# Tele2's Response to ERG Consultation on NGN Future Charging Mechanism / Long-Term Termination Issues

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## 1. About Tele2

Tele2 is one of Europe´s leading alternative telecom operator offering a wide range of products to consumers across Europe. Tele2´s most important products are mobile telephony and broadband but the company also provides fixed telephony in a number of countries. Tele2 welcomes the opportunity to provide its comments on ERGs consultation NGN Future Charging Mechanism/Long-Term Termination issues.

## 2. Executive Summary

The European Regulators Group (ERG) proposes that members of the European Union (EU) migrate to a Bill and Keep (BaK) mobile interconnection regime in its most recent draft Common Position (CP).[1] The ERG bases its claims on four main arguments:

1. Elements of efficiency and convenience make BaK appealing
2. BaK offers substantial consumer benefits
3. The demerits of BaK are minimal
4. BaK would reduce regulatory demands

Tele2 contends that many of ERG's arguments are misguided and unfounded. In light of the current regime's (calling party network pays or CPNP) relative advantages over BaK, Tele2 is of the view that the current CPNP regime should be maintained.

Tele2 is especially surpised by the timing of ERG's draft proposal to move from a CPNP regime to BaK. The Commission issued a recommendation[2] on termination rates ("Termination Recommandation") in May 2009. According to the

[1] ERG (2009)
[2] Commuission recommendation of 7 May 2009 on the Regulatory Treatment of Fixed and Mobile Terminaton Rates in the EU (2009/396/EC)

Commission press release[3] this recommendation will reduce the mobile termination rates in Europe from the current EU average of 8.55 euro cents to a level of 1.5-3 euro cents per minute. According to the Termination Recommendation this dramatic cut in mobile termination rates will be implemented from 2009 until 2012. It is uncertain which effects this dramatic change will have on the telecoms market in Europe. Tele2 finds it surprising that ERG already now proposes a further change in termination regulation.

Before contemplating future termination models ERG should first analyse the actual effects of the cuts in termination rates in Europe, and that can at the earliest be done in 2013, after the Termination Recommendation has been implemented in Europe. How the Termination Recommendation is implemented in Europe could be different in the European markets, since the merits of a pure LRIC method clearly can be questioned in many member states. This could influence the result of an analysis in 2013 regarding the next regulatory step on the termination issue.

As a general note, when imposing new regulatory measures, such as the Termination Recommendation, the measure has to be implemented in the member states, before any analysis can be made regarding the actual effects. No member state has yet implemented the Termination Recommendation in practice. To draw any conclusions regarding the effects of the Termination Recommendation or BaK in Europe in 2009/2010 is clearly premature. Tele2 encourages ERG to make a thorough analysis of the next regulatory step regarding termination when the Termination Recommendation has been implemented in all member states, and this new future analysis must include all other possible model options. This is a prerequisite to make the right policy decision regarding termination for the future.

[3] ”Commission acts on termination rates to boost competition” (IP/09/710)

It should also be noted that no member state or any country in the world has mandated BaK. It is probably not surprising that no member state has mandated BaK, since it would be in direct breach of Article 13 of the Access Directive.

In order for BaK to become the new termination regime, it is clear that the Access Directive has to be amended. Against this background it is very surprising that ERG has not in its document addressed the fundamental legal possibilities of imposing the proposed change. Deciding on a change of the directive which would be needed in order to cater for BaK would indeed entail a lengthy process and a thorough impact assessment. The essential parts of such an assessment ought to have been produced as a part of the draft CP.

The ERG should not underestimate the magnitude of the change that BaK would entail. It argues for all of the good BaK can bring to consumers. But to the extent that it miscalculates or misjudges any of the consequences that a move to BaK will have, such misjudgments could have equally great negative consequences for Europe. Moreover, the telecoms industry is crucial from an infrastructural standpoint. It affects more than just one-to-one communications; it has significant implications for commerce, governmental operations, safety/emergency services, and the whole of society. To put scale of this risk and what is at stake in context, such a change would impact: 27 diverse countries, each with varying economies, mobile ownership rates and usage patterns; 500 million people; 595 M mobile subscriptions; and an industry worth €357 B or 2.9% of GDP.

The ERG wants to repair a system that is not, in fact, broken and wants to carry out a transition that has never been implemented before. Given all of the flaws in the ERG’s arguments and the scale of the risk that switching to BaK would entail, Tele2 is adamantly against this regulatory overhaul.

## 3. Elements of Efficiency and Convenience

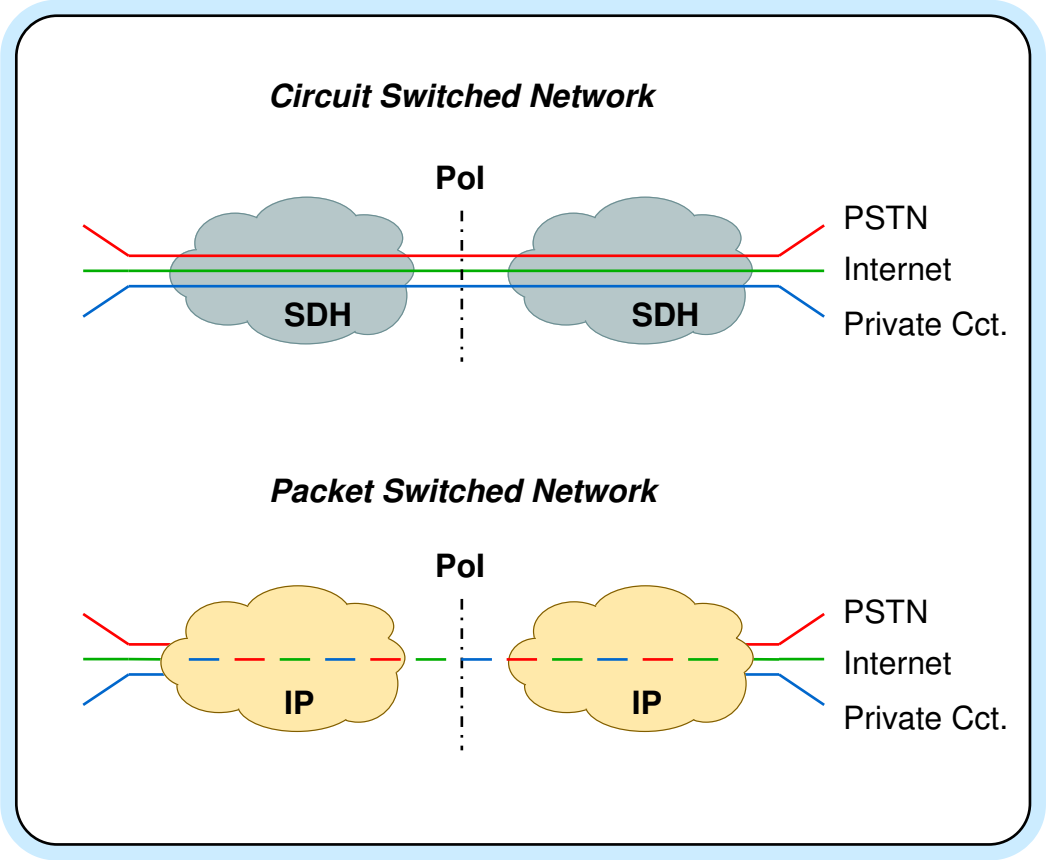
As a first base point of four main arguments ERG points to certain reasons why a move to BaK makes sense from a convenience and efficiency standpoint, each of which is flawed. It addresses:

- the migration to next-generation networks (NGNs);
- declining mobile termination rates (MTRs); and
- which billing regime is most efficient with respect to cost and utility.

### 3.1 Migration to NGNs

The ERG notes that telecommunications are on a path of convergence, through which multiple services will soon be carried over a single, next-generation IP network. It contends that differences in the charging mechanisms of PSTN/mobile and IP networks would create opportunities for arbitrage between regulated and unregulated services if these networks were run on the same network. This claim, however, is unsubstantiated and does not stand up to closer scrutiny. Although these services will share an underlying network, each of them remains distinct and logically separate. Indeed, the concept of shared infrastructure has a long history in legacy networks, albeit at lower levels in the network. For example, voice and data services often share a common SDH transport network in circuit-switched networks. In next-generation networks, the same principle applies: multiple services, logically separated, sharing a common transport network (see Figure 1). Although in the case of NGN, the transport network is based on IP, the same issues regarding service separation exist. That is, the ability to carry a separate service on the same network is not a new one. It has been implemented successfully before and can be done again without difficulty. ERG has not put forward any evidence to suggest the contrary.

**Figure 1**




The ERG also argues that the migration to NGN provides a unique opportunity to adjust the networks and charging mechanisms in parallel. Although it does not make this point the centerpiece of its case, a problem with this argument bears mentioning. Here, the ERG conflates the potential convenience of moving to BaK with a justification for it. Contrary to ERG's logic, whether or not the migration to NGN provides an opportune moment for implementing a new interconnection regime has no bearing on whether or not a new regime is actually necessary. Moreover, even if it did, this would not imply which regime to choose, just that one should be chosen.

### 3.2 Declining MTRs

ERG makes a similar error in logic when discussing a trend in MTRs. It argues that since Europe is on the path of declining MTRs already, Europeans might as well make the full switch to BaK. However, that decreases in MTRs diminish differences between BaK and CPNP does not provide any justification for making the switch; it is just a statement of fact. And before considering a switch to BaK, ERG obviously should wait and analyse the actual effect of declining MTRs that most likely will be the result of the Termination Recommendation.

