated by the final customer.	1.Minimum requirements for metering of individual energy consumption 1.1. Individual meters When an individual ***smart*** meter is installed, Member States shall ensure that it is connected to an interface which ***displays and securely transmits accurate consumption*** data to the final customer or a third party designated by the final customer. ***The data shall be handled in a secure way and consumer privacy shall be protected in compliance with the relevant EU data protection and privacy legislation.***	**1. […]** **1.1. […]**
The interface shall provide private information enabling final customers to better control their energy consumption and use the information for further potential analysis. Such information shall at least indicate the current rate of consumption (e.g. kWh, kJ, m^3) and related costs and be communicated in a format that promotes consumer action in energy efficiency.	The interface shall provide information enabling final customers to better control ***and reduce*** their energy consumption***. This*** information ***can then be used*** for further potential analysis ***and advice by a third party designated by the final customer safeguarding the privacy of the latter***. Such information shall at least indicate the current rate of consumption (e.g. kWh, kJ, m3) and related costs and be communicated in a format that promotes consumer action in energy efficiency.	
The National Regulatory Authority shall ensure that the interface also provides public data that allows the final customer to consult and use the applicable time-of-use tariffs with real-time pricing, peak time pricing and peak time rebates.	***They*** shall also ***provide*** public data that allows the final customer to consult and use the applicable time-of-use tariffs with real-time pricing, peak time pricing and peak time rebates. ***The smart metering infrastructure shall support two-way communication interfaces for the provision of energy efficiency and demand side management***	

	services, such as home automation and demand response programmes that allow the final consumer to react to price signals and adapt energy consumption. Member States shall require that these interfaces are interoperable. ***Member States shall ensure that interfaces are accessible to consumers with disabilities, where appropriate.***	
The private data exported through the interface shall offer the final customer a possibility to consult his/her historic consumption levels (in local currency and in kWh, kJ or m3):	The private consumption data securely transmitted through the two-way information interface shall offer the final customer a possibility to consult his/her historic consumption levels over a range of time periods (in local currency and in kWh, kJ or m3):	
a) in the last seven days, day by day; b) in the last complete week; c) in the last complete month; d) in the same complete month the previous year; e) in the last complete year. The historic periods shall match the billing periods for consistency with household bills.	(a) in the last seven days, day by day; (b) in the last complete week; (c) in the last complete month; (d) in the same complete month the previous year; (e) in the last complete year.	
Complementary information on historical consumption (any day, week, month, year from the start-up of intelligent metering) and other useful information allowing for more detailed self-checks by the consumer (e.g. graphic evolutions of individual consumption; benchmarking information, cumulative consumption/savings/spendings from the beginning of each contract, proportion of the individual consumption from renewable sources of energy and related CO2 savings, etc) shall be made easily accessible either directly through the interface or via the internet.	Complementary information on historical consumption (any day, week, month, year from the start-up of intelligent metering) and other useful information allowing for more detailed self-checks by the consumer shall be made easily accessible either directly through the interface such as an in-home display or via the internet.	
1.2. Heat cost allocators Heat cost allocators shall be equipped with clearly legible displays allowing the final customer to consult the current	1.2. Heat cost allocators ***Where*** heat cost allocators ***are used, they*** shall be equipped with clearly legible displays allowing the final	**1.2. […]**

rate of consumption as well as historic consumption levels. The historic periods displayed by the heat cost allocator shall match the billing periods.	customer to consult the current rate of consumption as well as historic consumption levels. The historic periods displayed by the heat cost allocator shall match the billing periods.	
2. Minimum requirements for billing **2.1 Frequency of billing based on actual consumption** In order to enable final customers to regulate their own energy consumption, billing on the basis of actual consumption shall be performed with the following frequency: a) On a monthly basis for electricity consumption.	2. Minimum requirements for billing 2.1 Frequency of billing ***information*** based on actual consumption In order to enable final customers to regulate their own energy consumption, billing ***information*** on the basis of actual consumption shall be performed with the following frequency: (a) On a monthly basis for electricity consumption.	**2. Minimum requirements for billing** **2.1 […] Billing based on actual consumption** In order to enable final customers to regulate their own energy consumption**, billing should take place on the basis of actual consumption at least once a year. […]** **[…]**
b) At least every two months for the consumption of natural gas. Where gas is used for individual heating, billing shall be provided on a monthly basis.	(b) At least every two months for the consumption of natural gas. Where gas is used for individual heating, billing ***information*** shall be provided on a monthly basis,	
c) With centralised heating and cooling, billing shall be provided on a monthly basis during the heating/cooling season.	(c) With centralised heating and cooling ***where individual meters are installed***, billing ***information based on actual consumption*** shall be provided on a monthly basis during the heating/cooling season. ***Where billing is based on heat cost allocation, monthly harmonized bills shall be balanced at least yearly.***	
d) At least every two months for hot water billing.	(d) ***Where technically feasible and appropriate, at*** least every two months for hot water billing ***information or, if provided by the same central system, with the same frequency as under (c)***.	
Billing based on the measurement of heat consumption using heat cost allocators shall be accompanied with explanations of the numbers available through displays of heat cost	Billing ***information*** based on the measurement of heat consumption using heat cost allocators shall be accompanied with explanations of the numbers available through displays of heat cost allocators, taking into	

allocators, taking into account the standard characteristics of heat cost allocators (EN 834)12.	account the standard characteristics of heat cost allocators (EN 834)[44] .	
2.2. Minimum information contained in the bill Member States shall ensure that the following information is made available to final customers in clear and understandable terms in or with their bills, contracts, transactions, and receipts at distribution stations: (a) current actual prices and actual consumption of energy; (b) comparisons of the final customer's current energy consumption with consumption for the same period in the previous year, preferably in graphic form; (c) comparisons with an average normalised or benchmarked final customer in the same user category; (d) contact information for final customers' organisations, energy agencies or similar bodies, including website addresses, from which information may be obtained on available energy efficiency improvement measures, comparative end-user profiles and objective technical specifications for energy-using equipment.	2.2. Minimum information contained in the bill Member States shall ensure that the following information is made available to final customers in clear and understandable terms in or with their bills, contracts, transactions, and receipts at distribution stations: (a) current actual prices and actual consumption of energy (b) comparisons of the final customer's current energy consumption with consumption for the same period in the previous year, preferably in graphic form; (c) comparisons with an average normalised or benchmarked final customer in the same user category; (d) contact information for final customers' organisations, energy agencies or similar bodies ***that are independent and accredited***, including website addresses, from which information may be obtained on available energy efficiency improvement measures, comparative end-user profiles and objective technical specifications for energy-using equipment. ***Member States shall ensure that a summary box containing the following information is included on the front of each gas and electricity bill:*** ***(a) The exact tariff name;*** ***(b) The amount of energy used;*** ***(c) The rate of gas and/or electricity per kWh and how this is broken down on a daily basis;***	**2.2. Minimum information contained in the bill** Member States shall ensure that**, where appropriate,** the following information is made available to final customers in clear and understandable terms in or with their bills, contracts, transactions, and receipts at distribution stations: (a) current actual prices and actual consumption of energy; (b) comparisons of the final customer's current energy consumption with consumption for the same period in the previous year, preferably in graphic form; (c) **[…]** (d) contact information for final customers' organisations, energy agencies or similar bodies, including website addresses, from which information may be obtained on available energy efficiency improvement measures, comparative end-user profiles and objective technical specifications for energy-using equipment. **In addition, wherever possible and useful, Member States shall ensure that the following information is made available to final customers in clear and understandable terms, in, with or signposted to within, their bills, contracts, transactions, and receipts at distribution stations:** **(e) comparisons with an average normalised or benchmarked final customer in the same user**

