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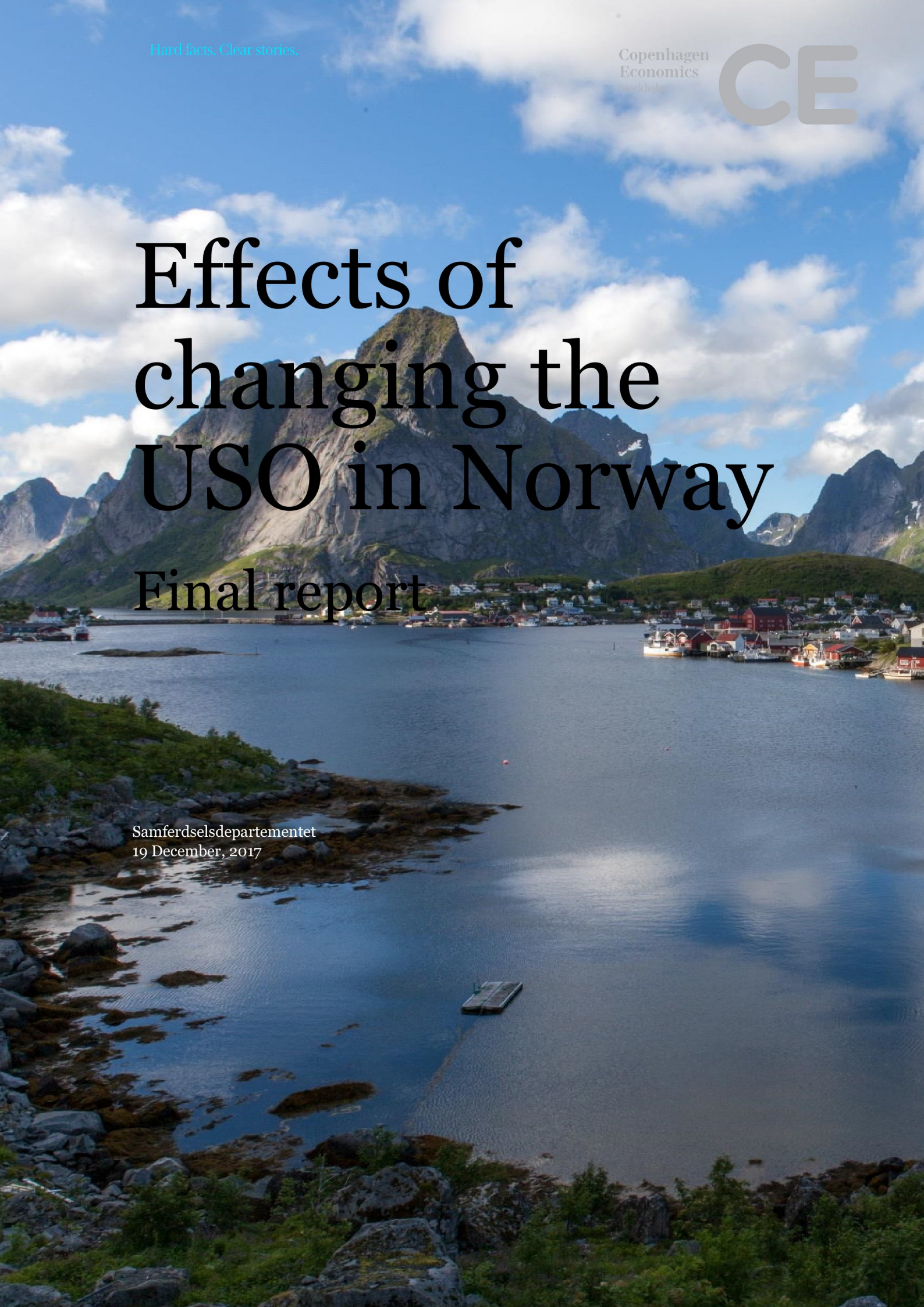
Stockholm

Effects of changing the USO in Norway

Final report



Samferdselsdepartementet
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Executive summary

Communication through physical letter post and the ability to receive and send goods within and between countries have for many years been considered a basic right for citizens across the world. In order to ensure that a basic level of postal services is provided on equal terms for all citizens, governments across the world impose a so-called universal service obligation (USO) on providers of postal services. The postal USO entails certain requirements, such as the obligation to collect and deliver specific types of postal items, collect and deliver mail a specific number of days per week, and ensure that prices for sending mail are affordable and uniform across the country.

The USO aims at covering a social need that would not be covered by the market on commercial terms, absent regulation. Covering this, otherwise unmet, need entails a benefit to the society. At the same time, supplying services that are not economically viable on their own comes at a cost for the designated operator obliged to provide the service. This is the so-called net cost of the USO. If the net cost of the USO for the designated operator is larger than the benefit to society, this will on balance entail a net cost to society.

Changing user needs call for an adjustment of the USO

According to the EU postal directive, a postal universal service provider can ask the government in its country for compensation of the USO net cost (i.e. the profit forgone due to the obligation). Posten is one of few operators in Europe that receive regular compensation for its USO net cost from the government. The format for this compensation in Norway is called *kjøp av post- og banktjenester –procurement of postal and banking services*.

Growing e-substitution and increasing e-commerce are changing the market dynamics and the need for universal postal services in Norway. As a result, the net cost of the postal USO has increased by more than 400 million NOK over the past few years (from 231 million NOK in 2014[1] to Posten's current estimate of 705 million NOK for 2018[2]). Taking into account that the benefits of the postal USO most likely have decreased[3], there is a risk that keeping the USO in its current shape may result in large socioeconomic losses over time. This development calls for adaptions to the current USO.

The assignment and our approach

Against this background, the Norwegian Ministry of Transport and Communication has commissioned Copenhagen Economics to conduct a study with the objective to provide a solid knowledge base and understanding of potential and suitable alternatives for the future postal USO in Norway and the associated impact on users and on public procurement of postal services. This will enable policy makers to make informed decisions in due time about how the USO should evolve. The assignment consists of two tasks.

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1 Prop. 19 S (2015-2016) Endringar i statsbudsjettet 2015 under Samferdselsdepartementet, p.6, https://www.regjeringen.no/contentassets/855fa96296ec4c06a1de0ffade9c2466/nn-no/pdfs/prp201520160019000dddpdfs.pdf.

2 Posten Norge (2017), Oppdatert grunnlag til statsbudsjettet for 2018.

3 Increased use of electronic means of communication have most likely reduced the benefits of the USO, because consumers have more alternatives to letters and are therefore less dependent on letter mail.

1. A review and an assessment of the current net cost calculations provided by Posten
2. An assessment of the socioeconomic impact of four different policy options where the delivery frequency required by the USO is altered for the years 2018-2025

The policy options investigated are:

- Required delivery frequency of 5 days per week throughout Norway (status quo)
- Required delivery frequency of 2.5 days per week[4] in urban areas and maintained delivery frequency of 5 days per week in rural areas[5]
- Required delivery frequency of 2.5 days per week throughout Norway
- Required delivery frequency of 1 day per week throughout Norway

The reason for considering only the delivery frequency element of the USO in relation to the assessment of different policy options is the fact that this element represents about 70 percent of Posten's estimated USO net costs in 2018. From 2019 to 2025 this share is even larger. Thus, reducing the requirements regarding delivery frequency has a significant potential to reduce the public spending on universal postal services.

Assessment of existing net cost calculations

We assess the existing net cost calculations in four steps:

- Step 1: Assessment of the counterfactual scenario identified by Posten
- Step 2: Assessment of cost and revenue effects
- Step 3: Assessment of intangible benefits
- Step 4: Assessment of the right to a reasonable profit and efficiency requirements

Step 1: Assessment of the counterfactual scenario identified by Posten

Posten's net cost of the USO is the difference in profit between the current scenario with the USO and a scenario absent the USO (the counterfactual scenario). We begin our analysis with an in-depth assessment of Posten's counterfactual scenario which entails changes within five areas: delivery speed, delivery frequency, delivery of international mail, delivery to blind and visually impaired people, and provision basic bank services. Based on our analysis, we conclude that Posten's counterfactual scenario is reasonable. We base this conclusion on four main observations.

First, we observe that many of the components in Posten's counterfactual already have been implemented by some European postal operators and that many other European postal operators are moving in the same direction. This suggests that it would be reasonable also for Posten to move in the same direction. Moreover, there are also several examples of European postal operators who (due to existing USO requirements) are not able to move in the direction of Posten's counterfactual scenario, but where the same elements are included in their USO net cost calculations.[6]

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4 In practice, delivery 2.5 days per week implies delivery 2 days per week and 3 days per week respectively over a two week period.

5 The classification of urban versus rural areas is made at the post-code level. A post code is classified as urban if it contains parts or all of a densely populated area, which is defined as having at least 10,000 inhabitants and a maximum of 50 meters between the households or businesses. The post code is otherwise classified as rural. Since a post code classified as urban may also contain areas which are sparsely populated, there is a risk of misclassification for some households and businesses.

6 Whereas there is no 100 percent guarantee that these operators would de facto change their behaviour in case they had the opportunity to do so, it is still a very strong indication of that they would.

Second, we observe that geographical conditions in Norway make it more costly to maintain a high service level there compared to in many other countries. This suggests that the benefits of reducing the service level in Norway would be higher than in many other countries.

Third, we observe that Norway's profile as a country on the forefront of technological adoption means that the impact of changes in the service level on Posten's revenues will be moderate as public authorities, businesses and private consumers to a large and increasing extent are communicating by electronic means of communication. This suggests that the reduction in demand and negative revenue effects stemming from a reduction in the service level will not be higher (in fact, they will most likely be lower) in Norway compared to many other countries.

Fourth, we observe that three elements in Posten's USO net cost (international mail, delivery to blind people, and provision of basic bank services in the rural delivery network) are priced at a loss making level due to reasons that Posten itself cannot affect. No commercial operator would price a service at a loss-making level. It is therefore reasonable that Posten would increase the prices charged or discontinue the provision of these services if it could do so.

Step 2: Assessment of cost and revenue effects
To assess the cost and revenue effects in Posten's net cost calculations, we apply a framework of best practice where we benchmark the methodology and assumptions applied by Posten against those applied in other countries. We also analyse actual developments in other countries and conduct interviews with large senders and competing delivery operators in Norway[7].

Based on our assessment, we find that the model used by Posten to calculate USO net costs adheres to international guidelines on USO net cost calculations and the calculation of cost effects is more elaborate than in many other countries where net costs of the postal USO are calculated. Based on a significant number of cross-checks and robustness checks we find no reason to believe that the model should be biased. Another observation supporting this is the fact that the model is used by Posten for a number of internal business decisions which are not linked to USO net costs[8]. This minimises the risk of the model being deliberately biased towards an overestimation of USO net costs.

We find that the assumptions applied by Posten generally are conservative and we have not been able to detect any calculation mistakes. Nevertheless, the model suffers from some weaknesses in terms of lacking documentation and qualifications, primarily in relation to assumed revenue effects. Based on our assessment, we suggest a few adjustments of assumptions which we implement in our estimation of future USO net costs.

Step 3: Assessment of intangible benefits
While the USO itself is a set of legal obligations which does not offer any benefits as such to the universal service provider, it may nevertheless create benefits stemming from an economic value of a

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7 Interviews have been conducted with the following stakeholders: The municipality of Oslo, the Norwegian Tax Administration, the Norwegian Cancer Society, Telenor, Lindorff, Aller Media, Coop, DB Schenker and Helthjem.

8 The model is, for example, used to provide Posten's board of directors with information about financial status and future expectations and it is also used to decide on yearly price changes. The model has also played a central role in decisions unlinked to the postal USO, such as the decision to change the distribution structure and increase the centralisation of sorting, and the decision to increase automation in production.

right or privilege that is linked to the USO. Such intangible benefits should, in accordance with the Postal Directive (2008/6/EC) [9], be included in the USO net cost calculation.

Based on our assessment, we find that Posten possesses an intengible benefit linked to the exclusive right to print "Norge" or "Noreg" on stamps. However, due to the small size of the philately market, the benefit is likely limited and should not be included in the calculation of USO net costs.

Step 4: Assessment of the right to a reasonable profit and efficiency requirements
According to the Postal Directive, postal universal service providers are entitled to a reasonable profit for providing the USO (i.e. they are not only expected to break even on these services). This profit should be included in USO net cost calculations.

Our analysis shows that Posten only includes a reasonable profit on 5 per cent of the net cost (the part relating to international mail). This is a conservative approach.

The Postal Directive's guidelines on USO net cost calculations also state that the universal service provider should be compensated for efficient costs only. In other words, in the case that Posten as a result of inefficient operations would have high costs today, these costs should not be compensated for by the public procurement of postal services.

Our assessment does not indicate that Posten operates inefficiently today. We find that Posten over the years has implemented a number of large cost saving initiatives and that the company very likely could not have done more to be even more efficient within the current regulatory framework (all elements included in Posten's counterfactual scenario require a relaxation of the USO in order to be implemented). The observation that competitive pressure from other operators, e-substitution, and requirements on a market based return from the owners incentivises Posten to operate efficiently further supports our conclusion.

Future regulatory options for the USO

With declining mail volumes, delivery of mail every day will become more and more costly. It is therefore important for Norwegian policymakers to consider suitable alternatives for the future postal USO in Norway and the associated impact on users and on public procurement of postal services. We apply the following three-step approach to provide policymakers with a solid knowledge base and understanding of the issue.

First, we estimate USO net costs (serving as a proxy for the level of public procurement of postal services) for each policy option by means of our own calculations.

Second, we assess the impact on USO benefits stemming from the different policy options. This analysis is conducted in four steps by i) assessing which services that will be affected significantly by the changes in the USO, ii) identifying the most important users of these services, iii) evaluating how the specific user groups may be negatively affected by reduced delivery frequency, and iv) analysing if there are other targeted measures that could be put in place to meet the needs of those user groups that are dependent on the current USO provided by Posten.

[9] "*The net cost calculation should assess the benefits, including intangible benefits, to the universal service operator*." Article 1 (25) Annex 1, Part B, Directive (2008/6/EC).

Thirdly, we discuss the impact on USO net costs and benefits across the regulatory options.

Development in USO net costs under different policy options

Our estimates of USO net costs show that reducing the USO requirements with respect to delivery frequency has the potential to reduce net costs of the USO by between 110 and 930 million NOK per year within the next eight years. The highest potential cost reduction is achieved when reducing the required delivery frequency to delivery one day per week throughout Norway. In our base case, this policy option has the potential to reduce net costs by approximately 440 million NOK in 2018, and almost 930 million NOK in 2025. However, the exact net cost (and thereby cost reduction potential) of this policy option is also the most uncertain as it represents a significant change compared to the status quo. A main reason for this uncertainty is that it is difficult to foresee how the demand for postal services would be affected if mail would only be delivered once a week compared to the current five days per week.

Reducing the required delivery frequency to 2.5 days per week throughout Norway would have the same impact on USO net costs as the reduction to one delivery day per week until year 2020. After that, the net cost for this policy option would increase as Posten would find it optimal to reduce delivery frequency below 2.5 days per week. Compared to the status quo (requiring delivery 5 days per week), a required delivery frequency of 2.5 days per week has the potential to reduce USO net costs by about 440 to 650 million NOK per year between 2018 and 2025.

The option to reduce the required delivery frequency to 2.5 days per week in urban areas only has a smaller cost reduction potential: Approximately 110 to 250 million NOK per year between 2018 and 2025 in our base case.

Development in USO benefits under different policy options

When evaluating the attractiveness of the different policy options, policy makers should not only consider the potential reduction in USO net costs compared to the status quo, but also the potential impact on users who are currently dependent on the universal services provided by Posten.

Our analysis of user needs reveals that most users of postal services in Norway are not dependent on delivery of physical mail five days per week. The reason for this is that neither senders nor recipients are dependent on fast delivery, or delivery on specific weekdays, provided by Posten today. The fact that many senders and recipients of mail may prefer a higher service level compared to a lower one does not necessarily imply that they are dependent on the higher service level. We also find that the large majority of businesses and citizens in Norway have access to alternative solutions which can fulfil the same needs as the postal universal service does today. Examples of such alternatives are digital newspaper subscriptions, electronic invoices, and physical delivery with alternative service providers.

Nevertheless, we identify a very small (and declining) group of citizens (elderly or disabled citizens, primarily in rural areas) who for different reasons do not have access to alternatives to Posten, or who cannot use the alternatives available to them. If the USO would be reduced, the Norwegian state could invest in targeted measures that do not exist today for this group. Examples of such targeted measures could, for example, be training for elderly in digital skills, specific home delivery

services provided to a small group of non-digital and immobile citizens, or partial public funding of express or registered letter services for specific needs, such as delivery of prescription medicines or urgent hospital notifications.

Balancing USO costs and benefits

When deciding on the future for the postal USO, policy makers have to consider the impact on both USO costs and benefits.

We find that all policy options entail significant prospects for reductions in USO net costs whereas the number of vulnerable users who are dependent on a high delivery frequency most likely is very limited. In fact, our analysis shows that (based on very conservative assumptions) there is a group of maximum 30,000-35,000 elderly and disabled citizens in rural areas who today are potentially dependent on the services provided by Posten within the USO and who would risk not having access to alternatives in case the delivery frequency provided by Posten would be reduced.[10] If policy makers can find ways to fulfil the needs of these users in a way that is less costly than providing the current service level implied by the postal USO, the Norwegian society would benefit without affecting any citizens negatively. However, even if some citizens would be negatively affected, it could be legitimate to reduce the current service level because of the large cost savings.

We also find that there are a number of alternative solutions that could be put in place to satisfy the needs of the identified vulnerable user groups. Although we have not estimated the exact cost of these alternative solutions, we find that they are likely to be smaller than the anticipated reduction in USO net costs. For example, with a reduction in USO net costs of between 440-650 million NOK (resulting from a reduction in delivery frequency to 2.5 days per week throughout Norway), this would imply at least on average 12,600-21,700 NOK per vulnerable user and year to invest in targeted measures to reduce the negative impact of reduced delivery frequency.[11]

In a situation where the required delivery frequency would be reduced to 2.5 days per week in urban areas only, this would according to our estimates lead to a reduction in USO net costs by approximately 110-250 million NOK per year. Although businesses and citizens in urban areas generally have access to alternative solutions today, there may be some citizens and businesses without access to alternative infrastructure. Thus, targeted measures identified for the case with 2.5 delivery days per week throughout the country could also be implemented with a partial reduction in deliv-

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10 The estimated maximum number of citizens dependent on the current service level of five days per week consists of (i) disabled citizens aged 15-66 in rural areas, (ii) citizens in rural areas above the age of 66 who read paper based newspapers and who do not access the Internet on a regular basis, and (iii) 5 per cent of remaining elderly citizens living in rural areas (as a conservative proxy for the number of citizens who could be dependent on urgent delivery to the door of e.g. medicines). The number of disabled citizens between the age of 15 and 66 who due to their disability are unable to work were in Q2 2017 24,000. Group (1): Assuming that the distribution of disabled citizens across rural and urban areas mirrors the distribution in the rest of the population indicates that there are approximately 4,800 disabled citizens in rural areas who we could assume not being able to use digital alternatives due to their disability, see Statistics Norway (2017), Personer i alt 15-66 år og personer med funksjonshemning etter arbeidsstyrkestatus og kjønn. Group (ii): According to Statistics Norway (2017): *Tabell 05277*, there are approximately 160.000 citizens above the age of 66 living in rural areas in Norway. According to Statistics Norway (2017), Tabell 11124 and Tabell 04499, the share of citizens between 66 and 79 years old who read paper based newspapers are 73 per cent, and 17 per cent of citizens above 66 years old do not use internet on a regular basis. Based on this information, we estimate the number of elderly, non-Internet users who read newspapers to approximately 20,000. Group 3: Of the remaining 140,000 citizens above 66 years old in rural areas, we conservatively assume that 5 percent, or approximately 7,000, could sometimes find themselves in a situation where they are dependent on urgent delivery of medicines to the door. In total, this amounts to approximately 31,800, or more generally 30,000 to 35,000 people.

11 As the needs of the vulnerable users would differ considerably, some needs would most likely be possible to meet with at a lower cost, whereas others would need a higher investment.

ery frequency. In order to ensure that only users dependent on the current service level receive support, it is important that the targeted measures are accompanied by robust eligibility criteria. This could mean that citizens would have to apply to receive support and that certain criteria (e.g. with respect to age, mobility, or distance to the nearest service point) would have to be fulfilled.

Reducing delivery frequency to one day per week throughout Norway comes at a greater risk (compared to option 1 and 2) of creating negative effects that call for the introduction of alternative solutions. However, this policy option also has the potential to reduce USO net costs by between 70 and 95 per cent (corresponding to 440-925 million NOK per year) compared to the status quo.

It is important to keep in mind that, even if regulation enabled delivery one day per week as of today, the implementation of delivery one day per week would not take place until mail volumes have dropped to a sufficiently low level. This implies that the impact on users of this option is more uncertain than the impact on users of the other options. The main reasons for this are that alternative service offerings might have developed in the meantime and that it is difficult for people to anticipate what their needs will be in a few years' time.

Chapter 1
Introduction and methodology

1.1 The postal universal service obligation

Communication through physical letter post and the ability to receive and send goods within and between countries have for many years been considered a basic right for citizens across the world. At the same time, strong dependence on scale economies in the provision of postal services and varying geographical and demographical conditions make it costly and commercially unattractive to collect and deliver mail in certain areas. For these reasons, postal services are defined as a so-called service of general economic interest[12].

In order to ensure that a basic level of postal services is provided on equal terms for all citizens, governments across the world impose a so-called universal service obligation (hereafter USO) on providers of postal services. The postal USO entails certain requirements, such as the obligation to collect and deliver specific types of postal items, collect and deliver mail a specific number of days per week, and ensure that prices for sending mail are affordable and uniform across the country.

The postal USO in Norway consists of the following elements, which have to be provided throughout the whole country:

- Distribution of priority[13] and non-priority letter post up to 2 kg, newspapers and periodicals in subscription up to 2 kg (as priority and non-priority letter post) and postal packages up to 20 kg;
- one collection of postal items at least five days a week;
- one delivery of postal items at least five days a week to the business address or permanent all-year residence of any legal entity or natural person;
- distribution of registered delivery postal items and insured postal items, both up to 2 kg;
- domestic distribution of postal items to and from other countries;
- free of charge delivery of certain specified postal services for the blind, visually impaired, prisoners of war and civil internees;[14]
- forwarding to a temporary address, forwarding for a minimum of 1 year in connection with permanent change of address and storing of postal items for a period of up to 3 months; and
- cash on delivery (COD) for domestic postal items up to 20 kg.

Benefits and costs of the postal USO

The obligation to provide some postal services through the USO aims at covering a social need that would not be covered by the market on commercial terms, absent regulation. Covering this unmet need entails a benefit to the Norwegian society. This benefit is represented by the part of the yellow

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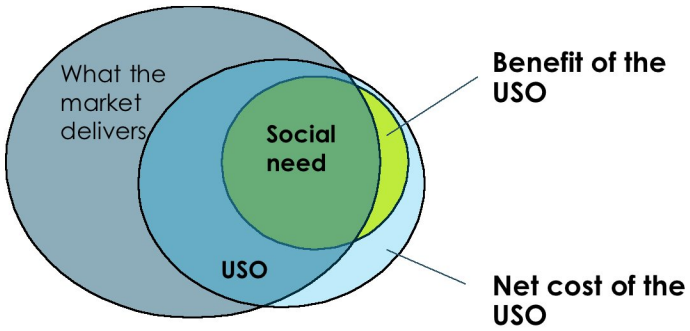
12 A service of general economic interest is defined as an economic activity that public authorities identify as being of particular importance to citizens and that would not be supplied (or would be supplied under different conditions) if there were no public intervention. See European Commission (2017), Services of general economic interest (public services), http://ec.europa.eu/competition/state_aid/overview/public_services_en.html.

13 The requirement of distribution of priority letters will be abolished as of 1 January 2018.

14 The Norwegian Postal Law, LOV2015-09-04-91.

circle not covered by the grey circle in Figure 1 below. At the same time, supplying services that are not economically viable on their own comes at a cost for the designated operator obliged to provide the service. This is the so-called *net cost of the USO*, represented by the part of the blue circle not overlapping with the grey circle in Figure 1 below. If the net cost of the USO for the designated operator is larger than the benefit of the USO to society, this will on balance entail a net cost to society.

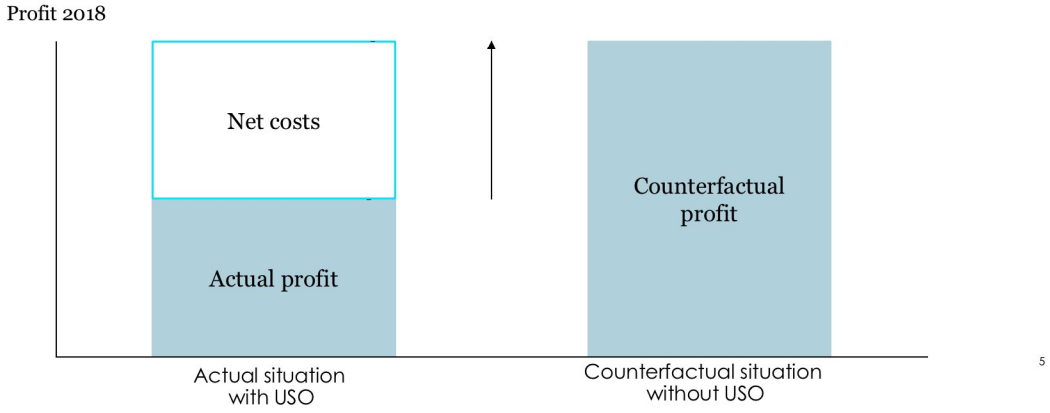
Figure 1 Benefit and cost of the USO



Source: Copenhagen Economics.