Additionally, a CPNP regime with MTRs set to zero is not the same as a BaK regime. Although they may have the same outcomes from a payment perspective (in both cases, operators do not pay each other to terminate mobile calls), they have different implications when it comes to policy. That is, in a CPNP regime with MTRs set to zero, the CPNP principle still holds and MTRs can always be raised in the future if regulators and operators deem it efficient to do so. By contrast, switching to BaK entails a paradigm shift that would likely preclude taking this kind of action in the future.

Furthermore, the ERG is inconsistent in the way that it treats this issue. On page five of the CP, it admits, “Irrespective of this [the diminished differences between current MTRs and a MTR of zero] the relative merits in the long run of BaK and current CPNP need to be assessed” (5).[4] But one page later, the ERG contradicts itself, writing that this “is an important development that also effects the relative merits of interconnection regimes” (6).[5] Indeed, contrary to the ERG’s latter claim, this trend has no bearing on “the relative merits of interconnection regimes.” If anything, the growing similarities between the regimes should highlight the importance of the differences that remain. There is obviously a vast

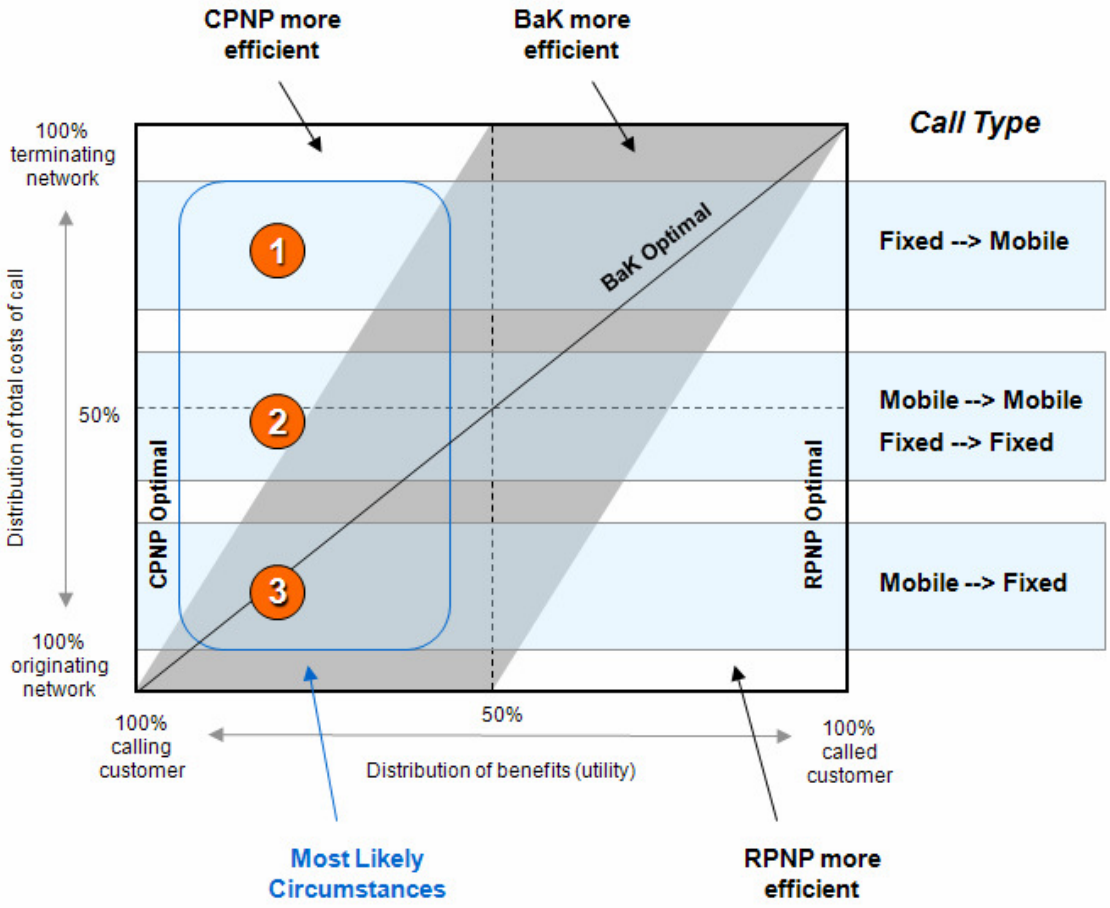
[4] ERG (2009)
[5] ERG (2009)

difference between a CPNP regime with termination rates between 1.5 - 3 eurocents and a mandated BaK where interconnection is set to zero.

### 3.3 Regime Efficiencies

One crucial distinction between CPNP and BaK pertains to their differential interconnection efficiencies. In the CP, the ERG concludes that BaK is more efficient because the ERG limits its assessment to calls that are mobile-to-mobile and fixed-to-fixed. While it acknowledges that mobile network operators (MNOs) have different network costs than fixed network operators (FNOs), it does not address this issue. More importantly, it does not account for the way in which this cost difference has different effects depending on the network types (i.e., fixed or mobile) of the calling and called users. Figure 2 provides a Tele2 augmented version of the efficiency model from the CP. The Tele2 model includes three long rectangular boxes, each of which encompasses a different call type; we define the call types based on the network type (i.e., fixed or mobile) of the calling user and the called user. This is the step that the ERG forgot to take.

**Figure 2**




Since mobile network capacity is more expensive than fixed network capacity, networks do not share call costs equally for calls between a fixed user and a mobile users; the MNO takes on a greater cost. This difference is reflected by the placement of the three boxes. The upper box (fixed --> mobile) is placed at the top of the model because the MNO bears more of the cost, and the mobile network is the terminating network. Similarly, the lower box (mobile --> fixed) is placed at the bottom because this time the mobile network is the originating network; its costs are still relatively greater. By not addressing the differential network costs, the ERG effectively ignores these two boxes.

Tele2 has also added a blue rounded rectangle to demarcate the set of most likely circumstances. On the y-axis, this box spans the range of the expected cost distribution of different call types. It sits to the left of the x-axis' midpoint because it is generally accepted that the calling user receives more utility than the called users.[6] Looking at the set of most likely circumstances, we make three observations:

1. CPNP is the most efficient interconnect regime for fixed-to-mobile calls;
2. CPNP and BaK are equally efficient for fixed-to-fixed and mobile-to-mobile calls; and
3. BaK is more efficient than CPNP for mobile-to-fixed calls.

These findings indicate that the most efficient interconnect regime is, in fact, asymmetric. That is, no single regime is more efficient for all call types, and no matter which regime one chooses, it will favor some call type over another. In light of this, if the ERG wants to be true to the ideal of economic efficiency then it should propose the hybrid, asymmetric regime.

From this one might also reason that the merits of BaK and CPNP are equal when it comes to regime efficiencies, however this conclusion would miss the point of the previous exercise. Once again, it is crucial to account for the different ways in which the two regimes treat network costs of fixed and mobile operators. Under CPNP, mobile and fixed operators pay termination fees to each other. Regulators and networks calculate these fees such that they are a fair reflection of network costs. Since the cost of capacity on mobile networks is higher than it is on fixed networks, mobile termination rates are higher than fixed termination rates (FTRs). MNOs consequently receive a net payment from FNOs to cover the higher cost of terminating calls on their networks.

[6] It bears mentioning that the asymmetry in utility may be less pronounced than that shown by the blue rounded rectangle, yet measuring this exactly is impossible. Still, the asymmetry in cost between fixed and mobile networks is in practice more extreme than we have depicted. Hence, our conclusion remains the same.

Under a BaK regime, however, FNOs would no longer pay MNOs to terminate calls on mobile networks. This would allow FNOs not to contribute to the higher cost of terminating calls on mobile networks, which would result in a net transfer of funds from mobile to fixed networks. The European Commission (EC) quantified what this transfer would be if MTRs were reduced from approximately €0.08 to €0.015-€0.03 by 2012. Based on these calculations, MNOs would provide a €2 billion subsidy to FNOs from mid-2009 through 2012.[7] Moving to a BaK regime (under which MTRs would be set to zero) would mean that this subsidy would actually be even greater than this EC projection. Assuming that MTR reductions have a linear relationship with the size of the subsidy, Tele2 estimates that this subsidy would be at least €2.75 billion, a subsidy with which mobile (and specifically, mobile-only) consumers would not be pleased. For Tele2 it is hard to understand why ERG is of the opinion that a mobile to fixed subsidy will benefit the telecommunication markets in Europe. In order for Europe to gain from the future mobile services, the mobile operators will have to invest substantial amounts in 3G and 4G networks. If regulators actively enforce subsidies from mobile to fixed, without taking into consideration the actual costs of mobile networks, this could slow down the investments into new mobile networks, i.e. 3G and 4G. Fixed telephony is a declining market, that hardly needs any subsidies. Any future investments into fiber networks should clearly not be fostered via the termination regime. It should also be noted that heavy investments are still being made in the GSM networks around Europe. Tele2 for instance made the biggest investment ever in its GSM network in Sweden in 2007 and 2008.

[7] EC (2009)

## 4. Impact on Consumer Welfare

The ERG argues that moving to BaK would deliver significant consumer benefits. It bases this claim primarily on a flawed comparison between CPNP and BaK countries. The logic of Tele2s criticism is as follows:

- The comparison is flawed before the ERG even begins to carry it out. It is subject to a small sample size of BaK countries. Additionally, no country is purely BaK and none has ever transitioned from CPNP to BaK. Furthermore BaK has up until now not been mandated in any country around the globe.
- Even if one chooses to conduct such a comparison, one cannot consider interconnection regime type as the only driver of mobile ownership and usage. The ERG fails to consider the myriad other factors that can impact these trends, such as country-specific and cultural profiles.
- Keeping these other factors in mind makes Canada and the US the most readily comparable countries. The ERG, however, excludes Canada from its analysis.
- Including Canada in the analysis challenges the conclusions that the ERG derives from its country comparison, namely that BaK would increase mobile usage and penetration while decreasing price.

