

- Public version – translated

Policy rules

Tariff regulation for unbundled fibre access



Disclaimer: this is a translation of the original Dutch language version entitled “Beleidsregels tariefregulering Ontbundelde Glastoegang” and is made available by OPTA for convenience only. No rights may be derived from this translated version.

The Hague, 19 December 2008

OPTA/AM/2008/202874

Contents

- 1 Introduction 2**
 - 1.1 Background to the policy rules 2
 - 1.2 Scope of the policy rules 3
 - 1.3 Application of the policy rules..... 4
- 2 Objectives of tariff regulation for unbundled fibre access 5**
 - 2.1 Fostering competition versus encouraging investments 5
 - 2.2 Fostering competition 5
 - 2.3 Investments in local fibre loops 7
 - 2.4 The commission’s standpoint 8
- 3 Fostering competition 9**
 - 3.1 Price-related competition problems..... 9
 - 3.2 Tariff principles for preventing price discrimination and margin squeeze 10
 - 3.3 Tariff principles for preventing excessive tariffs 13
- 4 Encouraging investments 18**
 - 4.1 Investment risks and the role of policy rules covering tariff regulation for unbundled fibre access. 18
 - 4.2 Greater certainty related to tariff regulation..... 18
 - 4.3 Systematic fibre risks and restricting asymmetrical regulatory risks..... 21
 - 4.4 Summary 22
- 5 Cost model 23**
 - 5.1 Tariff regulation of existing networks..... 23
 - 5.2 European Commission tariff principles for new network elements 24
 - 5.3 Cost model 24
 - 5.4 Parameters in the cost model..... 26
 - 5.5 Unbundling of service elements and new services 30
- 6 Conclusion 32**

1 Introduction

1.1 Background to the policy rules

1. In the present policy rules, the commission of the Independent Post and Telecommunications Authority ('the commission') gives detailed information about its tasks and powers in connection with the tariff measures that it may impose by virtue of section 6a.2, clause 1 of the Dutch Telecommunications Act ('TA'). The commission may impose this obligation, pursuant to section 6a.7, clause 1, TA, if a market analysis shows that the operator concerned has significant market power ('SMP') and can therefore, through the lack of genuine competition, maintain prices at an excessive level or erode margins, to the detriment of the end-user.
2. The commission notes that the transition in the market to what are termed Next Generation Networks ('NGN') raises questions in terms of regulating access to NGN ('NGN Access' or 'NGA') in general, and tariff regulation in particular. Against this background the commission has, in these policy rules, laid down the tariff principles, that, in its view, must apply to the regulation of tariffs for unbundled access to local fibre loop networks.
3. Through these policy rules the commission aims to help enforce the '*Commission Recommendation on regulated access to Next Generation Access Networks*' ('European NGA recommendation').¹ The purpose of this European NGA recommendation is to give to NRAs guidelines that will form the basis for consistent European legislation in the transition to NGN. The commission must take the recommendation of the European Commission into consideration wherever possible, on the basis of section 19 of Framework Directive 2002/21/EC. The European NGA recommendation is currently available in draft and consultation is now taking place. The recommendation is expected to be made definitive in the course of 2009.
4. In addition, the commission intends these policy rules to enforce the policy rules of the Minister of Economic Affairs with respect to the tasks to be carried out by the commission in the electronic communications sector.² The minister states therein that the commission must interpret the power to impose appropriate obligations that is vested in it under section 6a.2 of the TA in such a way as to deprive the providers of alternative electronic communications networks or relevant facilities as little as possible of the incentive to invest in networks and facilities.
5. These policy rules dovetail with, and further elaborate on, the Background Paper that the commission presented on 15 July 2008 when it published the Fixed Telephony, Broadband and Line Rental draft market decisions.³ In chapter 5 of this Background Paper the commission refers to the importance of stable and predictable regulation over the longer term with respect to investments in fibre access networks.

¹ Draft commission recommendation on regulated access to Next Generation Access Networks, 18 September 2008.

² Policy rules of the Minister of Economic Affairs for the tasks to be performed by the commission in the electronic communications sector, Government Gazette 9 June 2005, no. 109, page 11.

³ Background Paper accompanying the draft decisions of 15 July 2008, Context and perspective of the draft decisions Fixed Telephony, Broadband and Line Rental, OPTA/AM/2008/201603, 15 July 2008.

1.2 Scope of the policy rules

1.2.1 General

6. These policy rules relate to the implementation of the tariff regulation for unbundled fibre access, in particular the way in which the tariffs for access to passive infrastructure are determined. The way in which the tariffs for access to active infrastructure are determined is explicitly not covered by these policy rules.⁴
7. The policy rules describe the tariff principles that the commission will use for tariff regulation of unbundled fibre access. Consequently, the significance of the policy rules stretches definitely beyond a single specific regulatory period.

1.2.2 Focus on FttH networks

8. The tariff regulation such as is set out in these policy rules is not to be applied without any deviation to all types of local fibre loop networks, but exclusively to those local fibre loop networks that, in the section below, the commission categorises as FttH networks. Further details are set out below.
9. When laying and investing in local fibre loop networks, a distinction may be drawn between two types of fibre loop networks. First, large-scale works involving the laying of local fibre loop networks are carried out in areas with mainly residential users (hence the FttH acronym standing for Fibre to the Home networks). If their businesses are located in the connection area, business users – and specifically small business users – will also be connected up to such an FttH network. Second, small scale works involving the laying of local fibre networks is performed on a project basis. This is carried out in areas characterised by a heavy concentration of business users (referred to below as business fibre loop networks or Fibre to the Office (FtO) networks).
10. Laying FttH networks involves major investments. Areas such as these will typically have a scale ranging between 10,000 and 100,000 fibre connections. Investments in FttH networks typically amount to some EUR 1,000 per line connected, corresponding to an investment per connection area totalling between EUR 10 million and EUR 100 million. The total investment involved in a nationwide roll-out of FttH networks comes thus to several billions. If the business case for rolling out FttH networks is to be profitable, a specified minimum penetration is necessary, given that the (wholesale) costs per line are very much constrained by the average return per user ('ARPU') which, when set against the business user, is relatively limited. When laying FttH networks it is often worthwhile connecting all the homes the network passes, (i.e. the number of 'homes passed' is equal to that of homes connected). The costs of so doing are often lower than the revenues arising from a higher expected penetration.
11. A point of significance in respect of laying FttH networks is that these are at the embryonic stage of their development. The consequence is that investments in this type of network are, for the vast

⁴ In the European NGA recommendation the European Commission defines passive infrastructure as 'duct usage and the usage of other civil engineering works and other elements which are not active.' An example of a service that is created by active infrastructure is bitstream access.

majority of connections, still waiting to happen. Long term regulatory security (and specifically the applicable tariff regulation) is thus a significant precondition for those investing in such large scale fibre loops.

12. The investment involved in laying other types of local fibre loop networks, such as FttO networks, is, in relative terms, small. FttO networks are often realised on a project basis in areas with mainly business users (such as business or industrial zones). The scale applicable to areas such as these is generally of the order of several hundred connections. Although connection costs may exceed those incurred for FttH networks, the total investment will not exceed a few million euros per business or industrial zone. Against that, per line ARPU is substantially higher in the business market, especially for large businesses, such that a significantly lower level of penetration suffices to achieve a profitable business case. Such investments in FttO networks are therefore not comparable to investments in FttH networks. This is apparent from the fact that KPN has already made some of these FttO investments (and some hundreds of business and industrial zones have already been connected or plans for laying have already been made.) Thus long term security about the manner in which regulation, and specifically tariff regulation, is to be applied to investments made in this type of network has been shown not to be of decisive importance.
13. These differences between the types of local fibre loop networks have led the commission to the conclusion that in all events tariff regulation covering FttH-type networks requires implementation different from that the commission applies in general to wholesale tariff regulation by recourse to the embedded direct cost/wholesale price cap ('EDC/WPC') system. The policy rules below define the tariff principles on which the commission's approach to tariff regulation reposes. The policy rules thus apply exclusively to FttH networks and the tariff regulation covering their unbundled access, such as, for example, Reggefiber Group B.V. (a joint venture between Reggefiber B.V. and KPN) that is intending to lay fibre on a large scale over the coming years. This means that references in these policy rules to unbundled fibre access or to access to local fibre loop networks are to be read in all cases as referring to access to FttH networks.

1.3 Application of the policy rules

14. The policy rules define the tariff principles that, in the commission's view, apply to the regulation of tariffs covering unbundled access to FttH-type local fibre loop networks as further set out in section 1.2 above. The commission will also proceed with the implementation of these policy rules in the event that the commission comes to the view in a market decision that tariff regulation covering unbundled access to local fibre loop networks of this type constitutes an appropriate obligation. This means that, in the relevant market decision, further refinements of the tariff obligation will be set down in accordance with the tariff principles laid down in these policy rules.