[12] EN 834 Standard on heat cost allocators for the determination of the consumption of room heating radiators - appliances with electrical energy supply.

	(d) How the cost has been calculated; ***(e) Any discounts the customer is benefiting from and when the discounts end;*** ***(f) Any fees the customer will have to pay if he/she changes supplier***	**category.**
2.3 Advice on energy efficiency accompanying bills and other feedback to final customers When sending contracts and contract changes, and in the bills customers receive or through websites addressing individual customers, energy distributors, distribution system operators and retail energy sales companies shall inform their customers in a clear and understandable manner of contact information for independent consumer advice centres, energy agencies or similar institutions, including their internet addresses, where they can obtain advice on available energy efficiency measures, benchmark profiles for their energy consumption and technical specifications of energy using appliances that can serve to reduce the consumption of these appliances.	2.3. Advice on energy efficiency accompanying bills and other feedback to final customers When sending contracts and contract changes, and in the bills customers receive or through websites addressing individual customers, energy distributors, distribution system operators and retail energy sales companies shall inform their customers in a clear and understandable manner of contact information for independent consumer advice centres, energy agencies or similar institutions, including their internet addresses, where they can obtain advice on available energy efficiency measures, benchmark profiles for their energy consumption and technical specifications of energy using appliances that can serve to reduce the consumption of these appliances.	**2.3 Advice on energy efficiency accompanying bills and other feedback to final customers** When sending contracts and contract changes, and in the bills customers receive or through websites addressing individual customers, energy distributors, distribution system operators and retail energy sales companies shall inform their customers in a clear and understandable manner of contact information for independent consumer advice centres, energy agencies or similar institutions, including their internet addresses, where they can obtain advice on available energy efficiency measures, benchmark profiles for their energy consumption and technical specifications of energy using appliances that can serve to reduce the consumption of these appliances.
ANNEX VII **Planning for efficiency in heating and cooling**		**ANNEX VII** **Potential for efficiency in heating and cooling**
1. The national heating and cooling plans referred to in Article 10(1) shall include: (a) a description of heating and cooling demand; (b) a forecast of how this demand will change in the next 10 years, taking into acccount in particular the evolution of demand in buildings and the different sectors of industry;	1.The national heating and cooling ***roadmaps*** referred to in Article 10(1) shall include: (a) a description of heating and cooling demand; (b) a forecast of how this demand will change in the next 10 years, taking into acccount in particular the evolution of demand in buildings and the different sectors of industry;	1. The **assessment of** national heating and cooling **potentials** referred to in Article 10(1) shall include: (a) a description of heating and cooling demand; (b) a forecast of how this demand will change in the next 10 years, taking into account in particular the evolution of demand in buildings and the different sectors of industry; (c) a map of the national territory, identifying, **while preserving commercially sensitive information**: : (i) heating and cooling demand points, including: - municipalities and conurbations with a plot

		ratio of at least 0.3; and - industrial zones with a total annual heating and cooling consumption of more than 20 GWh;
(c) a map of the national territory, identifying: (i) heating and cooling demand points, including: – municipalities and conurbations with a plot ratio of at least 0.3; and – industrial zones with a total annual heating and cooling consumption of more than 20 GWh;	(c) a map of the national territory, identifying: (i) ***significant*** heating and cooling demand points.	
(ii) existing and planned district heating and cooling infrastructure;	(ii) existing and planned district heating and cooling infrastructure;	(ii) existing and planned district heating and cooling infrastructure;
(iii) potential heating and cooling supply points, including: – electricity generation installations with a total annual electricity production of more than 20 GWh; and – waste incineration plants; – existing and planned cogeneration installations, classified according to Annex VII, and district heating installations.	(iii) ***significant*** potential heating and cooling supply points.	(iii) potential heating and cooling supply points, including: - electricity generation installations with a total annual electricity production of more than 20 GWh; and - waste incineration plants; - existing and planned cogeneration installations, classified according to Annex VII, and district heating installations.
(d) identification of the heating and cooling demand that could be satisfied by high-efficiency cogeneration, including residential micro-cogeneration, and by district heating and cooling;	(d) identification of the heating and cooling demand that could be satisfied by high-efficiency cogeneration, including ***a specific section on*** residential micro-cogeneration, ***where appropriate***, and by district heating and cooling; ***setting of high-efficiency cogeneration targets for 2020 and corresponding intermediate targets and of district heating and cooling promotion areas which cost-benefit analysis have identified***	(d) identification of the heating and cooling demand that could be satisfied by high-efficiency cogeneration, including residential micro-cogeneration, and by district heating and cooling;

	cogeneration potentia;	
(e) identification of the potential for additional high-efficiency cogeneration, including from the refurbishment of existing and the construction of new generation and industrial installations or other facilities generating waste heat;	(e) identification of the potential for additional high-efficiency cogeneration, including from the refurbishment of existing and the construction of new generation and industrial installations or other facilities generating waste heat;	(e) identification of the potential for additional high-efficiency cogeneration, including from the refurbishment of existing and the construction of new generation and industrial installations or other facilities generating waste heat;
(f) measures to be adopted up to 2020 and up to 2030 to realise the potential in (e) in order to meet the demand in (d), including:	(f) measures ***which may be taken*** up to 2020 and up to 2030 to realise the potential in (e) in order to meet the demand in (d), including:	**(f) identification of energy efficiency potentials of district heating and cooling infrastructure;** **(g) a strategic assessment of the technical and economic potential for appropriate** measures **that may** be adopted up to 2020 and up to 2030 to realise the potential in (e) in order to meet the demand in (d), including**, where appropriate, proposals to**:
(i) measures to increase the share of cogeneration in heating and cooling production and in electricity production; and	(i) measures to increase the share of cogeneration in heating and cooling production and in electricity production; and	(i) **[…]** increase the share of cogeneration in heating and cooling production and in electricity production; **[…]**
(ii) measures to develop efficient district heating and cooling infrastructure to accommodate the development of high-efficiency cogeneration and the use of heating and cooling from waste heat and renewable energy sources;	(ii) measures to develop efficient district heating and cooling infrastructure to accommodate the development of high-efficiency cogeneration and the use of heating and cooling from waste heat and renewable energy sources; ***(iia) measures to ensure that new thermal electricity generation installations and industrial plants producing useful heat are located in sites where a maximum amount of the available useful heat will be recovered to meet existing or forecasted heat and cooling demand;*** ***(iib) measures to ensure that new residential zones or new industrial plants which consume heat in their production processes are located in sites where a maximum amount of their heat demand will be met by***	(ii) **[…]** develop efficient district heating and cooling infrastructure to accommodate the development of high-efficiency cogeneration and the use of heating and cooling from waste heat and renewable energy sources; **(iii) encourage new thermal electricity generation installations and industrial plants producing waste heat to be located in sites where a maximum amount of the available waste heat will be recovered to meet existing or forecasted heat and cooling demand;** **(iv) encourage new residential zones or new industrial plants which consume heat in their production processes to be located where available waste heat, as identified in the comprehensive assessment, can contribute to**