We address each of these points in turn.

### 4.1 Analytical Problems with Country Comparison

First, Tele2 would like to address the comparison itself. There are only four BaK countries in the world today: Singapore, Hong Kong, the United States, and Canada. Moreover, none of them operates under a purely BaK regime; each has a different type of hybrid regime:

- Until 2009, Hong Kong employed a Mobile Party Network Pays (MPNP) model, in which the MNOs must pay for all traffic (whether originated or terminated) exchanged with FNOs.[8] MNOs pay each other to terminate calls based on commercially agreed-upon MTRs, though these payments generally dafult to BaK since the charges for this type of traffic are balanced for every call.
- The US has system of reciprocal interconnection compensation in which rates are based on geography, type of traffic and type of carrier. The FCC believes that the majority of mobile-to-mobile interconnection operates on a BaK basis. Other interconnection fees are calculated based on a range of complex factors, including federal and state regulations.
- Singapore is the only BaK country in which MTRs are actually set to zero. There are very low termination rates for traffic that terminates on fixed networks.

Thus, the sample is not only too small but also too inconsistent to produce meaningful and applicable insights. That none of these countries – in fact, no country at all – switched from CPNP to BaK further bolsters this point and casts doubt on the capacity of any analysis to predict what the consequences would be if the EU adopted BaK.

### 4.2 The Importance of Other Drivers

Even if one were to go ahead with this analysis despite the abovementioned problems, one cannot ignore the diverse set of factors that drive the mobile economy besides interconnection regime type. By making regime type the only independent variable in its analysis, the ERG fails to control for these

[8] The country is currently undergoing major regulatory changes, though the MPNP regime was in effect for the time period used in the ERG's analysis.

other drivers. Considering factors that might make a group of countries otherwise comparable, however, is a crucial step in any such analysis. Looking at country-specific and cultural profiles, as well as socioeconomic metrics, the EU is much more similar to North America than it is to Singapore and Hong Kong. A fact that can be pointed out is the relative sizes of the regions included (or excluded regarding Canada) in the ERG analysis. The areal of the US is 9,5 million km2, Canada 10 million km2, EU 4,3 million km2 whereas Hong Kong is 1092 km2 and Singapore 693 km2. This means that the EU is approximately 6000 times bigger than Singapore. There is also a huge difference in the size of the population. By grouping the US with Singapore and Hong Kong without controlling for the differences between these countries, the ERG has therefore made an invalid comparison.

### 4.3 Comparing the Most Comparable Countries

Taking these other factors into account, countries in the EU are most comparable to the US and Canada (more so than to Hong Kong and Singapore). This guides the focus of the analysis, suggesting that if the object is to derive a hypotheses as to what may happen if BaK were implemented in the EU, one should look to these two countries for answers. The ERG, however, excludes Canada from its analysis, maintaining that “it is not clear which regime Canada is using” (23).[9] This is not an acceptable reason for excluding a potentially useful country from the analysis.

In fact, like other BaK countries, Canada also employs a hybrid regime. A MNO is entitled to interconnect as either a wireless service provider (WSP) or a competitive local exchange carrier (CLEC). If the operator chooses to be treated as a WSP, it receives no payment for calls it terminates; it pays termination fees to fixed operators; and traffic exchanged with other WSPs generally defaults to BaK, as charges are balanced for each call. If the operator elects to be treated as

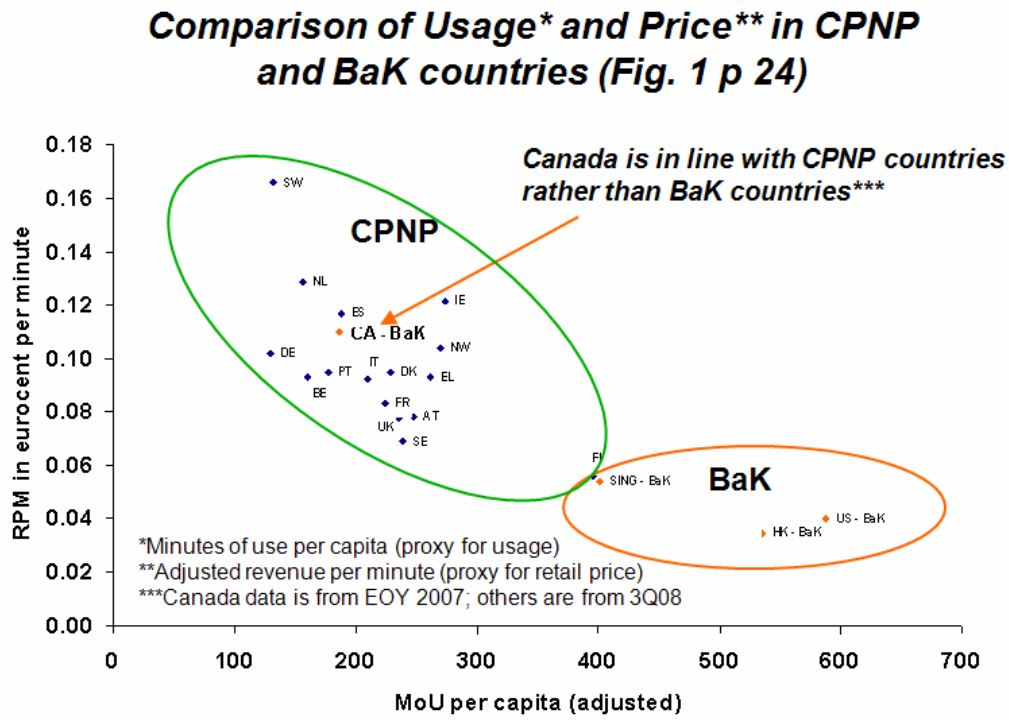
[9] ERG (2009)

a CLEC, traffic within local interconnection regions is exchanged on a BaK basis; and traffic across regions is paid for based on set termination rates. Mobile operators make this choice based on operational territory, history, subscriber base, and the particular nature of their business models.

### 4.4 Including Canada Challenges the ERG's Conclusions

Including Canada in the analysis turns the ERG's country comparison on its head. The ERG contends that BaK have twice the usage and half the retail price per minute of CPNP countries. In the figure presented on page 24 of the CP, the ERG plots minutes of use (MoU) per capita against revenue per minute (RPM) to make this point. Plotting Canada on this graph, however, challenges the ERG's conclusion (see Figure 3). Canada's RPM and MoU put it in the middle of the CPNP pack. This suggests that moving to BaK by no means guarantees increased usage and lower price per minute.

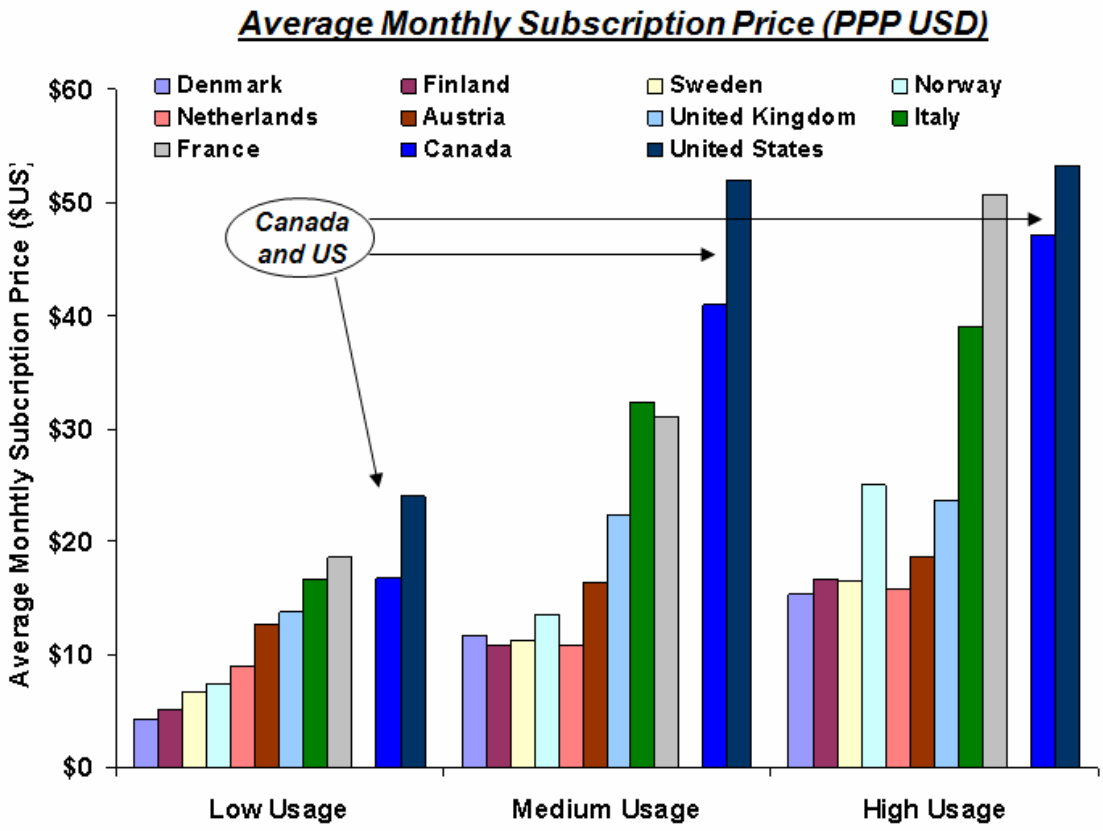
**Figure 3**




Source: ERG (2009), Analysys Mason (2008)

Similarly, a more comprehensive examination of subscription patterns contradicts the ERG's claim that BaK decreases prices. In Figure 4, a comparison is made of average monthly subscription prices for three usage profiles – low, medium, and high – across a variety of European CPNP countries as well as the BaK US and Canada. Subscriptions in the US and Canada are the first and second-most expensive of all countries examined here. This indicates that even if BaK would decrease prices on a per-minute basis (which we contend it does not), consumers would have to commit to a greater minimum spend for a mobile plan.