2 Objectives of tariff regulation for unbundled fibre access

2.1 Fostering competition versus encouraging investments

15. In tariff regulation a regulator is generally faced with the following trade-off that occurs in the short term. On the one hand, low access tariffs prevent competition problems as a result of SMP and foster effective competition in the short term. On the other hand, such low access tariffs discourage investments. The opposite applies to high access tariffs: they encourage investments but can work to the detriment of effective competition because entry is hampered in the short term.
16. According to section 1.3, clause 1, under a, TA, one of the objectives of the commission is to foster competition in the supply of electronic communication networks, electronic communication services or relevant facilities by, among other things, encouraging efficient investments in the domain of infrastructure and supporting innovations. Although fostering competition in the short term is in the forefront of this objective, the commission needs to encourage investments when carrying it out, as investments encourage effective competition in the longer term.
17. So the commission needs to find a balance in the trade-off that occurs between fostering competition in the short term and encouraging investments. The search for this balance is also described by the European Commission in Annex I, point 7 of the European NGA recommendation :

'The return that is allowed ex ante on equity capital to finance NGA networks should strike a balance between providing adequate incentives for companies to invest (implying a sufficiently high rate of return), while at the same time promoting efficiency and sustainable competition and maximizing consumer benefits (implying a rate of return that is not excessive).'

18. In the following pages the commission goes deeper into the objectives of fostering competition and encouraging investments in local fibre loops.

2.2 Fostering competition

19. The purpose of tariff regulation for unbundled fibre access is to prevent some of the competition problems that would otherwise arise where SMP is present. Preventing these competition problems fosters competition on wholesale and retail markets. The price-related competition problems that are of importance in unbundled fibre access are margin squeeze, price discrimination and excessively high tariffs. This is further reviewed in chapter 3 of these policy rules.
20. In terms of the objective of fostering competition another important distinction is that between infrastructure competition (i.e. competition between infrastructures) and service competition (i.e. competition within an infrastructure). The ultimate goal of the regulatory framework is to bring about a situation of enduring competition. This is competition that is not – or is no longer – dependent on sector-specific regulation for its existence and effectiveness. The commission takes

the view that a situation of enduring competition can best be achieved by giving priority in the choice of obligations, wherever possible, to measures that foster infrastructure competition.

21. This line has also been chosen in the joint standpoint of the ERG about obligations and is supported by the views of the European Commission expressed in the explanatory notes to the European NGA recommendation:

*'Ultimately, the goal of the new regulatory framework is to bring about a situation in which full infrastructure competition exists between several different infrastructures. This may take place within or between platforms. Regulation that imposes compulsory access to existing networks serves as a bridging measure to ensure competition between services as well as choice for the consume until adequate infrastructure competition arises. Investments in new network infrastructure will ensure that ex ante legislation relating to this market can be withdrawn even faster.'*⁵

22. Whether investments in new network infrastructure genuinely contribute towards the eventual withdrawal of *ex ante* legislation in this market depends partly on whether investments lead to an extra network infrastructure or serve to replace an existing infrastructure. In the case where investments in NGNs involve extra network infrastructure it is clear that infrastructure competition is fostered by it. In the case where the investments serve to replace an existing infrastructure the importance of those investments for infrastructure competition is less pronounced.
23. If investments in new networks eventually lead to replacement of an existing network, the investment itself does not lead to an additional competing network and it is not certain that the infrastructure competition actually increases. If the investment ensures that competition between existing networks increases, for example because with the NGN a similar or even more extensive package of services can be offered, infrastructure competition also benefits from investments in NGNs.
24. The parties purchasing unbundled fibre access are also obliged to make certain investments (in equipment and infrastructure elements). The objective of fostering competition implies that buyers of unbundled fibre access must also be prepared to make these investments. These parties must also be in a position to make a carefully considered choice between, on the one hand, investing themselves in local fibre loop networks and, on the other hand, purchasing unbundled fibre access. One of the functions of tariff regulation is to allow for this willingness and for making choices in order to foster competition.
25. On the basis of the above, the commission takes the view that it is likely that investments in the new generation of networks will contribute to infrastructure competition.

⁵ Explanatory notes to the recommendation of the European Commission of 11 February 2003 concerning relevant product and service markets, OJ EC 203, L114/45, page 29.

2.3 Investments in local fibre loops

26. Although the trade-off between fostering competition in the short term and encouraging investments always occurs in the tariff regulation of access services, it is of particular relevance in the case of tariff regulation for unbundled fibre access. Whereas in most other cases of tariff regulation investments have already been made in infrastructure and most of the network is already in existence, this is not the case with local fibre loops. Only a few local fibre loops have already been installed and it is socially desirable that this should now occur on a large scale (see point 22). In this case special attention therefore needs to be paid to encouraging investments in fibre, but that does not alter the fact that in this case as well the commission ought to ensure that competition is fostered.
27. The social importance of investments in local fibre loops is great. The use of broadband has increased sharply in the last few years, thanks mainly to the expansion of broadband service provision. In the commission's view, further growth in broadband capacity, through development of the possibilities of coaxial and mobile networks and the installation of fibre networks, could be a source of productivity growth and improvement of living standards. In the European NGA recommendation the European Commission also expressed a positive opinion of the roll-out of fibre optic networks. In point one of the European NGA recommendation the European Commission argues that:

'The development and upgrading of high-speed networks based wholly or partly on fibre optical cable is a desirable development which will enable the provision of innovative and better broadband services. Broadband is a key Community objective for the further development of the European economy and there is therefore a need to make the transition to fibre-based access networks in an efficient but timely manner.'

28. In chapter 1, page 3 of the explanatory note to the recommendation the European Commission adds that:

'The development of new higher-capacity networks based wholly or partly on fibre optic cable is [...] a positive trend and is to be welcomed in the context of facilitating innovation and long-term consumer welfare. The coming years will be crucial for the migration to such high-capacity Next Generation Access ('NGA') networks.'

29. The cost of investing in local fibre loops is considerable. The European Commission also recognises the importance of investments in NGN and acknowledges that these investments benefit from a certain degree of regulatory certainty. The European Commission believes that this regulatory certainty contributes towards a good investment climate and innovation to the benefit of market parties and consumers:

'However, the deployment of these networks requires substantial investment, in the range of billions of euros over the coming years. Investment decisions depend on a number of factors. Regulatory predictability is clearly one of them. It is therefore necessary to provide regulatory certainty to investors and foster investment and innovation for the benefit of all parties involved.'

30. The commission endorses the European Commission's view. The commission recognises the importance of investments in NGN and acknowledges that these investments benefit from a certain degree of regulatory certainty. This applies to investments in local fibre loops *per se*, as well as to the investments that purchasers of unbundled fibre access are obliged to make. The commission also believes that this regulatory certainty contributes towards a favourable investment climate and innovation to the benefit of market parties and consumers.

2.4 The commission's standpoint

31. The commission takes the view that both fostering competition and encouraging investments are essential objectives in implementing tariff regulation of unbundled fibre access. As in many cases a trade-off occurs between the two objectives, the commission will have to find the necessary balance.
32. In the following chapters the commission examines successively the way in which fostering competition (chapter 3) and encouraging investments (chapter 4) are to be structured as relevant objectives.

3 Fostering competition

3.1 Price-related competition problems

33. To achieve the objective of fostering competition the commission must prevent restrictive practices by a party with SMP by imposing suitable obligations. There are several restrictive practices that are not price-related, such as denying access, strategic use of information, delaying tactics, quality discrimination and strategic product design. These restrictive practices are addressed through obligations such as access, transparency and non-discrimination.
34. In addition, there are price-related restrictive practices in which a supplier with SMP undermines the competitive position of the other suppliers or damages buyers, by fixing its prices in a particular manner. In points 30, 31 and 32 the commission discusses the following price-related competition problems: price discrimination, margin squeeze and excessively high tariffs. In the draft market analysis decision on unbundled access the commission concluded that these competition problems occur on the unbundled access market, of which unbundled fibre access is part. The function of tariff regulation is to prevent these competition problems.