The net cost of the USO emerges since the USO can force postal service providers to structure their business in a way which they would not have done without the USO. As a result, the profit earned with the USO may be lower than the profit which should have been earned without the USO. The difference in profit for the designated operator with and without the USO – the so-called *USO net cost* – is illustrated in Figure 2.

Figure 2 Net cost of the USO



Source: Copenhagen Economics.

Compensation for USO net costs

According to the EU postal directive, a postal universal service provider can ask the government in its country for compensation of the USO net cost (i.e. the profit forgone due to the obligation). For this reason, many postal universal service providers – amongst others Posten Norge AS in Norway (hereafter Posten) – calculate the net cost of the USO on a regular basis.[15] Posten is, however, one of few operators in Europe that receive regular compensation for its USO net cost from the government. The format for this compensation in Norway is called *kjøp av post- og banktjenester –procurement of postal and banking services*. Three other countries where the universal service provider is compensated through public funds from the state budget are Spain, Italy, and Poland.[16]

It is of outmost importance that the provider of universal postal services is not overcompensated for its obligations. Such overcompensation would amount to unlawful state aid and would distort competition between the designated operator and other market players since the designated operator could use the extra compensation to cross-subsidise its activities in market segments where there is fierce competition. If there is no over-compensation, however, the universal service provider is no better off in the situation with a compensated USO than it would be in the situation without the USO.[17]

15 The information about which postal operators (and regulators) that are calculating the USO net costs on a regular basis is often not available in the public domain. In relation to an EU-wide study about the main developments in the postal sector in 2013, however, five national regulatory authorities (Bulgaria, Estonia, Spain, Slovakia, and Norway) reported estimates of the net cost of the universal service obligation. Five additional countries (Belgium, Greece, Italy, Sweden and Switzerland) reported that the cost of the universal service obligation had been or was being studied. Five more countries (Cyprus, France, Hungary, Luxembourg, and the Netherlands) reported that cost studies were planned. See WIK Consult (2013), Main Developments in the European Postal Sector (2010-2013), p.152.

16 WIK Consult (2013), Main Developments in the Postal Sector (2010-2013), p. 154. According to the same source, twenty-two Countries (Austria, Cyprus, Czech Republic, Germany, Denmark, Estonia, Greece, Spain, France, Croatia, Hungary, Italy, Luxembourg, Latvia, Malta, Poland, Portugal, Romania, Slovenia, Slovakia, UK, and Iceland) have authorised the establishment of a compensation fund. However, only 4 Countries (Cyprus, Estonia, Italy, and Slovakia) have actually established a compensation fund.

17 "Etterregningsordningen" in Norway safeguards against overcompensation in Norway. Every fall, the net cost for the services for which Posten received compensation through state procurement in the previous year's budget is recalculated based on Posten's accounts. If Posten has received too much compensation compared to the actual net cost, the company has to pay back the difference to the government. If the company has received too little compensation compared to the actual net cost, the state pays Posten the missing sum.

The fact that the universal postal service provider for historical reasons has a network in place that can be used to deliver both USO and non-USO products means that the incremental cost of delivering one extra product (USO or non-USO) in this network is very low. Despite this, the operator (in the case it would be considered having a dominant market position) is not allowed to price delivery such that an equally efficient competitor would not be able to compete. This would be the case if the universal service provider priced delivery below a certain cost benchmark (normally the long run average incremental cost or the average avoidable cost). These costs benchmarks, and thus the ability for the dominant operator to abuse its dominant position by applying anti-competitive pricing practices, are not linked to the compensation of USO net costs.

The commercial approach[18] to calculate USO net costs implies that designated operators like Posten cannot be compensated for *all* costs linked to the USO. The only cost compensated under this approach is the *net cost* of the USO (i.e. the profit forgone by the designated operator due to the USO). The compensation for this loss of profit puts the universal service provider in a situation where it is financially on equal terms with operators not providing the USO.

For the reasons mentioned above, the net cost compensation calculated based on the commercial approach cannot be used as an additional tool to outcompete competing operators (pricing below cost is still unlawful – with and without compensation).

1.2 Changing user needs call for an adjustment of the USO

Changes in users' needs for postal services in terms of increased e-substitution and booming e-commerce may alter the balance between the benefit and the net cost of the postal USO.

Firstly, as communication is moving from traditional postal services to the electronic alternatives, so called *e-substitution*, this decreases the benefits of the USO, as citizens, businesses and governments to a greater extent rely on electronic means of communication. Since postal services display strong economies of scale, e-substitution also increases USO costs as shrinking mail volumes raise the unit cost of delivery.

Secondly, the emergence of e-commerce alters the demand for postal services, resulting in structural changes of the market and users' social needs.

Growing e-substitution and increasing e-commerce are changing the market dynamics and the need for universal postal services in Norway. As a result, the net cost of the postal USO has increased by more than 400 million NOK over the past few years (from 231 million NOK in 2014[19] to Posten's current estimate of 705 million NOK for 2018[20]). Taking into account that the benefits of the postal USO have not increased to the same extent[21], there is a risk that keeping the USO in its current shape may result in large socioeconomic losses over time, see Figure 3.

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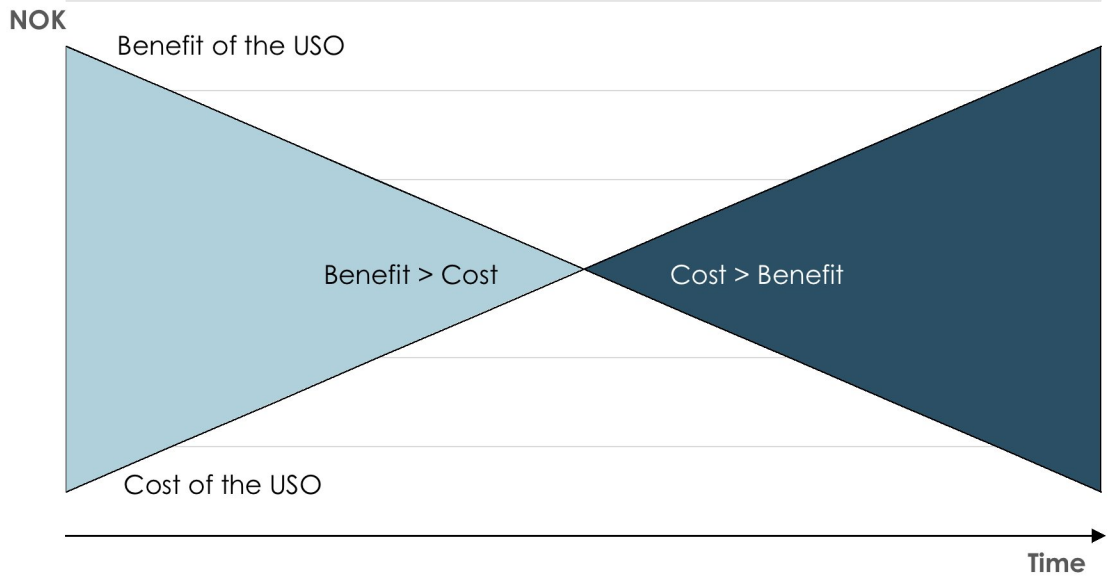
18 The commercial approach basically compares the designated operator's profit level in two business cases, the situation with USO and a (hypothetical) situation without USO, i.e. a practical application of the principles in Directive 2008/6/EC.

19 Prop. 19 S (2015-2016) Endringar i statsbudsjettet 2015 under Samferdselsdepartementet, p.6, https://www.regjeringen.no/contentassets/855fa96296ec4c06a1de0ffade9c2466/nn-no/pdfs/prp201520160019000dddpdfs.pdf.

20 Posten Norge (2017), Oppdatert grunnlag til statsbudsjettet for 2018.

21 Increased use of electronic means of communication have most likely reduced the benefits of the USO, because consumers have more alternatives to letters and are therefore less dependent on letter mail.

Figure 3 Keeping the current USO may lead to socioeconomic losses



Source: Copenhagen Economics.

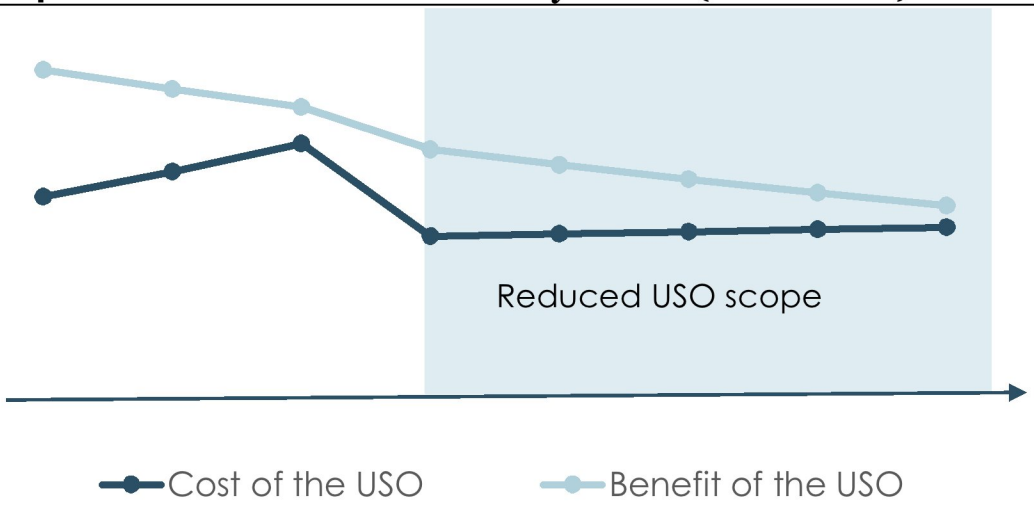
When the Norwegian government compensates the net costs of the postal USO directly via the state budget through public procurement, this creates a very clear trade-off for policy makers in Norway.

On the one hand, policy makers can leave the USO unchanged. This implies increased public spending to compensate Posten for its increasing net costs. However, given the changing market dynamics, this will over time result in socioeconomic losses as declining benefits of the USO create an increasing gap between USO costs and benefits.

On the other hand, policy makers can adapt the USO and provide Posten with increased commercial flexibility. While this will reduce net costs (and thereby public spending), it may also imply a reduction in the service level for some users of universal postal services. This means that not only the cost of the USO is reduced, but also the benefit to consumers of having a guaranteed universal service.

For this reason, any reduction in the USO must take into account market trends and developments. As the benefits of the current USO decline sequentially with time, reducing the USO too much too soon (when there still is a significant dependence on universal services and the cost saving potential is relatively low) may lead to a loss in total social welfare. With correct timing, however, the cost of the USO can be reduced more than the benefit of the USO and the adaptation may therefore result in a net benefit for society, see Figure 4.

Figure 4 A reduction in USO can shift dynamics (illustration)



Source: Copenhagen Economics.

In this context, efficient and transparent communication between the designated operator, policy makers and regulators is imperative to ensure that policy makers have a real chance to reduce net costs by adapting regulation in a timely manner and that the designated operator has sufficient time to adapt its business in case of regulatory changes.

The reason for this is that regulatory and legislative procedures, as well as the preparation of operational changes in the postal network take time. If the designated postal operator does not announce its preferred changes (i.e. the design of its counterfactual scenario) to policy makers sufficiently in advance of the preferred change, this means that policy makers have no chance of adapting the regulation in sufficient time to avoid an increase in USO net costs. In other words, this leaves policy makers without a real choice between a reduced service level and an increase in the USO net cost. As regulatory changes like, for example, a reduction in the required delivery frequency often require at least 18 months (and often more) to be implemented, this means that the operator should announce any preferred changes to its business at least 18 months in advance (and preferably even earlier) in order to allow for a smooth regulatory process. The need for timely notification is also important for the designated postal operators. If the change in regulation is not announced sufficiently well in advance, this means that the postal operator might have trouble making the changes necessary to take advantage of the increased flexibility from the first day when the new regulation is implemented.

1.3 The assignment

In the light of the developments described above, the Norwegian Ministry of Transport and Communication has commissioned Copenhagen Economics to review Posten's calculations of the USO net cost. Further, Copenhagen Economics has been asked to investigate a set of alternative USO requirements that may be appropriate in the future, as well as the implications of those alternatives on the level of public procurement of postal services going forward.

The overall objective of the study is to provide a solid knowledge base and understanding of potential and suitable alternatives for future service levels of the universal postal service in Norway and the associated impact on public procurement of postal services. This will enable policy makers to make informed decisions in due time about how the USO should evolve.

This assignment consists of two tasks.

The first task is to *review and assess the current net cost calculations provided by Posten*. In order to be reliable, it is important that these calculations are thorough and transparent, but also that they stay relevant in the light of changes in the postal market. Since the largest component of the net cost today is the obligation of delivery five days per week, it is of particular importance to analyse the underlying assumptions and the calculations relating to this element of the USO. A specific goal of this part of the study will thus be to investigate what the optimal delivery frequency would be if there were no USO.

The second task is to *assess the socioeconomic impact of three different policy options where the delivery frequency required by the USO is altered for the years 2018-2025*.

1.4 Methodology

In the following, we describe our approach to the assignment outlined above in more detail.

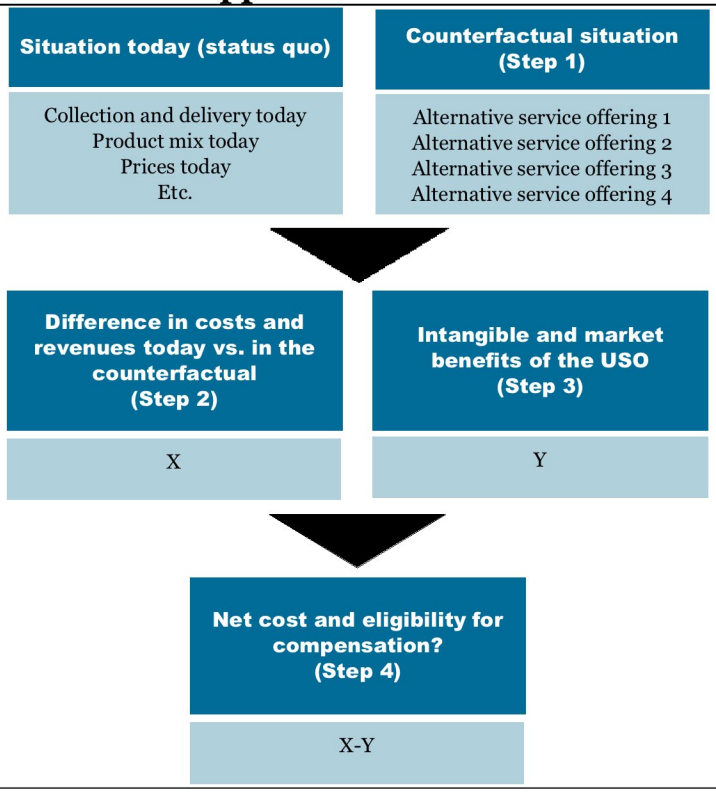
Assessing Posten's net cost calculations

A widely recognised model for calculating USO net costs is the so called *commercial approach*, which consists of four steps, see Figure 5. The commercial approach basically compares the designated operator's profit level[22] in two business cases, the situation with USO and a (hypothetical) situation without USO.

This approach is consistent with principles for calculating USO net costs outlined in the Third Postal Directive[23] and has been developed to overcome a number of shortcomings inherent in the older methods, such as the net avoidable cost method, or methods used in other fields, such as fully distributed costs from telecoms.[24]

[22] Annex 1 of the Postal Directive refers to net costs, which we interpret as revenue minus costs, cf. Decision of the European Commission of 25 January 2012, C(2012) (B-Post).
[23] Cf. ERGP (2011), p. 42; CERP (2008), 9.
[24] Cf. CERP (2008) for a discussion of these shortcomings.

Figure 5 The Commercial Approach to calculate USO net costs



Source: Copenhagen Economics.

In the first step of the commercial approach, focus lies on identifying an accurate counterfactual scenario. Postal operators often define their counterfactuals based on their in-depth knowledge about the market and the strategic ambitions of the company. It should be noted that the counterfactual scenario can be dynamic and change over time. For example, it might be optimal to reduce delivery frequency further as volumes continue to decline due to e-substitution.

Step two involves estimating the potential cost savings and revenue losses resulting from a removal of the USO. To estimate the revenue effects, the postal operator makes an assessment of the likely demand effects stemming from the changes in its business strategy. This assessment is often based on existing knowledge about demand structures, sometimes complemented by information collected from large senders of mail through surveys and interviews. The assessment of cost effects is preferably performed through a 'value chain approach', which includes identifying, for each step of the postal value chain, the specific changes resulting from the counterfactual scenario and their respective cost savings. Importantly, this also includes any cost changes caused by postal service demand fluctuations (i.e. impact on scale economies) that result from the changed business strategy.

Step three entails an assessment of any intangible benefits that the postal operator may derive from its USO. Examples of such benefits are VAT exemptions, certain rights to marketing, or exclusive rights to address databases or post office boxes.

Finally, step four brings the information from step 1 to 3 together and calculates the actual net cost.

In chapter 2, we assess the existing net cost calculations in Norway based on the approach described above. Our assessment consists of four steps:

1. Assessment of the counterfactual scenario identified by Posten.
2. Assessment of cost and revenue effects.
3. Assessment of intangible benefits
4. Assessment of the right to a reasonable profit and efficiency requirements

Our assessment of Posten's calculated net costs, including cost and revenue effects, is based on the calculations submitted by Posten to the Ministry of Transport and Communications as well as the associated descriptions and motivations for assumptions underlying the calculations. In addition to the data and information submitted by Posten to the Ministry, we have also had access to Posten's complete internal forecasting model (hereafter referred to as "the model") and other internal data not shared with the Ministry.

Assessing the socioeconomic impact of different policy options

In chapter 3, we assess the socioeconomic impact of three identified policy options (compared to the status quo) in three steps. The three policy options are:

- Delivery to households in urban areas 2.5 days per week[25] and maintained delivery 5 days per week to households in rural areas[26]
- Delivery 2.5 days per week to all households in Norway
- Delivery 1 day per week to all households in Norway

The reason for considering only the delivery frequency element of the USO is the fact that this element in 2018 represents about 70 percent of Posten's estimated net cost of the USO. Thus, reducing the requirements regarding delivery frequency has a significant potential to reduce the public spending on universal postal services.

Firstly, we estimate USO net costs (i.e. our proxy for the level of public procurement of postal services) quantitatively for each policy option by means of our own calculations. Our calculations build on Posten's net cost model, to which we have made some adjustments and changed a number of assumptions. We also conduct a sensitivity analysis where we adjust some of the most important parameters in the model further. Parameters that we adjust are expected volume development due to e-substitution, labour cost development, demand effects resulting from changes in the service level, and the degree of scale economies in delivery.

Secondly, we assess the impact on USO benefits stemming from the different options by qualitative analysis. This analysis is based on international benchmarks and stakeholder interviews with representatives of different user groups who today use the services provided by Posten as part of the

[25] In practice, delivery 2.5 days per week implies delivery 2 days per week and 3 days per week respectively over a two week period.

[26] Areas classified as urban (67 per cent of households and businesses) receive deliveries 2.5 days per week and areas classified as rural (33 per cent) receive deliveries 5 days per week. The classification is made at the post-code level. A post code is classified as urban if it contains parts or all of a densely populated area, which is defined as having at least 10,000 inhabitants and a maximum of 50 meters between the households or businesses. The post code is otherwise classified as rural. Since a post code classified as urban may also contain areas which are sparsely populated, there is a risk of misclassification for some households and businesses.

USO. The analysis is done in four steps by i) assessing which services that will be affected significantly by the changes in the USO, ii) identifying the most prominent users of these services, iii) evaluating how the specific user groups are affected by reduced delivery frequency, and iv) analysing if there are other targeted measures that could be put in place to meet the needs of those user groups that are dependent on the current USO provided by Posten.

Thirdly, we compare the impact on USO net costs and benefits and resulting socioeconomic effects across the regulatory options over time (2018-2025).

Chapter 2

Assessment of existing net cost calculations

2.1 Introduction and main findings

In this chapter, we assess the robustness of Posten's existing net cost calculations based on the framework provided by the commercial approach. Our assessment consists of four steps:

1. Assessment of the counterfactual scenario identified by Posten.
2. Assessment of cost and revenue effects.
3. Assessment of intangible benefits
4. Assessment of the right to a reasonable profit and efficiency requirements

Based on our analysis, we find that Posten's counterfactual scenario is reasonable. We find that the model used by Posten to calculate USO net costs adheres to international guidelines on USO net cost calculations and is more elaborate than in many other countries where net costs of the postal USO are calculated. The assumptions in the model are generally conservative and we have not been able to detect any calculation mistakes. Nevertheless, the model lacks documentation and qualification of some assumptions. Based on our own assessment of cost and revenue effects, we propose a few changes to Posten's assumptions. The net impact of our changes (which we implement in our modelling in chapter 3) compared to Posten's assumptions is a reduction of net cost in 2018 of about 7-8 per cent. We find that Posten possesses a small intangible benefit linked to its permission to issue stamps with the name "Norge" or "Noreg". This benefit, however, is most likely very small and is therefore not included in our estimate of USO net cost.

2.2 Assessment of Posten's counterfactual scenario

We begin our analysis with an in-depth assessment of Posten's counterfactual scenario. Posten's counterfactual scenario entails changes within five areas: delivery speed, delivery frequency, delivery of international mail, delivery to blind people and provision basic bank services, see Table 1.

Table 1 Changes included in Posten's counterfactual scenario 2018

Element	Actual situation	Counterfactual Scenario	**Net Cost 2018,** MNOK (% of total)
Delivery Speed	A-mail with delivery D+1[1] and B-mail with delivery D+4[2], merged into one type of mail with delivery D+2 for ≥ 85 % from Jan 1, 2018.	A- and B-mail would have merged into one stream from Jan 1, 2016.	152 (22%)
Delivery Frequency	Delivery to all households and business addresses 5 days per week.	Delivery 2.5 days per week from 2018 (alternating between 2 and 3 days per week). Express service with delivery 5 days per week provided by Posten's logistics division available to all senders. Posten still delivers to its post offices[3] 5 days per week. Registered letters can be picked up at the postal service points 5 days per week and mail delivered to post office boxes (located at postal service points) will still be delivered 5 days per week.	490 (70%)
International mail	Delivery of registered mail from abroad at (below cost) price regulated in the UPU convention.	Delivery of registered mail from abroad at profitable price.	33 (5%)
Delivery to blind people	Free delivery to blind and visually impaired.	No special treatment of blind people. Mail delivered at the price of standard letters.	16 (<3%)
Basic bank services	Basic bank services provided on Posten's rural postal routes.	No provision of basic bank services on rural postal routes.	14 (<3%)
			705

Note: [1]D+1 means that the letter is delivered the working day after it was posted. D+2 and D+4 means that the letter is delivered 2 or 4 working days after it was posted. [2] Posten's concession requires that at least 85 per cent of domestic non-priority letters should be delivered within four working days and that 97 per cent should be delivered within 6 working days. [3] Post offices includes service outlets run by Posten itself as well as outlets run by a third party (so called post-in-shops) on behalf of Posten, located e.g. in supermarkets or other shops.

Source: Posten Norge (2017), Oppdatert grunnlag til statsbudsjettet for 2018, Norwegian Ministry of Transport an Communications (2015), Midlertidig konsesjon til Posten Norge AS.

According to Posten, these elements together will create a net cost of the USO in 2018 of 705 million NOK. It is worth noting that the net cost of the USO calculated by Posten is reduced when all cost savings from the merging of A and B mail are realised and in Posten's calculations this element of the USO net cost disappears from the calculations. Moreover, as the net cost of international mail is linked to the volumes of registered items, that element will be reduced or disappear if those volumes would switch to less costly products (i.e. tracked delivery).

We assess the robustness of Posten's counterfactual scenario by asking five questions for each of the five elements making up the USO net cost. The questions are outlined in Table 2 and will subsequently be applied for each element of Posten's counterfactual scenario.

Table 2 Questions to assess the robustness of Posten's counterfactual

Question	Interpretation
Does Posten voluntarily offer more than required by the USO?	If Posten delivers more than required, the USO requirement is not restrictive and should not be part of the net cost.
Do competitors offer more than required from Posten by the USO?	If competitors deliver more than required from Posten by the USO, the requirement is hardly restrictive and should not be part of the net cost as the market will provide the service for free.
Do postal operators in other countries offer more than required by the USO in Norway, even though the requirements in their own USO are lower?	If postal operators in comparable countries with lower requirements voluntarily offer a service, the obligation to offer such service is hardly a burden for Posten Norway as should not be part of the net cost.
Which constraints would Posten in all events have as a dominant company under Norwegian law and regulation?	If competition law poses certain constraints on Posten as a dominant operator, only USO requirements exceeding those requirements should be considered a constraint and be part of the net cost.
What are the pros and cons of offering the service (level)?	The assessment of pros and cons provides a qualitative analysis of the benefits and drawbacks of voluntarily offering a USO service.

Source: CERP Working Group Economics PT Universal Service and its Financing (2008), Guidelines for Calculating the Net Cost of the Universal Service Obligations.

The purpose with the questions is to reveal if Posten (partly or fully) would have provided any of the elements included in the USO net cost also in a situation without the USO. If this is the case, the element in question should not be part of the USO net cost.

Based on our assessment, we conclude that Posten's counterfactual scenario is reasonable, see Table 3. We base this conclusion on four main observations.[27]

First, we observe that many of the components in Posten's counterfactual already have been implemented (at least partially) by postal operators in Denmark, Italy, Iceland, and New Zealand and that postal operators in countries such as Finland are moving in the same direction. This suggests that it would be reasonable also for Posten to move in that direction. Moreover, there are also at least four examples of postal operators who (due to existing USO requirements) are not able to move in the direction of Posten's counterfactual scenario, but where the same elements are included in their USO net cost calculations.[28]

Second, we observe that geographical conditions in Norway make it more costly to maintain a high service level there compared to many other countries. This suggests that the benefits of reducing the service level in Norway would be higher than in many other countries.