**Figure 4**




Source: OECD (2009)

The ERG acknowledges that there is evidence that indicates that US subscription prices are higher, yet it chooses to disregard these data because they are "far less aggregated than [the Merrill Lynch data that the ERG uses] and

therefore less precise as a total, aggregated indicator of price" (24).[10] These data, however, present only part of the picture. If examining interconnection regimes' impacts on overall consumer welfare is the goal of this assessment, as the ERG states it is, then total price (as opposed to price per minute) is unquestionably the most important datum to examine. Indeed, considering price on a per-subscription basis demonstrates that overall, consumers in the US and Canada have to spend more money on their mobile subscriptions than their European counterparts. When ERG chooses to use only one part of the picture, the per minute price, the conclusions drawn by ERG are not based on facts. What is important to the consumer is the total mobile spending, and figure 4 shows clearly that the total mobile spending is higher in BaK countries than in CPNP countries.

It is clear that Canada's inclusion in this analysis suggests that BaK could hurt consumer welfare by increasing subscription prices without increasing use or decreasing price per minute. Given the extent to which including Canada contradicts the ERG's findings, the ERG's deliberate exclusion of this country seriously detracts from the credibility of its conclusions.

## 5. The Demerits of BaK

Canada not only casts doubt on the potential benefits of BaK, but it also calls into question the ERG's assessment of BaK's potential disadvantages, which are addressed in this section. These are:

- decreases in penetration;
- the impact on vulnerable consumer groups;
- public discontent with the new regime;
- increases in unwanted calls;
- the risk of call-back schemes;
- subsidies to countries outside the BaK domain; and

[10] ERG (2009)

- intra-EU subsidies during the transition process.

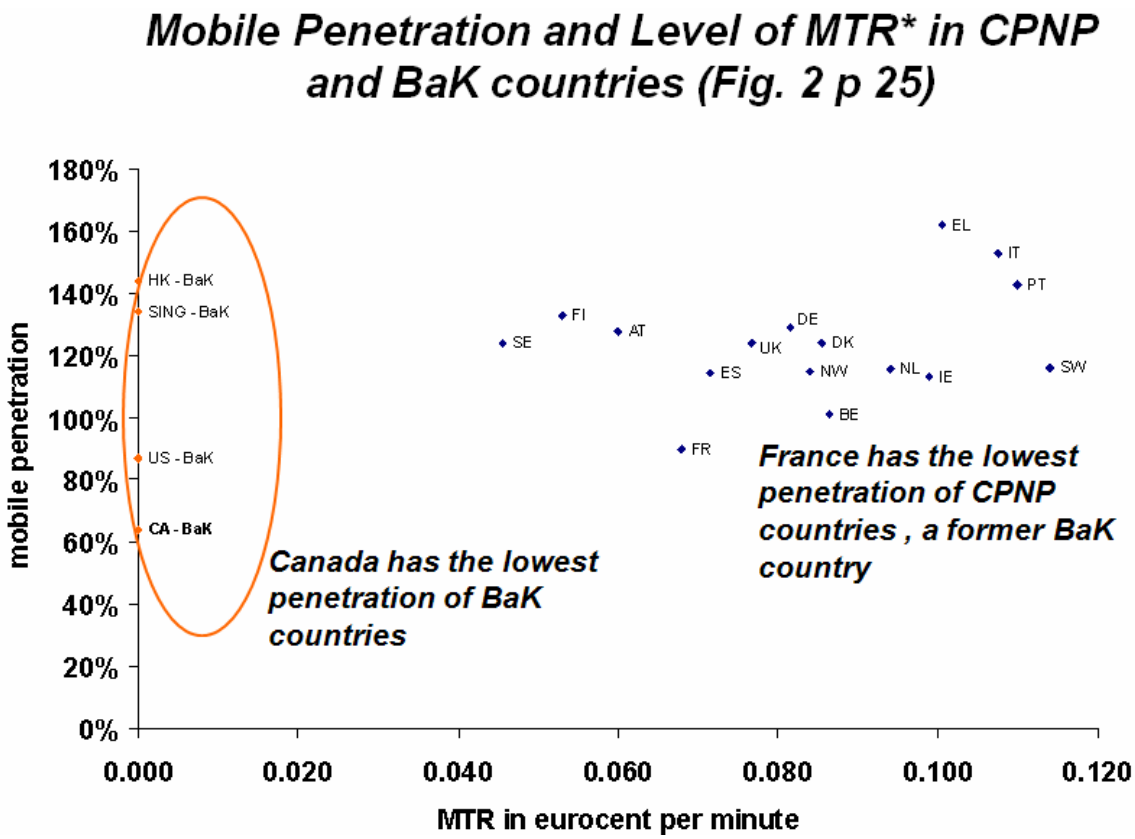
### 5.1 Decreases in Penetration

One shortcoming that Canada helps illuminate is the probable decrease in penetration that BaK will bring. The ERG tries to attack this idea preemptively. While acknowledging that US penetration (87%) is considerably lower than that of EU members (119% on average), it points to high penetration in Singapore (143%) and Hong Kong (144%).[11] Based on the apparent inconsistency among BaK penetration levels, the ERG asserts that "no strong conclusions can be drawn" on the relationship between BaK and penetration (25).[12]

However, introducing Canada once again sheds new light. At 64%, Canada's mobile penetration is lower than any other country – BaK or CPNP – evaluated here (see Figure 5). Given that the US and Canada are the countries most comparable to members of the EU, as previously argued, low penetration in these two countries foreshadows what the most likely outcome BaK would be in Europe – mobile penetration will suffer.

[11] ERG (2009). Although the ERG uses 123% for EU penetration, we use a more conservative and up-to-date statistic from EC (2009b).
[12] ERG (2009)

**Figure 5**



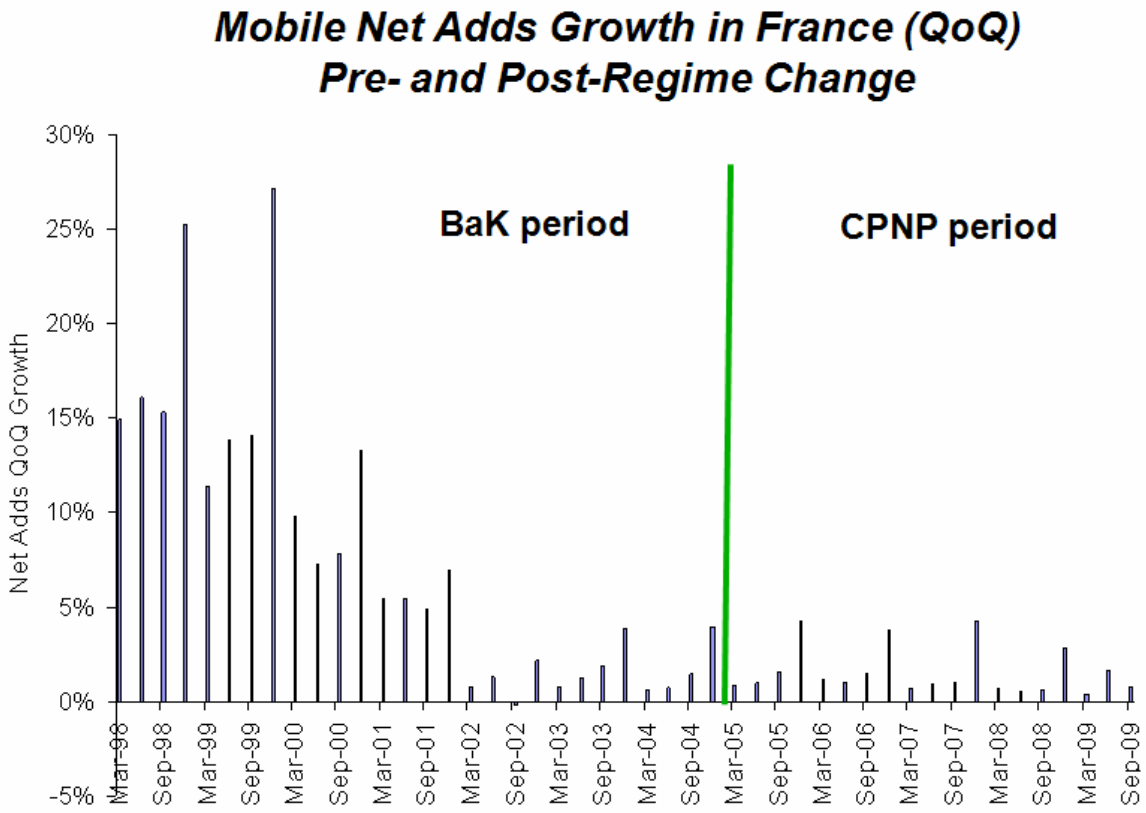

Source: ERG (2009), Lemay-Yates Associates, Inc. (2009)

Moreover, the ERG maintains that although low US penetration may be due to BaK, “the difference between the US and Europe is not significant” (25). On this point, the ERG stretches itself too far. The 32 percentage point difference between the US and Europe – which represents over a quarter of EU penetration and over a third of US penetration – is, in fact, significant. It is large enough that even if the penetration levels were off by as much as half (16 percentage points), a substantial penetration difference would still exist between the US and the EU.