3.1.1 Price discrimination and margin squeeze

35. The first competition problem that tariff regulation of unbundled fibre access aims to prevent is price discrimination that restricts competition. In the case of price discrimination a supplier with SMP deploys different tariffs for different buyers or categories of buyer. This affects the conditions under which various wholesale buyers compete with each other on the underlying markets. Moreover, price discrimination may also have a direct adverse effect on buyers because on average they pay a higher price. Finally, price discrimination may, if the party with SMP is also active on any underlying market, lead to impairment of competition on those underlying markets.
36. The second competition problem that tariff regulation aims to prevent is margin squeeze. The TA Explanatory Memorandum states that margin squeeze exists if the difference between the wholesale prices charged by a company with SMP to other companies and its own end-user tariffs is such that those other companies have no real opportunity to acquire or retain a market position.⁶ If a vertically integrated supplier with SMP erodes the margins of its competitors by charging prices for key wholesale services that are too high (whether or not in combination with low prices on the retail markets), the retail margins for competitors are too small to compete effectively with the supplier with SMP. As a result of this margin squeeze market entry may be prevented, competitors may be forced out of the market and the growth of competitors already present in the market may be hampered.

⁶ Margin squeeze is also known as a price squeeze. Alternative suppliers then find themselves in a price squeeze between the wholesale tariffs and the retail tariffs that the supplier with SMP charges to its wholesale buyers and retail end-users respectively.

3.1.2 Excessively high tariffs

37. The third competition problem that tariff regulation aims to prevent is the use of excessively high tariffs by the supplier with SMP. After all, in this case a provider of unbundled access with SMP has the opportunity to use excessively high tariffs and sees the incentive for it. Indeed, the incentive is the fact that using excessively high tariffs is an effective method of *de facto* denial of access. But even apart from this, excessively high tariffs lead to higher margins and excessive profits for the SMP supplier. Furthermore, excessively high prices may also lead to competitors being excluded from underlying markets. High wholesale tariffs then form part of a strategy of margin squeeze by an SMP party. Excessively high tariffs for unbundled fibre access put wholesale buyers at a disadvantage and ultimately, if they are passed on wholly or partially at retail level, are also to the detriment of end-users.

3.2 Tariff principles for preventing price discrimination and margin squeeze

3.2.1 Rules of conduct for non-discrimination

38. The market analysis decision on unbundled access⁷ lays down the following five rules of conduct, which prevent the competition problems of price discrimination and margin squeeze from occurring:

1. *selective price undercutting is forbidden: products or services must not be supplied under different conditions to wholesale buyers with the same or similar demand profile;*
2. *loyalty discounts are forbidden. This means, for example, that it is prohibited to use tariff differentiation where a mechanism is built into the tariff structure that tends to dissuade a buyer from switching to another supplier for one or more wholesale services, whether separately or at the same time;*
3. *tariff differentiation on the basis of the demand profile is permitted only if the following conditions are met: the differentiation must 1) be based on objective criteria, 2) be constructed logically and consistently and 3) not favour specific wholesale buyers but must be oriented to an appropriately large group of wholesale buyers. Differentiation on the basis of demonstrable underlying cost benefits is also permitted;*
4. *tariff differentiation on the basis of geographical circumstances is permitted only if the following conditions are met: the differentiation must 1) be based on objective criteria, 2) be constructed logically and consistently and 3) not favour specific wholesale buyers but must be oriented to an appropriately large group of wholesale buyers;*
5. *tariff differentiation is not permitted if it means in fact that the supplier charges its own downstream company (including its own retail company) a wholesale tariff, whereby other buyers cannot offer their services under competitive conditions as a result of margin squeeze on the downstream markets.*

⁷ These rules of conduct are also included in the summary of the market analysis decision on unbundled access at the wholesale level, OPTA/AM/2008/202719, 19 December 2008.

39. The commission considers it appropriate to include these rules of conduct because they provide clarity to an SMP supplier of unbundled access to local fibre loops about the way that the commission implements the non-discrimination obligation and make a more targeted contribution to remedying competition problems. In any case, only those forms of tariff differentiation that lead to wholesale buyers being put at a disadvantage or to margin squeeze are forbidden.
40. Loyalty discounts are also forbidden because they create a barrier that has to be surmounted, which has a negative effect on the incentives for other wholesale suppliers to invest in infrastructure.

3.2.2 Regional tariff differentiation

41. Tariff differentiation on the basis of geographical circumstances is permitted only if the three conditions mentioned in rule of conduct 4 are met.
42. In addition, it follows from rule of conduct 3 that tariff differentiation on the basis of geographical circumstances is also permitted if there are demonstrable underlying cost differences. This rule of conduct dovetails with the general tariff principles of the European Commission that are outlined in the European NGA recommendation. The European Commission argues that tariffs of passive network elements should not be geographically averaged if substantial cost differences exist between various areas.⁸

'Usage prices for ducts, other civil engineering works and other elements which are not active, should not be bound by the principle of geographic averaging in the presence of substantial cost differences between various areas.'

43. The commission endorses the views of the European Commission and takes the view that geographical differentiation of tariffs is possible in the event that these differing tariffs reflect differences in underlying costs. An example of possible differences in underlying costs is the regional differences in construction costs, such as excavation costs.

3.2.3 Discount schemes

44. Tariff differentiation on the basis of the demand profile is permitted only if the three conditions mentioned in rule of conduct 3 are met. In addition, by virtue of rule of conduct 3, differentiation on the basis of demonstrable underlying cost differences is also permitted.
45. There is a negative relationship between market penetration and the cost per connection (the higher the penetration, the lower the cost per connection). This means that a supplier of unbundled access to local fibre loops will want to encourage as many buyers as possible to purchase fibre connections so as to be able to make the biggest possible contribution to market penetration. A discount scheme is one way of incentivising buyers, whereby part of the achievable benefits of scale is given back to buyers of unbundled fibre access services, which is socially desirable as well.

⁸ European NGA recommendation, article 1 of Annex I, page 10.

46. If the discount percentage depends on the number of customers in an area per individual wholesale buyer, only the buyers that have a large share in the use of the network benefit from the discount. According to the commission, an unwelcome effect of this is that buyers that start later, or that for other reasons have a smaller number of customers, are put at a disadvantage because they would get a small discount or no discount at all. A discount structure of that sort creates barriers to entry for new parties. Consequently, such a discount scheme that depends on volumes of individual buyers conflicts with the rules of conduct described above.
47. The commission takes the view that, if no competition-restrictive behaviour exists and the rules of conduct have been met, an SMP supplier of unbundled access to local fibre loops ought to have the opportunity to differentiate tariffs. The commission stresses that, according to rule of conduct 5, tariff differentiation is never permitted if this means that the supplier charges a lower wholesale tariff to its own downstream company or a downstream company with which it has structural ties, whereby margin squeeze occurs. In other words, an SMP supplier may use various tariffs but may not apply them to specific buyers. Different tariffs are permitted as long as they are offered to all buyers.

3.2.4 One-off and periodic tariffs

48. The tariffs for access services for local fibre loops may consist of one-off fees and periodic fees. The choice to recoup fixed costs via a one-off fee or periodic fees has an effect both on the investment risk of suppliers of unbundled fibre access and on the entry risk resting on the buyers of unbundled fibre access.⁹
49. The advantage of fixing tariffs by means of a one-off fee is that a supplier of unbundled access to the local fibre loop recoups some of its investment in the first phase of the network, which heightens the willingness to invest. Ultimately, recouping the investment early on translates into a lower capital requirement over time and a decrease in the investment risk. This also means that the supplier of unbundled fibre access does not bear the whole risk of the investment ('risk sharing').¹⁰
50. A supplier of unbundled access may in any event charge as a one-off tariff for the costs connected to works and the purchase of materials and equipment for the individual connection, which activities take place after the wholesale buyer has placed an order for an unbundled connection. The commission also considers it reasonable that the supplier of unbundled fibre access should be enabled to charge as a one-off tariff a small part of the costs connected to the initial investment per fibre connection.
51. The commission takes the view that charging this one-off fee must not create a barrier to entry for buyers of unbundled fibre access. If relatively many costs are subsumed into one-off tariffs, this raises the barrier for purchasing services, because a buyer is confronted with higher advance

⁹ One-off tariffs are also used partly to cover one-off costs. The main question here is whether fixed costs may be recouped via one-off tariffs.

¹⁰ The investment risk of the supplier of unbundled access is thereby partly internalised by wholesale buyers who profit from the new infrastructure.

costs.

52. The commission accepts in principle the division of unbundled fibre tariffs into one-off tariffs (even if this goes further than a fee for one-off costs) and periodic tariffs. The reasoning is that a one-off tariff lowers the investment risk for the supplier of unbundled fibre access. However, the commission will prevent the one-off tariff from forming a barrier to entry that is detrimental to effective competition or the creation thereof.