	the available useful heat, as identified in the assessment, including the clustering of a number of industrial plants in the same location with a view to ensuring an optimal matching between demand and supply for heat and cooling; ***(iic) measures to ensure that thermal electricity generating installations, industrial plants producing useful heat, waste incineration plants and other waste-to-energy plants are connected to the local district heating or cooling network;*** ***(iid) measures to ensure that residential zones and industrial plants which consume heat in their production processes are connected to the local district heating or cooling network.***	**meeting their heat and cooling demands. This could include proposals that support the clustering of a number of individual installations in the same location with a view to ensuring an optimal matching between demand and supply for heat and cooling;** **(v) encourage thermal electricity generating installations, industrial plants producing waste heat, waste incineration plants and other waste-to-energy plants to be connected to the local district heating or cooling network;** **(vi) encourage residential zones and industrial plants which consume heat in their production processes to be connected to the local district heating or cooling network.**
(g) the share of high efficiency cogeneration and the potential established and progress achieved under Directive 2004/8/EC.	(g) the share of high efficiency cogeneration and the potential established and progress achieved under Directive 2004/8/EC.	(**h**) the share of high efficiency cogeneration and the potential established and progress achieved under Directive 2004/8/EC.
(h) an estimate of the primary energy to be saved;	(h) an estimate of the primary energy to be saved;	(**i**) an estimate of the primary energy to be saved;
(i) an estimate of public support measures to heating and cooling, if any, with the annual budget and identification of the potential aid element. This does not prejudge a separate notification of the public support schemes for a State aid assessment.	(i) an estimate of public support measures to heating and cooling, if any, with the annual budget and identification of the potential aid element. This does not prejudge a separate notification of the public support schemes for a State aid assessment.	(**j**) an estimate of public support measures to heating and cooling, if any, with the annual budget and identification of the potential aid element. This does not prejudge a separate notification of the public support schemes for a State aid assessment.
2. To the extent appropriate, the plan may be made up of an assembly of regional or local plans.	2. To the extent appropriate, the ***roadmap*** may be made up of an assembly of regional or local ***heating and cooling*** plans.	2. To the extent appropriate, the plan may be made up of an assembly of regional or local plans.
3. Urban spatial plans shall be designed to ensure that: a) new thermal electricity generation installations and industrial plants producing waste heat are located in sites where a maximum amount of the available waste heat will be recovered to meet existing or forecasted heat and cooling	***deleted***	**[…]**

demand; b) new residential zones or new industrial plants which consume heat in their production processes are located in sites where a maximum amount of their heat demand will be met by the available waste heat, as identified in national heating and cooling plans. To ensure an optimal matching between demand and supply for heat and cooling, spatial plans shall favour the clustering of a number of industrial plants in the same location; c) thermal electricity generating installations, industrial plants producing waste heat, waste incineration plants and other waste-to-energy plants are connected to the local district heating or cooling network; d) residential zones and industrial plants which consume heat in their production processes are connected to the local district heating or cooling network.		
ANNEX VIII **Guidelines for siting of thermal electricity installations and industrial installations**	***deleted***	[…]
1. Siting of thermal electricity generation installations as referred in Article 10(3) and (6) Where a heat demand point of the capacity given in the column C exists or there is a potential heat demand point, the power plant must be located at less than the corresponding distance in column A. A potential heat demand point is defined as one where it can be shown that one can reasonably be created, for example by constructing a district heating network. For example, using standard estimation techniques, if an aggregate heat load in excess of 15 MW / km^2 can be shown to exist, this is deemed to be a heat demand point. The total sum of such connectible km square loads shall be deemed to be the demand capacity of such heat demand points.		

Distance A is a pipeline route, not a straight line, along which it is considered feasible by engineering experts using standard estimating techniques such as quantity surveying, to construct a water carrying pipeline of the corresponding size at moderate cost. This excludes obstacles such as mountain ranges, city centres, difficult river or sea crossings etc.

A	B	C
Maximum distance between proposed electricity installation and heat demand point	Power station electrical Capacity	Heat demand point estimated annual consumption
< 100 km	> 1999* MWe	> 7500 TJ/year
< 65 km	>500	>1875 TJ/year
< 15 km	> 20 MW	> 50 TJ/year

* New plant will operate typically at 90% load factor.

2. Siting of industrial waste heat sources referred to in Article 10(8).

A	B	C
Maximum distance between proposed electricity installation and heat demand point	Power station electrical Capacity	Heat demand point estimated annual consumption
< 100 km	> 1999* MWe	> 7500 TJ/year
< 65 km	>500	>1875 TJ/year
< 15 km	> 20 MW	> 50 TJ/year