The ERG also examines penetration growth in France to asses the role of BaK. In 2005, France transitioned from a BaK regime to a CPNP regime. The ERG reasons that if BaK has a negative impact on penetration, then France’s shift to CPNP should have led to a surge in penetration. Upon evaluating the

French data, it finds no such surge. However, as Figure 6 demonstrates, French mobile adoption had slowed significantly in 2001 during the BaK period.

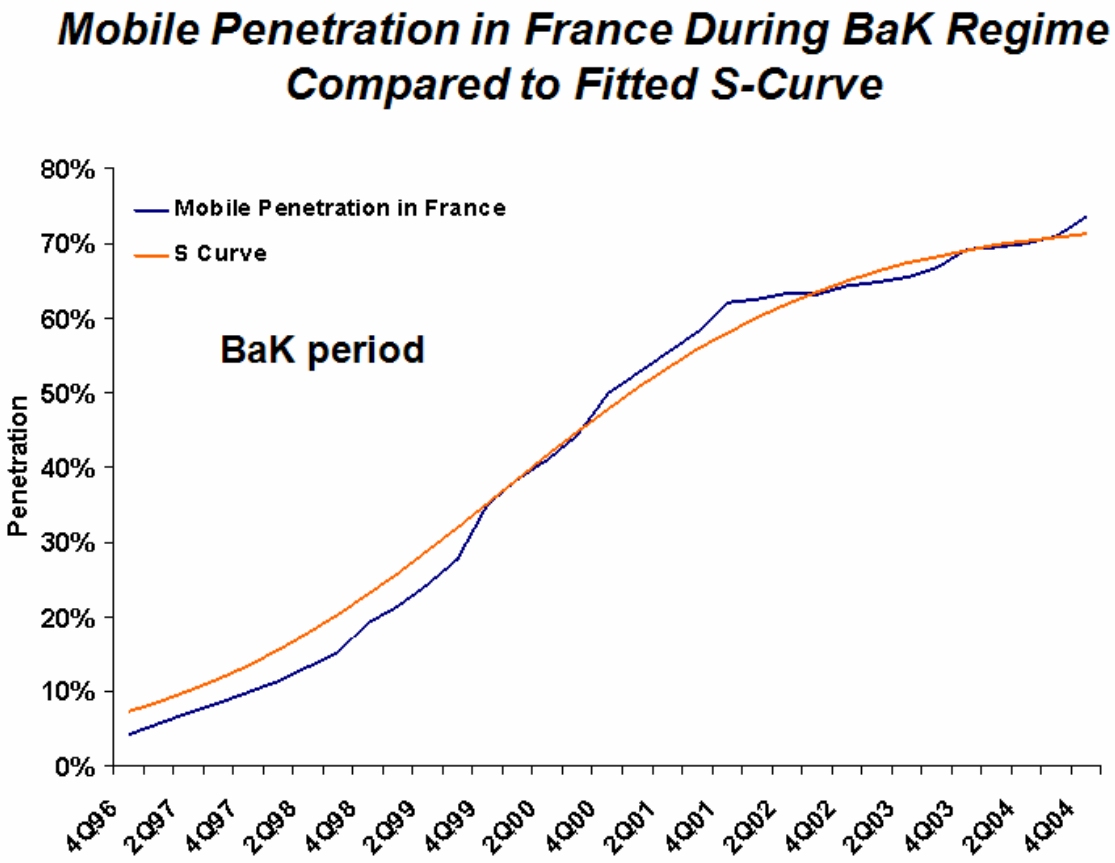
**Figure 6**




Source: ARCEP (2009)

Moreover, Figure 7 shows that French penetration closely followed a classic S-curve adoption pattern, and that it began to level off around the time of the regime change.

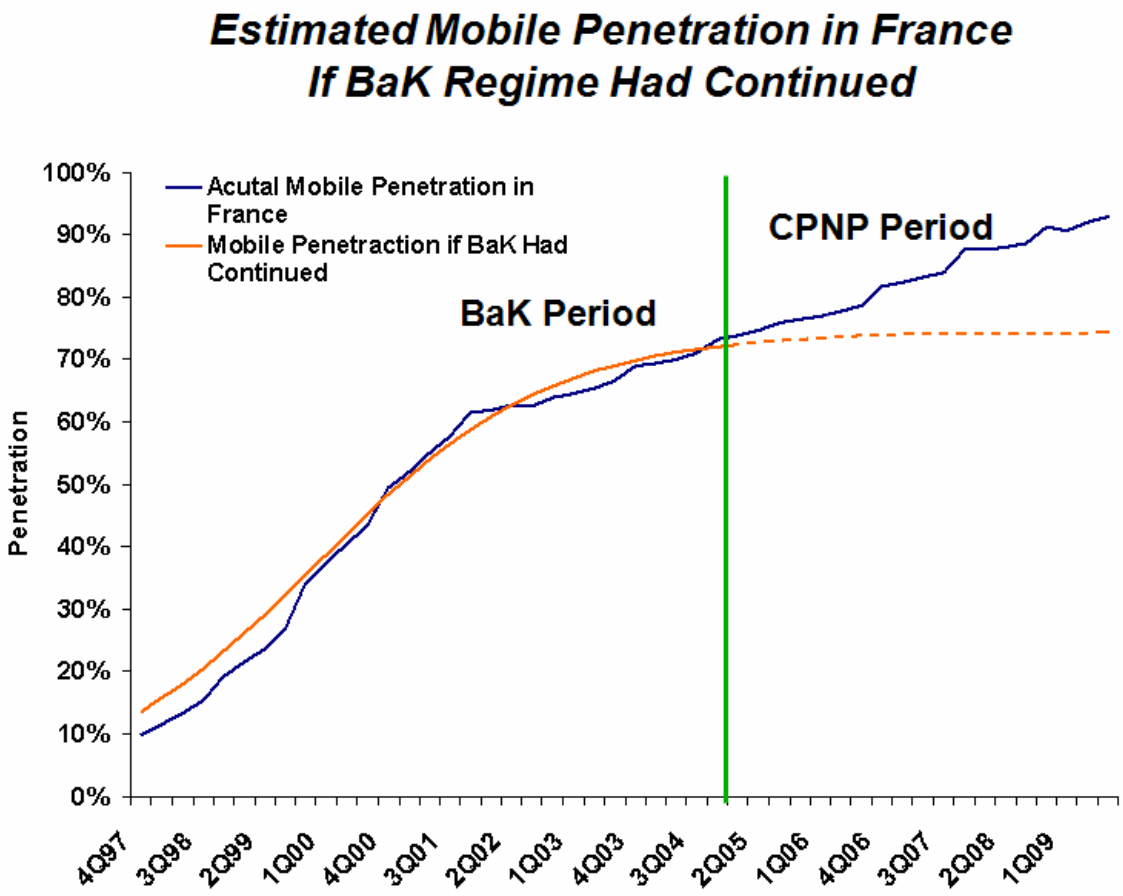
**Figure 7**




Source: ARCEP (2009)

Using the S-curve fit to French penetration until 2005, we extrapolate what mobile penetration would have been in France had there been no regime change. As seen in Figure 8, there was, in fact, a surge in actual growth compared to predicted growth following the introduction of CPNP.