Third, we observe that Norway's profile as a country on the forefront of technological adoption means that the impact of changes in the service level on Posten's revenues will be moderate as public authorities, businesses and private consumers to an increasing extent are communicating by electronic means of communication. This suggests that the reduction in demand and negative revenue effects stemming from a reduction in the service level will not be higher (in fact, they will most likely be lower) in Norway compared to many other countries.

[27] In addition to these four main observations, it is worth noting that Posten has previously implemented what it has assumed to be commercially optimal (the counterfactual scenario) once the regulation has allowed for it, e.g. adjustments in the expedition network (2014), no delivery on Saturdays (2016), as well as the planned merging of mail streams in 2018.

[28] Whereas this is no 100 percent guarantee that these operators would de facto change their behaviour in case they had the opportunity to do so, it is still a very strong indication of that they would.

Fourth, we observe that three elements in Posten's USO net cost (international mail, delivery to blind people, and provision of basic bank services in the rural delivery network) are priced at a loss making level due to reasons that Posten itself cannot affect. No commercial operator would price a service at a loss-making level. If Posten could increase the prices charges, or discontinue the provision of these services, it is reasonable that it would do so.

Table 3 Assessment of counterfactual scenario

Element	Counterfactual scenario	CE assessment
Delivery speed	A- and B-mail merged from Jan 1, 2016 (not in 2018 as currently allowed).[1]	**Counterfactual is reasonable** - European trend of removing D+1 from the USO and provide D+1 as express service through the parcel network at significantly higher price. Examples are provided by Denmark, Finland, and Italy. - Likely that Posten would have taken step from D+1 to D+2 already in 2016 as geographical conditions and low mail volumes make it more costly to maintain D+1 in Norway compared to other countries and demand effects from the change most likely are low.
Delivery frequency	Delivery to the door 2.5 days per week from 2018. Logistics division provides express service 5 days per week. Posten delivers to its post offices 5 days per week.	**Counterfactual is reasonable** - National postal operators in some European countries have reduced delivery frequency below 5 days per week.[2] - Commercial operators delivering letter mail deliver less than 5 days per week. - Norwegian mail volumes per capita are at level with countries where delivery frequency is being reduced. - Geographical conditions in Norway make it more costly to maintain a high delivery frequency compared to many other countries - Continued decline of mail volumes in Norway is expected as citizens, businesses, and the public sector are becoming more digital. This will further increased the costs of maintaining 5 delivery days per week - Demand effects will not prevent a reduction in delivery frequency.
International mail	Delivery of registered mail from abroad at profitable price	**Counterfactual is reasonable, but conservative** - International terminal dues agreements implies losses on standard and registered letters. Only registered letters included in the net cost = conservative approach (examples of other postal operators, e.g. in Ireland, including also standard letters). - A commercial operator would not price at a loss making level - Limited or non-existing potential to make a financial gain on international agreements for Posten.
Delivery to blind people	Delivery of mail for blind people at the price of standard letters	**Counterfactual is reasonable** - A commercial operator would not price a service at a loss making level
Basic bank services	No provision of basic bank services	**Counterfactual is reasonable** - Compensation received from Posten's bank partner does not cover costs. Not possible to renegotiate agreement due to weak bargaining position created by obligation to provide bank services on rural delivery routes. - Reduced demand and increasing costs per transaction implies increasingly loss making service - A commercial operator would not provide a loss making service

Note: [1] The assessment of the counterfactual scenario considers whether or not it is likely that Posten would have merged A-mail and B-mail in 2016, had it had the opportunity to do so. This assessment is not linked to whether or not Posten should have been able to realise the full cost savings of the merging of A-and B-mail within the time from when the parliament allowed this change until it was implemented. [2] These operators did not receive net cost compensation for maintaining five delivery days per week before reducing the delivery frequency.

Source: Copenhagen Economics.

In the following, we present our in-depth assessment of Posten's counterfactual scenario element by element.

Delivery speed

As of 1 January 2018, A-mail (currently delivered overnight, D+1) and B-mail (currently delivered within four working days, D+4) will be merged into one service where 85 percent of volumes have

to be delivered within two working days (D+2). Posten argues that, in a situation without the USO, the company would have merged A and B mail into one stream already in 2016, i.e. two years earlier than currently allowed.

Our assessment of the counterfactual scenario considers whether or not it is likely that Posten would have merged A-mail and B-mail in 2016, had it had the opportunity to do so. This assessment is not linked to whether or not Posten should have been able to realise the full cost savings of the merging of A-and B-mail within the time from when the parliament allowed this change until it was implemented.

We find that Posten's proposed counterfactual is reasonable. The main reason for this is that the cost savings from eliminating overnight delivery from the USO already in 2016 likely would have outweighed the loss in revenue created by users of mail that would substitute away from Posten due to the reduced service level. In addition to this, we observe that many other countries, for example Denmark, Finland and Italy, have excluded overnight delivery from the postal USO and that postal operators in these countries already have made use of the increased freedom and only provide overnight delivery as a premium (express) service at a significantly higher price.
The results of our assessment are presented in Table 4 below.

Table 4 Assessment of Posten's provision of overnight delivery as part of the USO

Question	Answer	Documentation
Does Posten voluntarily offer more than required by the USO?	No	D+1 required for A-mail and D+4 for B-mail. A- and B-mail will merge into one type of mail from Jan 1, 2018 as soon as the USO requirements are reduced.
Do competitors offer more than required from Posten by the USO?	No	D+1 delivery offered only by operators in the courier segment (to a significantly higher price, only to professional users, and not necessarily to the whole country)
Do postal operators in other countries offer more than required by the USO in Norway, although the requirements in their own USO are lower?	No	Postal operators who are not obliged to deliver D+1 within the USO do not do so. Examples are: • PostNord (DK): Does not have D+1 obligation and provides standard delivery within 5 working days. Provides "Quickebrev" for next day delivery at a price of 27 DKK. • Posti (FI): Does not have D+1 obligation and provides standard delivery within 2 working days. D+1 is considered express and is provided at a price of 8.20 EUR. • Poste Italiane (IT): Does not have D+1 obligation and provides standard delivery within 4 working days. Provides a D+1 express service at a price of 2.80 EUR. • Canada Post (CA): Does not have D+1 obligation and delivers regular letters within 2 business days within a city, in 3 business days within a province, and in 4 business days nationally.
Which constraints would Posten in all events have as a dominant company under Norwegian law and regulation?	None	Dominance would not imply requirements with respect to delivery speed
What are the pros and cons of offering the service(level)?	The cons of providing the service outweigh the pros	Pros: • Mores satisfied customers with overnight delivery at low price Cons: • Expensive to provide (requires overnight sorting, often requires transport by airplane, and implies higher costs in delivery as mail volumes decline)

Source: Copenhagen Economics.

The decision whether or not to abandon D+1 as a standard service is driven by two factors: Cost savings related to less overnight delivery and revenue effects created by substitution from overnight

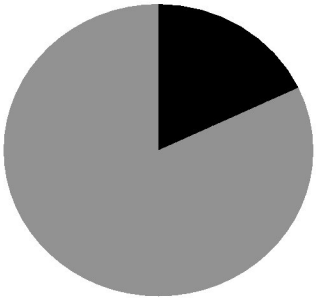
delivery to products with longer delivery time and a lower price and to other means of communication. If expected cost savings outweigh the anticipated revenue loss, the postal operator would find it attractive to abandon overnight delivery as part of the USO.

With respect to cost savings created by less overnight deliveries, these consist primarily of a lower use of aviation transportation and efficiency improvements in production due to increased scale economies at the distribution terminals. Due to the geographical conditions in Norway, Posten must use air transport of mail to fulfil the overnight delivery requirement. The savings from reduced delivery speed will therefore be significantly larger for Posten compared to operators in other (smaller and/or more densely populated countries). Consequently, Posten will most likely be able to save more by reducing the delivery speed compared with postal operators in many other countries.

With respect to revenue effects, an introduction of D+2 as the standard delivery speed will affect the service level experience for all current users of A-mail and B-mail. Whereas users of A-mail today will experience an increase in the delivery time, users of B-mail where the delivery speed currently is D+4 will experience an improvement in the service level. Some customers will also experience a price change (positive or negative). This will affect Posten's volume as well as its revenue per delivered mail piece. The revenue effect created by a reduced service thus consists of a price effect (i.e. an impact on the revenue per item) and a volume effect (i.e. a decrease or an increase in demand due to changed service level and the change in price).

Today, less than 20 percent of Posten's volume, including unaddressed mail, is delivered overnight, see Figure 6. Only a limited share of this is expected to disappear from Posten when D+2 becomes the standard speed of delivery. In fact, whereas some mail that needs overnight delivery (e.g. an urgent contract that needs to be signed) might be sent with Posten's express service, mail for which overnight delivery is not critical (e.g. a notification about a hospital appointment in two weeks' time) can be sent with Posten's new standard service. It should be acknowledged, however, that some mail for which quick delivery is needed, but where the willingness to pay is not large enough to use the express service, might migrate faster to electronic means of communication.

Figure 6 Split of Posten's mail volume according to delivery speed



Note: The volume includes addressed and undressed items delivered in Posten's network for letter mail. Parcels are not included as these are delivered in a separate network.

Source: Posten Norge.

In order to assess the likely revenue effects of the merging of A-mail and B-mail, Posten did in late 2016 conduct an analysis of likely demand effects. The analysis is based on market information (including an analysis of the competitive situation) and internal business intelligence in Posten's sales department. This analysis shows that the largest demand effects of introducing D+2 as the standard delivery speed are likely to occur for [redacted] whereas the demand for delivery of [redacted] would be relatively unaffected by the changes. Product categories that are not delivered overnight today (e.g. unaddressed mail) will per definition not be affected by the change. In total, Posten assumes that it would have lost less than five percent of its mail segment[30] revenues by implementing D+2 as the standard product in 2016.

Our interviews with large mailers in Norway confirm most of the assumptions made by Posten. In particular, we find that delivery overnight often is not a critical need, even for senders who use this service today. There are several reasons for why certain senders today are using a D+1 service instead of a slower delivery service. For small mailers who send stamped mail, franking machine mail, or mail items of varying sizes, the reason for not using a slower delivery product today is to a large extent that they currently do not have access to the slower service.[31] For larger senders, the use of overnight delivery is sometimes a consequence of individual's decisions rather than a critical need for rapid delivery. For example, the municipality of Oslo is a large user of overnight delivery today (approximately 40 percent of the mail sent is D+1 despite the fact that the municipality has a policy of using B mail as the standard). According to our interview with the municipality of Oslo, the high share of D+1 today is driven by the fact that many case handlers consider their own letters being important, although there is no actual critical need for overnight delivery. Moreover, the

29 [redacted]

30 Including both addressed and unaddressed mail which is delivered together in the last mile.

31 In order to use the B mail product today, senders must send at least 20 items per batch.

small price difference between A and B mail today creates very small incentives to save costs by using a slower delivery service. Making D+2 the standard delivery time would force case handlers to choose between physical delivery within 2 days and online delivery (express delivery overnight would most likely not be an option for most messages). Although the potential to digitize todays physical mail volumes (according to our interview with the municipality of Oslo, all messages from the municipality can be sent electronically in the future), the reduction in delivery speed from one to two working days is not expected to trigger additional digitization.

One mail segment where Posten potentially could lose more volumes by the introduction of D+2 as standard than assumed is small packets. Today, the competing delivery network Helthjem provides a delivery service which is similar to the service level provided by Posten after the merge of A-mail and B-mail into one mail stream. Whether or not Posten's current clients in the small packet segment will substitute to the competing operator as D+2 becomes standard depends on factors such as (i) the preference for overnight delivery of small packets, (ii) the price difference between the two products, (iii) the geographical coverage of the alternative network, (iv) and the difference in requirements, e.g. regarding pre-sorting of items, minimum volumes, and the deadline for dispatching items which should be delivered within the specified time frame. Our analysis of revenue effects (see Annex A) reveals that the demand effects assumed by Posten are reasonable. The main reasons for this are low preference for overnight delivery amongst Norwegian consumers as well as significant differences with respect to prices and other requirements between Posten and alternative service providers.

As Posten will de facto introduce D+2 as standard by 1 January 2018, this means that contract negotiations with many clients already have started (to come into effect as of 1 January 2018). According to Posten, its sales force has so far not experienced any large reactions from clients who, due to the slower delivery speed, reduce their demand for delivery with Posten more than would be expected from the analysis referred to above and the general trend of increasing e-substitution.

Even if we would adjust the revenue effects assumed by Posten to make them more conservative, this would not change the conclusion that overall revenue effects of reducing the standard delivery speed from D+1 to D+2 are small in comparison to the associated cost saving potential.

A more detailed discussion of demand effects is to be found in chapter 2.3 and in Annex A.

The finding that revenue effects linked to slower delivery speed are small in comparison with the potential cost savings is also supported by the observation of a clear movement away from D+1 delivery services as part of the USO in other countries. The most recent example of this is Sweden, where the government in October 2017 decided to abandon D+1 as part of the USO from April 2018. The decision requires that 95 percent of standard letters are delivered within two business days. The motivation for change originated from cost reduction needs in times of strongly declining mail volumes. Similar to Norway, PostNord in Sweden are strongly dependent on air transportation to deliver overnight throughout the country.

In addition to this, PostNord in Denmark, Posti in Finland, and Poste Italiane in Italy have all already been allowed to abandon D+1 delivery as part of the USO. As a result of this increased flexibility, they instead provide express services at higher prices – 27 DKK in Denmark, 8.20 EUR in

Finland, and 2.80 EUR in Italy[32]. Standard delivery speed is set at D+5 in Denmark and D+4 in Finland[33] and Italy. Canada Post differentiates between geographical areas based on sizes. Regular letters are delivered within two business days in a city, in three businesses days within a province and in four business days nationally.

Based on the above, we conclude that it is reasonable to assume that Posten would have merged A-mail and B-mail into one mail stream already in 2016.

Delivery frequency

We now move to delivery frequency where the current USO requires Posten to deliver five days per week throughout the country. Posten argues that, in a situation without the USO, the company would reduce delivery frequency to 2.5 days per week throughout the country in 2018 (alternating between 2 and 3 delivery days per week over a two week period). Within some years, depending on the pace of annual declines in letter mail volumes, it is forecasted that the delivery frequency would have to be reduced even further, to 1 day per week throughout the country.

We find that Posten's proposed counterfactual is reasonable and that the optimal delivery frequency in 2018 instead of delivery five days per week is delivery 2.5 days per week throughout the country. The main reason for this is that the cost savings linked to reduced delivery frequency are likely to outweigh the loss in revenue created by users of mail that will switch away from Posten due to the reduced service level. In addition to this, we observe that postal operators in Denmark, Italy, Iceland, New Zealand, and Finland are moving in the same direction and that the cost saving potential linked to reduced delivery frequency in Norway, due to geographical conditions and low mail volumes per capita, most likely is larger than in many other countries.

The results of our assessment are presented in Table 5.

[32] The price for the express service depends on several factors, such as cost and demand structure in the domestic postal market.

[33] The Finnish Postal law requires 50 per cent of standard letters to be delivered within four working days and 97 per cent to be delivered within five working days after they have been posted. See Law 29.4.2011/415, http://www.finlex.fi/sv/laki/ajantasa/2011/20110415#L3P19.

Table 5 Assessment of Posten's obligation to deliver mail five days per week

Question	Answer	Documentation
Does Posten voluntarily offer more than required by the USO?	No	Posten delivers 5 days a week = USO requirement Due to the USO requirements regarding delivery speed, Posten has not been able to reduce delivery frequency without changes in the USO.
Do competitors offer more than required from Posten by the USO?	No	No alternatives delivering letter mail five days per week. Only distribution of newspapers to the door of recipients six days per week + courier services, i.e. registered items, offered to professional users and not to the public. None of these alternatives offer 100% geographical coverage.
Do postal operators in other countries offer more than required by the USO in Norway, although the requirements in their own USO are lower?	No	• PostNord (SE): 5 days = USO requirement • PostNord (DK): XY delivery = de facto 2 days per week although USO requirement is 5 days per week • Posti (FI): 5 days = USO requirement (until 1 July 2018 when delivery can be reduced to 3 days per week where there are competing supply of newspaper delivery at least 5 days per week). • Iceland Post (IS): XY delivery in 5% most rural areas – from 2018 2 days per week allowed in whole country • PostNL: 5 days = USO requirement • Poste Italiane: 5 days = USO requirement (1 day for up to 25% of households) • New Zealand Post (NZ): 3 days per week in urban areas, 5 days per week in rural areas = USO requirement
Which constraints would Posten in all events have as a dominant company under Norwegian law and regulation?	None	Dominance would not imply requirements with respect to delivery frequency
What are the pros and cons of offering delivery five days per week?	The cons of providing the service outweigh the pros	Pros: • More satisfied customers and slightly higher demand for postal services Cons: • Expensive as volumes continue to fall (declining economies of scale and reduced profitability).

Source: Copenhagen Economics.

The question about what the optimal delivery frequency for a postal operator is has been investigated in a number of academic papers over the years.[34] They all conclude that the decision about optimal delivery frequency is driven by two factors: Cost savings related to fewer delivery routes and higher economies of scale, and revenue effects created by substitution away from the postal operator to other means of communication or to other providers of postal services. Thus, if cost savings outweigh the anticipated revenue loss, Posten would find it attractive to reduce delivery frequency to the point where cost and demand effects balance and where an additional reduction in delivery frequency would trigger revenue losses larger than the associated cost savings.

The cost effects of reduced delivery frequency can be explained by the cost structure of mail delivery, characterised by a high share of joint and common costs and low marginal costs. A high share

[34] See for example Borsenberger, C., Joram, D., Magre, C. & Roy, B. (2010) Cross-country comparisons of optimal mail delivery frequency across geographies', from Crew, M. a., & Kleindorfer, P. R. (eds) Reinventing the Postal Sector in an Electronical Age; Pearsall, Edward S. and Charles L. Trozzo (2011) Evaluating the demand effects of reductions in the frequency of deliver service, in M. A. Crew and P.R. Kleindorfer, Reinventig the Postal Sector in an Electronic Age, Cheltenham, UK and Northampton, MA, USA: Edward Elgar; Boldron, F., D. Joram, L. Martin, B. Roy, (2006), "From the size of the box to the costs of universal service obligations: a cross-country comparison", in M.A. Crew and P.R Kleindorfer (eds), Liberalization of the Postal and Delivery Sector, Northampton, MA: Edward Elgar, pp. 37-52.

of joint and common costs (e.g. mail carriers and cars used to deliver different types of mail items along the delivery route) means that economies of scale and scope are important to avoid large unit costs in mail delivery. Many of these costs, such as transportation expenses, are volume-independent and fixed in the short run. However, in the long run, postal firms can change their scale and alter the fixed component, leading to a lower overall cost level. Firms may wish to do so to increase economies of scale in their operations, for instance by reducing delivery frequency or geographical coverage.

Reduced delivery frequency increases the mail volume per route each time a specific route is served. If the delivery frequency is halved, this would mean that the mail volume for the route is doubled. Since the volume-variable costs of delivering a given quantity of mail to households along a specific delivery route during the week are small and mostly unaffected by the change in delivery frequency, the small increase in these costs will be largely outweighed by the reduction in route costs (i.e. the savings incurred by only serving households every second day). This leads to an overall reduction in costs.

The route-level economies of density are driven by two factors: Population density and the number of mail items per household per week.[35] Whereas low population density implies longer route time per delivery stop (i.e. higher cost per stop), fewer items per household implies longer route time per delivered letter (i.e. higher cost per letter). For this reason, cost savings of a frequency reduction are generally much greater in rural areas than in urban areas and in countries with low mail volumes per capita compared to countries with high mail volumes per capita.[36] An illustrative example of this is provided in Box 1.

[35] Pearsall, Edward S. and Charles L. Trozzo (2011) Evaluating the demand effects of reductions in the frequency of deliver service, in M. A. Crew and P.R. Kleindorfer, Reinventig the Postal Sector in an Electronic Age, Cheltenham, UK and Northampton, MA, USA: Edward Elgar.

[36] Boldron, F., D. Joram, L. Martin, B. Roy, (2006), "From the size of the box to the costs of universal service obligations: a cross-country comparison", in M.A. Crew and P.R Kleindorfer (eds), Liberalization of the Postal and Delivery Sector, Northampton, MA: Edward Elgar, pp. 37-52.

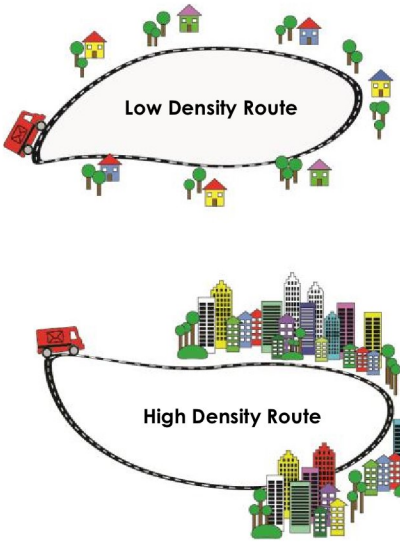
Box 1 Example: Cost reduction of reduced delivery frequency

Imagine that there are two delivery routes, one with 10 households (low density route) and one with 100 households (high density route). The routes are equally long and for simplicity we therefore assume that the route cost, i.e. the cost of driving the route is equal (100) for the two routes. We also assume in the base case that every household (irrespective of to which route they belong) receives 10 mail items per week. This implies that the mail carrier serving the low density route should deliver 100 items per week whereas the mail carrier serving the high density route should deliver 1000 items per week.

With five delivery days per week, this implies a route cost of 500 (100*5) per route. The cost per item for serving the low density route is 5 (500/100) whereas the cost per item of serving the high density route is 0.5 (500/1000).

Reducing delivery frequency to 2.5 days per week implies a route cost of 250 (100*2.5) per route. The cost per item for serving the low density route is 2.5 (250/100) whereas the cost per item of serving the high density route is 0.25 (250/1000). This implies a saving per item of 2.5 for the low density route and of 0.25 for the high density route. This clearly demonstrates that a reduction in delivery frequency create larger cost savings in areas with low population density compared to areas with high population density.

In order to show the impact of mail volumes per capita on cost savings, we now assume that each household instead of 10 items receive 20 items per week. I this situation, the cost saving per item of reducing delivery frequency to 2.5 days per week is 1.25 for the low density route and 0.125 for the high density route. This demonstrates that a reduction in delivery frequency create larger cost savings when mail volumes per capita are lower (in this example with 10 items per household per week instead of 20).



	Low density route	High density route
Items per household per week	10	10
Items per route per week	100	1000
Delivery 5 days per week		
Cost per item delivered	5	0.5
Delivery 2.5 days per week		
Cost per item delivered	2.5	0.25
Saving per item with 20 items per household per week	1.25	0.125

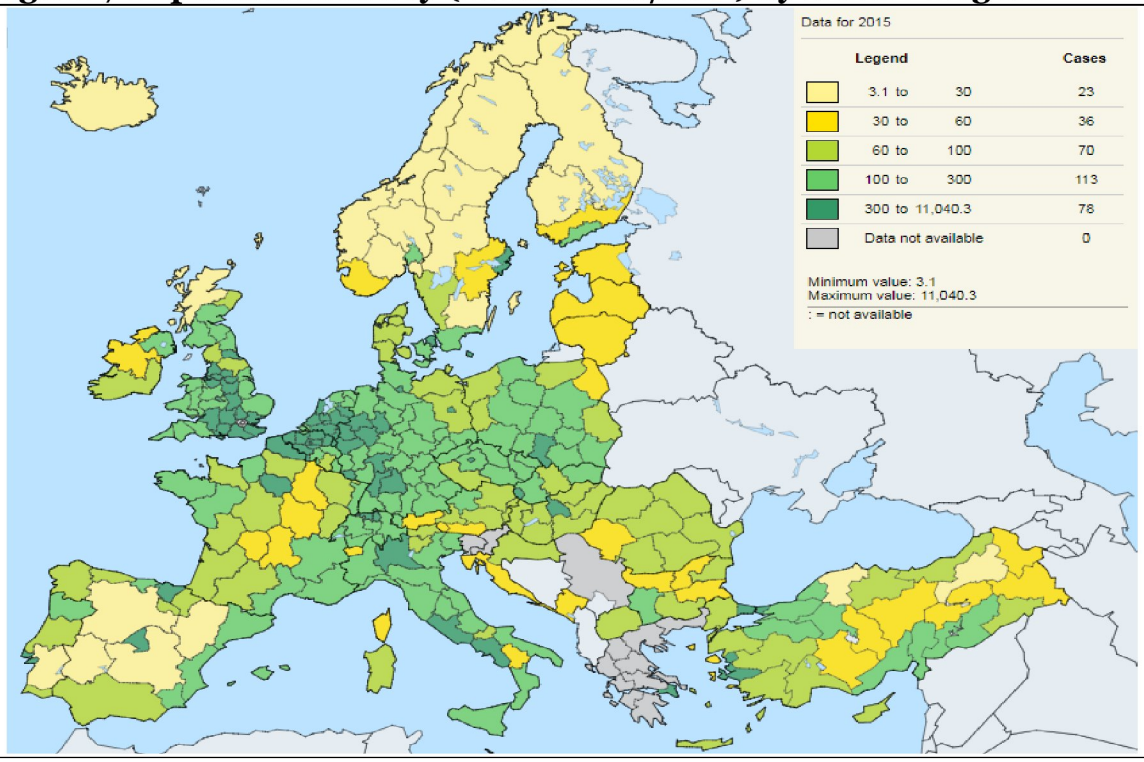
Note: Delivery costs per item can be reduced even further by clustering mail boxes of several households in the same place, thereby reducing the number of stops necessary to serve the same amount of recipients.

Source: Copenhagen Economics.

Figure 7 shows population densities in Europe. As evident from the map, Norway has one of the lowest population densities on the continent. In fact, the only country in Europe with a lower population density than Norway is Iceland. This indicates that there should be significant scale benefits

from a reduction in delivery frequency in Norway compared to many other countries.