	ANNEX VIII a ***Basic guidelines for use of cost-benefit analysis to be used under Article 10***	**ANNEX VIIIbis** **Cost-benefit analysis**
	Cost-benefit analysis shall respect a comprehensive set of guiding principles for project evaluation within the energy sector. The guidelines shall cover important aspects of the evaluation process such as the setting up a baseline scenario, identification of alternative scenarios, time horizon, and the use of sensitivity	**Part 1: General principles of the cost-benefit analysis** **The purpose of preparing cost benefit analyses - in relation to measures for promoting efficiency in heating and cooling as referred to in Article 10,**

	analysis. The guidelines shall also make use of the relevant welfare economic theory when it comes to the correct method for the valuation of both market and non-market goods and services. ***The guidelines shall contain a set of projected energy prices. It is recommended that these prices are used when doing cost benefit analysis related to e.g. heat planning. They shall include projected annual prices for different kinds of energy input, output, taxes and the welfare economic price of air pollutants at least until the years 2020 and 2030. They are updated each year based on data from different data sources (among which are the International Energy Agency) and, model simulation while taking into account changes in government policies.*** ***The guidelines shall also ensure that any solution chosen actually contributes to real reductions in primary energy savings terms and shall also be based on socio-economic criteria.*** ***The geographical area covered in the cost-benefit analysis shall be sufficiently broad to avoid distortion in the assessment of any specific project.***	**paragraph 1a, 3, 6 and 8 – is to provide a decision base for qualified prioritisation[…] of limited resources at society level.** **The cost-benefit analysis may either cover a project assessment of a group of projects for a broader local, regional or national assessment in order to establish the most cost-effective and beneficial heating or cooling option for a given geographical area for the purpose of heat planning […]. Part 1 of this annex shall apply in both cases. Part 2 shall apply only to broader assessments. Part 3 shall apply only to individual project assessments.** **[…] Cost-benefit analyses for the purposes of Article 10 shall include an economic analysis covering socio-economic and environmental factors and a financial analysis reflecting actual cash flow transactions from investing in and operating individual installations. The economic analyses shall be used in decision making for all analyses referred to in Article 10.** **[…]** **The cost-benefit analyses shall include the following steps and considerations:** **a) Establishing a system boundary and geographical boundary** **The scope of the cost-benefit analyses in question determines the relevant energy system. The geographical boundary […] shall cover a suitable well-defined geographical area, e.g. a given region or metropolitan area, to avoid selecting sub-optimized solutions on a project by project basis.**

		b) Integrated approach to demand and supply options **The cost-benefit analysis shall take into account all relevant supply resources available within the system and geographical boundary, including waste heat from electricity generation and industrial installations and renewable energy, and the characteristics of and trends in heat and cooling demand.** **c) Constructing a baseline** **The purpose of the baseline […] is to serve as a reference point, to which the alternative scenarios are evaluated.** **(i) The baseline […] shall (to the extent necessary depending on the scope of the cost-benefit analyses) account for foreseen developments in the economy, demographic development, forecast of the heated/cooled area and heat demand, detailed on different purposes as relevant, price of energy input, and technologies applied over the relevant time horizon of the project.** **(ii) The description of the baseline […] shall account for conditions that are uncertain and assumptions that have been made within the baseline scenario.** **d) Identifying alternative scenarios** **All relevant alternatives to the baseline […] shall be considered. Scenarios that are not feasible due to technical reasons, financial reasons, national regulation or time constraints may be excluded at an early stage of the cost benefit analysis if justified based on careful, explicit and well-documented considerations.**

		Only high-efficiency cogeneration, efficient district heating and cooling or efficient individual heating/cooling supply options as defined in Article 2 should be taken into account in the cost-benefit analysis as alternative scenarios compared to the baseline. **[…]** **e) Method for the calculation of cost-benefit surplus** (i) **The total long-term costs and benefits of heat or cooling supply options shall be assessed and compared.** (ii) **The […] criterion for evaluation shall be the net present value (NPV) criterion. Project shall be acceptable if the sum of discounted benefits in the economic analysis exceeds the sum of discounted costs (cost-benefit surplus).** (iii) **The time horizon shall be chosen such that all relevant costs and benefits of the scenarios are included. As a rule of thumb, the project planning period should be at least 25 years.** **f) Calculation and forecast of prices and other assumptions** **[…]** **(i) Member States shall provide assumptions, for the purpose of the cost-benefit analyses, on the prices of major input and output factors and the discount rate.** **[…]** **(ii) The discount rate used in the economic analysis for the calculation of net present value shall be chosen according to European or national**

		guidelines[13] after having performed a sensitivity analysis on at least two different rates, one of which shall be 3% expressed in real terms. **(iii) Member States shall establish national energy price development forecasts for oil, gas, coal, electricity and other fuels and energy sources, such as bio-energy in all its aggregations, LPG, district heating and cooling and peak load tariffs - if appropriate in their national and or regional/local context. Future fuel and energy prices should follow official national or European projections.** **[…]** **(iv) The prices used in the economic analysis shall reflect the true socio economic costs and benefits and should include external costs, such as the cost resulting from greenhouse gas emissions. Environmental effects shall be quantified to the extent possible, and economic values should be attached to them where feasible.[…]** **(v) Market prices shall be used in economic analysis when available. When a market price is not available or […] the market price systematically deviates from the social value, a valuation technique under a relevant well-established welfare economic theory to establish a surrogate market price or determining the true social value of the good or service shall be used. Such correction may be needed to:** **a. Adjust[…] the market price for sunk costs which are not part of the social cost.** **b. Adjust[…] the market price for social cost/value of non-market effect, e.g. environmental**

[13] **The national discount rate chosen for the purpose of economic analysis should take into account data provided by the European Central Bank.**

		and health effects not captured by the market price[14]unless such costs are already internalised by public policy. e.g. tax or quota systems. **c. Translate[…] factor input prices into consumer prices by taking account of consumer taxes.** **(vi) The prices used in the financial analysis should reflect the actual cash flows transaction related to the project.** **[…]** **g) Economic analysis: Inventory of effects** **The economic analyses shall take into account all relevant economic effects such as investment costs, fuel costs and operational costs as well as environmental and health effects stemming either directly or indirectly from the proposed measure.** **Member States may assess and take into account in decision making costs and energy savings from the increased flexibility in energy supply and from a more optimal operation of the electricity networks in the analysed scenarios.** **The costs and benefits taken into account shall include at least the following:** **(i) Benefits** **a. Value of output to the consumer (heat and electricity)** **b. Environmental and health benefits**

[14] **Care shall be exercised when taking into account environmental and health costs to ensure methodological consistency and avoid double counting of costs as well as benefits.**

		(ii) Costs **a. Capital costs of plants and equipments […]** **b. Capital costs of the associated energy networks including the costs of building and upgrading or reinforcing the energy (electricity, gas, district heating and cooling, etc.) networks, the cost of land, and the costs of network connection and access.** **c. Variable and fixed operating costs […], including maintenance cost, energy cost and the cost of water, the cost of waste elimination and land use and the cost of periodic replacement of components […].** **d. Energy costs taking into account annual variable costs for energy and annual fixed charges for energy reflecting the cost of needed production and network capacity.** **e. Environmental and health cost […]** **f. External costs internalised through a market-based mechanisms or through a valuation technique under a welfare economic theory […].** **(iii) Financial analysis: Inventory of cash flow items** **The financial analysis shall take into account all costs and benefits that affect the actual cash flow streams (income, revenue and expenditure) of a project or project assessed under Article 10(1a), (3), (6) and (8), covering at least the impact of different energy price developments and discount rates.** **h) Sensitivity analysis:** **A sensitivity analysis shall be included to assess the**