**Figure 8**

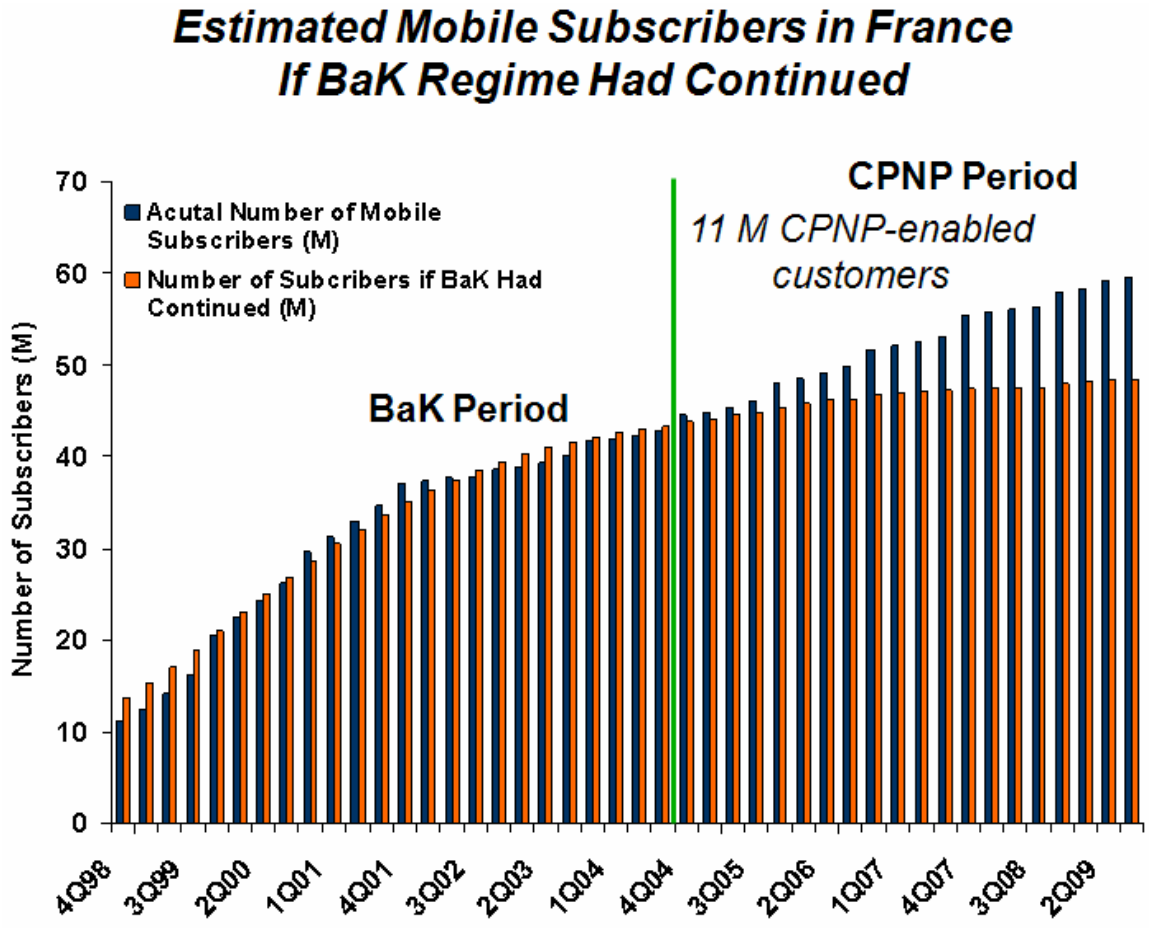



Source: ARCEP (2009)

If growth had continued along the trend predicted by the S-curve, mobile penetration in France would be 75% today; actual penetration is 93%.[13] Said differently, France might have 11 million fewer mobile subscribers today were it not for the introduction of CPNP (see Figure 9).

[13] ARCEP (2009)

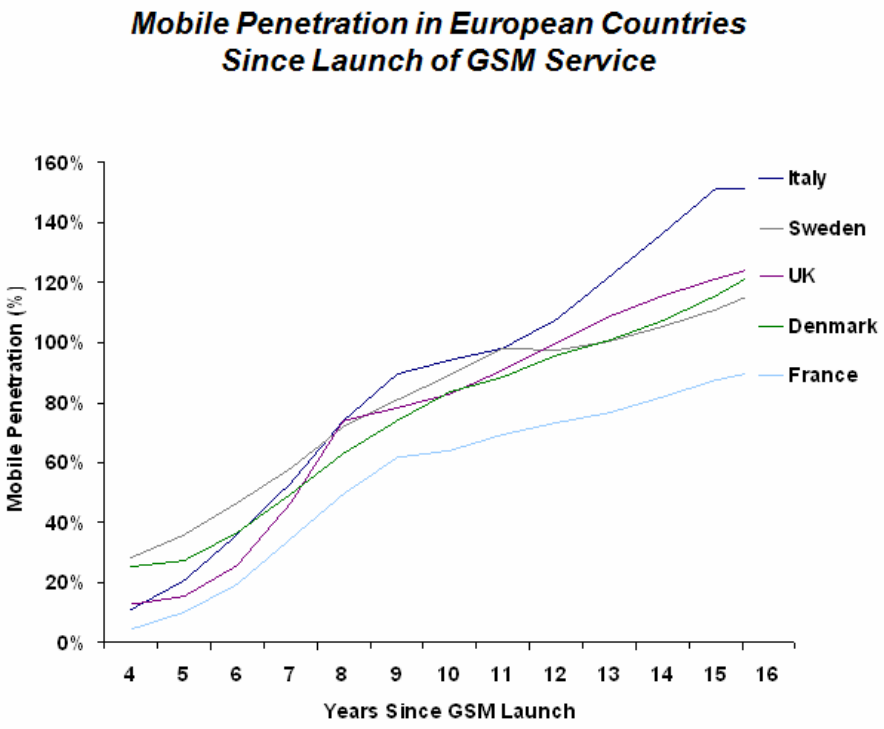
**Figure 9**




Source: ARCEP (2009)

Finally, as Figure 10 demonstrates, French mobile penetration has lagged behind other comparable European CPNP countries in mobile penetration and continues to do so. This buttresses the evidence for BaK's retarding effect on mobile penetration.

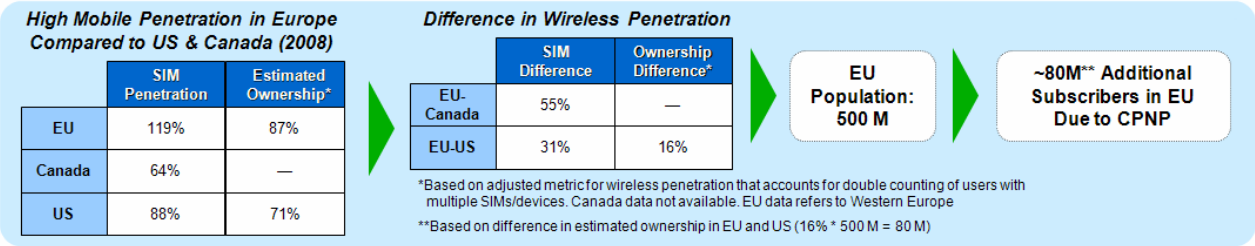
**Figure 10**




Source: ARCEP (2009), CIA (2008), ITU (2009)

It is likely that CPNP has enabled higher levels of penetration in the EU. Figure 11 quantifies this CPNP-induced benefit. Using the most conservative data on wireless penetration that can be found, it is possible to look at the ownership difference between the US and the EU. At 16%, this translates into an 80 million person difference. Said differently, the prevailing regime has enabled 80 million users that would not have been able to afford a mobile phone under BaK. This is also consistent with the analysis of French penetration, in which the difference between the predicted penetration from the S-curve and actual penetration is 19%.

**Figure 11**



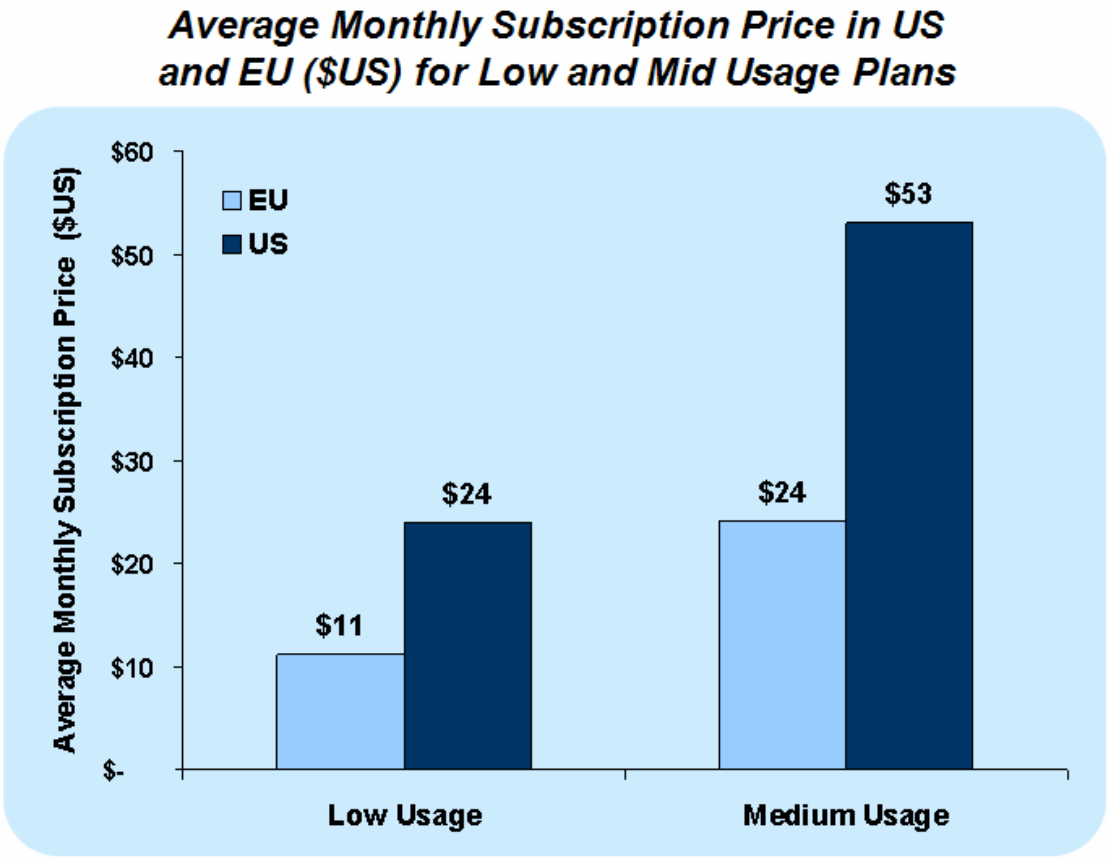

Source: Wireless Intelligence (2009), EC (2009), Lemay-Yates Associates, Inc. (2009)

### 5.2 Impact on Vulnerable Consumer Groups

There is still other evidence that indicates that BaK could put penetration levels at risk. Under the current regime, there are many low-use, pre-paid customers whose calls are mostly inbound. Mobile telephony is accessible to this group, because received calls are free and there are flexible top-up requirements. Operators can afford to retain these users because they get wholesale revenue from incoming calls. Under a BaK regime, however, many of these users will become unprofitable because the operators will no longer receive the termination revenue from other operators for incoming calls.