Figure 7 Population density (inhabitants/km²) by NUTS 2 region



Source: http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Population_density_based_on_the_GEO-STAT_population_grid,_2011_(number_of_inhabitants_km%C2%B2)_Cities16.png.

With respect to mail volumes per week, Norwegian mail volumes are at level with those in neighbouring or comparable countries. Sweden, Finland, Belgium and the Netherlands had approximately the same amount of items per mail box per week in 2016 as Norway, whereas Austria had significantly more items and Denmark and Italy had significantly fewer items per mail box per week.[37] Provided the more difficult geographical conditions and lower population density in Norway, this further supports the finding that the cost savings potential from reduced delivery frequency should be larger in Norway compared to many other countries.

According to the latest financial report from Posten, published on 20 October 2017, the volume of addressed letter mail over the last 12 months (October 2016-September 2017) was 714 million items (down almost 10 per cent since the same time last year). Taking into account that a large share (25-30 per cent) of the mail volume is delivered to business addresses (i.e. not to private households), making up 11 per cent of delivery addresses in 2017, we estimate the number of items per mail box

[37] For Austria, the amount of mail items per mail box per week in 2016 was 7.7, for Sweden 6.2, for Norway 5.6, for Belgium 5.5, for Finland 5.1, for the Netherlands 4.9, for Denmark 2.7, and for Italy 1.6. The number of mail items per mail box per week is calculated using the total number of addressed mail items in each country, divided by the total number of mail boxes. Information about addressed mail volumes come from annual reports of the incumbent postal operator in the respective countries, except for Norway for which we use the same data as in Figure 9 and Table 6. We estimate the total number of mail boxes by using data on the number of households in each country and an assumption that the share of business addresses is the same in all countries as in Norway, i.e. 11 per cent.

(private and business addresses) per week to less than 5.3 in 2017[38]. According to Posten's estimates for the full year 2017, the corresponding figure is 5.0. The number of items to private households (private addresses only) per week is estimated to 3.9 and the number of items to business addresses is estimated to 13.2 per week for 2017.

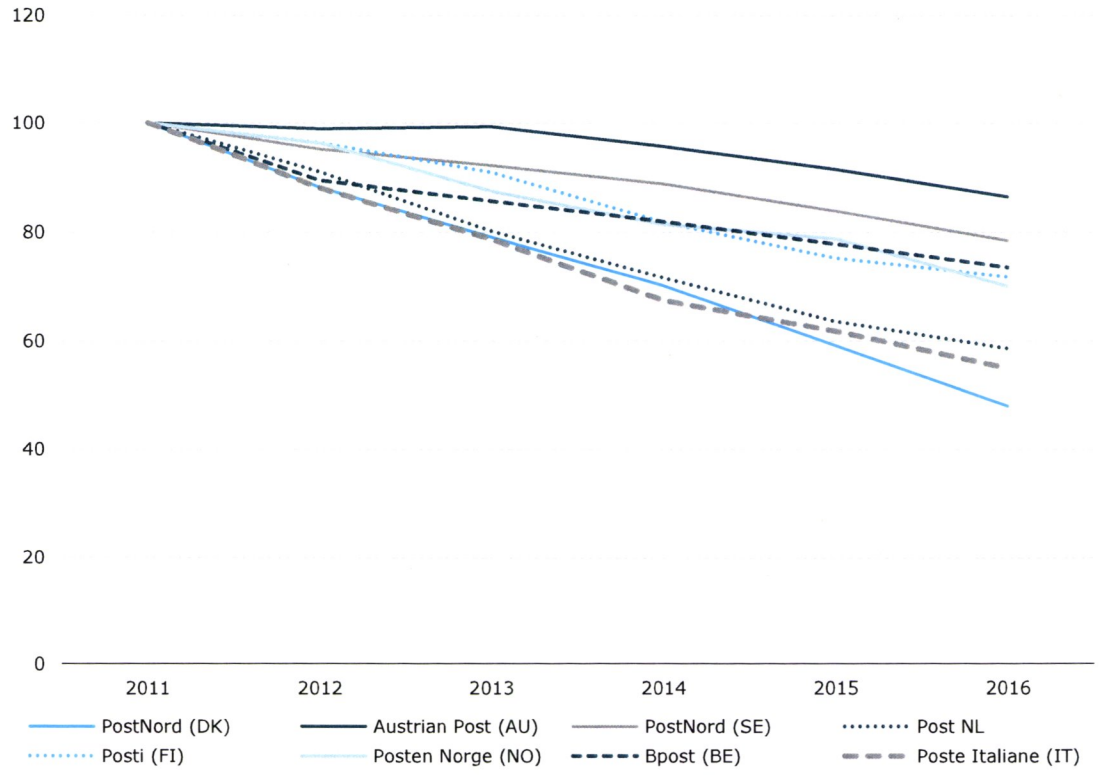
Internationally, there is a trend of postal operators moving towards reduced delivery frequency, triggered by declining mail volumes due to e-substitution. In fact, both PostNord in Denmark and Poste Italiane in Italy (both with slightly lower number of mail items per mailbox per week) currently operate with a delivery frequency lower than five days per week (at least for parts of the country). Whereas PostNord in Denmark (Post Danmark at that time) already in 2008 introduced XY delivery with delivery three days per week as standard, Poste Italiane introduced delivery one day per week to parts of the population (up to 25 percent of households allowed by the law) in 2016.

Other examples are provided by Posten's own subsidiary, Bring Citymail in Sweden, which delivers every third working day. Moreover, governments in Finland and Iceland (where population density and geographical conditions are similar to Norway) have recently changed their USO requirements to allow for reduced delivery frequency from 2018 onwards. Whereas Iceland Post from 1 January 2018 is allowed to deliver two days per week throughout the country, Posti in Finland will from 1 July 2018 be able to reduce delivery frequency to three days per week in areas where a competing network with early morning delivery of newspapers five days per week exists. A similar model is applied in New Zealand, where New Zealand Post since 2015 delivers three days per week to households in urban areas and five days in rural areas.

In the countries where the national postal operator has reduced its delivery frequency below five days per week, this decision has been driven by a strong or increasing decline in mail volumes due to e-substitution. Denmark is the most extreme example of this where letter mail volumes have declined by 79 percent since year 2000. Between 2011 and 2016 alone did letter mail volumes in Denmark decline by 50 per cent. The development in Italy is similar with a decline in letter mail volumes of approximately 45 per cent between 2011 and 2016, see Figure 8.

[38] 714 million items/2.6 million household and business mail boxes/52 weeks per year.

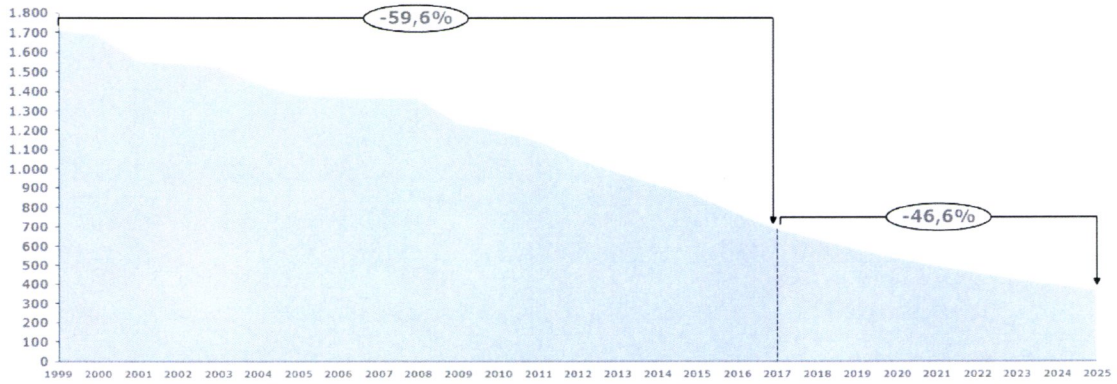
Figure 8 Development in letter mail volume for European postal operators, 2011-2016 (index, 2011=base year)



Source: PostNL (2017, 2016), PostNord (2016), Austrian Post (2016), Post Italiane (2016), Posten Norge (2016), Posti (2016), Bpost (2016).

As shown in the graph above, letter mail volumes in Norway have over the past five to six years declined by approximately 30 per cent. This is very similar to the development in Finland (where Posti now has been allowed to reduce its delivery frequency and where geographical conditions are similar, but not as challenging, as in Norway). Since year 2000, letter volumes in Norway have declined by more than 50 percent. Although a large share of all physical mail items already have disappeared from the market, this development is expected to continue in the coming years as the Norwegian population, businesses and the public sector become increasingly digital, see Figure 9 and Table 6.

Figure 9 Addressed letter volumes in Norway, 2000-2025, (mn. items)



Note: Volumes for 2000 to 2016 are based on Posten's actual data. Volumes for 2017 to 2025 are based on Posten's forecasts. See Table 6 for the volumes of respective years.

Source: Posten.

Table 6 Addressed letter volumes in Norway, 2000-2025, (mn. items)

1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
1,711	1,687	1,557	1,541	1,527	1,438	1,381	1,371	1,366	1,364	1,239	1,200	1,146	1,052

2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
983	917	863	769	692	637	585	539	498	461	427	396	369

Note: Volumes for 2000 to 2016 are based on Posten's actual data. Volumes for 2017 to 2025 are based on Posten's forecasts.

Source: Posten.

Increased digitalisation affects demand for all categories of mail sent by Posten today, see Table 7.

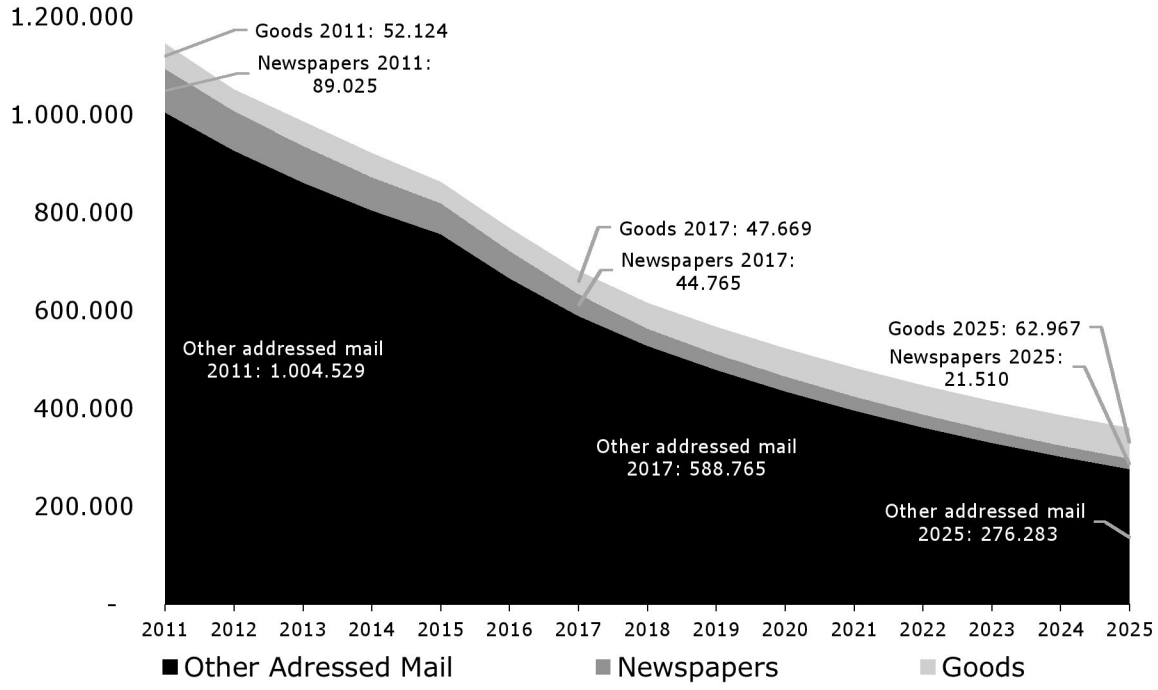
Table 7 Impact of digitalisation on mail segments

Content	Assumption about future development
Private letters	Reduction in large senders of C2C cards and letters. Requests to businesses (B2C) takes place online.
Invoices	Businesses switch to electronic invoices for cost efficiency reasons
ADM	Businesses switch to online platforms (my pages) and e-mail for cost efficiency reasons
Addressed Direct Mail	Catalogues and other direct mail substitutes to digital channels for cost efficiency reasons
Goods (domestic)	Decline in book/CD/DVD shipments, compensated by increase in other types of goods
Goods (imports)	Decline in book/CD/DVD shipments, compensated by increase in other types of goods
Other	Undefined content. Assumed to follow the total trend.
Magazines	A general fall in the number of subscriptions due to electronic substitution
Newspapers	Fall in the number of subscriptions and editions per week due to electronic substitution

Source: Copenhagen Economics.

Overall, Posten estimates that its total volume of addressed mail will fall to less than 400 million items in 2025, see Figure 10. 400 million addressed mail items per year corresponds to less than 3 items per mail box per week[39]. With five delivery days per week, this corresponds to approximately 0.6 items per mail box per delivery day. With 2.5 delivery days per week, this number increases to 1.2 items per household per delivery day.

Figure 10 Actual and estimated development in addressed mail volume per category 2011-2025 (thousand items)



Note: The category Other addressed mail contains Magazines, Addressed Direct Mail, Administrative mail, Invoices, Private letters, Inbound international letters (not containing goods), and a small share of unclassified addressed mail items. The category Goods contains domestic and imported goods sent as letter mail.

Source: Posten.

Without any variation in demand, the more costly it is to serve a certain area, the lower is the optimal delivery frequency. However, reduced delivery frequency is likely to also have a negative impact on demand for mail delivery and thereby also on the postal operator's revenues. For example, if mail as a means of communication becomes more difficult to use or does not provide the service level required, customers might increasingly turn to non-mail alternatives. In particular, the more drastic the reduction in delivery frequency, the more important the loss of demand becomes. For example, some needs might be satisfied with delivery 2.5 days per week but not with delivery only one day per week. Moreover, effects on revenue are magnified if demand losses primarily concern 'higher price' items (e.g. priority mail) as opposed to 'lower price' services (e.g. non-priority mail).[40]

[39] 400 million items/2.6 million household and business mail boxes/52 weeks per year.

[40] See e.g. Borsenberger, C., Joram, D., Magre, C. & Roy, B. (2010) Cross-country comparisons of optimal mail delivery frequency across geographies', from Crew, M. a., & Kleindorfer, P. R. (eds) Reinventing the Postal Sector in an Electronical Age.

Reducing the delivery frequency to 2.5 days per week will have two main implications on Posten's service quality:

i) No delivery on certain days[41]
ii) Longer delivery time (D+3 for 50% of volumes instead of D+2)

In its net cost model, Posten has provided a number of assumptions regarding demand effects created by reduced delivery frequency. These assumptions are based on an analysis made by internal business intelligence in Posten, as well as a customer-by-customer analysis of Posten's 75 largest customers in the segment of unaddressed mail made by Posten's sales department, representing 90 per cent of the turnover within that segment. Although Posten itself most likely has a good knowledge about the needs and behaviour of its clients, a weakness of this approach is that no direct interviews with customers have been conducted.

Based on its assessment, Posten finds that reduced delivery frequency would trigger a fall in mail volumes where Posten loses the entire volume of daily newspapers [redacted] In total, Posten assumes that reduced delivery frequency will lead to a loss of approximately 10 percent of the mail revenues (including unaddressed) in 2018.

In order to assess whether the assumed demand effects in the net cost model are plausible, we have conducted a number of interviews with large mailers with the aim of revealing how they would react to a change in Posten's delivery frequency. These interviews largely confirm the assumptions made by Posten itself. In particular, our interviews reveal that the largest revenue effects most likely are linked to the fact that Posten no longer delivers on certain days of the week as this change will have a significant impact on the core business of e.g. publishers of newspapers and senders of undressed mail. Nevertheless, as some publishers might be less dependent on fast delivery (e.g. because they publish the most recent news online) and there may be areas where Posten is the sole provider of newspaper delivery, assuming that 100 per cent of the daily newspaper volume will leave Posten is too conservative. We therefore suggest a number of changes to Posten's assumed revenue effects which we implement in our estimations of future USO net costs in chapter 3.

The impact of prolonging delivery time by one day (from D+2 to D+3) for 50 percent of the volumes would most likely have a very small impact on demand. The reason for this is twofold. First, this change only implies a minor change in the service level. Second, the largest share of mail items that remains in the physical delivery network can be planned in advance and do not require rapid delivery. There may nevertheless be certain groups of senders where the slight reduction in delivery speed may trigger substitution away from Posten, either to digital alternatives or to competing operators who provide similar services at a lower price.

A more detailed discussion of demand effects is to be found in chapter 2.3 and in Appendix B.

41 The model implies that mail is delivered Monday, Wednesday, Friday one week, and Tuesday and Thursday the next week.

Based on the high potential for cost savings of reduced delivery frequency and the moderate impact on demand and revenues, we conclude that it is reasonable to believe that Posten would reduce its delivery frequency to 2.5 days per week in 2018 if it had the chance to do so.

International mail

Due to its position as the designated postal operator in Norway, Posten has to adhere to the Universal Postal Union (UPU) convention and deliver inbound international mail at prices set by the convention if not otherwise agreed in bi-/multilateral international agreements (so-called terminal dues). The compensation that Posten receives for delivering inbound international letters to recipients in Norway is lower than the relevant cost incurred for the handling and distribution of these letters. This is particularly the case for registered letters, which to a large extent need to be handled manually and which cannot be delivered directly to the recipients' mailboxes. This situation is not unique for Norway, but the geographical conditions in Norway and the general trend of declining mail volumes make it more costly to deliver mail in Norway compared to other countries. The financial losses incurred on international shipments are therefore larger in Norway than in most other countries.

Posten argues that it in the absence of the USO would increase the price charged for the handling and delivery of inbound international registered letters. Although the price received today for handling and delivering standard letters from abroad also is lower than the price Posten would charge for this service in a fully commercial setting, changing the price for these letters is not included in Posten's counterfactual. Posten's price for handling and delivering registered letters from abroad without the USO would cover the costs incurred and ensure a margin in line with the return required by the owners).

We find that Posten's proposed counterfactual is reasonable and conservative. The main reasons for this is the fact that no commercial operator would supply a service at a loss-making price and the observation that only registered letters from abroad are included in the net cost calculation. The results of our assessment are summarised in Table 8 and outlined in more detail below.

Table 8 Assessment of Posten's obligation to deliver inbound international mail at current terminal dues rates

Question	Answer	Documentation
Does Posten voluntarily offer more than required by the USO?	No	Delivery of registered mail from abroad at price regulated in international agreements. There is no incentive to offer lower prices than those stipulated by international agreements (and which also work as a fall back provision in any bilateral negotiations).
Do competitors offer more than required from Posten by the USO?	No	Commercial service providers (e.g. UPS or FedEx) have no obligation to provide services at a price below cost and would not do so.
Do postal operators in other countries offer more than required by the USO in Norway, although the requirements in their own USO are lower?	No	Postal operators negotiating bilateral or multilateral agreements outside the UPU framework with higher prices are able to do so based on negotiation power coming with large outbound volumes. Due to small export volumes, this is not possible for Posten.
Which constraints would Posten in all events have as a dominant company under Norwegian law and regulation?	Prevention of excessive pricing	As a (potentially) dominant provider of delivery of inbound cross-border letter items to Norway, Posten would be prevented by competition law to charge excessive prices for the handling and delivery of inbound letter mail. The threshold for excessive prices, however, is certainly far above the price suggested for the counterfactual scenario (cost+9% margin).
What are the pros and cons of offering the service(level)?	The cons of charging UPU terminal dues outweigh the pros	Pros • Delivery of outbound international mail at UPU terminal dues rates (lower than counterfactual rates), but outbound volumes in Norway are much lower than inbound volumes Cons • Loss-making service

Source: Copenhagen Economics.

The impact of international terminal dues agreements on national postal operators' financial position has been investigated thoroughly over the years. A number of recent studies on this topic have been made by Copenhagen Economics on behalf of the US Postal Regulatory Commission (i.e. the national regulatory authority for postal services in the United States).[42]

Although terminal dues (i.e. the compensation paid by the national postal operator in the sending country to the national postal operator in the receiving country for handling incoming cross-border letters) conceptually should cover the costs incurred by the receiving operator, this is not always the case. In fact, due to the fact that the terminal dues paid for the handling of letter post items sent from countries traditionally thought of as developing to countries in the developed world are capped at a very low rate, postal operators in developed countries lose money on inbound international letters. The losses are particularly high in countries (like Norway) where the cost of delivery is high.

Despite this, there are a number of postal operators in Europe that make a financial gain on the terminal dues agreements. These are either postal operators in countries with a high net export of international letter mail[43] or postal operators who strategically have created a business model to take advantage of the arbitrage possibilities created by the terminal dues system through remail activities (see Box 3) or who have created an extraterritorial office of exchange (ETOE) in order to increase mail volumes through participation in the markets of foreign territories (see Box 2).

42 Copenhagen Economics (2012), the Economics of terminal Dues, Copenhagen Economics (2014), Quantification of Financial Transfers Created by the Universal Postal Union Terminal Dues.

43 Since the terminal dues agreements imply that postal operators pay too little for last-mile handling of outbound international letters and are receiving too little compensation for inbound international letters, being a net exporter of international letters often implies a net gain in terminal dues.

Box 2 ETOEs: Description and implications

An extraterritorial office of exchange (ETOE) is defined as a facility operated by a designated postal operator in the territory of another country. An ETOE is a special kind of International Mail Processing Centre (IMPC) with the purpose of processing mail items under the set specifications of international mail exchange. The majority of ETOEs are operated by European postal operators. One function of ETOEs is increasing mail volumes of designated postal operators through participation in the markets of foreign territories. In addition to gathering mail destined for the home country, ETOEs are also competing for cross-border volumes destined for other countries. For example, an ETOE owned by the designated operator in the Netherlands may compete for cross-border volumes between the UK and the United States via its ETOE in the UK.

The UPU Congress resolution C6/2012 reported 141 known ETOEs worldwide in 2011, up from 110 in 2008. Because ETOEs are affiliated with designated operators, they could in principle benefit from the service provisions and terminal dues rates available to UPU members. Under 2004 and 2012 UPU resolutions, however, ETOEs are considered strictly commercial entities, and are not covered by universal service provisions available to designated operators – including terminal dues rates. Nevertheless, the UPU resolutions instruct member states to respect national policies of individual countries, e.g., legal requirements of non-discrimination.

UPU members disagree about policy towards ETOEs. Some designated operators operate ETOEs, and they have been the topic of ongoing discussion since 2007.

Source: Definition by UPU Congress resolution C6/2012. Leong, Bahar & Papakrivopoulos (2008).

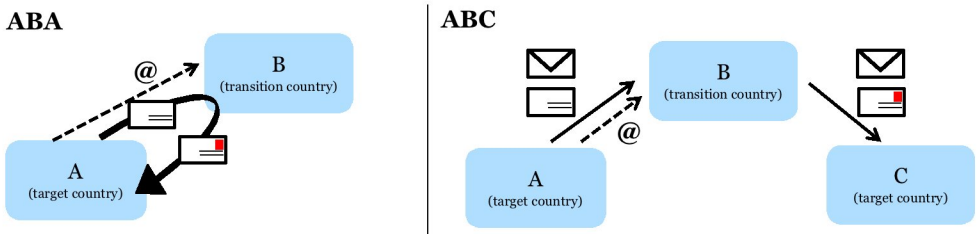
Box 3 Remail: Description and implications

The differences in terminal dues rates between countries, created by the UPU system, lay the groundwork for the possibility of arbitrage through injection of mail in a transition country in order to capitalize on low terminal dues. Arbitrage could come in the form of "remail" where mail items or data are transported across the border for injection in a foreign country.

"Remail" is letter post items which are posted in a country other than the country where the mailer "resides". The sender might physically send the mail to a second country for posting using a private operator or ETOE or "cause it to be posted" by transferring the electronic data from which the mail is prepared. Where a company is considered to reside is matter of judgement for postal officials. A large multinational company could be deemed to reside in almost every country in the world.

There are two main types of remail: ABA and ABC. In ABA remail, mail originating in country A is injected in country B, and sent back to A. In ABC remail, mail originating in country A is posted in country B, and sent to country C. In the example below, country B is a transitional country that enjoys lower terminal dues rates, while countries A and C respectively are target countries.

Illustration of ABA and ABC remail



Note: Remail refers to the situation when mail from one country is injected in another by a private or a foreign-designated operator.

Source: Ghosal 2002, Joint Cases C-147/97 and C-148/97, Deutsche Post AG v. Gesellschaft für Zahlungssysteme mbH (GZS) and Citicorp Kartenservice GmbH, and USPS (2012) report: EN-WP-12-001.

Under article 28 of the 2016 Universal Postal Convention, designated postal operators are allowed to confiscate and detain what appears to be ABA and ABC remail, in order to demand additional compensation. They may also refuse to deliver the mail items. The stated purpose of article 28 is to prevent mailers from taking advantage of the terminal dues system.

Since Norway is a small country with high import and low export of international letter mail, Posten is not making any financial gains from the exchange of international letter post to and from Norway. Options that potentially could help Posten to improve the financial position with respect to international mail would be to compete for international mail volumes through an ETOE or to negotiate bilateral agreements with higher terminal dues rates. The latter strategy is difficult as the UPU terminal dues rates always function as a fall-back provision in the negotiations. The fact that the volumes of outbound international mail are low in Norway puts Posten in a weak bargaining position negotiating bilateral agreements.

This strategy to establish an ETOE is for example followed by PostNord, through its ETOE Direct Link. Establishing an ETOE, however, would not guarantee an improvement in Posten's financial position since it would compete fiercely with other, already established and larger, ETOEs for the

international volumes. It would also require substantial investments. PostNord's ETOE Direct Link, for example, has seven offices across the world – from Australia and Hong Kong to the United States.