		costs and benefits of a project or group of projects based on different energy prices, discount rates and other variable factors having a significant impact on the outcome of the calculations. **The Member States shall designate the competent authorities responsible for carrying out the cost-benefit analyses under Article 10. They may require competent local, regional and national authorities or operators of individual installations to carry out the economic and financial analysis. They shall provide the detailed methodologies and assumptions in accordance with this Annex and establish and make public the procedures for the cost-benefit analysis.** **Part 2: Additional principles for the purpose of Article 10(1) and (1a)** **For the purposes of the comprehensive assessment referred to in Article 10(1) and taking into account Annex VII.2, Member States may provide that the relevant local, regional and national authorities, competent in implementing the measures falling under Article 10, shall be responsible for carrying out the cost-benefit analysis relating to a geographical areas under their responsibility, which may be a municipality, an urban district, a department, a region or a part of these or the entire national territory.** **Financial analyses at national, regional and local**

		level for the purposes of Article 10(1a) shall include financial analyses of those parties who may be financially influenced by the considered options, e.g. current or potential heating and cooling suppliers, heating and cooling consumers and public entities, such as municipalities, local and regional authorities or the State. **High-efficiency cogeneration and/or the use of efficient district heating and cooling shall be considered first in the cost-benefit analysis. In identifying the potential referred to in Article 10(1) and Annex VII, the following step-wise procedure shall be applied:** **The cost-benefit analysis should be applied first to areas with the most significant heat and cooling demand points identified under Annex VII.(1)(c)(i) to assess the feasibility of efficient district heating and cooling and/or high-efficiency cogeneration. The assessed area shall gradually be extended outwards from the centre until the incremental peripheral addition to the area supplied from a heat supply point identified under Annex VII.(1)(c)(ii) and (iii) using high-efficiency cogeneration and/or efficient district heating and cooling networks no longer meets the cost-benefit surplus test. This procedure shall be deemed to define the largest extent of a heat supply area supplied by that particular high-efficiency cogeneration installation and/or efficient district heating and cooling network.** **The same step-wise procedure shall then be applied to the areas with the next remaining largest heat and cooling demand points, and the process repeated until all clusters with a significant heat demand point have been covered or rejected**

		by the methodology by not meeting the cost-benefit surplus test. **The total areas suitable for efficient district heating and cooling and high-efficiency cogeneration revealed by this process shall then be compared with the total peak heat output of potential heating and cooling supply points available from power generation waste heat and industrial waste heat, and the total areas suitable for high-efficiency cogeneration and/or efficient district heating and cooling shall be reduced if necessary to reflect the available supply.** **In the areas that fall outside those defined by the analysis described in the previous three paragraphs, efficient individual heating and cooling options, including micro-cogeneration, shall then be assessed and compared.** **Part 3: Additional principles for the purpose of Article 10(3), (6) and (8)** **In addition to Part 1, the cost-benefit analyses assessing the feasibility of an individual installation under Article 10(3) or (6) or (8) shall include the following steps and considerations:** **If an electricity-only installation or an installation without heat recovery is planned, a comparison shall be made between the planned installations and an equivalent installation producing the same amount of electricity or process heat, but recovering the waste heat and supplying heat through high efficiency cogeneration and/or district heating and cooling**

		networks. **The system and geographical boundary shall in all assessed options be set at the level which includes the planned installation and at least one appropriate existing or potential heat demand point that could be supplied from it. […]** **In determining what options to compare […] with the planned case, account shall be take of the results of the comprehensive assessment under Article 10(1) and (1a) […].** **The cost-benefit analysis shall be based on a description of the planned installation and the comparison installation(s), covering electrical and thermal capacity, as applicable, fuel type, planned usage and the number of planned operating hours annually, […] location and electricity and thermal demand […]. For the purpose of the comparison, the thermal energy demand and the types of heating and cooling used by the nearby heat demand points, as assessed under Article 10(1) and (1a) shall be taken into account.** **Member States may require that the companies responsible for the operation of thermal electric generation installations, industrial companies, district heating and cooling networks, or other parties influenced by the defined system boundary and geographical boundary, contribute data for use in assessing the costs and benefits of an individual installation.** **The cost-benefit analysis shall include consultation of relevant parties concerning the construction of**

		the baseline and the choice of alternative scenarios. These parties shall be those who may form part of the same heating/cooling market as the preferred solution, e.g. by being current or potential heating/cooling suppliers. **If the NPV-criterion is positive for the economic analysis and negative for the financial analysis, the relevant authorities shall, in conjunction with the investors in the specific installations, investigate what initiatives can be taken to bring the results of the financial analysis in line with the economic analysis.**
ANNEX IX **Guarantee of origin for electricity produced from high efficiency cogeneration**		**ANNEX IX** **Guarantee of origin for electricity produced from high efficiency cogeneration**
a) Member States shall take measures to ensure that: i) the guarantee of origin of the electricity produced from high-efficiency cogeneration: – enable producers to demonstrate that the electricity they sell is produced from high-efficiency cogeneration and is issued to this effect in response to a request from the producer; – is accurate, reliable and fraud-resistant; – is issued, transferred and cancelled electronically; ii) the same unit of energy from high-efficiency cogeneration is taken into account only once.		a) Member States shall take measures to ensure that: i) the guarantee of origin of the electricity produced from high-efficiency cogeneration: - enable producers to demonstrate that the electricity they sell is produced from high-efficiency cogeneration and is issued to this effect in response to a request from the producer; - is accurate, reliable and fraud-resistant; - is issued, transferred and cancelled electronically; ii) the same unit of energy from high-efficiency cogeneration is taken into account only once.
b) The guarantee of origin referred to in Article 10(7)		b) The guarantee of origin referred to in Article 10(**10**) shall contain at least the following

shall contain at least the following information: – the identity, location, type and capacity (thermal and electrical) of the installation where the energy was produced; – the dates and places of production; – the lower calorific value of the fuel source from which the electricity was produced; – the quantity and the use of the heat generated together with the electricity; – the quantity of electricity from high efficiency cogeneration in accordance with Annex II that the guarantee represents; – the primary energy savings calculated in accordance with Annex II based on the harmonised efficiency reference values indicated in Annex II paragraph (f); – the nominal electric and thermal efficiency of the plant; – whether and to what extent the installation has benefited from investment support; – whether and to what extent the unit of energy has benefited in any other way from a national support scheme, and the type of support scheme; – the date on which the installation became operational; and – the date and country of issue and a unique identification number. The guarantee of origin shall be of the standard size of 1 MWh. It shall relate to the net electricity output measured at		information: - the identity, location, type and capacity (thermal and electrical) of the installation where the energy was produced; - the dates and places of production; - the lower calorific value of the fuel source from which the electricity was produced; - the quantity and the use of the heat generated together with the electricity; - the quantity of electricity from high efficiency cogeneration in accordance with Annex II that the guarantee represents; - the primary energy savings calculated in accordance with Annex II based on the harmonised efficiency reference values indicated in Annex II paragraph (f); - the nominal electric and thermal efficiency of the plant; - whether and to what extent the installation has benefited from investment support; - whether and to what extent the unit of energy has benefited in any other way from a national support scheme, and the type of support scheme; - the date on which the installation became operational; and - the date and country of issue and a unique identification number. The guarantee of origin shall be of the standard size of