Since it is no longer profitable for operators to serve these users, operators will have to increase subscription prices and/or adjust top-up policies to recoup the loss of MTR revenue. The experiences of the US and Canada are once again instructive. As previously discussed, subscription prices in the US and Canada are higher than all others in Figure 4. As illustrated in Figure 12, average monthly subscription prices in the US are more than double those in the EU for low- and medium-usage plans. Ofcom has also found that base subscription prices are higher in the US than in most European countries.[14]

**Figure 12**




Source: OECD (2009), EC (2009b)

Higher base subscription prices put penetration at risk. It might be unrealistic to suggest that a switch to BaK will cause penetration levels to drop immediately to those of the US or Canada. It is not so improbable, however, to suggest that some pre-paid users will have to forfeit their mobile phones due to increased base prices, and that some would-be users will be unable to adopt. Any penetration decline is also likely to come from a disproportionate decline among pre-paid customers. That the pre-paid users make up a smaller percentage of total users in the US (22%) and Canada (17%) than in the EU (58%) corroborates this point.

[14] Ofcom (2009)

Finally, a penetration decline would hit vulnerable consumer groups the hardest. As explained previously, the characteristics of pre-paid users put them at the greatest risk under BaK. Additionally, low-income groups in the UK are more likely than higher-income users to have pre-paid service (see Table 1). Therefore, any change that puts pre-paid users at a disadvantage will have a disproportionate impact on low-income users. This correlation between income and pre-paid use is present but less pronounced in Canada and the US (see Tables 2 and 3). This finding is consistent with the expectation that a large portion of penetration decrease under BaK will come from pre-paid users who cannot afford higher base subscription prices. Similarly, low-income groups are also less likely than others (in UK) to have a mobile phone. This trend is even more pronounced in Canada and the US. This further indicates that low-income users will be the first to lose their mobile phones under BaK. Not only would this development be unacceptable to many EU citizens, but any decreases in mobile penetration or growth would run counter to the EC policy aim to promote digital inclusion (e.g., the European Commission i2010 strategy).

**Table 1**

*Mobile Ownership Comparison, by Household Income*

| | UK | | | | US | | | | | Canada | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | < £11.5K | £11.5K - £17.5K | £17.5K - £29.9K | > £30K | < $25K | $25K - $49K | $50K - $69K | $70-$99K | > $100K | < $25K | $25K - $49K | $50K - $69K | $70-$99K | > $100K |
| Mobile Penetration | 80% | 93% | 93% | 99% | 63% | 78% | 85% | 89% | 92% | 53% | 67% | 88% | 85% | 80% |
| % Pre-paid (adults w/mobiles) | 78% | 66% | 57% | 32% | 28% | 26% | 24% | 19% | 12% | 22% | 24% | 22% | 20% | 13% |

Source: UK: Ofcom (2009b), US: Source: Forrester (2008), Canada: Forrester (2008b)

### 5.3 Public Discontent

In addition to eroding EU penetration, such increases in mobile pricing and policies will be deeply unpopular with the public. The principles behind CPNP are accepted as European norms. The notion of paying for an inbound call – an event initiated by someone else – is alien to European consumers. As described above,

MNOs will have to adjust their propositions under BaK to recoup the cost of termination fees in other ways. They may begin to charge for received calls (also known as receiving party pays or RPP) or to count inbound minutes against monthly minute baskets. In the case of pre-paid users, MNOs may introduce daily charges or time-bound top-ups. This is likely to decrease pricing transparency, which would run counter to the Universal Service Directive, which states that "operators should provide users with transparent, comparable, appropriate and up to date information on prices and tariffs."[15]

Whether introduced overtly or covertly, consumer reaction to the introduction of anything resembling a RPP model will be overwhelmingly negative, and the ERG does not address this issue. In fact, aside from an anecdotal mention in a footnote on page 39 of the CP, the ERG all but disregards the inevitable public discontent that will likely erupt against RPP.

### 5.4 Unwanted Calls

The ERG acknowledges the risk that unwanted calls will increase if the EU adopts BaK. CPNP has a built-in deterrent to such calls, namely the fact that the cost of making these calls is borne by the person originating them. Under BaK, however, originating these calls would become much cheaper. The ERG presents three arguments for why BaK would not increase the risk of unwanted calls under BaK, yet of each these is weak.

First, the ERG contends that people will hang up, which will curb unwanted calls. The experience of other forms of unwanted communication, however, is instructive. Let us consider email SPAM, SMS SPAM, and fixed line telemarketing as analogues. Email SPAM continues to increase despite the fact that most people delete it and filter it out. In fact, SPAM volumes grew by 141% between March and July 2009 and are now estimated to be at least 117 billion

[15] European Parliament (2008)

emails a day.[16] Unwanted SMS is becoming problematic despite the fact that there are no mobile phonebooks. For instance, decreases in the price of sending SMS in India and China have led to astronomical increases in unwanted SMS. Currently, 30%-40% of all SMS in India and China is unwanted.[17] Finally, telemarketers in the US continue to call people on fixed lines even though most people hang up. The lesson – low conversion rates do not matter if a marketing channel is cheap enough. Most customers will find it annoying to receive unwanted calls, even if you can hang up once you understand it is an unwanted call.

Second, the ERG maintains that European laws prohibiting automated calling will limit the number of unwanted calls. Yet, email SPAM is illegal and it continues to grow. Moreover, it is nearly impossible to enforce the activities of those outside the EU. Given that most of email SPAM comes from outside the EU,[18] it is reasonable to expect that a significant portion of SPAM phone calls would, too. Lastly, it is difficult to enforce such legal impositions even within Europe. While the US has had some success reducing unsolicited fixed line calls through the creation of the National Do Not Call Registry, violations abound. In 2009, the US Federal Trade Commission (FTC) received over 1.8 million complaints about calls to people whose phone numbers were registered on the National Do Not Call Registry.[19] Companies continue to make automated or 'robocalls' even though this practice is illegal, and even mainstream companies like Comcast have been found in violation of FTC regulations.[20] Many of these 'robocallers' target cell phone users, in particular.[21]

Third, the ERG points to an Analysys Mason report in support of its claim that SPAM over Internet Telephony (SPIT) will not become an increased risk under BaK. According to the ERG, this report "does not show evidence of

[16] McAfee (2009)
[17] *PC World* (2009)
[18] McAfee (2009)
[19] Bourne-Farrell (2009)
[20] FTC (2009)

increasing SPIT in BaK countries" (34).[22] Reading the report in full, however, reveals that it barely addresses the issue of unwanted calls. Contrary to the ERG's claim, this report does not even directly address SPIT. Furthermore, the ERG neglects to point out that Analysys Mason finds complaints about SPAM SMS in Canada and Hong Kong; and that the majority of mobile subscribers in the latter country regularly receive unwanted calls from fixed lines.[23]

### 5.5 Call-Back Schemes

Another risk that BaK presents is the potential for arbitrage through call-back schemes. In this kind of scheme, a service provider uses two free terminating calls to connect two users for free. For instance, it could have a service number located on a central server. Caller A dials this number then hangs up immediately. This central server then calls back Caller A and connects her to her intended call recipient, Caller B. The ERG suggests that these schemes can be avoided for two reasons, though its arguments are thin.

First, the ERG asserts that a commercially agreed upon RPP model would address this problem, since operators could recover the cost of the call from the receiving party. However, the ERG acknowledges (albeit in passing) that RPP would be deeply unpopular with the public. Moreover, it should not presuppose what retail charging regime the commercial sector will or should adopt.

Second, the ERG suggests that restricting BaK to traffic on the network of the called user only would circumvent this problem. Since service providers implement these call back schemes by using two free terminating calls, the ERG suggests that it identify the final destination of the call and restrict BaK to that call; all other 'conduits' used in between to connect the call would be subject to CPNP. According to the ERG, these schemes are easily detectable, since an operator

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[21] LawyersandSettlements.com (2009). The methods by which robocallers obtain these cell phone users is unclear based on this article.
[22] ERG (2009)
[23] Analysys Mason (2008)

only needs to look for a situation in which a call *from* Caller A is immediately followed by a call *to* Caller A.

Despite the ERG's best intentions, this is, in fact, highly difficult to implement. The ERG itself admits that "it is very difficult to differentiate billing of termination traffic based on the source of the traffic" (48).[24] Operators would have to work closely with each other and regulators, share information, and track calls in real time (since so many users are pre-paid and minutes would have to be deducted in real time). As with voice SPAM, it would be difficult to enforce any such operations, especially if they were located outside the EU.

Finally, the ERG has identified only the simplest permutation of call-back schemes, and service providers are likely to invent new and creative ways to circumvent any proposed tracking systems. Originating callers can anonymize or spoof their phone numbers, as well as use third party numbers, to avoid detection. What will ensue is an arms race between operators and regulators on the one hand, and service providers on the other.

More complex technologies that the ERG's proposed solution does not address already exist. Using the internet to request a call-back is one such way. Amazon.com already uses this for customer service inquiries, and it is reasonable to expect that this could be implemented using a mobile phone application, as well. In fact, a company called Jajah, which provides international long distance using a hybrid Voice over Internet Protocol (VoIP)-PSTN network, has two offerings that would circumvent the ERG's proposed solution. With Jajah Direct, users are given a local number that is linked to another (usually international) number they wish to call. When they dial that local number, Jajah automatically connects them to the international number linked to it. Jajah users can also navigate to Jajah's mobile web site from their phones. They choose any number from their contacts, then receive a call from Jajah, which connects them to their desired contact.[25] Since in neither of these scenarios is a call from Caller A

[24] ERG (2009)
[25] Jajah (2009)

followed by a call to Caller A, operators would not be able to detect them using the ERG's method. Call-back service providers could easily apply either of these services to calling in Europe to capitalize on free termination under BaK.