Financial losses incurred by the international terminal dues agreements traditionally have not been part of the net cost calculation (neither in Norway, nor in other countries). In recent years, we have observed a shift regarding this. To our knowledge, at least three national postal operators have now included the financial losses on international mail in their calculations of USO net costs. As the USO net cost calculations often are confidential and not published in the public domain, it is difficult to assess the exact number of countries where losses made on inbound international mail are included in the net cost calculations. One example of a country where the net cost calculations are publicly available, and where losses on inbound international mail are included in the calculations, is Ireland where the national postal operator, An Post, experienced a loss of 13.2 million Euro linked to inbound international mail in 2015. This loss accounted for almost 40 percent of the operator's total losses in providing the universal postal service.[44]

The reason for this development is most likely twofold: *First*, increasing cross-border e-commerce from countries in Asia (primarily of small and non-expensive items that can be sent as letter post and often are sent as registered letter post) means that the problem created by international terminal dues is increasing (i.e. the losses incurred by national postal operators in Europe are growing). *Second*, the low prospect of having the terminal dues system changed in the near future means that postal operators experience a stronger need to get compensation for their losses (as they will not decline in a foreseeable future).

Based on the above, we find that a counterfactual situation where Posten would set the price for inbound international registered letters at a price corresponding to cost plus a [redacted] margin is reasonable.

Delivery to blind people

The current USO requirement in Norway means that Posten has to provide free delivery to blind and visually impaired citizens. Posten's counterfactual implies that the company instead of free delivery would charge standard prices for these deliveries. We find this assumption to be reasonable as no commercial operator would deliver for free.

Moreover, empirical evidence shows that only postal operators with the obligation to provide free delivery to certain user groups do so. Commercial operators, like Posten's own subsidiary Bring Citymail in Sweden, do not provide delivery for free to any user groups. Last, but not least, the fact that Posten most likely would remain a dominant provider of postal services in Norway also without the USO does not imply any restrictions with respect to its ability to charge standard rates for delivery to the blind. These observations support the assumption that Posten would refrain from a special treatment of visually impaired citizens in the situation without the USO.

A summary of our assessment is provided in Table 9.

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[44] Comreg (2016), An Post's losses on international inbound mail in the universal postal service. An Post has not received any financial compensation for its USO net cost. The primary reason for this is that the compensation scheme in Ireland is designed as a compensation fund where all market players should contribute to covering the USO net cost based on their market shares. As An Post still holds a market share of above 90 percent in the Irish postal market, the designated operator would have to cover most of the USO costs itself.

Table 9 Assessment of Posten's obligation to provide free delivery to blind and visually impaired citizens

Question	Answer	Documentation
Does Posten voluntarily offer more than required by the USO?	No	Delivery free of charge is only provided to the user groups specified by the USO.
Do competitors offer more than required from Posten by the USO?	No	No competitors offer free delivery for the blind.
Do postal operators in other countries offer more than required by the USO in Norway, although the requirements in their own USO are lower?	No	• All universal service providers in Europe are obliged to provide free delivery for the blind. • Operators who are not obliged to do so (e.g. Bring Citymail in Sweden) do not provide this service for free
Which constraints would Posten in all events have as a dominant company under Norwegian law and regulation?	None	Dominance would not imply requirements with respect to free delivery to certain user groups.
What are the pros and cons of offering the service(level)?	The cons of providing free delivery for blind people outweigh the pros	Cons: • No revenue and costly service → purely loss making and not commercially viable

Source: Copenhagen Economics.

Basic bank services

The USO in Norway today entails an obligation to provide basic bank services in Posten's rural delivery network. Absent the USO, Posten claims that it would stop providing these services. We find this assumption reasonable. The main reason for this is that reduced demand for manual bank services and lower mail volumes throughout Posten's network imply increasing costs per bank transaction in Posten's rural network.

In relation to a study for the Norwegian Ministry of Transport and Communications in 2011, Copenhagen Economics found that mail carriers in rural delivery on average had one bank transaction per delivery route per day in 2010. The low number of bank transactions through rural delivery was also supported by interviews with rural postal workers who estimated the share of visits with bank transactions from nearly zero up to five percent of the total number of visits.[45] The low number of transactions in the network implied a cost per transaction that was not outweighed by the financial compensation received by Posten from its financial partner DnB Nor. With continuously falling demand for manual bank transactions[46], the cost per transaction is most likely larger today, seven years later[47], creating an even larger loss per transaction for Posten.

For this reason, it seems likely that Posten would abolish this part of its operations if it had the opportunity to do so. The result of our assessment is summarised in Table 10.

45 Copenhagen Economics (2011), Bank services in the postal network, p. 24.

46 According to a report from the Norwegian Ministry of Transport and Communications, the number of bank transactions in the rural postal network declined by on average 17.5 per cent per year 2013-2015, see Samferdselsdepartementet (2017), Meld. St. 31 (2015-2016), Melding til Stortinget – Postsektoren i endring.

47 Since the cost of providing bank services in the rural delivery network entails a fixed as well as a variable component, costs per transaction increase as volumes go down.

Table 10 Assessment of Posten's obligation to provide basic bank services on its rural delivery routes

Question	Answer	Documentation
Does Posten voluntarily offer more than required by the USO?	No	Posten does not offer more than required on the rural delivery routes. Bank services are also offered in the other parts of the network, but at more profitable conditions.
Do competitors offer more than required from Posten by the USO?	No	No other operators provide bank services on rural postal routes.
Do postal operators in other countries offer more than required by the USO in Norway, although the requirements in their own USO are lower?	No	• PostNord (SE): No USO requirement and no service • PostNord (DK): No USO requirement and no service • Posti (FI): No USO requirement and no service • PostNL (NL): No USO requirement and no service • Poste Italiane (IT): No USO requirement but extensive provision of financial services at fixed service points
Which constraints would Posten in all events have as a dominant company under Norwegian law and regulation?	None	Dominance would not imply requirements with respect to the provision of bank services on rural delivery routes
What are the pros and cons of offering the service(level)?	The cons of providing bank services on rural delivery routes outweigh the pros	Pros: • More satisfied customers since people in sparsely populated areas are able to access basic bank services. Cons: • Expensive to provide – low use of the service → unprofitable and not commercially viable

Source: Copenhagen Economics.

2.3 Assessment of cost and revenue effects

To assess the cost and revenue effects in Posten's net cost calculations, we apply a framework of best practice within the postal sector. Our track record of assisting postal operators and regulators in their calculations of postal USO net costs has provided us with thorough experience of the challenges of calculating USO net costs. The information about which postal operators (and regulators) that are calculating the USO net costs on a regular basis is often not available in the public domain. In relation to an EU-wide study about the main developments in the postal sector in 2013, however, five national regulatory authorities (Bulgaria, Estonia, Spain, Slovakia, and Norway) reported estimates of the net cost of the universal service obligation. Five additional countries (Belgium, Greece, Italy, Sweden and Switzerland) reported that the cost of the universal service obligation had been or was being studied and five more countries (Cyprus, France, Hungary, Luxembourg, and the Netherlands) reported that cost studies were planned.[48] Posten in Norway is one of few operators in Europe that receive regular compensation for its USO net cost from the government. Three other countries where the universal service provider is compensated through public funds for the state budget are Spain, Italy, and Poland.[49]

[48] See WIK Consult (2013), Main Developments in the European Postal Sector (2010-2013), p.152.

[49] WIK Consult (2013), Main Developments in the Postal Sector (2010-2013), p. 154. According to the same source, twenty-two Countries (Austria, Cyprus, Czech Republic, Germany, Denmark, Estonia, Greece, Spain, France, Croatia, Hungary, Italy, Luxembourg, Latvia, Malta, Poland, Portugal, Romania, Slovenia, Slovakia, UK, and Iceland) have authorised the establishment of a compensation fund. However, only 4 Countries (Cyprus, Estonia, Italy, and Slovakia) have actually established a compensation fund.

When assessing Posten's calculations we have analysed whether the underlying assumptions are consistent and economically sound. Due to the sheer size and the granularity of Posten's forecasting model[50], we have not been able to assess all calculations and input variables in detail. Based on a significant number of cross-checks and robustness checks, however, we have no reason to believe that the model should be biased. Another observation supporting this is the fact that the model is used by Posten for a number of internal business decisions which are not linked to the USO net costs. The model is, for example, used to provide Posten's board of directors with information about the financial status and future expectations and it is also used to decide on yearly price changes. The model has also played a central role in decisions unlinked to the postal USO, such as the decision to change the distribution structure and increase the centralisation of sorting, and the decision to increase automation in production. The model is thus not designed purely for the calculation of USO net costs as often is the case in other countries. This minimises the risk of the model being deliberately biased towards an overestimation of USO net costs.

To assess the revenue effects in Posten's model, we have benchmarked the assumed reactions of Posten's customers against the experience in other countries. We have also conducted interviews with large senders and competing delivery operators in Norway. We have selected interviewees that represent large senders from the public sector, non-profit organisations, as well as the private sector. We have also selected stakeholders in order to cover a range of relevant products supplied by Posten (transactional bulk mail, direct mail, unaddressed mail, newspapers and magazines). Additionally we have conducted interviews with a number of delivery operators who today compete with Posten for the delivery of different types of mail items. We have conducted interviews with the following stakeholders:

Public authorities and non-profit organisations:

- Municipality of Oslo[51]
- Norwegian Tax Administration (Skatteetaten)[52]
- Norwegian Cancer Society (Kreftforeningen)[53]

Large private organisations:

- Telenor[54]
- Lindorff[55]
- Aller Media AS[56]
- Coop[57]

Competitors:

- DB Schenker[58]
- Helthjem[59]

[50] For example, direct variable unit costs are calculated for 158 different categories of deliveries. These categories depend on franking method, format, machine or manual sorting, and different degrees of pre-sorting. For each category, sorting and production costs are calculated bottom-up using the actual number of items sorted, sorting speed and salary costs.
[51] Interview with Siv Neby, 02-11-2017.
[52] Interview with Lars Thorvaldsen, Team leader IT- and service partner at Skatteetaten, 14-11-2017.
[53] Interview with Marte Grønnli, Special advisor at Kreftforeningen, 31-10-2017.
[54] Interview with Øyvind Eldegard, Telenor, 16-11-2017.
[55] Interview with Fred Ivar Forsland, 08-11-2017.
[56] Interview with Arne Aksdal, Managing Director Market Print at Aller Media AS, 03-11-2017.
[57] Interview with Rune Hadland, Program and Marketing Manager at Coop, 10-11-2017.
[58] Interview with Einar Spurkeland, head of communication at DB Schenker, 14-11-2017.
[59] Interview with Anders Angen, General Manager Helthjem e-commerce, 21-11-2017.

Based on our assessment, we find that the model used by Posten to calculate USO net costs adheres to international guidelines on USO net cost calculations. The calculated cost effects are more elaborate than in many other countries where net costs of the postal USO are calculated. The assumptions in the model are generally conservative and we have not been able to detect any calculation mistakes. Nevertheless, the model lacks documentation and qualification of some assumptions. Based on our own assessment of revenue effects, we propose a few changes to Posten's estimated cost and revenue effects. Whereas some of these changes decrease the net cost (i.e. the assumed cost effect is decreased or the revenue effect is increased), others increase the net cost (i.e. the assumed cost effect is increased or the revenue effect is decreased). The net impact of our changes compared to using Posten's assumptions is a reduction of net cost in 2018 of about 7-8 per cent.

Posten's estimations contain two main assumptions relating to the estimated cost effects of reducing the delivery frequency to 2.5 days per week in all or parts of Norway. The first relates to cost reductions on route whereas the second relates to the share of mail that needs extra sorting. Based on a detailed analysis of how Posten's distribution costs will be affected by reduced delivery frequency, we change the assumption about the cost reduction potential on routes by one percentage point. We do not change other assumptions about cost effects, see Table 11.

Table 11 Cost effects: Main assumptions and proposed changes

Assumption	Posten	Copenhagen Economics Base case
Option 1: Delivery 5/2.5 dpw		
Cost reduction on routes	[redacted]	[redacted]
Extra sorting - share of mail	[redacted]	[redacted]
Option 2: Delivery 2.5 dpw		
Cost reduction on routes	[redacted]	[redacted]
Extra sorting - share of mail	[redacted]	[redacted]
Option 3: Delivery 1 dpw		
Cost reduction on routes	[redacted]	[redacted]
Extra sorting - share of mail	[redacted]	[redacted]
Reduction fixed costs - salaries	[redacted]	[redacted]

Note: The assumptions are explained in more detail in the Annex A. For the net cost of 2018, only Option 1 and 2 are relevant. Option 3, with delivery 1 day per week, would only be optimal to implement at a later point in time after either of Option 1 or 2 has been implemented.

Source: Copenhagen Economics.

With respect to revenue effects, we propose the following changes compared to Posten's original assumptions for the scenario with reduction in delivery frequency to 2.5 days per week (Option 2)[60], see Table 12.

First, whereas Posten assumes that the demand for [redacted] will remain unchanged with a reduction in delivery frequency and merging of A-mail and B-mail into one mail stream, our assessment suggests that there will likely be a small reduction in volume. We assume this effect to be [redacted] per cent for each of the two changes in our base case.

[60] In this section, we focus on Option 2 which is the commercially optimal scenario in 2018. In section 3.2 and Appendix D, we analyse Options 1 and 3 more in detail.

Second, we find Posten's assumption about a [redacted] per cent reduction [redacted] as a result of lower delivery frequency too conservative. Instead, we assume a [redacted] per cent reduction in our base case.

Third, we make minor adjustments of Posten's assumption regarding the demand effect for [redacted] in the scenario with reduced delivery frequency.

Table 12 Revenue loss: Main assumptions and proposed changes

Product	Posten	Copenhagen Economics Base case
Delivery speed		
Bulk, stamped, etc.	[redacted]	[redacted]
International mail	[redacted]	[redacted]
Small packets	[redacted]	[redacted]
Newspapers inter-regional	[redacted]	[redacted]
Unaddressed	[redacted]	[redacted]
Option 1: Delivery 5/2.5 dpw		
Bulk, stamped, etc.	[redacted]	[redacted]
International mail	[redacted]	[redacted]
Small packets	[redacted]	[redacted]
Daily newspapers	[redacted]	[redacted]
Weekly magazines	[redacted]	[redacted]
Unaddressed	[redacted]	[redacted]
Option 2: Delivery 2.5 dpw		
Bulk, stamped, etc.	[redacted]	[redacted]
International mail	[redacted]	[redacted]
Small packets	[redacted]	[redacted]
Daily newspapers	[redacted]	[redacted]
Weekly magazines	[redacted]	[redacted]
Unaddressed	[redacted]	[redacted]
Option 3: Delivery 1 dpw		
Bulk, stamped, etc.	[redacted]	[redacted]
International mail	[redacted]	[redacted]
Small packets	[redacted]	[redacted]
Daily newspapers	[redacted]	[redacted]
Weekly magazines	[redacted]	[redacted]
Unaddressed	[redacted]	[redacted]

Note: [redacted] The assumptions are explained in more detail in the Annex A. As the commercially optimal delivery frequency in 2018 is 2.5 days per week (see section 2.2), only Option 1 and 2 are relevant for the calculation of USO net costs for 2018.

Source: Copenhagen Economics.

Our in-depth assessment of cost and revenue effects for 2018 and suggestions regarding changes to the model for each of the five elements of Posten's net cost calculations can be found in Annex A. A description of Posten's model, used for calculating USO net costs, can be found in Annex B. Our proposed changes to Posten's net cost calculations are implemented in our base case scenario in our estimation of future net costs in chapter 3.2.

2.4 Assessment of intangible benefits of the USO

While the USO itself is a set of legal obligations which does not offer any benefits as such to the universal service provider, it may nevertheless create benefits stemming from an economic value of a right or privilege that is linked to the USO. Such intangible benefits should, in accordance with the Postal Directive (2008/6/EC) [61], be included in the net cost calculation of the USO by subtracting the value of the benefit from the net costs.

The Postal Directive does not provide any specific examples of possible intangible benefits to consider in net cost calculations. A range of candidate benefits have been proposed in various types of literature, such as literature surveys, previous investigations of the net cost of the USO, academic literature and a manual on net cost calculation, prepared by Copenhagen Economics for the Finnish national regulatory authority for the post and telecom sectors. To collect a list of potential intangible benefits of the USO that may apply to Posten, we have surveyed 13 publications linked to the postal universal service obligation, see Box 4.

Box 4 Literature to identify possible intangible benefits

- ERGP (2011) – a report on net cost calculation and evaluation of a reference scenario, produced by the European Regulators' Group for Postal Services
- Copenhagen Economics (2011) – a report on how to calculate net costs of the USO prepared for the Finnish Communications Regulatory Authority (FICORA).
- ARCEP (2010) – a report commissioned by the French national regulatory authority on the identification of intangible benefits of the USO
- CERP (2008) – guidelines on the calculation of the net cost of USO, produced by the Committee of European Postal Regulators
- Bergum (2008) – an estimation of net costs for Posten Norge
- Copenhagen Economics (2008) – an estimation of net costs for Post Denmark
- Frontier Economics (2008) and (2011) – an estimation of net costs for Royal Mail
- Postcomm (2001) – an assessment for Consignia62
- Barkatullah et al. (2002)
- London Economics (2002)
- Kapferer (1998)
- Panzar (2008)

Source: Copenhagen Economics.

From the above references, we have identified 16 examples of potential intangible benefits of the USO, which we list in alphabetic order in Table 13. It should be noted that the below list contains *potential* benefits which may not apply to Posten.

[61] "*The net cost calculation should assess the benefits, including intangible benefits, to the universal service operator.*" Article 1 (25) Annex 1, Part B, Directive (2008/6/EC).

[62] The brand name "Consignia" was used by Royal Mail during 2001-2002.

Table 13 Potential intangible benefits discussed in literature

Potential benefit	Explanation	Source
Access public registers	USPs may be allowed exclusive access to public registers.	▪ ARCEP (2010), p. 10. ▪ ERGP (2011), p. 30.
Better bargaining position	The views of the USP may carry extra weight in the formation of policy by the government.	▪ Postcomm (2001), p. 61. ▪ London Economics (2002), p. 19. ▪ ERGP (2011), p. 29.
Brand effects and consumer preference	The brand creates value for the company through the ability to charge premium prices for postal services (compared to competitors).	▪ CERP (2008), p. 19, p. 36. ▪ Postcomm (2001), pp. 57-58. ▪ London Economics (2002), pp. 19-20, 96. ▪ ARCEP (2010), p. 9. ▪ ERGP (2011), p. 30. ▪ Frontier Economics (2008), p. 33.
Customer life-cycle effects	Unprofitable customers today can become profitable in the future.	▪ CERP (2008), p. 36. ▪ Postcomm (2001), p. 60.
Demand complementarities	The USP can supply non-USO products via the postal outlet network.	▪ ARCEP (2010), p. 5. ▪ Barkatullah et al (2002), pp. 2-3, 14-15. ▪ London Economics (2002), p. viii. ▪ ERGP (2011), p. 28.
Economies of scale and scope	The USP can count on cost savings from scale economies where the USO generates volume.	▪ CERP (2008), p. 19. ▪ Barkatullah et al (2002), pp. 3, 16-18. ▪ London Economics (2002), pp. 97-119. ▪ ERGP (2011), p. 28. ▪ Bergum (2008), p. 116.
Exemptions from customs legislation	The exemptions can make it faster or cheaper to import and export deliveries.	▪ Postcomm (2001), p. 58. ▪ ARCEP (2010), p. 11.
Stamp issuance: Right to print state name[63]	The USP can have an exclusive right to issue stamps bearing the designation of the issuing country and / or graphical elements related to the state.	▪ CERP (2008), p. 19. ▪ ARCEP (2010), p. 7. ▪ EGRP (2011), p. 29. ▪ London Economics (2002), p. 19
Stamp issuance: interest free loan from stamp issuance	The USP can have an (indirect) interest free loan from sold but unused stamps.	▪ CERP (2008), p. 19. ▪ ARCEP (2010), p. 7. ▪ EGRP (2011), p. 29. ▪ London Economics (2002), p. 19.
Low transaction costs due to uniform tariffs	Having uniform tariffs saves time for both USP and customers.	▪ Postcomm (2001), p. 60. ▪ ARCEP (2010), p. 7. ▪ ERGP (2011), p. 29.
Ownership of post office (PO) boxes	If the USP owns a network of post office boxes to which only the USP has access, it may make competition difficult.	▪ ARCEP (2010), p. 11. ▪ Panzar (2008), pp. 23-24.
Parking/stopping exemptions	The USP delivery cars can be exempt from parking regulations and fees.	▪ Postcomm (2001), p. 58. ▪ London Economics (2002), p. 19. ▪ ARCEP (2010), p. 10.
Special rights to marketing	This could for instance be the possibility to use certain marketing symbols.	▪ CERP (2008), p. 19.
Funding predation and expansion	The USP might use the revenues generated in the reserved area in order to fund predation or acquisitions of competitors	▪ London Economics (2002), p. 20.
Ubiquity	The value of the advantage to use an already installed network.	▪ CERP (2008), p. 19. ▪ Postcomm (2001), p. 60. ▪ ARCEP (2010), pp. 8-9. ▪ ERGP (2011), pp. 29-30.
VAT exemption	The USP would profit from VAT exemption.	▪ CERP (2008), p. 19. ▪ Postcomm (2001), p. 58. ▪ ARCEP (2010), p. 6.

Note: USP=Universal Service Provider.

Source: List compiled by Copenhagen Economics.

[63] Referred to in literature as "Privileged access to the philately market", cf. e.g. ARCEP (2010).

The benefits above have been suggested for a variety of purposes and in different contexts. There are three reasons why not all of them will apply to Posten in Norway.

First, a given benefit may continue to exist in the absence of USO – and thus not be related to USO.[64] *Second*, a given benefit may not exist in Norway today, e.g. there may be certain provisions included in the USO in other countries that are not part of the USO in Norway. *Third*, a given benefit may already have been included in the counterfactual scenario as an indirect revenue effect when the net cost of the USO was estimated.

In the following, we evaluate each of the potential benefits to establish whether they apply to Posten in Norway. Based on our assessment, we find that Posten possesses one of the identified potential intangible benefits of the USO, namely the benefit linked to Posten's exclusive right to print "Norge" or "Noreg" on stamps. Consequently, 15 out of the 16 potential benefits identified in literature do not apply to Posten in the Norwegian context. The most common reasons are that a benefit does not exist in the Norway today or that a benefit would continue to exist in the hypothetical situation without the USO. The results of our assessment are summarised in Table 14.

[64] Benefits that are linked to the postal operator's position as an incumbent operator, but not to the universal service obligation as such, are not considered intangible benefits of the USO. In the Norwegian context, one example of this is Posten's access to the masterkeys used for several entrance doors and post boxes (sonenøkler). Posten's access to these keys would not disappear in case the universal service obligation would be abolished and the intangible benefit that the access to keys might imply can therefore not be considered an intangible benefit of the USO.

Table 14 Assessment of intangible benefits applying to Posten

Potential benefit	Situation in Norway	Conclusion
Access public registers	Posten has no exclusive rights to public registers	No benefit for Posten
Better bargaining position	Posten's bargaining power would not change in the situation without the USO	No benefit for Posten
Brand effects and consumer preference	The brand value depends on the services that customers experience, not a regulation (USO designation) which customers have difficulties relating to. The benefit will continue to exist without the USO.	Not tied to USO
Customer life-cycle effects	If there are customer life-cycle effects, they may continue to exist in the absence of USO – and thus not be related to the USO.	Not tied to USO
Demand complementarities	Posten will continue to maintain a modified network and enjoy demand complementarities without the USO. The revenue effects have been considered when the profit in the counterfactual scenario is determined.	No benefit for Posten
Economies of scale and scope	The USO does not generate mail volumes by default. Instead it actually reduces economies of scale (e.g. forces Posten to handle a non-optimal number of items per delivery day)	No benefit for Posten
Exemptions from customs legislation	Exemptions from customs legislation are not linked to the USO. In addition, the obligation to receive international mail through UPU agreements create extra costs for Posten.	No benefit for Posten
Stamp issuance: Right to print state name[65]	The Norwegian USO comes with a right to print "Norge" or "Noreg" on stamps.	Benefit for Posten
Stamp issuance: interest free loan from stamp issuance	All postal operators that can issue stamps can enjoy "interest free" loans from payments received in advance. This benefit is not related to having the USO but to the form of payment for services..	No benefit for Posten
Low transaction costs due to uniform tariffs	The counterfactual scenario maintains uniform tariffs across the country. The benefit will continue without the USO.	No benefit for Posten
Ownership of post office (PO) boxes	The owner of PO boxes shall give other operators access to those PO boxes at a cost based price.	No benefit for Posten
Parking/stopping exemptions	There are no stopping/parking exemptions linked to the USO in Norway	No benefit for Posten
Special rights to marketing	There are no special rights to marketing linked to the USO in Norway	No benefit for Posten
Funding predation and expansion	This argument is obsolete as there is no reserved area in Norway anymore	No benefit for Posten
Ubiquity	Current USO leads to a dense network. Less dense network gives sufficient ubiquity. However, all areas of the country would still be serviced without a USO.	No benefit for Posten
VAT exemption	There is no VAT exemption linked to the Norwegian USO.	No benefit for Posten

Note: USP=Universal Service Provider.

Source: Copenhagen Economics.

As evident from the table above, our assessment reveals that the only intangible benefit applying to Posten is the right to print "Norge" or "Noreg" on stamps.

The Norwegian postal law states that: *"A permission is required from the authority in order to issue stamps or types of postage with "Norge" or "Noreg". Such permission can only be given to the designated provider."*[66]

Without the USO, Posten would thus not have this right. Consequently, the relevant question is whether Posten's sales of stamps would drop absent this right. If so, the right provides a benefit to Posten today.

[65] Referred to in literature as "Privileged access to the philately market", cf. e.g. ARCEP (2010).
[66] Original text in Paragraph 18 of the Norwegian Postal Law: Det kreves tillatelse fra myndigheten for å utgi frimerker eller andre frankeringsmidler påført «Norge» eller «Noreg». Slik tillatelse kan bare gis til leveringspliktig tilbyder.

