Office of Energy Regulation

ANNEX A TO THE METHOD DECISION

Number: 100947-82.
Subject: Annex A to the decision approving the method for determining the price cap to promote efficient operations, pursuant to section 41 (4) of the Electricity Act of 1998.

1 Introduction

1. This is the method for determining the price cap (hereinafter "the x factor") for electricity grid managers, which is applied in determining the tariffs for electricity grid managers, with the exception of the manager of the national high-voltage grid (hereinafter "the grid managers"). It is the technical part of decision 100947-82 of 11 September 2003.

2. All references to 'costs' below are understood to mean 'standardised economic costs', that is, including a cost of capital allowance and depreciation, both on the basis of standardised asset values, as set out in Annex 3 to decision 101496/65.0191 of 4 June 2003 determining the x factor for the first regulatory period (hereinafter "the x factor decision for the first regulatory period").

3. In the formulas below, inflation parameters have not been included in calculating the allowable revenue from the year 2000 onwards. The relative movement in the consumer price index (for all households) will be used as the inflation parameter for year t. This is calculated as the quotient of this price index, published in the fourth month prior to year t, and this price index, published in the sixteenth month prior to year t, as determined monthly by Statistics Netherlands.

4. The x factors in the formulas below must be regarded as factors. This is a derogation from the provisions of section 41 of the Electricity Act, which stipulates that the x factor is a percentage. This increases the legibility of the formulas. Where the Act stipulates x/100, reference is made here to x.

2 Determination of tariffs on the basis of allowable revenue

5. For each year t DTe sets the tariffs for grid manager i, represented here as vector ($\overrightarrow{p_{i,t}}$). The allowable revenue($TO_{i,t}$) is defined as the maximum revenue which grid manager i may realise in year t on the basis of set standard volumes. These standard volumes are the actual volumes invoiced in the year 2000 ($\overrightarrow{y_{i,2000}}$). In other words, the following applies to every year:

$$TO_{i,t} = \overrightarrow{p_{i,t}} \cdot \overrightarrow{y_{i,2000}} \qquad (1)$$

6. The standard volumes will be determined again by DTe at the start of the second regulatory period on the basis of the volumes realised in 2002. These new standard volumes will be adjusted in proportion to the ratio of allowable revenue for 2002 and standard volumes for 2002 two allowable revenue for 2002 and standard volumes for 2000.

7. The individual x factors for the second period shall be determined on the basis of the allowable revenue for 2003. This was determined for every grid manager in the x factor decision for the first regulatory period.

8. The allowable revenue for grid manager i in the second regulatory period is calculated as follows on the basis of an estimate of the general change in productivity and the individual x factors calculated on this basis:

$$TO_{i,2004} = TO_{i,2003} \cdot (1 - x_{i,2004,2005,2006}) \qquad (2)$$

$$TO_{i,2005} = TO_{i,2003} \cdot (1 - x_{i,2004,2005,2006})^2 \qquad (3)$$

$$TO_{i,2006} = TO_{i,2003} \cdot (1 - x_{i,2004,2005,2006})^3 \quad (4)$$

9. At the end of the regulatory period, the individual x factors will be recalculated on the basis of the general change in productivity measured. On this basis, the recalculated allowable revenue used to determine estimation errors per grid manager i for 2004, 2005 and 2006 is calculated as follows:

$$TO'_{i,2004} = TO_{i,2003} \cdot (1 - x'_{i,2004,2005,2006}) \quad (5)$$
$$TO'_{i,2005} = TO_{i,2003} \cdot (1 - x'_{i,2004,2005,2006})^2 \quad (6)$$
$$TO'_{i,2006} = TO_{i,2003} \cdot (1 - x'_{i,2004,2005,2006})^3 \quad (7)$$

10. The estimation errors $s_{i,t}$ per grid manager i are then calculated as follows:

$$s_{i,2004} = TO'_{i,2004} - TO_{i,2004} \quad (8)$$
$$s_{i,2005} = TO'_{i,2005} - TO_{i,2005} \quad (9)$$
$$s_{i,2006} = TO'_{i,2006} - TO_{i,2006} \quad (10)$$

11. These estimation errors resulted in corrections to the allowable revenue in the third regulatory period. The interest on outstanding tax, pursuant to section 30 (5) of the State Taxes Act [*Algemene Wet inzake de Rijksbelastingen*] is calculated for these corrections. The total estimation error $TS_{i,2004,2005,2006}$ for grid manager i in 2004, 2005 and 2006, including the interest on outstanding tax, is calculated as:

$$TS_{i,2004,2005,2006} = \sum_{t=2004}^{2006} s_{i,t} \cdot (1 + r_t)^{2007-t} \quad (11)$$

This estimation error will be included in the tariffs for the third regulatory period.