3.2.5 Summary

53. To prevent the competition problems of price discrimination and margin squeeze, non-discrimination rules of conduct apply to the SMP party's tariffs for unbundled fibre access. These are the same rules of conduct as were formulated in the draft market analysis decision. Concretely this means the following for the tariffs of unbundled fibre access:
 54. Firstly, regional tariff differentiation is permitted, but only if it is based on underlying cost differences (e.g. regional differences in construction costs).
 55. Secondly, discounts are permitted but may not differ from one buyer to another: if discounts based on advantages of scale are desirable, they must apply to all buyers and not to one buyer or a few buyers.
 56. Thirdly, a tariff construction using both one-off and periodic tariffs is permitted, such that more costs than simply the one-off costs are allocated to the one-off tariffs, provided this does not lead to excessively high barriers to entry.
 57. The commission wishes to make the following comment. In section 3.3 a wholesale price cap is laid down to prevent excessive access tariffs. No margin squeeze may occur in tariffs that are at or below the price cap.

3.3 Tariff principles for preventing excessive tariffs

58. In the draft market analysis decision on unbundled access the commission concluded that excessive tariffs are a competition problem that SMP suppliers of unbundled access to local fibre loops have the opportunity to cause and have the incentive to do so. Several tariff principles for preventing excessive tariffs are outlined below. These tariff principles also ensure that margin squeeze occurs less quickly.
59. Briefly, the basis of the principles is that a price cap is imposed, below which the tariffs for unbundled fibre access must fall. This ceiling is laid down at the beginning of the first regulatory period and is then indexed annually. Subsequently, the commission examines periodically the tariffs for unbundled fibre access to ensure that they are not excessively high. This is done by comparing the internal rate of return¹¹ with a standard rate¹². If this examination shows that the

¹¹ The internal rate of return is the discount rate that gives a net present value of zero for a series of future cash flows.

¹² It is customary to take a weighted average cost of capital as the standard rate. This is explained further in section 3.3.2.

internal rate of return is above the standard rate, the price cap will be adjusted downwards. These principles are explained and elaborated later in this document.

3.3.1 Price cap

60. Pursuant to section 6a.2 in conjunction with 6a.7, TA, the commission may impose obligations with respect to tariff control or cost allocation. Tariff regulation aims to prevent excessively high tariffs and margin squeeze.
61. At the beginning of the first regulatory period the maximum starting tariff¹³ (referred to below as 'T₀') for unbundled fibre access is to be fixed for all investments to be made ('wholesale price cap'). The wholesale price cap will apply to tariffs after discount, such that the effects of a discount scheme allowed by the commission at T₀ are taken into account. This wholesale price cap will then be increased annually by the consumer price index (CPI). So in the course of time the wholesale price cap is formed by T₀ increased annually by the CPI. Tariffs for unbundled fibre access must not exceed this wholesale price cap.¹⁴
62. T₀ will be determined by the commission on the basis of a cost model¹⁵, in which the relevant investments and costs for unbundled fibre access are included. The commission will use the investor's business model to determine T₀. The commission will assess whether the inputs in this business model contain reasonable, genuinely expected¹⁶ values. The main parameters in such a model are the expectations with respect to (1) the discount rate; (2) the payback period and economic service life; (3) the penetration level (anticipated consumption level over time); (4) the capital costs (mostly excavation costs); and (5) the operating costs.¹⁷
63. In this business model that is taken as reasonable the net present value must be set as equal to zero. The corresponding internal rate of return ('IRR') is known here as the 'starting IRR'. This results in T₀ (the maximum starting tariff) that the commission sets when the first regulatory period starts.
64. In the starting IRR no asymmetrical regulatory risks are taken into account, i.e. the asymmetrical risks resulting from retrospective regulatory intervention. Further details of this are given in the

¹³ As set out in section 3.3.2, regional tariff differentiation is permitted provided that it relates only to cost differences. This could result in a different starting tariff (T₀) applying in different capex areas, with a price cap being created for each capex area.

¹⁴ This price cap is determined individually for each unbundled tariff element, for example the wholesale price cap is applied separately for one-off and periodic tariffs for unbundled lines, co-location and backhaul. Therefore the wholesale price cap does not apply to the totality of the unbundled tariff elements (added all together, the total tariff), but for each of the unbundled tariff elements individually.

¹⁵ A discounted cash flow model, on the basis of which an SMP supplier takes investment decisions about fibre local loops, is in this case a suitable cost model for fixing tariffs.

¹⁶ By 'genuine expectations' the commission means 'neutral' expectations and not the expectations in a pessimistic or optimistic scenario. Amongst other things, this means that risks related to the demand for fibre-based services are not (partially) covered by including in the business model a pessimistic estimate of the expected demand.

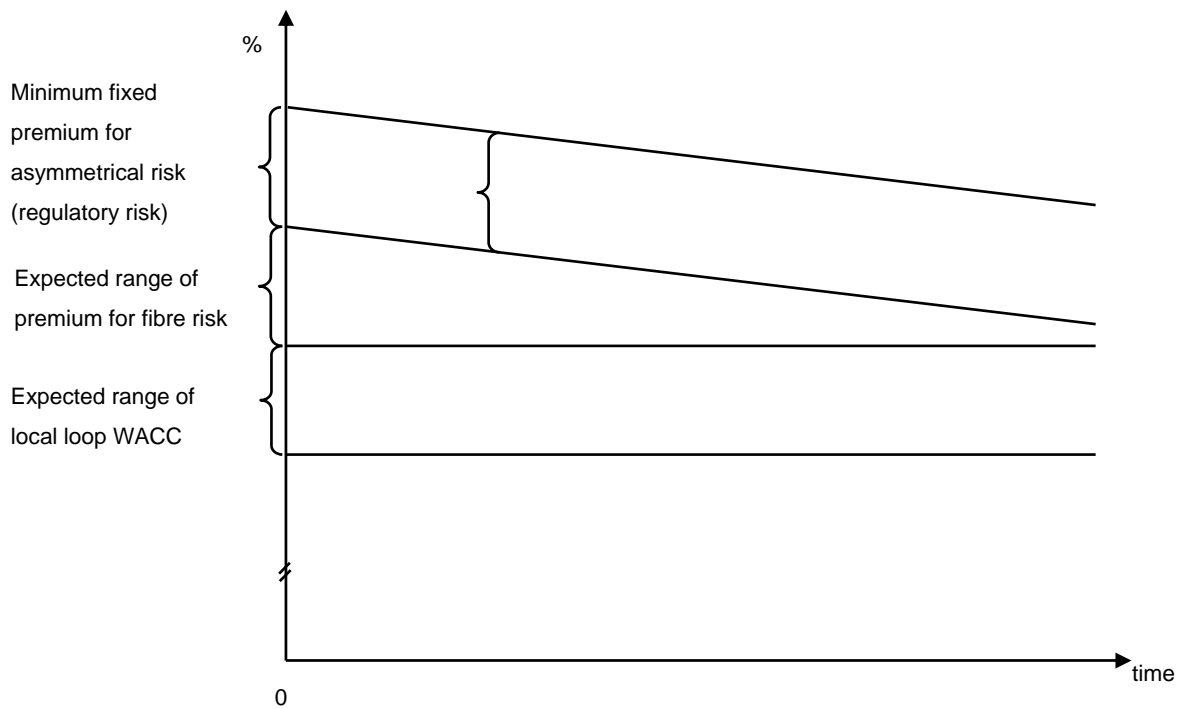
¹⁷ In the following chapter a detailed explanation is given of how the starting tariffs in the price cap are derived from the cost model and how the price cap develops in the course of time (for example, as a result of indexation).

next section. In chapter 5 of this document the commission gives more details of the cost model used to determine T_0 .

3.3.2 Periodic review of the price cap

65. Periodically, i.e. prior to the beginning of every new regulatory period, the commission decides whether the price cap in force at that moment and which applied to all fibre investment projects, is still effective in preventing excessively high tariffs. The commission will do so by comparing the prevailing IRR of the SMP supplier with the prevailing standard rate.
66. The basic criterion for this standard rate will be an all-risk WACC, comprising three elements. The three elements of the all-risk WACC are shown in the table below.

Diagram. Elements of the all-risk WACC



67. The first element is the WACC applicable to the existing copper local loop. In the course of time this WACC is expected to fluctuate relatively little.
68. The second element is a premium to the WACC for the copper local loop that takes account of systematic risks in connection with fibre investments ('fibre premium'). This fibre premium covers the risk that is related to the uncertainty surrounding future demand for new fibre-based services. In the European NGA recommendation the European Commission states that the parties must be compensated for project-specific, non-diversifiable risk. For this reason the commission takes the view that the fibre premium should be part of the all-risk WACC. The commission expects the fibre premium to be higher at the start of the investments and to decrease gradually in the course of time as uncertainty over the demand for new fibre services decreases.