It is possible that philatelists' demand for Posten's stamps would drop if Posten stopped printing "Norge" or "Noreg" on its stamps and instead printed something else, for example "Posten". Some collectors might stop buying Posten's stamps altogether when completing their collection of stamps from Posten printed "Norge" or "Noreg". As Posten's position as incumbent provider remains without the USO obligation, preferences for Posten's stamps may consequently be largely intact.

This conclusion is in line with previous analysis conducted by London Economics' (2002), finding that: "*The USP is often able to sell at significant margins to the philately market. Even when the USP does not have the exclusive right to issue stamps, it may still have a large advantage compared to other potential issuers of stamps.*"[67]

We therefore find that Posten's exclusive right in principle is an intangible benefit of the USO. However, due to the small size of the philately market, the benefit is likely to be limited and should thus not be included in the calculation of USO net costs.

A detailed assessment of all potential benefits and their application to Posten in the Norwegian context is found in Appendix C.

2.5 Assessment of the right to a reasonable profit and efficiency considerations

According to the Postal Directive (Directive 2008/6/EC), *"The [net cost] calculation should take into account [...] the* ***entitlement to a reasonable profit*** *and* ***incentives for cost efficiency****."*

This implies that universal service providers are entitled to a reasonable profit for providing the USO and not only expected to break even on these services. This profit should thus be included in net USO cost calculations.

Posten only partially includes a reasonable profit in its net cost calculation. This is a conservative approach. The only element where a reasonable profit is considered is for international mail, where Posten in the counterfactual would charge a price covering costs plus a [redacted] profit margin. Since this margin [redacted] and also is very much in line with estimates of reasonable profits in other countries[68], we consider this margin to represent a reasonable profit. Although Posten, in principle, would be expected to include a reasonable profit on all elements of its net cost, our assessment shows that this change likely would not have a large impact on total net costs.

The Postal Directive's guidelines on USO net cost calculations also state that the universal service provider should be compensated for efficient costs only. In other words, in the case that Posten as a result of inefficient operations would have high costs today, these costs should not be compensated by the public procurement of financially unsustainable postal services.

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67 London Economics (2002), p. 19.

68 For example, postal tariff regulation in the Netherlands stipulates an allowed return on sales for postal services within the USO of 10 percent. Moreover, the European Commission has used 7.4 per cent return on sales for bPost and Deutsche Post (2006-2010).

We therefore have to assess what incentives Posten has to behave cost efficiently today, and whether there are any evidence of this being the case.

Our assessment reveals no signs that Posten behaves inefficiently today. On the contrary, we find that Posten today faces at least three constraints which force the company to behave efficiently. These are competitive pressure from other operators, e-substitution, and requirements on a market based return from the owners. In addition to this, we find that Posten over the years have implemented a number of large cost saving initiatives and that the company could not have done more to be even more efficient within the current regulatory framework.

Table 15 outlines a number of examples of cost saving reforms conducted by Posten over the past six years. As a result of these and other cost rationalisation/efficiency projects and programmes, Posten has in the same time frame reduced its workforce by nearly 40 percent, thereby creating substantial savings.

Table 15 Examples of Posten's Cost Reforms 2011-2017

Reform	Details
Changed post offices to "post-in-shops"	Posten has over several years reduced its number of traditional post offices and replaced them with a larger network of post-in-shops. This change has allowed for substantial cost savings in terms of reduced costs for premises and personnel as Posten, instead of having their own buildings and personnel pay a compensation per transaction to the store with the Post-in-shop.
More efficient placement of letter boxes	Clustering of letter boxes on delivery routes have allowed for more efficient delivery with fewer stops per route and hence associated cost savings.
New bank agreement	The abolishment of Posten's bank service requirement in the non-rural network provided Posten with an opportunity to renegotiate its contract with its bank partner to obtain better conditions (compensation per bank transaction conducted at Posten's service points). The provision of basic bank services at Posten's service points in the non-rural network thereby went from being a loss-making service to being a profitable service.
Abolishment of distribution on Saturdays	Abandoning distribution on Saturdays has allowed for significant savings since volumes that previously were delivered on Saturdays now contribute to increasing economies of scale in distribution on the other five delivery days of the week.
Changes in distribution structure	Manual sorting of letter mail has been centralised to the sorting terminals before the mail is distributed (sorted already in delivery order) to the local delivery offices. This change has implied savings in terms of smaller office space needed at the local delivery offices (ability to renegotiate contracts), fewer cars, more efficient route optimisation, and more efficient use of mail carriers' time since they spend the whole day on the route delivering mail.

Source: Interviews with Posten.

In order to assess whether Posten behaves efficiently today, we also ask ourselves if Posten within the current regulatory framework could have done more to reduce costs. In particular, since scale economies in distribution is so important for distribution costs, we ask whether Posten could have reduced actual delivery frequency (thereby increasing scale economies in distribution) without any regulatory changes. This has for instance happened in Denmark, where PostNord since 2008 has increased the price of D+1 delivery strongly to move senders to slower mail products and allow for the introduction of XY delivery where the mail carriers only deliver mail to households three days a week (unless there is a D+1 letter that needs to be delivered on a non-standard delivery day).

We find that the strategy followed in Denmark, however, is not a viable one in Norway. There are two main reasons for this.

First, we observe that it would be difficult for Posten to increase the price of D+1 substantially in order to trigger substitution to slower mail products and allow for less frequent delivery. The main reason for this is that prices for postal services within the USO in Norway must by be cost oriented and affordable.[69] Assuming that a significant price increase nevertheless would be possible, however, there would still be a second obstacle related to the geographical conditions in Norway, preventing Posten from reducing its delivery frequency without abandoning D+1 delivery. More specifically, as long as there is still a share of D+1 mail in the letter mail stream, it is not possible to change the terminal structure and reduce the air transport of mail between the southern and the northern parts of Norway. This is due to the fact that there still would be a need to comply with the D+1 requirement for some letters and airplanes would have to be used irrespective of whether there are 100,000 or 1,000,000 letters to deliver overnight. Geographical conditions in terms of many areas with very low population density also implies that there would be situations where mail carriers would have to drive very far to deliver only one or a few D+1 letters for households that would otherwise not be served on that day.

Based on the above, we conclude that there does not seem to be any systematic inefficiencies in Posten's operations and that there should be no need to reduce the net cost compensation to compensate for operational inefficiencies.

[69] Lovdata.no (2017), LOV 2017-02-09-41, Lov om posttjenester (postloven), paragraph 10, https://lovdata.no/dokument/NL/lov/2015-09-04-91?q=posttjenester.

Chapter 3

Future regulatory options for the USO

3.1 Introduction and main findings

When evaluating the attractiveness of different policy options, policy makers should consider the potential reduction in USO net costs compared to the status quo, as well as the potential impact on users who currently are dependent on the universal services provided by Posten.

In this chapter, we assess the impact on USO costs and benefits of four policy options linked to the requirements regarding delivery frequency in the postal USO in Norway.

- Status quo: Required delivery frequency of 5 days per week throughout Norway
- Option 1: Required delivery frequency of 2.5 days per week in urban areas (5 days in rural areas)[70]
- Option 2: Required delivery frequency of 2.5 days per week throughout Norway
- Option 3: Required delivery frequency of 1 day per week throughout Norway

We find that reducing the USO requirements with respect to delivery frequency has the potential to reduce net costs of the USO by between 110 and 930 million NOK per year 2018-2025, depending on the policy option, see Table 16.

Table 16 Impact on USO net cost of policy options

Policy option	Yearly net cost (MNOK)	Cost reduction compared to status quo (MNOK)
Status quo (delivery 5 days per week)	530-990	-
Option 1 (delivery 2.5 days in urban areas and 5 days in rural areas)	400-740	110*-250
Option 2 (delivery 2.5 days per week throughout Norway)	60-340	440-650
Option 3 (delivery 1 day per week throughout Norway	60-210	440-930

Note: * The smallest potential yearly cost reduction for Option 1 is in 2019, while the smallest yearly net cost is in 2018, see Figure 11 and Figure 13. For the other options, the left-most values in both columns refer to 2018 and the right-most values to 2025.

Source: Copenhagen Economics.

The potential to reduce net costs is highest when reducing the required delivery frequency to delivery one day per week throughout Norway. In our base case, this policy option has the potential to reduce net costs by approximately 440 million NOK in 2018, growing to almost 930 million NOK in 2025. However, the exact net cost (and thereby cost reduction potential) of this policy option is also the most uncertain as it is a significant change compared to the status quo and it is difficult to foresee how demand for postal services would be affected if mail would only be delivered once a week compared to the current five days per week.

[70] The classification of urban versus rural areas is made at the post-code level. A post code is classified as urban if it contains parts or all of a densely populated area, which is defined as having at least 10,000 inhabitants and a maximum of 50 meters between the households or businesses. The post code is otherwise classified as rural. Since a post code classified as urban may also contain areas which are sparsely populated, there is a risk of misclassification for some households and businesses.

Reducing the required delivery frequency to 2.5 days per week throughout Norway would have the same impact on USO net costs as the reduction to one delivery day per week until year 2020. After that, the net cost for this policy option would increase as Posten would find it optimal to reduce delivery frequency below 2.5 days per week. Compared to the status quo (requiring delivery 5 days per week), requiring delivery 2.5 days per week has the potential of reducing USO net costs by about 440 to 650 million NOK per year.

The option to reduce the required delivery frequency to 2.5 days per week in urban areas only has a smaller potential of reducing USO net costs: Approximately 110 to 250 million NOK per year in our base case.

Our analysis of user needs reveal that most users of postal services in Norway are not dependent on physical mail delivery five days per week. The reasons for this is that neither senders nor recipients are dependent[71] on speedy delivery, or delivery on specific weekdays. We also find that the large majority of businesses and citizens in Norway have access to alternative solutions which can fulfil the same needs as the postal universal service does today. Examples of such alternatives are digital newspaper subscriptions, electronic invoices, and physical delivery with alternative service providers.

Nevertheless, we also find that most likely there is a small (and declining) group of citizens (primarily elderly or disabled citizens in rural areas) who for different reasons do not have alternatives available, or cannot use the alternatives available to them. These users are more likely than others to be dependent on a high delivery frequency provided by Posten, e.g. for delivery of medicine, daily newspapers, and urgent notifications[72] (e.g. from hospitals), see Table 17.

Table 17 Impact on USO benefits of policy options

Policy option	User group dependent on current service level	Service affected
Option 1 (delivery 2.5 days in urban areas and 5 days in rural areas)	None[1]	
Option 2 (delivery 2.5 days per week throughout Norway)	Immobile citizens in rural areas	Delivery of medicine
	Citizens in rural areas who cannot use digital alternatives	Delivery of daily newspapers
Option 3 (delivery 1 day per week throughout Norway	Immobile citizens in rural areas	Delivery of medicine
	Citizens in rural areas who cannot use digital alternatives	Delivery of daily newspapers
	Immobile citizens who cannot use mobile phone or other digital alternatives	Delivery of urgent notifications (e.g. from hospitals)

Note: [1] The classification of urban versus rural areas might result in some households without alternative infrastructure available being classified as located in urban areas based on population density. For this reason, some of the targeted solutions identified for policy options 2 and 3 might still be considered also in relation to policy option 1.

Source: Copenhagen Economics.

If the USO would be reduced, the Norwegian Government could invest in targeted measures that do not exist today in order to ensure that these needs are satisfied also going forward. Examples of such targeted measures could, for example, be training of digital skills for elderly, specific home delivery services provided to a small group of non-digital and immobile citizens, public procurement

[71] The fact that many senders and recipients of mail may prefer a higher service level compared to a lower one does not imply that they have a critical need for (i.e. are dependent on) the higher service level. When assessing the impact on users of changes in the USO, it is therefore important to distinguish between critical and non-critical needs (or preferences).

[72] Urgent notifications can often also be made via telephone, thereby reducing the dependency on postal services for this matter.

of newspaper delivery in rural areas, or partial public funding of registered letter services for specific needs, such as delivery of prescription medicines.

When deciding on the future for the postal USO, the cost of implementing such measures should thus be weighed against the potential reduction in USO net costs.

3.2 Development in USO net cost with different policy options

In order to provide policy makers with knowledge to make informed decisions about any future changes to the postal USO in Norway, we have estimated USO net costs in Norway for the years 2018-2025. Since any estimates about future developments by definition are uncertain (because they depend on exogenous factors that cannot be controlled for at the outset), we conduct the analysis in two steps.

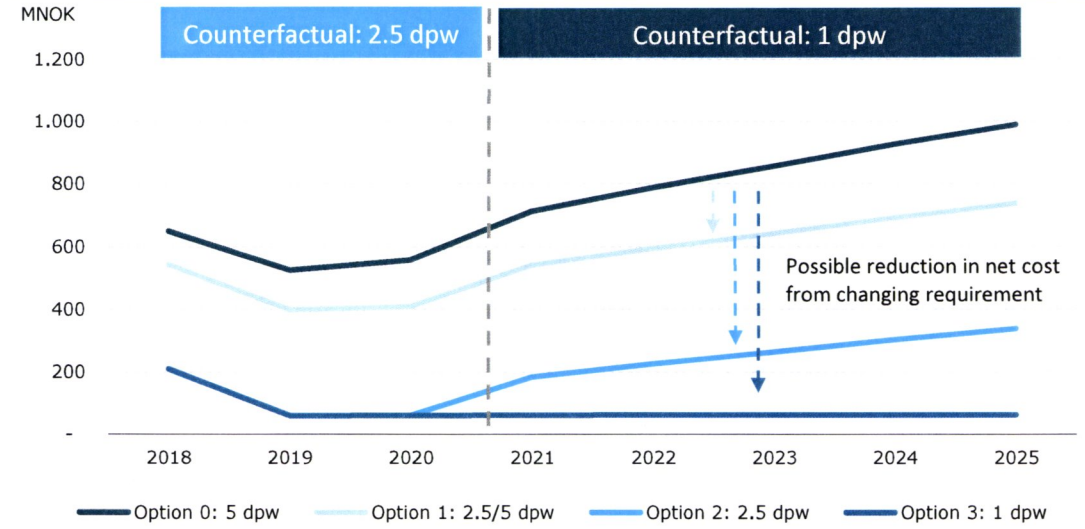
First, we estimate the development in USO net costs for the four policy options discussed throughout this report for a base-case scenario. The base case scenario is based on our best estimates regarding factors such as mail volume developments, development in labour costs and postal users' responses to the changes in service level.

Second, we perform a sensitivity analysis for each policy option. The sensitivity analysis contains a low net cost scenario and a high net cost scenario where a number of key assumptions are adjusted to take into account uncertainties relating to general market developments as well as to assumptions about cost and revenue effects in the net cost model. The scenarios reflect a lower and an upper bound for net costs 2018-2025.

Development in USO net costs in the base-case scenario

Our estimates of USO net costs in 2018-2025 reveal that a required delivery frequency of 1 day per week throughout Norway (Option 3) leads to the lowest net cost of the three options, see Figure 11. Requiring delivery 2.5 days per week throughout Norway (Option 2) leads to an equally low net cost until 2020 in our base case scenario, but the net cost for this option compared to option 3 increases from 2021 onwards. A required delivery frequency of 2.5 days per week in urban areas and 5 days per week in rural areas (Option 1), or a requirement of delivery 5 days per week throughout Norway (status quo), results in significantly higher net costs compared to the other two policy options for all years.

Figure 11 USO net cost 2018-2025 base-case scenario



Note: Net cost includes the elements reduced delivery frequency, international mail, delivery to blind and visually impaired people, and basic bank services. For 2018, net cost also includes delivery speed, which will not be a net cost from 2019 and onwards, because of the merging A and B mail into one stream. To estimate net cost of international mail, delivery to blind and visually impaired people, and basic bank services for 2019-2025, we use the respective estimates for 2018 and adjust for expected volume and price developments. The commercially optimal delivery frequency changes in 2021 from 2.5 to 1 day per week. This means that the net cost for options 0, 1 and 2 changes (increases) since net cost is the difference between the outcome of an option and the commercially optimal scenario.

Source: Copenhagen Economics based on Posten's forecasting model adjusted by Copenhagen Economics.

As evident from Figure 11, Option 2 and Option 3 create equal net costs until 2020. The reason for this is that Posten's optimal delivery frequency (i.e. how the company would behave without the USO) changes as mail volumes continue to decline. Based on our base case estimates about the general mail volume decline in Norway, the optimal delivery frequency, and thereby the counterfactual scenario, for Posten will be 2.5 days per week throughout the country until 2020, and thereafter 1 day per week throughout the country.[73] This means that the requirement to deliver mail 2.5 days per week does not constrain Posten in its behaviour until 2021. It also means that the delivery frequency element in Option 2 and 3 is eliminated from the net cost calculations until 2021.

Predicting if, or when, delivery 1 day per week will become commercially unviable is highly uncertain. However, if mail volumes keep declining as they have done in the last decade, sustaining delivery more than 1 day per week will eventually become unviable. The development in Denmark illustrates this. Starting from January 2018, PostNord in Denmark will not operate a dedicated mail network. Instead, its logistics network will be used for delivering mail once every week.[74]

Allowing Posten to deliver mail only one day per week throughout Norway (Option 3) would eliminate the delivery frequency element from the net cost calculations for all years of the analysis. The

[73] If volume decline turns out to be different than expected, the optimal delivery frequency may change earlier or later than 2021.

[74] Postnord (2017), Postnord styrker omstillingen i Danmark yderligere, https://www.postnord.com/da/presse/pressemeddelelser/postnord/2017/postnord-styrker-omstillingen-i-danmark-yderligere-desuden-fortsatter-arbejdet-med-at-reducere-koncernens-administrative-omkostninger/.

reason for this is that Posten within the given timeframe would find it optimal to deliver at least one day per week throughout the country. This means that the net cost in Option 3 only consists of the elements international mail, provision of bank services in the rural network and free delivery to blind and visually impaired citizens, for which the estimated net cost is stable around 60 million NOK between 2019 and 2025.[75]

The significant difference in net costs between Option 1 (reducing the required delivery frequency to 2.5 days per week in urban areas, while still requiring 5 days per week in rural areas) and Option 2 (reducing the required delivery frequency to 2.5 days per week throughout Norway) can be explained by the observation that the cost savings potential is much lower when reducing delivery frequency only in urban areas whereas the negative impact on demand for Posten's products is rather similar for both options.

The increase in net costs over time for all policy options is a result of declining mail volumes, which lead to higher unit costs in mail delivery and increase the gap between the profit earned by Posten with the USO and the profit that could have been generated in a situation without the USO.

In March 2017, Posten presented its forecasts of net costs for the three policy options for the period 2018-2025 to the Ministry of Transport and Communications. Since then, Posten has revised its forecasts and shared the model, which the revised forecasts are based on, with us. Our base case estimates of net cost are generally lower than Posten's, see Figure 12.[76] This is true for the revised forecasts as well as for most of the estimates in the initial forecasts that Posten presented in March to the Ministry. In Posten's revised forecasts, the estimates for net cost in 2018 differ in the following way; Posten's estimates of net cost related to delivery speed is higher (152 compared to our 120 million NOK), the estimates of net cost related to delivery frequency (Option 2) is higher (490 compared to our 473 million NOK), the estimates of net cost related to international mail is lower (33 compared to our 66 million NOK), and the estimates of net cost related to delivery to blind and visually impaired people as well as basic bank services are relatively similar.

Our estimate of the net cost of keeping the current scenario of delivery 5 days per week constant (Option 0) is around 8 per cent lower than Posten's most recent forecasts for 2018 and for 2025. The differences stem from our changes in assumptions regarding cost and revenue effects resulting from an implementation of reduced delivery frequency, as discussed in section 2.3 and in Appendix A.

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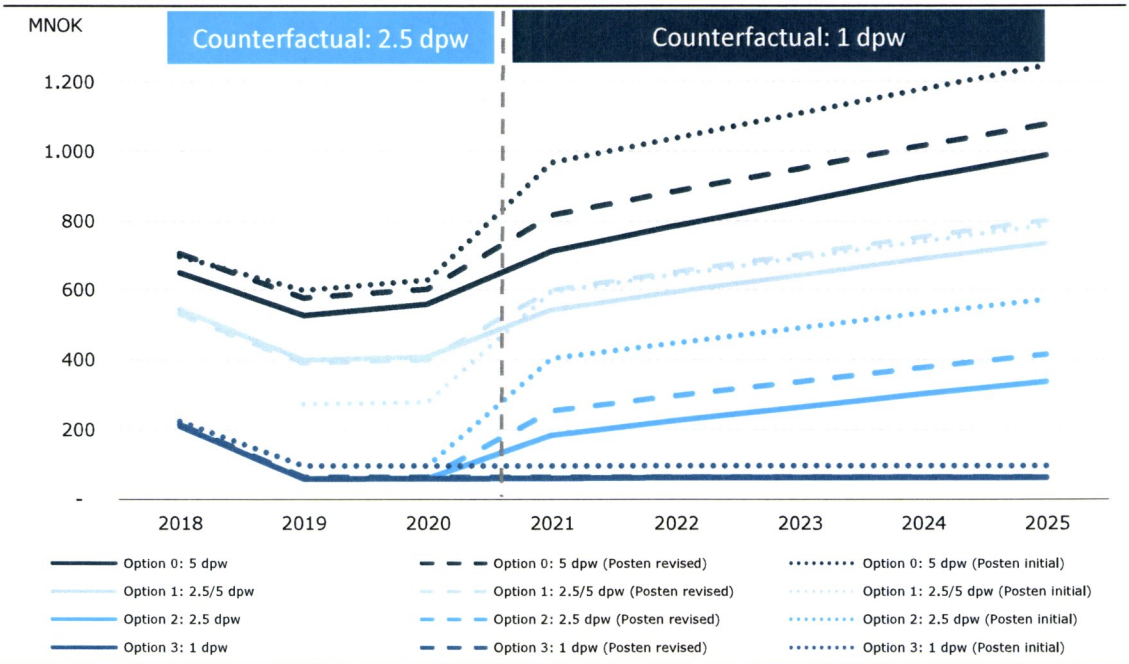
75 For 2018, there is still an element of the net cost (152 million NOK) related to delivery speed. Net cost of international mail depends on the volume development of imported registered mail. If e-retailers in Asia start using other services, like standard tracked mail, net cost will decrease even though the volume of international small packets increases.

76 We have had complete access to Posten's revised forecasts and the model they are based on. However, we have not had access to the initial model which the forecasts that were presented to the Ministry in March were based on. Therefore, it has not been possible to make a complete comparison of assumptions and detailed results between the two sets of forecasts.

Figure 12 USO net cost 2018-2025 comparison of base case scenario and two versions of Posten's forecasts

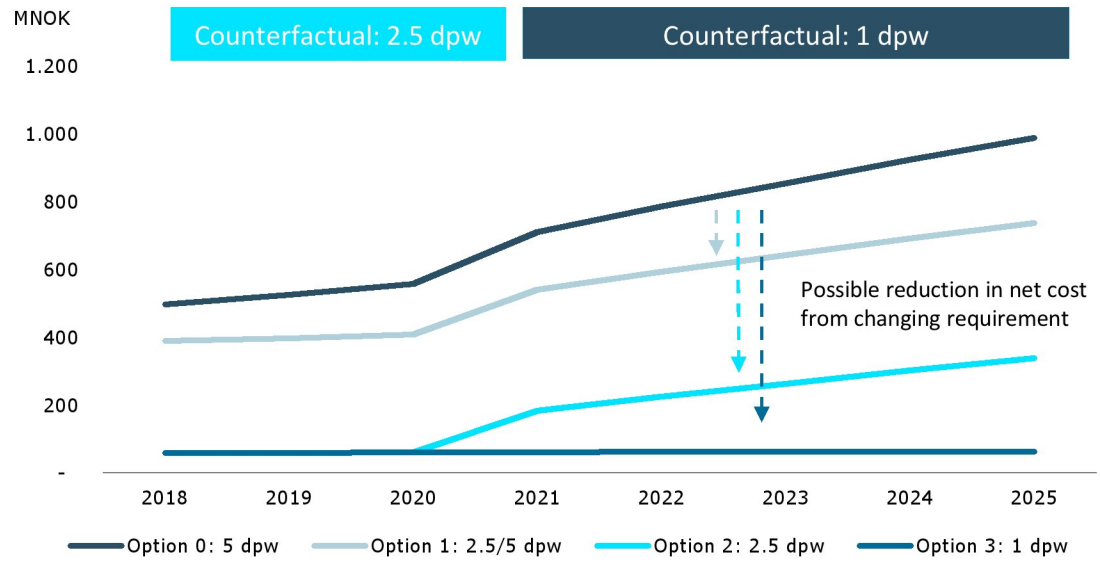


Note: Net cost includes the elements reduced delivery frequency, international mail, delivery to blind and visually impaired people, and basic bank services. For 2018, net cost estimates also includes delivery speed, which will not be included in Posten's calculations from 2019 and onwards, because of the merging A and B mail into one stream. The commercially optimal delivery frequency changes in 2021 from 2.5 to 1 day per week. This means that the net cost for options 0, 1 and 2 changes (increases), since net cost is the difference between the outcome of an option and the commercially optimal scenario. The lines with small dots (dashed) are the initial forecasts of Posten, which were presented to the Ministry of Transport and Communications in March 2017. These initial estimates do not contain net cost estimates for Option 1 (2.5/5 dpw) in 2018. The lines with large dots (dashed) are the revised forecasts made by Posten using its own forecasting model. These estimates are based on the revised model and the assumptions presented in Table 11 and Table 12. In both versions of Posten's forecasts, Posten has for 2019-2025 used a simplifying net cost calculation for the elements international mail, delivery to blind and visually impaired people, and basic bank services. Posten's estimated net cost for 2018 for these elements, 96 million NOK in the initial forecasts and 63 million NOK in the revised forecasts, are used as net cost for each of the years 2019-2025. In our estimates, we use the estimate for 2018 adjusted for expected volume and price developments.

Source: Copenhagen Economics based own calculations and Posten's forecasts.