3 Estimate of the x factor

12. The allowable revenue in the second regulatory period is determined on the basis of individual x factors for the second regulatory period ($x_{i,2004,2005,2006}$). These x factors are calculated as:

$$(1 - x_{i,2004,2005,2006})^3 = \theta_i \cdot (1 - g_{2004,2005,2006})^3 \quad (12)$$

On the basis of this, the average change in productivity for the second regulatory period ($g_{2004,2005,2006}$) is estimated to be 1.5 percent. θ_i gives the inefficiency of grid company i. At the end of the second regulatory period the tariffs are based on efficiency costs. After this, $\theta_i = 1$ applies to all grid companies. This parameter is calculated as follows:

$$\theta_i = \frac{C_{i,2000} \cdot DEA_{i,2000} \cdot (1 - g_{2001,2002,2003})^3}{TO_{i,2003}} \qquad (13)$$

13. The average change in productivity is therefore 2.0 percent for the first regulatory period ($g_{2001,2002,2003}$). The parameters, $C_{i,2000}$ and $DEA_{i,2000}$ are set out in the x factor decision for the first regulatory period.

4 Recalculation of the x factor at the end of the regulatory period

14. For the second regulatory period, the recalculated x factors ($x'_{i,2004,2005,2006}$) are determined on the basis of formula (12) in which $g_{2004,2005,2006}$ is replaced by the general change in productivity measured ($g'_{2003,2004,2005}$) which is determined in accordance with the formula in section 5. The generic price cap in a regulatory period is determined on the basis of the actual change in productivity realised and the general change in productivity measured by DTe in all years of the previous regulatory period with the exception of the last year, and the last year of the regulatory period preceding this.

15. The general change in productivity is measured for all years without the last year of the regulatory period, and with the realised change in productivity of the last year of the preceding regulatory period. These recalculated x factors are calculated as follows:

$$(1 - x'_{i,2004,2005,2006})^3 = \theta_i \cdot (1 - g'_{2003,2004,2005})^3 \qquad (14)$$

5 Calculation of the measurement of the general change in productivity at the end of the regulatory period

16. The general change in productivity is measured for all years without the last year of the regulatory period, and with the realised change in productivity in the last year of the preceding regulatory period. This

means that for a regulatory period with a length of M years, where the regulatory period starts in year T, the average change in productivity is calculated for years T-1 up to and including year T+M-2.[1] The change in productivity per (efficient) grid manager for years T-1 up to and including year T+M-2 is weighted on the basis of the grid tariffs of year T-1 and the realised volumes in year T+M-2. This ensures that the total cost of the participating grid managers is covered by the grid tariffs.

17. The measured average change in productivity for T-1 up to and including T+M-2 is calculated as follows:

$$1-(1-g'_{T-1,..,T+M-2})^{M} = \frac{\sum_{i=1}^{n}\left(\overrightarrow{p_{i,T-2}}\cdot\overrightarrow{y_{i,T+M-2}}\cdot PV_{i,T-1,..,T+M-2}\right)}{\sum_{i=1}^{n}\left(\overrightarrow{p_{i,T-2}}\cdot\overrightarrow{y_{i,T+M-2}}\right)} \qquad (15)$$

These are summed up for n efficient grid managers, in accordance with formula (21) in section 6 below.

18. The change in productivity per efficient grid manager for years T-1 up to and including T+M-2 is expressed by:

$$PV_{i,T-1,..,T+M-2} = \frac{C_{i,T-2}/z^{*}_{i,T-2} \_ C_{i,T+M-2}/z^{*}_{i,T+M-2}}{C_{i,T-2}/z^{*}_{i,T-2}} \qquad (16)$$

19. In accordance with the above three paragraphs, the measured average change in productivity for 2003, 2004 and 2005 is calculated as follows:

$$1-(1-g'_{2003,2004,2005})^{3} = \frac{\sum_{i=1}^{n}\left(\overrightarrow{p_{i,2002}}\cdot\overrightarrow{y_{i,2005}}\cdot PV_{i,2003,2004,2005}\right)}{\sum_{i=1}^{n}\left(\overrightarrow{p_{i,2002}}\cdot\overrightarrow{y_{i,2005}}\right)} \qquad (17)$$

These are summed up for n efficient grid managers, in accordance with formula (21) in section 6 below.