69. The third element is a premium that takes account of asymmetrical regulatory risks. The commission hereby undertakes to give investors the possibility of realising an optimistic scenario in the future in the business case. This possibility will be constrained by the commission at such moment when excess arises. In the policy rules of the Minister of Economic Affairs for the tasks to be performed by the commission in the electronic communications industry¹⁸, and in the draft recommendation of the European Commission¹⁹, it is stated that this element must be taken explicitly into account, with the aim of encouraging investments in local fibre loops. For this reason the commission undertakes to use a minimum fixed premium in the all-risk WACC.
70. Before the start of each regulatory period the all-risk WACC will be compared with the current IRR included at that moment in the business model of the SMP supplier. The SMP supplier must make available to the commission the same cost model that is used to determine the starting tariffs. In this model the values of the various inputs can be altered, in comparison with the original cost model, in terms of realisations and changed expectations. The commission will assess whether the inputs in that business model constitute genuine realisations and/or reasonable values that can genuinely be expected.
71. The commission will derive the corresponding IRR²⁰ from that business model that has been assessed as being reasonable.
72. If this IRR is at or below the all-risk WACC at the time of the periodic review of the price cap, the price cap will not be altered.
73. A supplier of unbundled access to local fibre loops is itself able to monitor the IRR. At the moment that the IRR approaches the all-risk WACC the supplier is able to adjust the IRR downwards by providing more discounts or reducing tariffs. The supplier may also opt to roll out (more quickly) in less profitable areas. In this way the supplier of unbundled access to local fibre loops is able to prevent the price cap from being altered. The opinion of the commission is that such investment decisions are an incentive for investments in infrastructure.
74. If at the time of the periodic review the IRR appears to exceed the all-risk WACC, the regulator will intervene by adjusting the price cap downwards. If, in the course of the periodic review, it is established that the IRR has exceeded the all-risk WACC and thus the risk of excess has materialised, the commission will make a direct downwards adjustment to the price cap without delay. At the same time there remains, in accordance with policy rules, the possibility of raising the tariffs at every subsequent year in line with the CPI. This approach to processing the total surplus that arises is one that gives rise to the lowest administrative costs: the price cap is imposed once and neither further monitoring nor any additional investigation in the course of the regulatory period are called for. A further benefit is that of avoiding a period during the following regulatory period during which buyers pay too high a tariff.

²⁰ In the event that the discount rate makes the net present value in the business model zero

3.3.3 Summary

75. To prevent the competition problem of excessively high tariffs for unbundled fibre access the commission sets a price cap (T_0) at the start of the first regulatory period. This price cap is indexed annually on the basis of the CPI. Tariffs for unbundled fibre access may not exceed this price cap. Every three years the commission reviews whether the price cap is still effective in preventing excessively high tariffs.

4 Encouraging investments

76. In this chapter the commission describes the tariff regulation it is proposing from the point of view of the second objective pursued in regulating tariffs for unbundled fibre access, i.e. that of encouraging investment in local fibre loops.²¹ Investment risks in general are first examined, followed by special focus on regulatory risks. The question of how these policy rules covering tariff regulation for unbundled fibre access can limit regulatory risk when making investments in local fibre loops is then examined.

4.1 Investment risks and the role of policy rules covering tariff regulation for unbundled fibre access.

77. As with every investment there are risks attached to investments in local fibre loops. Amongst other things, these risks arise in connection with construction costs (which can turn out higher or lower than forecast) market demand (penetration can turn out to be higher or lower than previously expected), the cost of capital and relevant regulation. Investments will only be made if there exists at least a reasonable return relative to these risks. This also means that the higher the risks of an investment, the higher the minimum reasonable return must be relative to those risks.

78. Although the commission can exercise little or no influence on most investment risks, the commission can influence the regulatory risks of a specified investment. By limiting the regulatory risk, whilst nevertheless taking account of the objective of promoting competition, a regulator can ensure that investments in local fibre loops are encouraged, i.e. that these take place earlier than would be the case if the regulatory risk was greater. Investments that have to be made by purchasers of unbundled fibre access will also benefit from restrictions placed on regulatory risk.

79. Two approaches are open to the commission for constraining regulatory risk: the first is by providing greater regulatory certainty and the second is by permitting a premium for fibre risk and a minimum fixed premium in the all-risk WACC for asymmetrical regulatory risks.

4.2 Greater certainty related to tariff regulation

80. The first way in which the commission can constrain regulatory risk is by specifying in advance the principles of tariff regulation that will apply to unbundled fibre access by an SMP supplier. This removes uncertainty about the way the industry is to be regulated. These policy rules will, in themselves, act as a constraint on regulatory risk on investments in local fibre loops because the commission has set out in this document the manner in which it will regulate the tariffs for unbundled fibre access.

81. The European Commission states that laying NGA networks, such as local fibre loops, benefits from multi-year regulatory certainty. The global objective of this European NGA recommendation,

²¹ Fostering competition in the short term is the first objective.

as appears from point 4 of the preamble, is to encourage national regulatory agencies to take a consistent approach when regulating NGAs. The European Commission states that:

'Such a consistent approach is required in order to provide regulatory certainty to investments and foster investments and innovation for the benefit of all the parties involved.'

82. In the Explanatory Note to the European NGA recommendation it is explained that the recommendation is a guideline for national regulatory agencies whose duty it is both to raise the level of regulatory predictability and to offer market parties legal certainty. Under point 8 of the General Principles of the European NGA recommendation the European Commission states that:

'A consistent regulatory approach should apply over successive review periods [...]

83. On the other hand the European Commission also recognizes the difficulty of setting tariffs that must both give the proper investment incentives and that are at the same time set according to a method lending itself to consistent application over different periods. On page 17 of the Explanatory Note the European Commission notes in this respect:

'[...] NRAs will need to set the terms on which an SMP operator grants access to a third party. At the same time, such regulated terms need to preserve incentives to invest and innovate. This [...] raises the issue of the ability of NRAs to commit to terms that preserve such incentives, and remain consistent over several review periods.'

84. Although the European Commission underlines the policy of regulatory certainty, the European Commission also recognizes that there must be sufficient freedom of movement to allow the possibility of intervention later where necessary.

4.2.1 Weighing the arguments

85. Given the uncertainty surrounding the electronic communications industry a regulator cannot argue with certainty that there will be no reasons for changing regulation in the future. It is, for example, unclear whether in the course of time the risk of excessively high tariffs for unbundled fibre access and of margin squeeze will increase. This uncertainty about the future means that some room must be reserved for subsequent intervention so as to continue serving general policy objectives in this fashion.

86. A regulator may choose to vest the greatest possible certainty in its conduct during a specified period or a regulator may choose not to provide such certainty in advance. The crucial point here is whether the regulator's provision of certainty takes place *before* an investment is made or *after* an investment is made. Because a regulator's assessment may be mistaken, and especially so in the case where certainty is given before an investment is made, there arises the possibility of error: that, at the end of the day, the regulator intervenes erroneously or, equally erroneously, fails to intervene. In order to avoid the risk of erroneous conduct by the regulator, the approach whereby the regulator gives certainty before an investment is made is not preferred.

87. On the other hand it may be stated that uncertainty about the regulator's conduct may lead to an

investment not being made, because in that case the investor has to allow for the possibility of regulation, whether of tariffs or other matters, that may restrict potential revenues. If regulatory conduct is transparent and if the manner of regulation is made known in advance, the investor will take its decision accordingly. So as to prevent regulatory uncertainty from prejudicing the investment incentive, the approach whereby the regulator intervenes as far as possible before an investment is made is preferred.

88. These arguments point in contrary directions. The risk of erroneously intervening in advance leads to the conclusion that it is better not to intervene in advance while lack of regulatory transparency about possible future intervention may remove investment incentives. Advance specification of the framework governing how *potential* future intervention will take place, without setting out the precise details of that regulation reduces the risk of erroneous intervention. At the same time investment incentives will not be prejudiced.
89. The commission may also constrain regulatory uncertainty by the way it designs tariff regulation. Multi-year tariff regulation instead of single-year tariff regulation lowers uncertainty because buyers find tariffs more foreseeable and because the regulatee has an additional reason for improving efficiency. Tariff predictability provides market parties purchasing unbundled access with greater certainty when drawing up their business plans. This puts alternative suppliers in a better position to make a choice between, on the one hand, investing in their own infrastructure and, on the other hand, using access services. Furthermore, multi-year tariff regulation incentivises the regulatee to maximise operational efficiency. Under a multi-year tariff regulatory regime the SMP party may hold onto efficiency improvements made in the course of the regulatory period.