Figure 11 and Figure 12 also demonstrate a decline in net cost in 2019 for all policy options. This is a result of the merging of A-mail and B-mail into one mail stream in 2018, which contributes to the calculated net costs in 2018, but not in the following years. If this element of the net cost is removed from the analysis, net costs for all policy options would be about 150 million NOK lower in 2018 compared to the net cost with the element included, see Figure 13.

Figure 13 USO net cost 2018-2025 base-case scenario (excl. element delivery speed)



Note: Net cost includes the elements reduced delivery frequency, international mail, delivery to blind people, and basic bank services. The element delivery speed is excluded. The commercially optimal delivery frequency changes in 2021 from 2.5 to 1 day per week. This means that the net cost for options 0, 1 and 2 changes (increases) since net cost is the difference between the outcome of an option and the commercially optimal scenario.

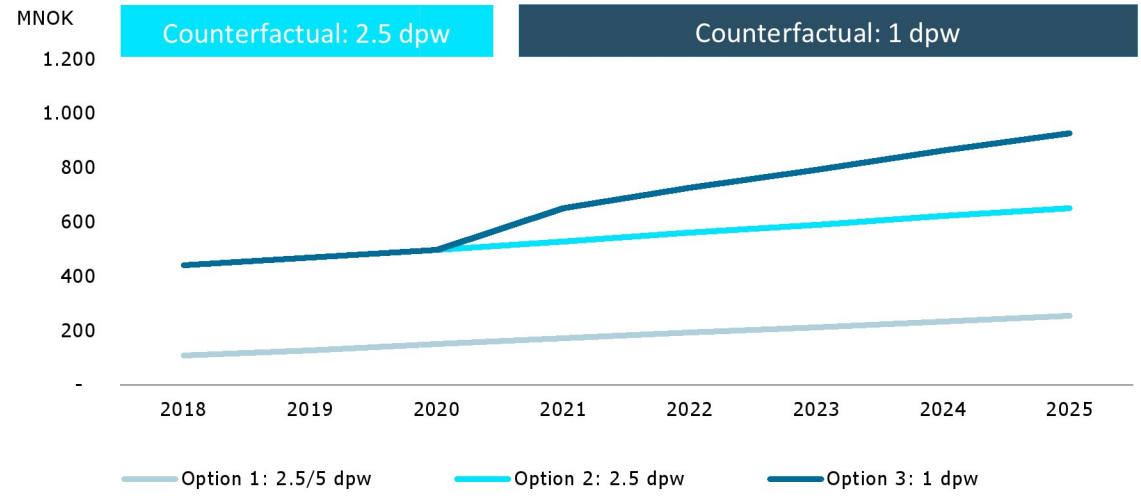
Source: Copenhagen Economics based on Posten's forecasting model adjusted by Copenhagen Economics.

Reduction in USO net costs compared to the status quo regulation

As evident from the discussion above, all policy options allowing for a reduction in the required delivery frequency will also allow for a reduction in USO net costs compared to the status quo. The potential net cost reductions are growing over time as mail volumes continue to decline and thereby make the provision of a high service level more costly.

Our estimations show that the largest reduction in net costs (440-930 million NOK) compared to the base case results from Option 3 (requiring delivery one day per week). Similarly, we find that Option 2 (requiring delivery 2.5 days throughout Norway) has the potential to reduce net cost by approximately 440-650 million NOK compared to the status quo and Option 1 (with a partial reduction of delivery frequency only in urban areas) has the potential to reduce net costs by 110-250 million NOK compared to the status quo, see Figure 14.

Figure 14 Reduction in net cost compared to status quo, 2018-2025



Note: The graph shows the difference between Option 0 (status quo – delivery 5 days per week throughout Norway) and the other options. Net cost includes the elements reduced delivery frequency, international mail, delivery to blind people, and basic bank services for all years as well as delivery speed for 2018.

Source: Copenhagen Economics based on Posten's forecasting model adjusted by Copenhagen Economics.

Parameters in sensitivity analysis

In order to test the robustness of our results, we have conducted a sensitivity analysis where we in addition to our base case have created a "low net cost" scenario and a "high net cost" scenario.

The net costs of the USO are affected by a range of parameters, including general market developments as well as specific assumptions about cost and revenue effects in the model. Parameters included in our sensitivity analysis are those where (i) a small change in the parameter have a significant impact on results and/or (ii) there is significant uncertainty about the actual development. The parameters are further divided into external and internal factors.

External factors relate to general market developments that have a significant impact on USO net costs in the future. The two main parameters that will influence the level of USO net cost are (i) mail volume developments and (ii) developments in real wages, see Table 18.

Table 18 External factors included in sensitivity analysis

Parameters	Base case scenario	High net cost scenario	Low net cost scenario
Yearly mail volume development[1]	-7.8%	-10.7%	-5.9%
Yearly development in real wages	0.6%	1.4%	-0.3%

Note: [1] The yearly volume development is a combined effect of individual estimates of volume developments for different mail categories.

Source: Copenhagen Economics.

Our base case takes as a starting point almost 8 per cent mail volume decline per year. This is slightly higher than the historical mail volume development in Norway (on average -6.8 per cent per year over the last five years)[77] and similar to the development in countries like Finland. In our high net cost scenario, we assume increased digitalisation (and thereby e-substitution) and a faster growth in international mail (small packets from e-commerce). The decline in mail volumes assumed in this scenario (nearly 11 per cent per year) is similar in magnitude to mail volume declines experienced in countries like Italy and the Netherlands. Our low net cost scenario represents a less extensive decline (almost 6 per cent per year), corresponding to the development observed in countries like Germany and Sweden.

The development in real wages[78] in our base case scenario is based on a study from 2016 by Samfunnsøkonomisk analyse AS[79], indicating a yearly increase in real wages of 0.6 per cent in Norway. In order to construct a high and low net cost scenario we scale the annual changes in nominal wages up/down while keeping assumptions about all other prices (i.e. inflation) constant. In the high net cost scenario, we scale up nominal wages by 30 percent, and in the low net cost scenario, we scale down nominal wages by 30 percent, resulting in a yearly increase in real wages of 1.4 per cent in the high net cost scenario and a yearly decline in real wages of 0.6 per cent in the low net cost scenario.

Internal factors relate to specific assumptions in the model used to calculate USO net costs. The assumptions concern both cost effects and revenue effects triggered by changes in delivery frequency.

Up to three cost effects are accounted for in the sensitivity analysis, depending on the regulatory option considered, see Table 19.

[77] Posten (2017), Kvartalsrapport 3. kvartal 2017, https://www.postennorge.no/finansiell-informasjon/rapportarkiv/_/attachment/inline/3bf695b5-b0ac-4691-a224-9e7beb68bfab:dadf6ae16f234b00080dc4d8e1415a062daf629a/Q3%202017%20presentasjon%20norsk%20v2.pdf

[78] Real wages are nominal wages net of inflation.

[79] Samfunnsøkonomisk analyse (2016) *Økonometriske prognoser for makroøkonomiske pensjonsforutsetninger 2016-2035*.

Table 19 Internal cost effects included in sensitivity analysis

Assumption	Base case scenario	High net cost scenario	Low net cost scenario
Option 1: Reduced frequency to 2.5 days per week in urban areas			
1. Share of cost reduction on routes	[redacted]	[redacted]	[redacted]
2. Share of mail requiring extra sorting	[redacted]	[redacted]	[redacted]
Option 2: Reduced frequency to 2.5 days per week nationwide			
1. Share of cost reduction on routes	[redacted]	[redacted]	[redacted]
2. Share of mail requiring extra sorting	[redacted]	[redacted]	[redacted]
Option 3: Reduced frequency to 1 days per week nation-wide			
1. Share of cost reduction on routes	[redacted]	[redacted]	[redacted]
2. Share of mail requiring extra sorting	[redacted]	[redacted]	[redacted]
3. Reduction fixed costs - salaries	[redacted]	[redacted]	[redacted]

Note: * For Option 1 and 2, the same assumption is made regarding the share of mail requiring extra sorting. However, the numbers differ. In Option 1 only 67 per cent of the mail is delivered with reduced frequency, reducing the need for extra sorting, while in Option 2 all mail is. The delivery frequency in Option 3 differs from Option 1 and 2, and the timing is later in time, allowing Posten to develop even more efficient processes thereby reducing the need for extra sorting further.

Source: Copenhagen Economics.

Cost reductions on routes will be possible since lower delivery frequency means that Posten does not have to deliver mail on each route every day. Therefore, the need for mail carriers and vehicles is reduced. A simple assumption on the potential cost saving is that Posten can reduce its on-route costs by a share equal to the reduction in delivery frequency. Reducing delivery frequency, for example, from 5 to 2.5 days per week means a 50 percent reduction in delivery frequency. The potential cost saving should therefore be around 50 percent. However, fewer delivery days per week also implies higher costs, or in other words, lower potential cost reduction. In the base case, we assume that [redacted] percent of the potential cost reduction can be realised, in the high net cost case [redacted] percent and in the low net cost case [redacted] percent. The base case assumption for a reduction from 5 to 2.5 days per week, therefore implies a [redacted] percent cost saving of on-route costs.[80]

With reduced delivery frequency, Posten has to do *additional sorting* which increases costs. Reducing the delivery frequency from 5 to 2.5 days per week implies that mail arriving at the distribution centre either will be delivered on the day of arrival or the day after. To distinguish the mail, an additional sorting has to be done which was not necessary prior to the change in delivery frequency. The assumption relates to how efficient Posten is in avoiding the need for extra sorting. In the base case scenario, Posten is assumed to develop efficient processes that eliminates the need for additional sorting of [redacted] per cent of the items that would otherwise need it. This results in a share of all mail requiring extra sorting of [redacted] per cent for Option 2.[81] In the high cost scenario, we assume that Posten can avoid extra sorting for [redacted] per cent of the mail. In the low net cost scenario, we assume that Posten cannot avoid extra sorting for any of the mail. This is very conservative (see discussion in Annex A).

80 [redacted]

81 [redacted]

Reducing delivery frequency to one day per week (Option 3) means that Posten will be able to save some fixed salary costs. The level of this cost saving is uncertain and the assumptions for the high and low net cost scenarios therefore differ significantly.

Our sensitivity analysis also takes into account the uncertainty regarding how senders and recipients of mail will react to the proposed reductions in delivery frequency, see Table 20.

Table 20 Internal volume effects included in sensitivity analysis

Product	Base case scenario	High net cost scenario	Low net cost scenario
Option 1: Reduced frequency to 2.5 days per week in urban areas			
Bulk, stamped, etc.	[redacted]	[redacted]	[redacted]
International mail	[redacted]	[redacted]	[redacted]
Small packets	[redacted]	[redacted]	[redacted]
Daily newspapers	[redacted]	[redacted]	[redacted]
Weekly magazines	[redacted]	[redacted]	[redacted]
Unadressed	[redacted]	[redacted]	[redacted]
Option 2: Reduced frequency to 2.5 days per week nationwide			
Bulk, stamped, etc.	[redacted]	[redacted]	[redacted]
International mail	[redacted]	[redacted]	[redacted]
Small packets	[redacted]	[redacted]	[redacted]
Daily newspapers	[redacted]	[redacted]	[redacted]
Weekly magazines	[redacted]	[redacted]	[redacted]
Unadressed	[redacted]	[redacted]	[redacted]
Option 3: Reduced frequency to 1 days per week nationwide			
Bulk, stamped, etc.	[redacted]	[redacted]	[redacted]
International mail	[redacted]	[redacted]	[redacted]
Small packets	[redacted]	[redacted]	[redacted]
Daily newspapers	[redacted]	[redacted]	[redacted]
Weekly magazines	[redacted]	[redacted]	[redacted]
Unadressed	[redacted]	[redacted]	[redacted]

Source: Copenhagen Economics.

Lower delivery frequency means that mail items delivered by Posten will arrive later and less often than they do today. For this reason, lower frequency will likely lead to lower demand for some of Posten's services. All else equal, a larger loss of volume induced by lower frequency of delivery will lower the profit in the counterfactual scenario without the USO and thereby reduce the net cost of the USO.

As assumptions about postal users' future reactions to a change in delivery frequency are very uncertain, we vary our base case assumptions about demand effects. This means that, for example, the assumed decline for bulk mail and stamped mail when going from 5 to 2.5 delivery days per week (Option 2) is [redacted] per cent in the base case, but [redacted] per cent in the low net cost scenario and [redacted] per cent

in the high net cost scenario. The assumptions for each product and scenario are based on our analysis of the Norwegian market, experience from other countries, as well as information provided by Posten and interviews with large senders and other delivery operators in Norway.

Results of the sensitivity analysis

We test the sensitivity of external and internal effects separately for two reasons. *First*, it is important to know how sensitive the forecasted net costs are to uncertainty in different types of parameters. *Second*, combining the internal and external factors into one high net cost scenario and one low net cost scenario can muddle the interpretation, since the impact of general volume developments and salary cost developments interact with the volume effects from reducing delivery frequency.

Nevertheless, we also test the sensitivity of the combined effects. The combined scenarios should, however, be seen as extreme outcomes as it is highly unlikely that all parameters included in the sensitivities will turn out to be at either the low-cost or high-cost level.

The results of our sensitivity analysis for 2019 and 2025 are displayed in Table 21 (showing net cost estimates) and in Table 22 (showing the reductions in net costs compared to the status quo).

Table 21 Sensitivity analysis: Total net costs in 2019 and 2025

	Base case scenario		High net cost scenario (change compared to base)		Low net cost scenario (change compared to base)	
	2019	2025	2019	2025	2019	2025
External factors						
Status quo	526	988	+3%	+24%	-3%	-21%
Option 1	399	736	+2%	+23%	-1%	-20%
Option 2	59	338	0%	+40%	0%	-33%
Option 3	59	63	0%	+3%	0%	-1%
Internal factors						
Status quo	526	988	+28%	+20%	-48%	-34%
Option 1	399	736	+5%	+14%	-32%	-27%
Option 2	59	338	0%	+25%	0%	-31%
Option 3	59	63	0%	0%	0%	0%
Combined factors						
Status quo	526	988	+30%	+42%	-51%	-56%
Option 1	399	736	+7%	+37%	-36%	-47%
Option 2	59	338	0%	+63%	0%	-65%
Option 3	59	63	0%	+4%	0%	-1%

Note: The high and low net cost scenarios show the difference in net cost in percentages compared to the base case scenario in 2018 and 2025. The sensitivity results for the external and internal factors cannot simply be added to reach the combined effect. This is because the external and internal factors have interacting effects.
The fact that net cost in Option 3 do not include the delivery frequency element makes Option 3 insensitive to internal factors.

Source: Copenhagen Economics.

The results show that the forecasted net costs are sensitive to changes in underlying assumptions. However, they also show that high and low net cost scenarios are extreme scenarios, in which all parameter assumptions are changed such that they all either increase or decrease the net cost. While all these changes of parameters are plausible individually, it is not likely that they all will occur jointly and change the net costs in the same way. Instead, it is likely that some of the parameters will be close to the base case, some close to the high net cost scenario and some close to the low net cost scenario. This would create net costs close to those in our base case scenario.

Whereas the net costs in 2019 are more sensitive to variations in internal cost and revenue effects than to external factors, this imbalance changes over time and we observe that net costs in 2025 are roughly as sensitive to internal as to external factors. The reason for this is that the internal factors represent one-time effects with a large impact in the year they occur whereas the external factors (general volume decline and wage developments) accumulate every year, thereby increasing their impact over time. In other words, the longer time horizon, the more sensitive the results will be to changes in external factors.

Table 22 Sensitivity analysis: Reduction in total net costs in 2019 and 2025

	Base case scenario		High net cost scenario (change compared to base)		Low net cost scenario (change compared to base)	
	2019	2025	2019	2025	2019	2025
External factors						
Option 1	127	252	+7%	+26%	-6%	-23%
Option 2	467	650	+3%	+16%	-3%	-14%
Option 3	467	925	+3%	+26%	-3%	-22%
Internal factors						
Option 1	127	252	+98%	+37%	-100%	-56%
Option 2	467	650	+31%	+17%	-55%	-36%
Option 3	467	925	+31%	+21%	-55%	-36%
Combined factors						
Option 1	127	252	+103%	+57%	-100%	-81%
Option 2	467	650	+34%	+31%	-58%	-51%
Option 3	467	925	+34%	+44%	-58%	-59%

Note: The high and low net cost scenarios show the difference in net cost in percentages compared to the base case scenario in 2018 and 2025. The sensitivity results for the external and internal factors cannot simply be added to reach the combined effect. This is because the external and internal factors have interacting effects.

Source: Copenhagen Economics.

Detailed results of the sensitivity analysis can be found in Annex D.

3.3 Analysis of socioeconomic effects

When considering to adjust the postal USO, policy makers in Norway are faced with a task of balancing the impact on USO net costs (and thereby public spending) on the one hand and the effects on postal users on the other.

In the previous section, we estimated the impact of three policy options on USO net costs (i.e. how much USO net costs could be reduced by implementing the different policy options). In this section, we assess the impact of the same policy options on postal users in Norway. In particular, we investigate whether there are groups of postal service users in Norway that are dependent on the universal services provided by Posten and who therefore would be negatively affected by the policy options considered. We also analyse whether there are alternative measures which could be put in place to satisfy the needs of these users at a lower cost than the current USO.

Analytical framework for analysing the impact on postal users

Conceptually, the total benefit of the postal USO consists of two types of benefits: (i) a direct benefit to users of postal services, represented by these users' willingness to pay for keeping the USO at the current level and (ii) an indirect benefit in terms of the value that individuals place on ensuring that other people have access to basic postal services. In other words, citizens who are not dependent on postal services themselves may still care about the protection of vulnerable users who are dependent on postal services and be willing to pay for the basic services offered to these vulnerable users.

For each policy option, we evaluate the impact on postal users in three steps.

1. We identify which services that will be significantly affected by the changes in the USO and the most prominent users of these services.
2. We analyse if there are specific user groups that may be negatively affected by a reduced service level and who does not have a valid alternative to Posten.
3. We investigate if there are other targeted measures that could be put in place to meet the needs of those user groups that are dependent on the provision of universal services by Posten in a way that is less costly than maintaining the current USO. We also provide relevant benchmarks of the cost in order to put the magnitude into perspective.

The use of postal services in Norway today serves as a starting point for our analysis. For example, reducing the delivery frequency from five to two or three days per week implies that Posten no longer will deliver newspapers on a daily basis. This may have a large impact on citizens who today are dependent on Posten's delivery network. However, since user needs are changing over time, we also apply a more dynamic perspective and analyse how the benefits derived from the USO will evolve in the future (2018-2025). In the case of daily newspapers, for example, an increasing share of Norwegian citizens are able to read newspapers electronically on a computer or mobile device. These citizens are not dependent on Posten's delivery network for the consumption of daily news. For this specific example, this development implies that the negative impact of a lower service level will decline over time as the Norwegian population becomes increasingly digital (i.e. less dependent on physical delivery by Posten).

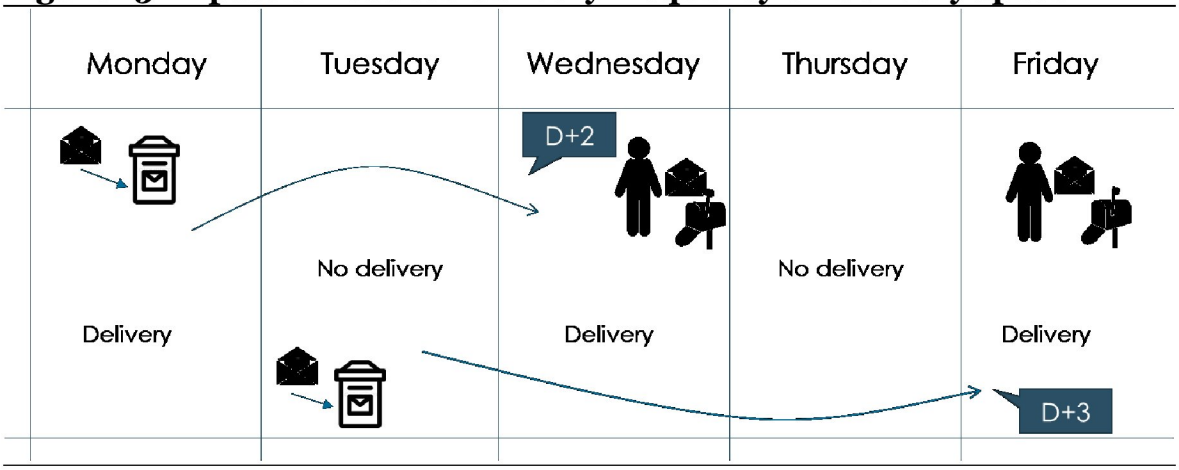
Our analysis is based on an in-depth review of previous studies related to changes in delivery frequency for postal services and interviews with representatives from different groups of postal service users in Norway.

Step 1: Services and postal users affected by the three policy options

Reduced delivery frequency will naturally affect postal services that depend on delivery a specific number of days per week. The most prominent and most frequently used example of this is daily newspapers which no longer can be delivered every day by Posten in case the delivery frequency

would be reduced. Further, reduced delivery frequency will also have an impact on delivery speed. If mail is delivered every second workday (i.e. 2.5 days per week on average), this means that a letter posted on a Monday to a recipient in an area where mail is delivered Tuesday and Thursday in the same week, will be delivered on the Thursday that same week (i.e. three working days after it was posted). Similarly, a letter posted on the Tuesday that same week to the same recipient will also be delivered on the Thursday. This means that the standard delivery speed will be two working days (D+2) for 50 percent of the mail volume and three working days (D+3) for the remaining 50 percent, see Figure 15. Since A-mail and B-mail will be merged into one mail stream with D+2 as the standard delivery speed from 1 January 2018, this means that the *only* change in deliver speed caused by a reduction from 5 to 2.5 delivery days per week is an addition of one working day for 50 percent of the volume.

Figure 15 Impact of reduced delivery frequency on delivery speed



Note: The figure illustrates that with delivery within two days as standard and delivery every other day, only half of the letters (sent on Monday in the figure) will effectively have a delivery speed of two days while the other half (sent on Tuesday in the figure) will have a delivery speed of three days.

Source: Copenhagen Economics.

The changes in service level following from each policy option are the following:

Option 1: Delivery 5 days per week in rural areas and a reduction to 2.5 days per week in urban areas

- 50 per cent of letter mail volumes sent to urban areas will be delivered within three working days, compared to two working days in the status quo.
- Delivery of mail items that require delivery five days per week, most notably newspapers, will be discontinued in urban areas.
- Items that currently are delivered on specific weekdays (e.g. every Monday), will partly be delivered on other days of the week in urban areas.

Option 2: Delivery 2.5 days per week throughout Norway

- 50 per cent of letter mail volumes will be delivered within three working days, compared to two working days in the status quo.
- Delivery of mail items that require delivery five days per week, most notably newspapers, will be discontinued.

- Items that currently are delivered on specific weekdays (e.g. every Monday), will partly be delivered on other days of the week.

Option 3: Delivery 1 day per week throughout Norway

- All letter mail volumes will be delivered within five working days, compared to two working days in the status quo.
- Delivery of mail items that require delivery more than one day per week will be discontinued.
- All items will be delivered on one specific day of the week (different days for households in different areas).

Postal users' needs in general, and the need to maintain a high delivery frequency in particular, have been investigated in several previous studies, both within and outside Europe. These previous studies help us identify groups of postal users who normally depend the most on frequent delivery of mail. They also guide us towards the most common problems experienced by users in relation to reduced delivery frequency.

Our in-depth review of eleven recent studies on postal users' needs reveal two main findings.

First, we find that there are considerable differences across countries regarding the impact of a reduction in delivery frequency. In some countries, a change in delivery frequency has been considered a major concern amongst senders and in other countries, a similar change has been considered acceptable. The impact of a reduction in delivery frequency in Norway is thus not evident and needs to be investigated in further detail.

Second, we find a rather clear pattern across countries regarding the groups of postal users who are considered most affected by changes in delivery frequency. These user groups consist of elderly citizens, citizens in rural areas, and small and medium sized enterprises (primarily in rural areas) and other frequent senders of mail. Although there might be country-specific differences regarding vulnerable user groups, these groups of postal users are most likely the most vulnerable to changes in delivery frequency in the Norwegian context. In our analysis of user needs we should therefore pay specific attention to these users groups, and test whether the same concerns are relevant in Norway.

Table 23 provides an overview of the main conclusions derived from user needs studies in other countries.

Table 23 User need related to delivery frequency in other countries

Main conclusion	Vulnerable user group	Main concerns	Countries studied
Majority of postal users prefer 5 or 6 delivery days per week. Major inconveniences if frequency would be reduced.	Elderly citizens	Little access to digital alternatives Few or no alternatives to pension payments and medicine sent by mail.	RO, SE, PT
	Citizens in remote/rural areas	Invoices which might be delivered after the dedicated payment deadline	RO, SE, PT
	Small and medium sized businesses and other frequent senders	Organizational difficulties, especially for large mailers who would have their mail items concentrated on fewer delivery days Concentration of calls to customer service on fewer days[1] and cash flow problems if reduced delivery frequency leads to late payments	DE, IE, BE, UK
Reduction in delivery frequency is acceptable, even though 5 or 6 delivery days per week might be preferred	Elderly citizens	Little access to digital alternatives	DK, AUS, BE
	Citizens in remote/rural areas	Delivery of letters, newspapers and express delivery packages	DK, NZ, BE
	Small and medium sized businesses and other frequent senders	Time sensitive items (fertilised eggs, live queen bees, live chicks, fresh flowers, and livestock DNA samples). Reduced productivity if need to await replacement parts or machinery (farmers or craftsmen)	NZ

Note: [1] This would not be a concern with the options for reduced delivery frequency in Norway, since Posten still would deliver mail all days of the week, only not serving every route every day. RO=Romania, SE=Sweden, PT=Portugal, DE=Germany, IE=Ireland, BE=Belgium, UK=United Kingdom, DK=Denmark, AUS=Australia, NZ=New Zeeland.