### 5.6 Subsidies to Countries Outside the BaK Domain

The ERG's assessment of extra-EU subsidies is weak. If the EU transitioned to a BaK regime, countries outside of the EU that remain CPNP would continue to receive MTR revenue from EU members. These countries would not, however, have to keep paying to terminate calls into EU countries. As a result, EU consumers would effectively subsidize countries outside the new BaK domain. While the ERG concedes that this subsidy "can probably not be prevented" (49), the ERG hardly acknowledges the magnitude and consequences of the subsidy. Given the immense inbound call volumes to Europe this subsidy would easily be in the hundreds of millions of euros. Not only would this provoke public outcry, but it would also incentivize non-BaK countries to remain non-Bak, since they would want to continue to receive this net influx of MTR revenue from the EU.

### 5.7 Intra-EU Subsidy

The potential subsidy between EU BaK countries and CPNP countries outside the EU also highlights the difficulty of effecting a smooth transition to BaK among EU members. There would be a similar incentive for EU countries to remain non-BaK for as long as possible during the transition process. The EU would need to synchronize the transition of all member countries so that none of them could take advantage of others who may move to the BaK model first. For example, any country that remains CPNP while others have switched to BaK will have a net influx of revenue, since it will not have to pay the newly-BaK operators termination fees (but will continue to receive them). Some countries will most likely intentionally resist or delay transitioning to BaK during the process in order

to capitalize on the temporary imbalance of payments, posing yet another obstacle to changing interconnection regimes.

## 6. BaK Reduces Regulatory Burden

One of the ERG's central arguments for switching to BaK is that it will reduce the regulatory burden. The ERG neglects to consider three regulatory issues, however, that will complicate its plan for a reduced workload:

- cost-oriented (e.g., Long-Run Incremental Cost or LRIC) pricing models will still be necessary;
- implementing the Central Office Bill and Keep (COBAK) model, which the ERG proposes, is expensive and complex; and
- regulating the transition to BaK will be long and arduous.

### 6.1 Ongoing Need for Cost-Oriented Models

The ERG reasons that it can reduce its regulatory burden by eliminating the need for complex cost-oriented models, which are used to determine fair MTRs. Since BaK would eliminate MTRs, these models would no longer be necessary. Yet even though regulators would no longer need cost-oriented models for MTRs, they would still need to use these models in the course of regulating other parts of the telecoms industry. Most notably, the cost calculations of carrier pre-select (CPS), wholesale line rental (WLR) and access to copper/fibre (LLUB) arrangements still require cost-oriented models. These services and their corresponding regulatory needs will persist under BaK. Additionally, certain services would be excluded from the BaK regime, such as directory and emergency services; these would still require supervision and regulatory frameworks. That the EC has issued a recommendation to develop NGN inputs to LRIC models suggests that cost-oriented models will still exist after

NGN deployment.[26] Finally, drawing on other BaK countries' experiences bolsters this point. In Canada, for example, whilst operating a BaK regime, the regulator still requires Canadian LECs to file cost studies.[27] Thus, even a move to BaK will not eliminate the need for cost-oriented modelling.

### 6.2 Cost and Complexity of COBAK

The ERG proposes the COBAK model to address the 'hot potato' routing problem that could arise under BaK. However, COBAK is not without its own problems.

Under COBAK, regulators and operators define a set of regional points of interconnection (PoI). Each PoI serves one or more local exchanges and hence, end-users. Originating operators are responsible for delivering calls to whichever PoI serves the called number. (This is defined as the PoI closest to point of termination.)

The complexity of COBAK arises in the definition of the regional PoIs. If implemented, incumbent operators and their competitors would take differing positions on the 'correct' number and location of PoI to favour their existing infrastructure and calling patterns. Furthermore, any future change to the set of PoIs (e.g., arising from network optimisation or changes in traffic patterns) would be fiercely contested. For example, in the UK in 2004, BT announced the "21CN Programme" to replace PSTN and other legacy networks with a single NGN. During this effort, operators became mired in a protracted negotiation process over where to set the PoIs, and it is reasonable to expect that a similar process would take place if the EU member states were to migrate to COBAK. Thus, the regulators would have swapped an economic problem (LRIC) for a technical one (COBAK); and an established regime for an unproven one.

[26] EC (2009)
[27] Analysys Mason (2008)

COBAK would also exacerbate the cost differences between fixed and mobile networks. As previously explained, the cost to carry and terminate a call on a mobile network is more expensive than the equivalent cost on a fixed network. Whereas operators can assign fixed numbers a permanent PoI, they cannot do this for mobile numbers. Since a mobile subscriber is, by definition, mobile, there will never be a single PoI that is always closest to that subscriber. Thus, while mobile operators would have to bear the cost of transport to the appropriate PoI for calls to fixed lines, fixed operators would not have to do the same for calls to mobile phones. In addition, this cost asymmetry would exist whether the call was originated on a fixed or mobile line. By neglecting to consider this point, the ERG oversimplifies the process of implementing BaK and misses out on a crucial drawback to it. This would be a new conflict area that should not be neglected, and that potentially could be a bigger regulatory burden than the existing LRIC system, since the LRIC process has now been well tested by the NRAs for several years.

### 6.3 Long and Laborious Transition

The next challenge considered is the time and difficulty it would take to transition to BaK. Assuming that all countries move in parallel and without delay, it is a fair estimate that the earliest point at which the EU could actually implement BaK would be 2019. First, the EU member states would have to complete the current MTR reduction glide path, which closes at the end of 2012. It would then have to wait at least another year in order to observe the impact that this reduction has had on the European telecoms landscape. Next, it would require a consultation on a move to BaK from both the individual member states as well as the EU-level policymakers. In order for both of these groups to carry out their consultations – and then to reconcile them with each other – the process would take another two years. Finally, the EU would need to provide for an adjustment period for operators and consumers. During this period, operators would have to introduce new retail charging regimes and pricing plans to consumers. Operators

might also have to work out the terms of new commercial interconnection agreements between themselves, such as RPP agreements. In total, this process would take approximately eight years.

Additionally, this timeline does not account for the variety of potential obstacles to implementation that have been outlined in previous sections of this document. For example, any countries that seek to remain CPNP while others transition will drag out the process even more. Compounded with the fact that no country has ever moved from CPNP to BaK, this long timeframe for transition makes it especially difficult to predict the myriad complications that could arise. None of these have been addressed or assessed with any degree of detail by the ERG.

### 7. BaK not permitted under the current legal regime

As mentioned there is a cost difference between mobile and fixed networks, a fact that an introduction of a BaK regime will in essence neglect to take into consideration. It is an indisputable fact that there is a cost incurred when terminating a call. A BaK regime may therefore not be introduced in the EU member states, without altering the existing regulatory regime. The access directive[28] Article 13 has, inter alia, the following wording:

> *"National regulatory authorities shall take into account the investment made by the operator and allow him a reasonable rate of return on the adequate capital employed, taking into account the risks involved."*

If national regulatory authorities should want to mandate BaK, thus forcing the mobile termination price to zero, it would first be necessary to alter, inter alia, Article 13 of the Access Directive. There can be no discussion about the fact, that

[28] Directive 2002/19/EC

by setting the interconnect rate to zero, the NRAs are not allowing mobile operators a reasonable rate of return on capital employed.

This part of the access directive has been changed in the new telecom package[29]. The new wording of Article 13 is as follows:

> *"To encourage investments by the operator, including in next generation networks, national regulatory authorities shall take into account the investment made by the operator and allow him a reasonable rate of return on the adequate capital employed, taking into account any risks specific to a particular new investment network project."*

It is clear that also under the new framework operators are entitled to a reasonable rate of return on capital employed for access services. This also means that mandating BaK would entail a change of the directive.

The legal issues surrounding a possible regulatory change to BaK has not been addressed at all by ERG. This is highly astonishing since any regulatory intervention as a rule must be based on a legal foundation and must as such be viewed as a core issue.

### 8. Future investments

Mobile operators are investing in new network projects, i.e. 3G and 4G and are still investing heavily in 2G networks. Besides new investments operators also have high cost for maintainance, and substitution of incremental parts of the current networks.

[29] PE-CONS 3677/6/09 REV 6, revised text of article 13 in the access directive.

The fact that ERG proposes to cut off a revenue stream and at the same time making the assessment that an introduction of a BaK regime will not have any effect on future penetration (and implicitly coverage), must be built on the fact that the networks have already been built. Put differently, the implicit assessment is that the current operators will not dismantle parts of their current networks only because BaK is introduced. It is probably true that operators will not dismantle functioning parts of the networks. The main question though is whether operators in the future will continue to maintain and when necessary swap old or faulty equipment. All investments made in networks are based on a business case. In simple terms that means that a base station which, according to a business case, does not generate a positive cash flow will not receive investment. The result of that would over time be reduced coverage in remote areas of member states, parts which are generally sparsely populated. Less coverage will obviously mean a smaller penetration. Seen together with the above mentioned negative impact on penetration for vulnerable consumer groups, section 5.2, the total negative impact on penetration can be expected to be significant. Such a development would be in line with the current situation in the US and Canada today. For this reason it would over time be wrong to say or expect that there would be no impact on penetration if moving to a BaK termination regime were to be mandated.

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