4.2.2 Position of the commission

90. Based on article 6a.4 TA the commission must, no later than three years after a market analysis decision has taken effect, re-examine whether obligations should be maintained or withdrawn. The first, second and fourth sub-sections of section 6a.1 TA permit the commission to proceed to define markets and to research them. A consequence of the TA is that the commission may not impose obligations for a period exceeding three years without having re-examined them.
91. By drawing up policy rules in which specified tariff principles are solidly anchored, the commission sees a possibility of providing greater clarity about the manner in which it will give substance to remedies in a particular market if the commission contemplates the imposition of such remedies. Because, as of today, the commission is as yet unable to estimate how the market will develop and whether investments in NGA networks will be successful, the commission takes the view that it is more appropriate to limit itself to policy rules. In its policy rules the commission has chosen in favour of multiyear price caps that are periodically checked for tariffs that are easier to foresee over the longer term.
92. By means of these policy rules the commission sheds light on the manner in which it will apply tariff regulation to unbundled fibre access in the future.

4.3 Systematic fibre risks and restricting asymmetrical regulatory risks

93. The second manner in which the commission uses tariff regulation to influence the risk attached to investments in local fibre loops is part and parcel of allowing a premium for the systematic risk for fibre and for asymmetrical regulatory risks.
94. In order to take proper account of the systematic risks attendant upon fibre investments, the commission explicitly incorporates a fibre premium in the all-risk WACC. This fibre premium covers the risk that is related to the uncertainty surrounding future demands for new fibre-based services. In the European NGA recommendation the European Commission states that the parties must be compensated for project-specific, non-diversifiable fibre risk. For this reason the commission takes the view that the fibre premium must be part of the all-risk WACC.
95. Depending on the form of regulation and its periodic review, project risks may be distributed asymmetrically. Guthrie (2006)²² portrays two extremes in which on the one hand unexpectedly good results bring investors higher profits, while when these are unexpectedly low they may lobby for a review of the regulatory framework. A floor is put on the downside of the risk allocation in such a fashion as to reduce the range of possible results. On balance this reduces the risk, which in turn leads to a lower required return and to an increase in the expected return.
96. The contrary applies when the investor specifically has to foot the bill for downside risks, while the regulator intervenes whenever the expenditures or the revenues turn out better than expected and a higher than previously expected return is obtained. In such a case it is precisely the upside of the risk allocation that is subject to a ceiling: in the case of a higher than expected return, the investor's returns are skimmed off while results that are worse than expected are not compensated. This too reduces the spread of possible results, but at the same time results in a reduction of the expected average return.
97. Given that the first objective of regulation is to foster competition, and in that context to prevent excessively high tariffs and margin squeeze, a degree of asymmetry in the risks is unavoidable. Where a higher return than was initially expected is obtained the chance of competition problems in the shape of excessively high tariffs and margin squeeze specifically increases. The first objective lays upon the commission the duty of eliminating these competition problems.
98. The commission explicitly allows for asymmetrical regulatory risks in its approach to tariff regulation of unbundled fibre access. The commission does this by incorporating a minimum fixed premium for regulatory risks in the all-risk WACC against which the IRR is periodically checked for excess. By incorporating a minimum fixed premium for asymmetrical regulatory risks in the all-risk WACC, the commission undertakes, ahead of the moment at which the investment decision is made, not to skim off positive results up to a certain level. Investors may assume they may hold on to the positive results from their investments up to a certain level.
99. In this fashion the commission fosters investments in local fibre loops. In so doing the commission

²² Guthrie, G. (2006), 'Regulating infrastructure: the impact on risk and investment', *Journal of Economic Literature*, 44(4): 925–972.

also gives explicit substance to the policy rules set by the Minister of Economic Affairs in respect of the tasks to be performed by the commission in the electronic communications industry²³, and to the European Commission's draft NGA recommendation.²⁴

4.4 Summary

100. The commission fosters investments in local fibre loops by reducing the regulatory risk for investors. The commission does this in the first place by providing greater certainty relative to the proposed tariff regulation by means of these policy rules. In addition the commission limits the regulatory risk by taking explicit account of systematic fibre risk and asymmetrical regulatory risks, for which it permits a fibre premium and a minimum fixed premium in the all-risk WACC.

²³ Minister of Economic Affairs, Policy rules in respect of the tasks to be performed by the commission in the electronic communications industry, Dutch Government Gazette, 9 June 2005, number 109, page 11.

²⁴ Draft commission recommendation on regulated access to Next Generation Access Networks, 18 September 2008.

5 Cost model

101. In chapter 3 the commission stated that T_0 (the maximum starting tariff) for unbundled fibre access will be set using a cost model the investor itself uses. In chapter 4 the commission stated that unbundled fibre tariffs will be assessed periodically for excess using the IRR of the investment project at the time assessment is made. In order to determine this IRR the same cost model as was used to set the starting tariffs will be taken as the basis. That basis will incorporate realised values and any modifications that have been applied with respect to expected developments in the light of experiences gained in the meanwhile. This chapter will help identify which cost model the commission will use for these evaluations, and which parameters will be present in that cost model.

5.1 Tariff regulation of existing networks

102. Until now the commission has tended to set the wholesale tariffs using the EDC model (Embedded Direct Cost model) for regulating tariffs for the existing network.²⁵ The most important starting point of this model is that the SMP party's cost data used to set tariffs is derived from that company's audited annual accounts.

103. The EDC methodology has already been in use for about a decade as a method for determining KPN's wholesale tariffs. When the EDC method was introduced KPN already had a telecommunications network with nationwide coverage. This involved a limited degree of expansion to cover areas where new buildings were being put up, the replacement of worn out network components and network upgrades that would often be performed in combination with the necessary replacements. A situation like this is akin to one of reasonable stability in terms of the cost perspective. On average, depreciation and investment are in a reasonable balance with each other. The method of depreciation chosen is of little consequence for the total cost picture and the setting of the tariff level.

104. In the case where a new network is to be constructed the tariffs are determined using a cost system such as that of EDC system and no balance between the write-downs and the investments obtains. For this reason the EDC model is less well-suited for regulating access tariffs to a new loop network (such as a fibre loop network). Because the book value is high at the beginning, more or less equal to that of the investments, high capital costs arise. These fall over time in line with depreciation. Hence cost prices are high at the beginning whilst later on they are low. This can lead to a barrier to entry and a tariff that is not optimally in synch with a retail tariff that is indispensable to enable achievement of the desired penetration in the retail market. When laying a new network this will typically lead to under-exploitation of a network in the initial stage. From the point of view of the benefit to society this must be seen as suboptimal.

105. Partly for the reasons set out above the EDC methodology is not used to establish tariffs for access to FttH-type local fibre loop networks, as was set out in section 2.1 above.

²⁵ The market analysis decision for unbundled wholesale access, OPTA/AM/2008/202719, 19 December 2008, provides further details of the EDC model.

5.2 European Commission tariff principles for new network elements

106. In point number 5 of the preamble of the European NGA recommendation a number of preconditions are set out with which, according to the European Commission, tariff regulation must comply. Hence the European Commission states that when setting tariffs account must be taken of the service life of the assets, the risk in terms of uncertainty about demand and uncertainty about the service life of the technology.

'Mandatory access conditions including, if applicable, price controls should reflect the characteristics of different assets (existing or new ducts, for example) of the concerned electronic communications networks and services providers, such as asset lifetimes and levels of risk in terms of uncertainty of demand and technological obsolescence. Article 12(2)(c) of Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities, requires NRAs to take into account the initial investment by the facility owner, bearing in mind the risks involved in making the investment, when imposing access obligations. Access conditions should thus in some cases reflect historic costs and in other cases the value associated with the new investment. When an NRA calculates the costs of access to new infrastructure elements mandated under the Access Directive, it is appropriate to allow a reasonable return on the capital employed which should incorporate, as appropriate, a project-specific risk premium.'

107. Relative to the tariff regulation applicable to new infrastructure the European Commission adds in point number 6 that when setting tariffs for network elements and accompanying facilities account must be taken of the investment risk of the specific project assumed by the investors.

'Where NRAs mandate access to new infrastructure elements, (...) price controls on reference proposals should incorporate a project-specific risk premium to reflect any investment risk incurred by the operator.'

108. In Annex I of the European NGA recommendation the European Commission finally reviews the tariff principles that, in its view, must apply to the setting of tariffs for new passive network elements. Tariffs must be based on costs plus a project-specific risk premium.