20. The change in productivity per efficient grid manager for 2003, 2004 and 2005 is expressed by:

[1] For the retrospective settlement for the years T up to and including T+M-1 and as an estimate of the generic price cap for the regulatory period which begins in year T+M.

$$PV_{i,2003,2004,2005} = \frac{C_{i,2002} / z^*_{i,2002} \_ C_{i,2005} / z^*_{i,2005}}{C_{i,2002} / z^*_{i,2002}} \quad (18)$$

5.1 Cost of the measurement of the change in productivity

21. In applying formula (16), it is important to take into account the fact that all the costs referred to are standardised costs (see the list of symbols used). In addition, the costs in formula (18) must be expressed at the price level of 2002 in order to make a meaningful comparison. This means that the operating costs for 2003, 2004 and 2005 and investments for 2003, 2004 and 2005 must be deflated using the relevant consumer price index to 2002 prices. The asset values for 2000 (as the basis for calculating depreciation costs and the cost of capital allowance) and the investments in year 2001 must be inflated to the year 2002 using the relevant consumer price index. If the regulatory accounting rules, which formed the basis for determining the costs in formula (18) change, a correction must be made so that the costs in the various years can be compared.

5.2 Composite output in the measurement of the general change in productivity

22. In formula (16), $z^*_{i,t}$ is defined as the composite output[2] per grid manager in year t, which is the turnover of grid manager i if the tariffs are equal to the average sector tariff basket $\overrightarrow{p^*_{2000}}$ for the year 2000. This composite output is calculated as:

$$z^*_{i,t} = \overrightarrow{p^*_{2000}} \cdot \overrightarrow{y_{i,t}} \quad (19)$$

23. This applies to all tariff elements in the tariff baskets, with the exception of the connection service standing charges and one-off connection tariffs.[2]

[2] One-off connection tariffs are not regarded as a tariff element which partly determines the composite output. There are no standard volumes for one-off connection tariffs, and therefore also no sector tariff. The level of one-off connection tariffs is determined in the tariff decision and is assessed on the basis of the Tariff Code. In calculating the composite output, the individual tariffs and volumes of the grid managers are rendered comparable by correcting these for the customer groups <3x25 A (DT), >3x25 A (DT) and LS so that all low tariff hours amount to 90 hours a week.

24. In formula (19), the sector tariff basket $\overrightarrow{p^*_{2000}}$ is calculated by determining the average sector tariff element j $p^*_{2000}(j)$ per tariff element j of the tariff baskets, $p_{i,2000}(j)$, the average, by weighting this with the corresponding volumes for all N regional grid managers. In the formulas, the sector tariff per tariff element j in the year 2000 is written as:

$$p^*_{2000}(j) = \frac{\sum_{i=1}^{N} p_{i,2000}(j) \cdot y_{i,2000}(j)}{\sum_{i=1}^{N} y_{i,2000}(j)} \qquad (20)$$

6 Determination of the efficient grid managers which participate in the determination of the general change in productivity

25. Only the change in productivity actually realised of comparable efficient grid managers is measured. The grid managers with DEA2000 = 1.000 are deemed to be amongst the efficient grid managers.

26. In addition, the grid managers whose costs in 2002 per unit of composite output in 2002 are lower than or equal to the actual efficient costs per unit of composite output in 2000 are in any event also efficient. The actualisation of efficient costs per unit of composite output in 2000 occurs on the basis of the average change in productivity for 2001 and 2002, which is set at 2.0 percent per annum. In any event, the following applies to this group of grid managers, which are in any event considered efficient:

$$\frac{C_{i,2002}}{z^*_{i,2002}} \leq \frac{C_{i,2000} \cdot DEA_{i,2000}}{z^*_{i,2000}} \cdot (1 - g_{2001,2002,2003})^2 \qquad (21)$$

27. When using formula (21), the price level in which the costs are expressed must be taken into account. The total efficient economic costs for 2000 are expressed at the price level of 2002 by inflating them using the relevant consumer price index. In addition, the present value in 2002 of the total efficient economic costs per unit of composite output in 2000 is found by means of the average change in productivity for 2001 and 2002 ($g_{2001,2002,2003}$), which is set at 2 percent. If the regulatory accounting rules change, which form the basis for determining the costs in formula (21), a correction is made so that the costs in the various years can still be compared.

7 Deviation from the standard method in the second regulatory period

28. In deviation from formula (14), the correction to be made for the estimation error for the years 2004, 2005 and 2006 will be adjusted downwards once by 0.5 percentage points and half of this will be determined for the years 2003, 2004 and 2005 by the measured change in costs and half will be determined by the measured change in productivity. The recalculated x factors for the second regulatory period will be calculated once in deviation from formula(14) as:

$$(1-x'_{i,2004,2005,2006})^3 = \theta_i \cdot \left(1-\left(\frac{g'_{2003,2004,2005}+k'_{2003,2004,2005}}{2}-0{,}005\right)\right)^3 \qquad (22)$$

29. In doing so, the average change in costs measured for 2003, 2004 and 2005 ($k'_{2003,2004,2005}$) will be calculated as:

$$1-(1-k'_{2003,2004,2005})^3 = \frac{\sum_i^n \left(\overrightarrow{p_{i,2002}} \cdot \overrightarrow{y_{i,2005}} \cdot \left(\frac{C_{i,2002}-C_{i,2005}}{C_{i,2002}}\right)\right)}{\sum_i^n (\overrightarrow{p_{i,2002}} \cdot \overrightarrow{y_{i,2005}})} \qquad (23)$$

30. In the event of a change in the regulatory accounting rules, which form the basis for determining the costs in formula (23), a correction will be made so that the costs in the various years can still be compared.