the station boundary and exported to the grid.		1 MWh. It shall relate to the net electricity output measured at the station boundary and exported to the grid.
ANNEX X **Inventory of energy efficiency data of energy transformation installations**		[…]
The inventories referred to in Article 11 shall include: a) a non-nominative list of electricity only generation installations with a rated thermal input of 50 MW or more, indicating for each: – annual average installation electrical output (MW_e) and total rated thermal input (MW_{th}); – annual average primary fuel and fuel mix (if applicable); – plant type and technology employed at the installation; – design efficiency and its conditions; – operation start date; – date of last substantial refurbishment; – the number of annual average operating hours; – annual average net operational efficiency.		
b) a non-nominative list of heat only installations with a rated thermal input of 50 MW or more, indicating for each: – annual average installation thermal output and total rated thermal input (MW_{th});		

– annual average primary fuel and fuel mix (if applicable); – plant type and technology employed at the installation; – design efficiency and its conditions; – heat load configuration; – operation start date; – date of last substantial refurbishment; – the number of annual average operating hours; – annual average net operational efficiency;		
c) a non-nominative list of cogeneration installations with a rated thermal input of 50 MW or more, indicating for each: – annual average installations electrical and thermal output (MW_e and MW_{th}) and total rated thermal input (MW_{th}); – annual average primary fuel and fuel mix in accordance with Decision 2007/74/EC on harmonised reference values, if applicable; – plant type and technology employed at the installation in accordance with Annex VII; – design efficiency and its conditions; – the designed electricity-only and heat-only efficiencies;		

– annual average power to heat ratio; – operation start date; – date of last substantial refurbishment; – the number of annual average operating hours; – annual average net operational efficiency.		
d) a non-nominative list of <u>installations undertaking the refining of mineral oil and gas,</u> indicating for each: – annual average installation energy input (MW_{th}); – annual average installation energy output (energy content of the fuel mix, MW_{th}); – annual average feedstock; – plant type and technology employed at the installation; – design efficiency (theoretical); – operation start date; – date of last substantial refurbishment; – the number of annual average operating hours; – annual average net operational efficiency.		
<u>ANNEX XI</u> <u>Energy efficiency criteria for energy network regulation and for network tariffs set or approved by energy regulatory authorities</u>		**<u>Energy efficiency criteria for energy network regulation and for electricity network tariffs […]</u>**

1. Network tariffs shall accurately reflect electricity and cost savings in networks achieved from demand side and demand response measures and distributed generation, including savings from lowering the cost of delivery or of network investment and a more optimal operation of the network.		1. Network tariffs shall **be cost-reflective of cost-savings** in networks achieved from demand side and demand response measures and distributed generation, including savings from lowering the cost of delivery or of network investment and a more optimal operation of the network.
2. Network regulation and tariffs shall allow network operators to offer system services and system tariffs for demand response measures, demand management and distributed generation on organised electricity markets, in particular: a) the shifting of the load from peak to off-peak times by final customers taking into account the availability of renewable energy, energy from cogeneration and distributed generation; b) energy savings from demand response of distributed consumers by energy aggregators ; c) demand reduction from energy efficiency measures undertaken by energy service providers, including energy service companies ; d) the connection and dispatch of generation sources at lower voltage levels; e) the connection of generation sources from closer location to the consumption; and f) the storage of energy. For the purposes of this provision the term "organised electricity markets" shall include over-the-counter markets and electricity exchanges for trading energy, capacity, balancing and ancillary services in all timeframes, including		2. Network regulation and tariffs shall allow network operators to **make available** system services and system tariffs for demand response measures, demand management and distributed generation on organised electricity markets, in particular: a) the shifting of the load from peak to off-peak times by final customers taking into account the availability of renewable energy, energy from cogeneration and distributed generation; b) energy savings from demand response of distributed consumers by energy aggregators ; c) demand reduction from energy efficiency measures undertaken by energy service providers, including energy service companies ; d) the connection and dispatch of generation sources at lower voltage levels; e) the connection of generation sources from closer location to the consumption; and f) the storage of energy. For the purposes of this provision the term "organised electricity markets" shall include over-the-counter markets and electricity exchanges for trading energy, capacity, balancing and ancillary services in all timeframes, including forward, day-ahead and intra-

forward, day-ahead and intra-day markets.		day markets.
3. Network tariffs shall be available that support dynamic pricing for demand response measures by final customers, including: a) time-of-use tariffs; b) critical peak pricing; c) real time pricing; and d) peak time rebates.		3. Network tariffs shall be available that **allow the market to offer** dynamic pricing for demand response measures by final customers, **such as**: a) time-of-use tariffs; b) critical peak pricing; c) real time pricing; and d) peak time rebates.
ANNEX XII **Energy efficiency requirements for transmission system operators and distribution system operators**		**ANNEX XII** **Energy efficiency requirements for transmission system operators and distribution system operators**
Transmission and distribution system operators shall: a) set up and make public their standard rules relating to the bearing and sharing of costs of technical adaptations, such as grid connections and grid reinforcements, improved operation of the grid and rules on the non-discriminatory implementation of the grid codes, which are necessary in order to integrate new producers feeding electricity produced from high efficiency cogeneration into the interconnected grid; b) provide any new producer of electricity produced from high-efficiency cogeneration wishing to be connected to the system with the comprehensive and necessary information required, including: (i) a comprehensive and detailed estimate of the costs associated with the connection; (ii) a reasonable and precise timetable for receiving and processing the request for grid connection; (iii) a reasonable indicative timetable for any proposed grid		Transmission and distribution system operators shall: a) set up and make public their standard rules relating to the bearing and sharing of costs of technical adaptations, such as grid connections and grid reinforcements, improved operation of the grid and rules on the non-discriminatory implementation of the grid codes, which are necessary in order to integrate new producers feeding electricity produced from high efficiency cogeneration into the interconnected grid; b) provide any new producer of electricity produced from high-efficiency cogeneration wishing to be connected to the system with the comprehensive and necessary information required, including: (i) a comprehensive and detailed estimate of the costs associated with the connection; (ii) a reasonable and precise timetable for receiving and processing the request for grid connection; (iii) a reasonable indicative timetable for any proposed grid connection. The overall process to become connected to the grid should be no longer