'The usage price for new ducts, other civil engineering works and other elements which are not active should be based on costs plus a project-specific risk premium to be included in the costs of capital for the investment risk incurred by the operator.'

5.3 Cost model

109. The commission subscribes to the starting points taken by the European Commission. This means that, when determining T_0 for unbundled fibre access, the commission will take account of the characteristics of the assets in which investments are made, such as the anticipated economic service life and the accompanying risk. When determining T_0 the commission will also take

account of the level of the investment and the commission will allow the investor to receive a reasonable return that reflects the corresponding investment risk.

5.3.1 Determining the starting tariffs for unbundled fibre access

110. The commission takes the view that the cost model used to determine T_0 for unbundled fibre access must be a multi-year cost model that includes, amongst other things, the expected economic payback period and the expected economic service life of the investments. The input for this cost model comprises the expected expenditure (above all capex) and the revenue streams expected over time. Using the discount rate (the minimum return required) and after having filled in all the parameter values, the model must finally be able to calculate the net present value of the investment project.

111. In order to ensure that the starting tariffs (T_0) are based on costs plus a reasonable return, the commission takes the view that the net present value of the cash flows expected prior to the investment (for the duration of a reasonable expectation for the economic service life of the investment) in the business model such as is used by the investor must be set at zero.²⁶ If the net present value of the cash flows expected prior to the investment is greater than or equal to zero, the investor is motivated to invest.

112. The tariff for unbundled fibre access is the output variable of the cost model set out above in which the net present value of the cash flows prior to the investment over the expected economic service life of the investment is set at zero. This starting tariff (T_0) forms the basis for the price cap, which provides the investor with flexibility in terms of tariffs. Companies offering unbundled fibre access have the option of applying tariffs that are below the ceiling. In section 5.3.2 the college reviews how the permitted tariff may evolve over time.

113. In addition to expected expenditure, expected revenues and expected economic service life the cost model also includes other inputs (parameters). These inputs will need to be evaluated separately by the commission. Indeed, if these parameters are wrongly estimated, the price cap cannot be estimated at the right starting level and it can no longer be assumed that competition problems such as excessive tariffs and margin squeeze will be avoided. The manner in which the commission assesses the different parameters in the cost model is described in further detail in section 5.4.

5.3.2 The price cap over time

114. The maximum starting tariffs T_0 set at the beginning of the first regulatory period may be indexed. This means that the price cap may be modified every year. Here the annual Dutch consumer price index (CPI) must be used as a maximum. The use of annual indexation must be taken account of in the cost model when determining T_0 . This means that the choice of indexation has the effect of not only increasing the tariffs over time, but also that T_0 will be relatively lower (than in a situation

²⁶ This does not mean that the net present value must be seen ex post facto as equal to zero at the end of the economic service life. Ex post facto the net present value of the realised cash flows at the end of the economic service life may turn out higher or lower than the net present value of the cash streams expected prior to the start.

without indexation). The choice to apply indexation does not correlate so much to the fact that costs over time will increase, but has been made in the interests of permitting over time a specified price model (i.e. increasing nominal prices). The commission will assess the reasonableness of the forecast in respect of the CPI in the cost model evaluation, using, amongst other things, historic CPI trends (Consumer price, all households, Statistics Netherlands [CBS]) and the inflation forecast for the coming years (macroeconomic surveys, CPB Netherlands Bureau for Economic Policy Analysis).

5.3.3 Cost model and periodic checks

115. In addition to determining T_0 for unbundled fibre access when the first regulatory period starts, the cost model will also be used for the commission's periodic checks. In the periodic checks the commission will check whether the price cap still deters the risk of excessively high tariffs to a sufficient degree. These periodic checks will be performed for as long as the supplier of unbundled access to local fibre loop networks is regarded as an SMP party.

116. As part of the process the commission performs a price cap check on the all-risk WACC before the end of a regulatory period. For as long as the commission concludes in its market analysis prior to a new regulatory period that the supplier of unbundled fibre access enjoys SMP the price cap may be adjusted downwards, specifically in cases where the internal rate of return has turned out higher than the all-risk WACC. If it appears from the market analysis that the supplier of unbundled fibre access no longer enjoys SMP the price cap will no longer apply.

117. As set out in chapter 3 above the college will determine the all-risk WACC when making the periodic check. Using this all-risk WACC the internal rate of return (IRR) applying at that moment to the investor will be assessed. The cost model will be used to determine this IRR. Here the base used will be that of the costs incurred, the revenues obtained and the realised parameter values as well as the then prevailing expectations in terms of revenues and expenditures and the then prevailing parameter values for the model. In other words, the IRR so determined indicates, amongst other things, how the investment project has evolved until that time relative to the original plan, including the expected parameter values of the cost model in that original plan.

118. If the IRR exceeds the all-risk WACC, there exists under the existing price cap a significant risk of the competition problem of excessively high tariffs. As set out in section 3.3 above the price cap will in that case be adjusted downwards to prevent these excessively high tariffs. Because the commission always establishes the all-risk WACC in these periodic analyses which, in addition to specific premium for fibre risk, incorporates a minimum fixed premium asymmetrical regulatory risks, in this way the commission stimulates investments in local fibre loops as well.

5.4 Parameters in the cost model

119. The cost model incorporates different input variables and parameters that are assessed individually by the commission. The review below examines the following parameters further. Returns are first discussed, including the starting IRR (for setting the T_0 starting tariffs); the all-risk WACC (for periodic checking for tariff excess); and the internal rate of return (to arrive at a picture

of the revised expectation in the course of time). In addition to expected returns we review below the expected payback period; the expected penetration level; the expected costs of capital; and the expected operating costs.

5.4.1 Returns

The European NGA recommendation

120. Under point 7 in Annex 1 of the European NGA recommendation the European Commission states that:

'[...] regulated returns should compensate companies for the relevant (i.e. project-based and non-diversifiable) risks they face when making the investment. The return that is allowed on equity capital should be based on a concrete pricing model built on realistic assumptions and rigorous implementation through an objectively verifiable methodology. The Capital Asset Pricing Model (CAPM) is an adequate instrument to calibrate such required rate of return. The CAPM equates the required rate of return to the sum of the risk-free rate and a risk premium, where the latter is defined as beta times the market risk premium. Other methods could be used if they are fully justified as meeting the same quality standards.'

121. The commission takes the view, just as the European Commission has done, that the reasonable return must compensate the supplier of unbundled access to local fibre loops for the relevant systematic (because non-diversifiable)²⁷ risk to which the investment is exposed. According to the commission and rejoining what the European Commission stated in its draft European NGA recommendation, the return permitted on capital invested must be based on a concrete pricing model built on realistic assumptions and an objectively verified methodology. The *capital asset pricing model* ('CAPM') is, the commission believes, a good model for setting such a permitted return.

122. If, based on realistic assumptions and an objectively verified methodology, it appears that complementary systematic risk applies to investments in local fibre loop networks then, so the commission believes, this risk must be reflected in a higher reasonable return.

123. The European Commission also states that market developments may cause new investments to bring with them a systematic risk other than that attaching to investments already made. In that case the permitted reasonable return for these new investments will need to be modified. Under point 7 in Annex 1 of the European NGA recommendation the text specifies literally that:

'Market developments which imply that additional investments involve a different systematic risk will lead to an adjusted rate of return (and WACC) for those further investments.'

124. In order to give tangible substance to these considerations about returns by means of policy rules

²⁷ Under the CAPM only systematic and therefore non-diversifiable risks must be compensated. According to the commission, project-specific risks must therefore be compensated only if systematic project-specific risks or non-diversifiable project-specific risks are said to obtain.

the commission intends to base itself on a starting IRR when setting the starting tariffs for unbundled fibre access during the first regulatory period and, in the subsequent periodic checks, to base itself on an all-risk WACC.

Starting IRR

125. In order to set T_0 the commission will base itself on the IRR used in the investor's business case model. When assessing this IRR the commission bases itself on the reasonably expected economic service life. The IRR that in the investor's business model makes the net present value of the investments equal to zero constitutes the basis for T_0 . This is the starting IRR. For further details of the starting IRR the commission refers to section 3.3.

All-risk WACC

126. The all-risk WACC consists of three elements. The first element is the WACC that applies to the KPN's (existing) copper local loop network. This WACC is expected to display a fairly stable development over time and fluctuates within a relatively limited range. The second element is a premium on the WACC for the copper local loop in order to allow for the systematic risk ('fibre premium'). The commission expects the fibre premium to be higher when the investments begin but to decline gradually in the course of time as uncertainty about the demand for new services over fibre goes down. The third element is a minimum fixed premium that takes account of asymmetrical regulatory risks. For further details of the all-risk WACC the commission refers to section 3.3.