8 Considerations with regard to the continuity of regulation

31. The present decision determines regulation for the period 2004 up to and including 2006. Since DTe strives to ensure her continuity in its regulatory practice, the way in which DTe expects to apply the method in subsequent regulatory periods is explained below.

30. From the second regulatory period onwards, every subsequent regulatory period will have a generic price cap (hereinafter "g"), which will be applied to the allowable revenue of the previous year. This will be done on the basis of formulas (24) and (25); a general formula for determining the allowable revenue in year t (formula 24), and a formula for determining the allowable revenue for the first year of a regulatory period (formula 25).

General

$$TO_{i,t+1} = TO_{i,t} \cdot (1-g) \qquad (24)$$

First year

$$TO_{i,t+1} = TO'_{i,t} \cdot (1 - g) \qquad (25)$$

31. At the start of a new regulatory period, the generic price cap to be used (for the purpose of producing estimates) will be based, in principle, on the actual change in productivity realised and the average change in productivity measured by DTe in all years except the last year of the preceding regulatory period, and the last year of the regulatory period preceding this. The estimated generic price cap (price cap) determined in this manner may be corrected, if necessary.

32. At the start of a new regulatory period, the allowable revenue in the first year of the new regulatory period will be calculated on the basis of the allowable revenue of the last year of the preceding regulatory period, taking into account paragraph 32. In doing so, the allowable revenue, calculated on the basis of the recalculated generic price cap, will be used for this last year.

33. The calculation of the allowable revenue on the basis of formulas (24) and (25) is exclusively the recalculation of estimation errors.

9 Symbols used

$TO_{i,t}$	the allowable revenue of grid manager i in year t
$TO'_{i,t}$	the allowable revenue of grid manager i in year t, as it would be calculated on the basis of the actual change in productivity measured
$C_{i,t}$	the standardised costs of grid manager i in year t
θ_i	the efficiency parameter of grid manager i based on the benchmark data for 2000.
DEA_i	the DEA score of grid manager i on the basis of data for the year 2000
N	the total number of grid managers, excluding the manager of the national high-voltage grid
n	the number of grid managers which participate in yardstick competition, in other words, the number of grid managers whose change in productivity is measured
$\longrightarrow$	vector symbol
$\overrightarrow{p_{i,t}}$	the tariff basket of grid manager i in year t
$p_{i,t}(j)$	the tariff element j from $\overrightarrow{p_{i,t}}$
$\overrightarrow{p^*_{2000}}$	the sector tariff basket in year 2000 calculated on the basis of the tariffs for the sector weighted with the actual volumes invoiced in 2000
$p^*_{2000}(j)$	the tariff element j from $\overrightarrow{p^*_{2000}}$

$\overrightarrow{y_{i,t}}$	the actual volumes invoiced of grid manager i corresponding to the tariff basket $\overrightarrow{p_{i,t}}$ of grid manager i in year t
$y_{i,t}(j)$	the volume element j from $\overrightarrow{y_{i,t}}$
$z^*_{i,t}$	the composite output of grid manager i in year t, calculated by multiplying the sector tariff basket $\overrightarrow{p^*_{2000}}$ by the actual volumes invoiced in year t, $\overrightarrow{y_{i,t}}$
$x_{i,p}$	the x factor for grid manager i in period p based on an estimated average change in productivity and catch-up
$x'_{i,p}$	the x factor for grid manager i in period p as calculated using the measured change in productivity and catch-up
g_p	the estimated average change in productivity for period p (this has been determined for 2001, 2002 and 2003)
g'_p	the measured average change in productivity for period p
k'_p	the average change in costs measured for period p
$PV_{i,p}$	the measured change in productivity of grid manager i for period p
$s_{i,t}$	the estimation error of the allowable revenue for grid manager i in year t as a result of the difference between the change in productivity determined beforehand and the measured change in productivity
$TS_{i,p}$	the total estimation error in period p for grid manager i
r_t	interest on outstanding tax in year t, pursuant to section 30 (5) of the State Taxes Act [*Algemene Wet inzake de Rijksbelastingen*]