connection. The overall process to become connected to the grid should be no longer than 12 months. (c) provide standardised and simplified procedures for the connection of distributed high efficiency cogeneration producers to facilitate their connection to the grid. The standard rules referred to in a) shall be based on objective, transparent and non-discriminatory criteria taking particular account of all the costs and benefits associated with the connection of those producers to the grid. They may provide for different types of connection.		than **24** months**, bearing in mind what is reasonably practicable and non-discriminatory**. (c) provide standardised and simplified procedures for the connection of distributed high efficiency cogeneration producers to facilitate their connection to the grid. The standard rules referred to in a) shall be based on objective, transparent and non-discriminatory criteria taking particular account of all the costs and benefits associated with the connection of those producers to the grid. They may provide for different types of connection.
ANNEX XIII **Mimimum items to be included in energy performance contracts with the public sector**		**ANNEX XIII** **Mimimum items to be included in energy performance contracts with the public sector or in the associated tender specifications**
• Clear and transparent list of the efficiency measures to be implemented • Guaranteed savings to be achieved by implementing the measures of the contract. • Duration and milestones of the contract, terms and period of notice. • Clear and transparent list of the obligations of each contracting party. • Reference date(s) to establish achieved savings. • Clear and transparent list of steps to be performed to implement a measure and associated costs. • Obligation to fully implement the measures in the contract and documentation of all changes made during the project. • Regulations specifying the inclusion of third parties (subcontracting). • Clear and transparent display of financial implications		• Clear and transparent list of the efficiency measures to be implemented **or the efficiency results to be obtained.** • Guaranteed savings to be achieved by implementing the measures of the contract. • Duration and milestones of the contract, terms and period of notice. • Clear and transparent list of the obligations of each contracting party. • Reference date(s) to establish achieved savings. • Clear and transparent list of steps to be performed to implement a measure **or package of measures** and associated costs. • Obligation to fully implement the measures in the contract and documentation of all changes made during the project. • Regulations specifying the inclusion of **equivalent requirements in any subcontracting with** third parties **[…]**.

of the project and distribution of the share of both parties in the monetary savings achieved (i.e. remuneration of the service provider). • Clear and transparent provisions on measurement and verification of the guaranteed savings achieved, quality checks and guarantees. • Provisions clarifying the procedure to deal with changing framework conditions that affect the content and the outcome of the contract (i.e. changing energy prices, use intensity of an installation). • Detailed information on the obligations of each of the contracting party.		• Clear and transparent display of financial implications of the project and distribution of the share of both parties in the monetary savings achieved (i.e. remuneration of the service provider). • Clear and transparent provisions on measurement and verification of the guaranteed savings achieved, quality checks and guarantees. • Provisions clarifying the procedure to deal with changing framework conditions that affect the content and the outcome of the contract (i.e. changing energy prices, use intensity of an installation). • Detailed information on the obligations of each of the contracting party **and of the penalties for their breach**.

ANNEX XIV General framework for reporting		ANNEX XIV General framework for reporting
PART 1. General framework for annual reports The annual reports referred to in Article 19(1) provide a basis for the monitoring of the progress towards national 2020 targets. Member States shall ensure that the reports include the following minimum information: a) an estimate of following indicators in the previous year: (i) primary energy consumption as defined in Article 2(2) (ii) total final energy consumption (iii) final energy consumption by sector • industry • transport (split between passenger and freight transport) • households • services (iv) gross value added by sector • industry • services (v) disposable income of households (vi) gross domestic product (GDP) (vii) electricity generation from thermal power generation (viii) heat generation from thermal power generation (ix) fuel input for thermal power generation (x) passenger kilometers (pkm) (xi) tonne kilometers (tkm) (xii) population		**PART 1. General framework for annual reports** The annual reports referred to in Article 19(1) provide a basis for the monitoring of the progress towards national 2020 targets. Member States shall ensure that the reports include the following minimum information: a) an estimate of following indicators in the **[…]** year **before last (year X[15]-2)**: (i) primary energy consumption as defined in Article 2(2) (ii) total final energy consumption (iii) final energy consumption by sector • industry • transport (split between passenger and freight transport**, if available**) • households • services (iv) gross value added by sector • industry • services (v) disposable income of households (vi) gross domestic product (GDP) (vii) electricity generation from thermal power generation **(vii bis) electricity generation from combined heat and power** (viii) heat generation from thermal power generation **(viii bis) heat generation from combined heat and power plants, including industrial waste heat** (ix) fuel input for thermal power generation (x) passenger kilometers (pkm)**, if available** (xi) tonne kilometers (tkm)**, if available**

[15] **To be understood as X=current year.**

In sectors where energy consumption remains stable or is growing, Member States shall analyse the reasons for it and attach their appraisal to the estimates.		**(xi bis) combined transport kilometres (pkm + tkm), in case (x) and (xi) are not available** (xii) population In sectors where energy consumption remains stable or is growing, Member States shall analyse the reasons for it and attach their appraisal to the estimates.
b) updates on major legislative and non-legislative measures implemented in the previous year which contribute towards the overall national energy efficiency targets for 2020. c) the total building floor area of the buildings with a total useful floor area over 250 m^2 owned by its public bodies that, on 1 January of the year in which the report is due, did not meet the energy performance requirements referred to in Article 4(1); d) the total building floor area owned by the Member States' public bodies that was renovated in the previous year. e) energy savings achieved through the national energy efficiency obligation schemes referred to in Article 6(1) or the alternative measures adopted in application of Article 6(9). The first report shall also include the national target referred to in Article 3(1).		b) updates on major legislative and non-legislative measures implemented in the previous year which contribute towards the overall national energy efficiency targets for 2020. c) the total building floor area of the buildings with a total useful floor area over **500 m^2 and as of 9 July 2015 over** 250 m^2 owned by its public bodies that, on 1 January of the year in which the report is due, did not meet the energy performance requirements referred to in Article 4(1); d) the total building floor area owned by the Member States' public bodies that was renovated in the previous year. e) energy savings achieved through the national energy efficiency obligation schemes referred to in Article 6(1) or the alternative measures adopted in application of Article 6(9). The first report shall also include the national target referred to in Article 3(1). **In the annual reports referred to in Article 19(1) Member States may also include additional national targets. These may be related in particular to the statistical indicators enumerated in Annex XIV, Part 1a or combinations thereof, such as primary or final energy intensity or sectoral energy intensities.**
PART 2. General framework for supplementary reports The reports referred to in Article 19(2) shall provide a		**PART 2. General framework for National Energy Efficiency Action Plans** The **Plans** referred to in Article 19(2) shall provide a