Internal rate of return ('IRR')

127. Periodically (prior to the start of every regulatory period) the internal rate of return of the investment project will be set at that moment using the cost model. This internal rate of return takes account of expenditures and revenues actually realised until that moment and with the expenditures and revenues expected as from that moment. This approach permits the internal rate of return of the investment project to be used to estimate how the realisation has, up to that moment, kept in line with the initial planning and what the modified expectations for the future are.

5.4.2 Expected payback period and economic service life

128. The expected payback period is the period within which the investor expects to earn its investment back. The investor will set the reasonable payback period using the information from the economic and technical service life from which the investor derives the period over which the investment generates revenues. The investor must earn back the investment within this period.

129. In the cost model the payback period determines the moment at which the net present value in the cost model must be set as equal to zero. The payback period is an important parameter in the cost model. If the payback period is longer and assuming that the other values stay constant, T_0 may be adjusted downwards. To avoid excessive tariffs the commission takes the view that expectations about the economic service life should be taken as leading when setting the payback period.

5.4.3 Penetration level

130. In addition to returns, payback period and economic service life, the expected penetration level also constitutes an important parameter in the cost model. When a larger proportion of the number of households connected to a network activate their connection and begin consuming paid services via the network the costs per active connection go down. The proportion of households with active connections (paying customers) in the total number of households connected is referred to as the penetration level.²⁸ The penetration level will develop in a particular way over the service life of the network, growing during the initial operating phases until stabilising at a certain level with the passage of time.

131. The higher the expected level of penetration that was estimated prior to the initial investment, the lower the tariff will be. In order to determine T_0 an assumption in terms of the expected penetration level is incorporated into the cost model (which may incorporate the trend numbers leading to the expected final penetration). The commission assesses the reasonableness of the expected penetration level in the cost model. Here the commission may use the financing models supplied by the investor to the banks in order to raise loan capital. Penetration level estimates are also influenced by whether a supplier of unbundled fibre access can work on the basis of preordering, so setting a floor beneath which penetration cannot fall.

132. The penetration level will also play a part in determining the new internal rate of return in the periodic checks on excess (that are performed before each regulatory period starts). This may well differ from the penetration level expected at the start of the investment project, as a function of the penetration levels realised up to that time in the local fibre loops laid up to that date.

5.4.4 Capital expenditure (capex) – checks on allocation to capex categories

133. The investment per passive connection is a major cost driver. The level of the amount invested varies by area. For example, the cost of laying each connection will vary in proportion to the excavation costs incurred to reach each home. The investment amount per passive connection is only to a limited degree dependent on the question of whether services will be consumed via a passive connection. In the final analysis, capital costs will depend on both the level of investment per passive connection and the discount rate.

134. Given the direct relationship between investment expenditure and the tariff the commission takes the view that it is of great importance to monitor the investments per passive connection. Monitoring investment costs per passive connection must according to the commission be performed prior to roll-out to a new area. Because excavation costs are the most important cost factor, investment expenditures per passive connection may be determined at the time that excavation costs are known.²⁹ The commission must be provided with information about investment expenditures per passive connection. After roll-out, limits will cease to govern investment expenditures made by efficient business management.

²⁸ The penetration level can also be expressed as the percentage of *homes connected* divided by *homes passed*.

²⁹ In the commission's opinion, excavation costs are assumed to be known at the time of concluding a contract with a contractor.

135. By checking³⁰ the level of the investment expenditures per passive connection, investment expenditures (excavation and other charges related to laying) will be equal to the investment expenditures actually incurred. The parties are motivated to perform, or cause to perform, these investments as efficiently as possible, as lower investment expenditures lead to a lower tariff per connection and thus augment potential penetration.

5.4.5 Operating costs (opex)

136. The operating costs may consist of the costs for maintaining and managing the passive network and organisation costs, including overheads such as personnel and accommodation costs.³¹ Operating costs have a limited share in the total costs per passive connection. Contrary to investment expenditures (capex) a supplier of unbundled fibre access can indeed keep operating costs under control by running its business efficiently.

137. The commission will assess the operating costs when determining T_0 . In the course of subsequent periodic checks, an assessment of the reasonableness and the genuine expectations relative to the operational costs set out in the investor's business model will be performed.

5.5 Unbundling of service elements and new services

138. In Annex I of the European NGA recommendation the European Commission states under 4 that the tariffs of accompanying facilities must be set on a basis comparable to that for the tariffs for unbundled access to the fibre connection line.

'The pricing of ancillary services (such as power supply in street cabinets) should be calculated on the same basis as sections 2 and 3 above as appropriate depending on whether the service exists or is new. The access price of ancillary services should be consistent with the price implied by the SMP operator's other wholesale products (e.g. local loop rental).

139. The supplier of unbundled access to local fibre loop networks must, using a separate tariff, offer its services on an unbundled basis in a number of service elements. Hence the supplier of unbundled fibre access must draw a distinction between the tariff per line and the tariff for backhaul and co-location usage. This secures the principle that the tariffs are set consistent with the cost causality principle.³²

140. The commission takes the view that it is of importance that services are offered as far as possible on an unbundled basis by the supplier of unbundled access. In this way the buyer of unbundled access is enabled to choose whether to purchase these parts of the service from the supplier of

³⁰ The commission is specifically not going to assess the investor's investment expenditures in advance, i.e. it will grant them neither approval nor disapproval. Here this concerns the check on the actual excavation costs, and whether the allocation of an area to capex category is performed correctly.

³¹ Accommodation costs here are understood refer to costs for accommodating office staff and not co-location costs.

³² Whenever, for example, the costs of co-location are determined to only a limited degree by the number of those joining the system, the costs per wholesale buyer must decline in line with the cost causality principle in the case where the number of wholesale buyers goes up.

unbundled access, from a third party or to make its own arrangements for the service; the unbundled access buyer is thereby placed in a position where it can take a make-or-buy decision.

6 Conclusion

141. The commission takes the view that when implementing tariff regulation for unbundled FttH fibre access both the fostering of competition and the encouraging of investment incentives are essential objectives. Given that in many cases a trade-off arises between the two objectives the commission will have to find a balance between them.

6.1.1 Fostering competition

142. Fostering competition via tariff regulation exists in order to avoid the following price-related competition problems: price discrimination and margin squeeze and excessively high tariffs.

143. To avoid the competition problems of price discrimination and margin squeeze the rules of the price discrimination code of conduct apply to the SMP party's tariffs for unbundled fibre access. These are the rules of the code of conduct set out in the draft market analysis.

144. In order to avoid the competition problem of excessively high tariffs for unbundled fibre access the commission will set a price cap on the basis of a starting IRR at the beginning of the first regulatory period. This price cap is indexed each year by no more than the CPI. Tariffs for unbundled fibre access may not be above this price cap.

145. Every three years the commission will check whether the price cap still succeeds in avoiding excessively high tariffs by comparing the internal rate of return to the then prevailing all-risk WACC. If the internal rate of return exceeds the then prevailing all-risk WACC, the price cap will be adjusted downwards to ensure that the internal rate of return once again goes below the all-risk WACC then set.

6.1.2 Encouraging investments

146. As noted above, another of the commission's objectives is to encourage investments in new local loops. The commission fulfils this objective by setting constraints on investor exposure to regulatory risk. The commission does this first by providing greater clarity in respect of its proposed tariff regulation by means of these policy rules. In addition the commission limits the regulatory risk by allowing for asymmetrical risk caused by regulation and by permitting a minimum fixed premium in the all-risk WACC in addition to a fibre risk premium. This all-risk WACC will be used to assess the future returns of the SMP party.

6.1.3 Balance

147. When setting tariff regulation for unbundled fibre access the commission must find a balance between fostering competition and encouraging investments in local fibre loops. The commission seeks this balance by setting a price cap for unbundled fibre access using a cost model based upon a starting IRR. This price cap may be increased every year by no more than the CPI. Combined with the three-yearly checks on excessive returns, the wholesale price cap eliminates the risk of competition problems arising from excessively high tariffs and margin squeeze.

148. On the other hand, investments in local fibre loops are encouraged by using as the base an all-risk WACC that includes a minimum fixed premium for asymmetrical regulatory risks when making periodic checks on excessively high tariffs that are below the price cap. This all-risk WACC leaves scope for positive results relative to prior expectations and so constrains the degree of risk asymmetry.

149. The commission takes the view that with these policy rules the balance between fostering competition and encouraging investments in local fibre loops has been found.

THE COMMISSION OF THE INDEPENDENT POST AND TELECOMMUNICATIONS AUTHORITY

[mr.] C. A. Fonteijn, Chair