framework for the development of national energy efficiency strategies. The reports shall cover significant energy efficiency improvement measures and expected/achieved energy savings, including those in the supply, transmission and distribution of energy as well as energy end-use. Member States shall ensure that the reports include the following minimum information: **1. Targets and strategies** - The national energy efficiency target for 2020 as required by Article 3(1); - The national indicative energy savings target set in Article 4(1) of Directive 2006/32/EC; - Other existing energy efficiency targets addressing the whole economy or specific sectors.		framework for the development of national energy efficiency strategies. The **Plans** shall cover significant energy efficiency improvement measures and expected/achieved energy savings, including those in the supply, transmission and distribution of energy as well as energy end-use. Member States shall ensure that the **Plans** include the following minimum information: **1. Targets and strategies** - The national energy efficiency target for 2020 as required by Article 3(1); - The national indicative energy savings target set in Article 4(1) of Directive 2006/32/EC; - Other existing energy efficiency targets addressing the whole economy or specific sectors.
2. Measures and energy savings The reports shall provide information on measures adopted or planned to be adopted in view of implementing the main elements of this Directive and on their related savings. ***a) Primary energy savings*** The reports shall list significant measures and actions taken towards primary energy saving in all sectors of the economy. For every measure or package of measures/actions estimations of expected savings for 2020 and savings achieved by the time of the reporting shall be provided. Where available, information on other impacts/benefits of the measures (greenhouse gas emissions reduction, improved air quality, job creation, etc.) and the budget for the implementation should be provided. ***b) Final energy savings*** The first and second supplementary report shall include the		**2. Measures and energy savings** The **Plans** shall provide information on measures adopted or planned to be adopted in view of implementing the main elements of this Directive and on their related savings. ***a) Primary energy savings*** The **Plans** shall list significant measures and actions taken towards primary energy saving in all sectors of the economy. For every measure or package of measures/actions estimations of expected savings for 2020 and savings achieved by the time of the reporting shall be provided. Where available, information on other impacts/benefits of the measures (greenhouse gas emissions reduction, improved air quality, job creation, etc.) and the budget for the implementation should be provided.

[16] Recommendations on Measurement and Verification Methods in the framework of the Directive 2006/32/EC on Energy End-Use Efficiency and Energy Services.

results with regard to the fulfilment of the final energy savings target set out in Article 4(1) and (2) of the Directive 2006/32/EC. If calculation/estimation of savings per measure is not available, sector level energy reduction shall be shown due to (the combination) of measures. The first and second reports shall also include the measurement and/or calculation methodology used for calculating the energy savings. If the "recommended methodology[16]" is applied, the report should provide references to this.		***b) Final energy savings*** The first and second **National Energy Efficiency Action Plans** shall include the results with regard to the fulfilment of the final energy savings target set out in Article 4(1) and (2) of the Directive 2006/32/EC. If calculation/estimation of savings per measure is not available, sector level energy reduction shall be shown due to (the combination) of measures. The first and second **National Energy Efficiency Action Plans** shall also include the measurement and/or calculation methodology used for calculating the energy savings. If the "recommended methodology[17]" is applied, the **Plan** should provide references to this.
3. Specific information related to provisions of this Directive ***3.1. Public bodies (Article 4)*** Supplementary reports shall include the list of public bodies having developed an energy efficiency plan in accordance with Article 4(3).		**3. Specific information related to provisions of this Directive** ***3.1. Public bodies (Article 4)*** **National Energy Efficiency Action Plans** shall include the list of public bodies having developed an energy efficiency plan in accordance with Article 4(**4**).
3.2. Energy efficiency obligations (Article 6) Supplementary reports shall include the national coefficients chosen in accordance with Annex IV. The first supplementary report shall include a short description of the national scheme referred to in Article 6(1) or the alternative measures adopted in application of Article 6(9).		***3.2. Energy efficiency obligations (Article 6)*** **National Energy Efficiency Action Plans** shall include the national coefficients chosen in accordance with Annex IV. The first **National Energy Efficiency Action Plan** shall include a short description of the national scheme referred to in Article 6(1) or the alternative measures adopted in application of Article 6(9).
3.3. Energy audits and management systems (Article 7) Supplementary reports shall include: a) the number of energy audits carried out in the previous		***3.3. Energy audits and management systems (Article 7)*** **National Energy Efficiency Action Plans** shall include:

[17] Recommendations on Measurement and Verification Methods in the framework of the Directive 2006/32/EC on Energy End-Use Efficiency and Energy Services.

3-year period; b) the number of energy audits carried out in large enterprises in the previous 3-year period; c) the number of large companies in their territory, with an indication of the number of those to which Article 7(3) is applicable.		a) the number of energy audits carried out in the previous **[…]** period; b) the number of energy audits carried out in large enterprises in the previous **[…]** period; c) the number of large companies in their territory, with an indication of the number of those to which Article 7(3) is applicable.
3.4. Promotion of efficient heating and cooling (Article 10) Supplementary reports shall include an assessment of the progress achieved in implementing the national heating and cooling plan referred to in Article 10(1).		***3.4. Promotion of efficient heating and cooling (Article 10)*** **National Energy Efficiency Action Plans** shall include an assessment of the progress achieved in implementing the **comprehensive assessment** referred to in Article 10(1).
3.5. Energy transformation (Article 11) - Supplementary reports shall include a non-confidential summary of the inventories of data referred to in Article 11, in accordance with the requirements set in Annex X.		***3.5. Energy transformation (Article 11)*** **National Energy Efficiency Action Plans** shall include **measures taken in accordance with** Article 11 **[…]**.
3.6. Energy transmission and distribution (Article 12) - The first supplementary report and the subsequent reports due every 10 years thereafter shall include the plans for energy efficiency potentials of gas and electricity infrastructure referred to in Article 12(2).		***3.6. Energy transmission and distribution (Article 12)*** The first **National Energy Efficiency Action Plan** and the subsequent reports due every 10 years thereafter shall include the **assessment made, the measures and investments identified to utilise the** energy efficiency potentials of gas and electricity infrastructure referred to in Article 12(2).
3.7. Availability of certification schemes (Article 13) Supplementary reports shall include information on the available national certification schemes or equivalent qualification schemes for the providers of energy services, energy audits and energy efficiency improvement measures.		***3.7. Availability of certification schemes (Article 13)*** **National Energy Efficiency Action Plans** shall include information on the available national certification schemes or equivalent qualification schemes for the providers of energy services, energy audits and energy efficiency improvement measures.
3.8. Energy Services (Article 14) Supplementary reports shall include an internet link to the website where the national lists and registers of energy		***3.8. Energy Services (Article 14)*** **National Energy Efficiency Action Plans** shall include an internet link to the website where the

services providers referred to in Article 14 can be accessible.		national lists and registers of energy services providers referred to in Article 14 can be accessible.
3.9. Other measures to promote energy efficiency (Article 15) The first supplementary report shall include a list of the measures referred to in Article 15(2).		***3.9. Other measures to promote energy efficiency (Article 15)*** The first **National Energy Efficiency Action Plan** shall include a list of the measures referred to in Article 15(2).