Source: RO: ancom.org; SE: PTS (2016) ; IE: ComReg (2016) ; BE: BIPT (2017); DK: TRM (2015); AUS: BCG (2014); NZ: CERP (2014); UK: OfCom (2012) ; OfCom (2012a); DE: ERGP (2016); PT: ANACOM (2014).

In addition to the studies conducted in other countries, Econ Pöyry and Vista Analyse did in 2010 investigate Norwegian postal users' attitudes towards changes in the USO on behalf of the post and telecom regulatory authority in Norway[82]. The study concluded that there was a willingness to pay (although relatively small) for maintaining delivery six days per week which was the regulated service level at that time.

The study also mapped the attitude towards the service level at the time for different user groups. When asked to evaluate how the USO scope at the time reflected personal needs for postal services, older citizens and citizens in scarcely populated areas stated to a lower extent compared to younger citizens and citizens in urban areas that the provision of universal services covered more than their needs[83]. These responses indicated that younger citizens and citizens in urban areas to a larger extent have access to alternative service offering and thereby consider the postal USO to cover more than necessary. The study also investigated the needs of enterprises of various sizes, concluding that the general attitude towards the scope of the USO did not differ depending on the number of employees in the firm.

Although market developments and developments in user needs since 2010 make the findings from this study less applicable today, the study still points towards elderly citizens in rural areas as being a potential vulnerable group of postal users in Norway.

82 Pöyry (2010). *Utredning om behov for leveringspliktige posttjenester*. Utarbeidet for Post- og teletilsynet.

83 Respondents were asked whether the USO scope was a) covering more than their needs b) in line with their needs or c) covering less than their needs.

Step 2: Users negatively affected by reduced delivery frequency

When analysing the benefits of the postal USO in Norway, it is important to acknowledge that there may be users who *prefer* a higher service level, although they do not *depend* on it. This could be users who very seldom use postal services, or users who have access to alternative solutions, but who for some reason prefer the services provided by Posten. There might also be users who simply use a faster service, only because it is available and they are not well-informed about the alternatives. Although a reduction in delivery frequency might disappoint these users and reduce the benefit they derive from the USO, it is very difficult to measure the impact on these users in any meaningful way for two reasons. First, it is very difficult to measure and value the reduction in utility of a lower delivery frequency. Second, users stated preferences before the change may be very different from the actual experience once the user is used to the new reality. It is therefore important to distinguish this from users who are truly dependent on the postal USO and who do not have a valid alternative if the USO is reduced. For such user groups, policy makers will have to consider whether there are alterative solutions that could be introduced at a lower cost than that of keeping the USO unchanged with a high (and costly) service level for everyone – also those who are not depending on this service.

Based on previous literature and experiences in other countries, we have identified four specific groups of postal users in Norway that are likely to be particularly vulnerable to a reduced delivery frequency. In order to investigate in more detail how these groups may be affected by each policy option, we have conducted in-depth interviews with representatives from each of the following user groups:

- Elderly citizens – represented by Pensjonistforbundet[84]
- Households and business located in remote or rural areas – represented by Norges Bondelag[85]
- Small and medium sized enterprises – represented by Virke[86]
- Blind and visually impaired citizens – represented by Blindeforbundet[87]

In the following, we summarize our main findings for each of these four user group.

Elderly citizens in Norway use postal services to a higher degree than the Norwegian population in general. For example, elderly citizens often receive information (e.g. notifications of hospital appointments or bills) via letter mail today that otherwise is sent electronically.

Elderly citizens are normally not dependent on rapid delivery. For example, notifications from the hospital is usually sent out weeks in advance and if it is urgent such that the information needs to be delivered the within a few days, the hospital would often use telephone instead. Likewise, bills and pension payments can usually be planned and sent out well in advance.

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84 Interview with Kristin Ruud, Communications Manager at Pensjonistforbundet, 27-10-2017.
85 Interview with Erling Aas-Eng, chairman of Hedmark Bondelag and senior advisor at Rådhuset Vingleden, 02-11-20177.
86 Interview with Jarle Hammerstad, head of policy unit at Virke, 27-10-2017.
87 Interview with Sverre Fuglerud, head of unit for information and community contact, 31-10-2017.

A smaller group of elderly citizens in Norway use postal services to receive prescribed medicines.[88] Our interview with Pensjonistforbundet revealed that this type of delivery is not always easy to plan ahead and that a certain time constraint may apply. Thus, if the delivery frequency is reduced *significantly*, the longer delivery time may cause important problems. An increase in delivery time by one day for 50 per cent of the recipients is in general not expected to be problematic, but in certain instances where the delivery is very urgent, this might create significant inconvenience. This risk increases in the scenario with delivery one day per week. Whereas elderly citizens in urban areas often have alternatives available, such as a pharmacy nearby where the medicine can be picked up, elderly citizens in rural areas may not have the same opportunities.

The most notable impact of reduced delivery frequency on elderly citizens is the discontinuation of daily delivery of newspapers by Posten. Paper based newspapers are today an important source of information for many elderly citizens. In particular, elderly citizens living in rural areas have a strong demand for local newspapers. Whereas elderly citizens in urban areas have access to alternatives to Posten's delivery, e.g. in terms of alternative delivery networks or a supermarket or kiosk nearby, this is not always the case for elderly citizens living in more rural areas. Although many elderly citizens are able to read digital newspapers[89], which could constitute a viable alternative to the paper-based newspapers, there is still a share of elderly citizens for whom this is not a viable solution. In a situation with lower delivery frequency, these citizens would have to consume news via alternative channels, such as radio and television. Although these channels normally convey the most important and most recent information, this might nevertheless imply a reduction in the amount of information consumed by this group of citizens compared to the current situation. The reason for this is that local newspapers, for example, often contain information about social events for elderly or information about activities arranged by local communities or organisations, which normally is not conveyed via radio or television. If publishers discontinue the physical distribution of local newspapers in some geographical areas due to the lack of a daily delivery service, this might reduce the amount of information consumed by a share of elderly citizens.

Citizens and businesses in rural areas are generally more frequent users of postal services than their counterparts in urban areas. The main reason for this is the lack of infrastructure (e.g. shops or offices of local authorities) in rural areas, which make citizens and businesses there more dependent on written communication and goods bought online delivered by mail.

In most cases, rural citizens' demand for mail delivery is not time critical. There is also a development towards more use of electronic communication in rural areas, although there are still some areas where broadband coverage is lagging behind. A recent study, however, estimates that 99.98 per cent of Norwegian households have an offer of getting access to broadband with at least 4Mbit/s downstream capacity. This implies that less than 1,000 households lack access to this service offering.[90] Due to the lower supply of brick and mortar stores in rural areas, some citizens in rural areas are heavy users of online shopping and are thereby dependent on the goods being delivered within a reasonable timeframe. Although online shoppers prefer the items ordered online to

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88 According to data from Posten, the number of "pharmacy mail" items were less than 95,000 in 2017. This corresponds to a reduction of more than 60 per cent for this mail category over the past five years.

89 Almost 83 per cent of Norwegian citizens above the age of 65 access the internet at a regular basis today, see Statistics Norway (2017) Tabell: 11124: Hyppighet på internett- og PC-bruk siste 12 mnd., etter kjønn og alder (prosent). We have calculated a weighted average based on the two age groups above the age of 65 presented by statistics Norway.

90 See Analysis Mason (2017), Bredbåndsdekning 2017, p.4, https://www.nkom.no/aktuelt/nyheter/_attachment/30010?_ts=15ea341c791.

be delivered as soon as possible, rapid delivery is not necessarily a critical need. In fact, a recent study by PostNord about e-commerce in the Nordics reveals that only 8 percent of Norwegian e-shoppers demand delivery within 1-2 days whereas 70 percent considers delivery within 3-5 days to be sufficient and 13 percent find delivery within 6 days or more acceptable.[91] Moreover, several previous studies[92] have revealed that a low delivery price is more important for both recipients and online retailers than the speed of delivery. In most parts of Norway, alternatives to delivery with Posten exist. Examples of this is delivery with Norway's largest network for newspaper delivery, Helthjem, (covering 85 per cent of households in Norway) or delivery with parcel delivery operators, such as PostNord or DB Schenker. As the level of e-commerce continues to grow, more delivery solutions will develop to meet the needs of online retailers and e-shoppers throughout Norway. There may still, however, be rural areas where competition will not develop solutions that are comparable with the value proposition of Posten's USO offering today. These areas are most likely the most rural ones where the cost of delivery will remain high also with less costly delivery solutions in place (e.g. delivery by drones or delivery to community parcel lockers) and where the volumes delivered are not large enough to compensate for the higher cost. As alternative delivery networks today cover at least 85 per cent of the population in Norway, the share of households without access to alternatives in the future will realistically not be larger than 15 per cent.

Some businesses in rural areas use postal services to send and receive fresh samples of goods, components, and spare parts for machinery. These service can sometimes be time-critical and a lower delivery frequency may affect productivity. For example, a farmer may need a spare part or mechanic component when his machinery brakes down. If this happens, it is often critical that the spare part is delivered very quickly because any waiting time delays production for the farmer. This does not mean, however, that these businesses are dependent on a USO requirement of postal delivery five days per week. In fact, businesses which need to send or receive spare parts and components to rural areas can have them delivered by Posten to a post office box at the nearest post-in-shop. With reduced delivery frequency, this will still enable delivery five days per week as in the status quo. After the merging of A-mail and B-mail into one mail stream in 2018, the standard delivery time will be two working days. For some urgent matters, express services (provided by Posten and competing operators) will also be a valid alternative.

Small and medium sized enterprises in Norway are generally far ahead of those in many other countries in terms of their use of electronic communication[93]. Our interview with Virke revealed that unaddressed direct mail is a particularly important channel for small and medium sized enterprises to communicate with their customers, especially in smaller communities. In most parts of the country, competing networks provide delivery of unaddressed mail, but in some rural areas, Posten is the sole provider. Unaddressed mail is, however, not part of the USO and is not considered a basic service that everyone is entitled to. The benefit derived from the provision of unaddressed mail can thus not be attributed to the postal USO.

Our interviews also revealed that some firms are dependent on the delivery of fresh samples or goods. This can for example be laboratories or farmers. This is typically a time-critical need, which

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91 See Postnord (2017), E-handel I Norden 2016, https://www.postnord.com/globalassets/global/danmark/dokument/publikationer/e-handel/e-handel-i-norden-2016-dkx.pdf.

92 See for example Copenhagen Economics (2012), E-commerce and delivery, a study commissioned by the European Commission's DG MARKT.

93 For example, according to Eurostat data, 62 per cent of SMEs in Norway receive eInvoices, suitable for automated processing. Only Finland has a higher score with 70 per cent.

is likely to be affected by a reduction in delivery frequency. Businesses who depend on next day delivery today will already have to find other alternatives from 2018 after the discontinuation of the A-letter mail stream and alternative already exist, for example in the form of express services. One example of this is provided by the Norwegian hospitals which, in relation to the discontinuation of overnight delivery starting in 2018 have negotiated an agreement with Posten for express delivery of laboratory samples at uniform rates across the country. [94] Whereas small and medium sized enterprises may not be able to (and do not have the need to) negotiate nation-wide agreements for overnight delivery, they can still use the express offerings provided by Posten and competing operators.

The findings from our interviews highlight the fact that concerns for small and medium sized enterprises in Norway primarily relate to mail items that either cannot be digitised (fresh samples and goods) or where the value of physical presence is large (unaddressed advertisements). There could, however, also be other instances where small and medium sized enterprises are dependent on delivery within less than three or five working days. In these instances, a number of alternative solutions are already in place, such as the opportunity to send registered mail (delivered every working day to the nearest service point) or the opportunity to rent a post office box at the nearest post-in-shop where mail is delivered every working day. Given the merging of A-mail and B-mail in 2018, these solutions provide for delivery within two working days.

Blind and visually impaired citizens in Norway primarily use postal services to receive books (in braille or as audiobook on CD), newspapers and magazines (normally audiobooks on CD). Although volumes are small (approximately 840,000 in 2016[95]), postal services are a crucial part of the everyday lives for some blind and visually impaired citizens.

As discussed already, reduced delivery frequency may have implications for delivery of time-critical items such as newspapers and magazines. Furthermore, reduced delivery frequency may also create mailbox capacity problems for blind citizens. The reason for this is that books in braille generally comes in several batches, spread over several delivery days in order to fit in the recipient's mailbox. With reduced delivery frequency, the recipient would have to wait longer for the next part of the book. A simple solution to this problem could be to install a larger mailbox where this is possible.

Based on the above, we now analyse the expected effects of the three policy options. Based on this analysis, we are able to identify areas where the reduction in the service level implied by the policy options at hand create negative effects on users. We thereafter continue in the next step by discussing whether there are alternative solutions that could be put in place to reduce the identified negative effects at a lower cost than the cost of maintaining the USO in its current shape.

Option 1: Delivery 5 days per week in rural areas and 2.5 days per week in urban areas
Reducing delivery frequency from 5 to 2.5 days in urban areas is not expected to create negative effects on users of postal services in Norway. The primary reason for this is that citizens and businesses in urban areas have access to alternative solutions, e.g. competing deliver networks or other types of infrastructure, which can satisfy the needs that currently are satisfied with the services provided by Posten within the USO.

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[94] See Sykehusinnkjøp (2017), Ny avtale om transport av laboratorieprøver er inngått, sykehusinnkjop.no/ny-avtale-om-transport-av-laboratorieprover-er-inngatt/.

[95] Posten's calculations for net cost of delivery to blind people submitted to Samferdselsdepartementet, file: *SK–- Forhåndsberegning – Blindeskrift*.

For example, reduced delivery frequency will imply that Posten no longer will deliver daily newspapers in urban areas. However, citizens and businesses in urban areas already today have access to alternative solutions for daily newspapers, both in terms of the publishers' own delivery networks and in terms of supermarkets and kiosks selling newspapers. In addition, nearly all Norwegian newspapers offer digital subscriptions to their readers. This reduces the dependence on physical delivery for all citizens who are able to use a computer or a mobile device for the purpose of reading the news.

Table 24 summarizes the results from our analysis.

Table 24 Option 1: Delivery 2.5 days per week in urban and 5 days per week in rural areas

Change in service level	Vulnerable groups that may be negatively affected by the change	Services affected	Future development in demand	Alternatives available today	Need for other measures?
D+2 delivery of letters and small packets to mailbox *in urban areas* becomes D+3 for 50% of volumes	Elderly and disabled citizens in urban areas	Urgent delivery of medicine	Stable or increasing[1]	Pick up medication directly at the pharmacy. Local delivery companies For some, medications can be delivered with homecare staff.	No
	Laboratories and SMEs in urban areas	Delivery of fresh samples and goods	No change	Express services Local delivery services Delivery to post box	No
		Delivery of components and spare parts	No change	Express services Local delivery services Delivery to post box	No
	E-commerce consumers in urban areas and online retailers sending to urban areas	Delivery of small packets	Steady increase	Parcel delivery with Posten Delivery with competing networks (Helthjem, PostNord, Schenker etc)	No
Daily delivery of letter post items to the mailbox in urban areas becomes delivery every other workday	Private households and businesses in urban areas	Newspapers	Steady decline	Delivery with alternative delivery networks. Purchase of newspaper in super market/kiosk Digital subscriptions	No
	Blind and visually impaired citizens in urban areas	Delivery of books in braille	Slow decline	Invest in a larger mailbox	No

Note: [1] As the number of elderly citizens is expected to increase in the future, one could imagine that home delivery of medicines from the pharmacy would become a more attractive service.

Source: Copenhagen Economics based on interviews with stakeholders.

Our results indicate that the negative impact on postal users from option 1, and the need for alternative solutions to accompany this option, most likely is very low and maybe non-existing. Still, the

classification of urban versus rural areas[96] might result in some households without alternative infrastructure available being classified as located in urban areas based on population density. For this reason, some of the targeted solutions identified for policy options 2 and 3 might still be considered also in relation to policy option 1. This could for example be alternative measures targeted towards specific groups of elderly or disabled citizens who today rely heavily on the postal services provided by Posten.

Option 2: Delivery 2.5 days per week throughout Norway

Reducing delivery frequency from 5 to 2.5 days throughout Norway may create negative effects for some users of postal services, primarily immobile (elderly or disabled) citizens in rural areas. The main reason for this is that citizens and businesses in rural areas, compared to citizens and businesses in urban areas, have lower access to alternative service offerings that can satisfy the current needs satisfied by the postal USO.

Based on our analysis, we have identified two potentially problematic areas. The first area is delivery of urgent pharmaceutical mail in rural areas, primarily used by elderly and disabled citizens. The second area is delivery of newspapers in rural areas not covered by alternative delivery networks and to citizens that do not have access or ability to use digital alternatives.

Today, home delivery of medicine from the pharmacy is primarily used by citizens with a close relationship with their pharmacist. As the number of elderly citizens is expected to increase in the future, one could imagine that home delivery of medicines from the pharmacy would become a more attractive service. Already today, citizens in Norway can buy medicines (including prescription medicines) online and get them delivered home by mail. The delivery service provided by the online pharmacies is often a standard delivery service which, with delivery 2.5 days per week, would imply delivery within 2-3 days.[97] Whereas this delivery speed often is sufficient, there might be a few instances where it is crucial that the medicine is delivered within two days instead of three days. In the instances where this is the case, and where the citizen in question does not have the ability to pick up the medicine at the local pharmacy or get it delivered faster by an alternative (express) solution, this may create significant inconveniences. The share of transactions where this is the case is, however, most likely very small.

With respect to newspaper delivery, a very high level of broadband coverage in Norway[98] implies that the main issue most likely is the ability of citizens to use digital alternatives. However, recent research also shows that the elderly population in Norway is becoming increasingly digitalised at a high pace. For example, about 83 per cent of Norwegian citizens above the age of 65 used internet

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96 Areas classified as urban (67 per cent of households and businesses) receive deliveries 2.5 days per week and areas classified as rural (33 per cent) receive deliveries 5 days per week. The classification is made at the post-code level. A post code is classified as urban if it contains parts or all of a densely populated area, which is defined as having at least 10,000 inhabitants and a maximum of 50 meters between the households or businesses. The post code is otherwise classified as rural. Since a post code classified as urban may also contain areas which are sparsely populated, there is a risk of misclassification for some households and businesses.

97 See for example Apotek 1 (2017), https://www.apotek1.no/aktuelt/bestill-reseptvarer-paa-nett or Virusapotek (2017), https://www.vitusapotek.no/ofte-stilte-sporsmal---medisiner/a/A45012.

98 According to a recent study conducted on behalf of the Norwegian regulatory authority for communications services, 99.98 per cent of Norwegian households have access to an offering of broadband with at least 4Mbit/s downstream capacity. This implies that less than 1,000 households lack access to this service offering. See Analysis Mason (2017), Bredbåndsdekning 2017, p.4, https://www.nkom.no/aktuelt/nyheter/_attachment/30010?_ts=15ea341c791.

on a regular basis in 2017[99], indicating that there only is a very small share of elderly citizens who do not use internet-based solutions on a regular basis. This indicates that the share of citizens who cannot use digital alternatives most likely is very small and will decline further over time.

In some rural areas, Posten is the sole provider of daily newspaper delivery and there is no indication that any competing network would cover the most remote areas if Posten would discontinue its delivery of daily newspapers. When delivery on Saturdays was discontinued in 2016, the Ministry of Transport and Communications issued a public procurement for newspaper delivery in geographical areas where Posten was the sole provider. At that time, this area covered approximately 15 per cent of Norwegian households.[100] Although most citizens and business have other alternatives available, such as subscription to electronic newspapers or the possibility to buy the newspaper at the nearest kiosk or super market, this indicates that there may be some citizens in remote areas who do not have access to valid alternatives. This is most likely elderly citizens who live far away from the nearest kiosk or supermarket and who do not have the ability to use electronic alternatives.

Table 25 summarizes the results from our analysis.

99 Statistics Norway (2017) Tabell: 11124: Hyppighet på internett- og PC-bruk siste 12 mnd., etter kjønn og alder (prosent). We have calculated a weighted average based on the two age groups above the age of 65 presented by statistics Norway.

100 "Avtale om levering av aviser i abonnement på lørdager mellem Samferselsdepartementet og Kvikkas.no AS, 08.07.2016" (available at Regjeringen.no).

Table 25 Option 2: Delivery 2.5 days per week throughout Norway

Change in service level	Vulnerable groups that may be negatively affected by the change	Services affected	Future development in demand	Alternatives available today	Need for other measures?
D+2 delivery of letters and small packets to mailbox becomes D+3 for 50% of volumes	Elderly and disabled citizens	Urgent delivery of medicine	Stable or increasing[1]	Pick up medication directly at the pharmacy. Local delivery companies For some, medications can be delivered with homecare staff.	Yes, for immobile citizens in rural areas
	Laboratories and SMEs	Delivery of fresh samples and goods	No change	Express services Local delivery services Delivery to post box	No
		Delivery of components and spare parts	No change	Express services Local delivery services Delivery to post box	No
	E-commerce consumers and online retailers	Delivery of small packets	Steady increase	Parcel delivery with Posten Delivery with competing networks (Helthjem, PostNord, Schenker etc)	No
Daily delivery of letter post items to the mailbox becomes delivery every other workday	Private households and businesses	Newspapers	Steady decline	Delivery with alternative delivery networks. Purchase of newspaper in super market/kiosk Digital subscriptions	Yes, for citizens in rural areas who cannot use digital alternatives
	Blind and visually impaired citizens	Delivery of books in braille	Slow decline	Invest in a larger mailbox	No

Note: [1] As the number of elderly citizens is expected to increase in the future, one could imagine that home delivery of medicines from the pharmacy would become a more attractive service.

Source: Copenhagen Economics based on interviews with stakeholders.

Option 3: Delivery one day per week throughout Norway

Reducing delivery frequency to one day per week throughout Norway comes with a greater risk (compared to option 1 and 2) of creating negative effects that call for the introduction of alternative solutions. However, since reduced delivery frequency only will affect Posten's last mile operations, recipients who are dependent on more frequent delivery (e.g. businesses who frequently receive spare parts of fresh samples) can solve this by renting a post office box at the nearest post-in-shop and senders who require faster delivery (e.g. hospitals sending urgent notifications or businesses sending invoices will short payment periods) can send registered letters. After the merging of A-mail and B-mail in 2018, there options will allow recipients to receive mail items within the standard delivery time of two working days. Both these solutions, however, imply a higher cost for the sender or recipient in question.

Postal users who are not able to visit the nearest post-in-shop at a regular basis, e.g. due to immobility issues, might require additional assistance.

It is important to keep in mind that, even if regulation enabled delivery one day per week as of today, the implementation of delivery one day per week would not take place until a few years down the line. The reason for this is that it is not yet commercially optimal for Posten reduce its delivery frequency that much. In the base case for USO net costs (see section 3.2), one delivery day per week is expected to be commercially optimal in 2021. If market developments happen at a faster pace than anticipated, e.g. if mail volumes decline much faster than expected, the reduction in delivery frequency to one day per week would become commercially optimal sooner. However, a faster reduction in mail volumes also indicates that users' needs for postal services are reduced as well (i.e. a smaller impact on USO benefits). The fact that the reduction of delivery frequency to one day per week will not be implemented until the demand for physical postal services is sufficiently low to allow for this change also implies that the impact on users of this policy option is more uncertain than the impact on users of the other options. The main reason for this is that it is difficult for people to anticipate what service offerings will be available in the future and what their needs will be in a few years' time.

Delivery one day per week for standard letters will soon become reality in Denmark where the universal service provider PostNord has embarked on a journey to restructure its business and create a new business model centred around logistics. The new model implies that the separate infrastructure used to deliver letters today will be phased out. Letters will instead be handled in a basic flow with delivery within five working days (i.e. once per week) or in an express flow with delivery within 24 hours. In both instances, letters are delivered together with parcels.[101]

Table 26 summarises the results from our analysis.

[101] See PostNord (2017), " PostNord styrker omstillingen i Danmark yderligere".

Table 26 Option 3: Delivery 1 day per week throughout Norway

Change in service level	Vulnerable groups that may be negatively affected by the change	Services affected	Future development in demand	Alternatives available today	Need for other measures?
D+2 delivery of letters and small packets to mailbox becomes D+5	Elderly and disabled citizens	Urgent delivery of medicine	Stable or increasing[1]	Pick up directly at nearest pharmacy. Local delivery companies For some, medications can be delivered with homecare staff	Yes, for immobile citizens in rural areas
		Delivery of hospital notifications	Decline as elderly citizens become more digital	Delivery by registered letter Electronic notifications	Yes, for immobile citizens
	Laboratories and SMEs	Delivery of fresh samples and goods	No change	Express services Local delivery services Delivery to post box	No
		Delivery of components and spare parts	No change	Express services Local delivery services Delivery to post box	No
	E-commerce consumers and online retailers	Delivery of small packets	Steady increase	Parcel delivery with Posten Delivery with competing networks (Helthjem, PostNord, Schenker etc)	No
	Businesses and authorities sending invoices	Delivery of invoices with short payment periods	Decline as businesses and citizens become more digital	Delivery by registered letter Electronic invoices	Maybe
Daily delivery of letter post items to the mailbox becomes delivery one day per week	Private households and businesses	Newspapers	Steady decline	Delivery with alternative delivery networks. Purchase of newspaper in super market/kiosk Digital subscriptions	Yes, for citizens in rural areas who cannot use digital alternatives
	Blind and visually impaired citizens	Delivery of books in braille	Slow decline	Invest in a larger mailbox	No

Source: Copenhagen Economics based on interviews with stakeholders.

Note: [1] As the number of elderly citizens is expected to increase in the future, one could imagine that home delivery of medicines from the pharmacy would become a more attractive service.

Step 3: Targeted measures for vulnerable user groups

Instead of keeping a uniform high (and costly) service level for the entire population by means of a broad USO on postal services, a more favourable option could be to introduce more targeted measures to compensate the vulnerable users identified above. Such measures could be preferred both from a financial and from a social perspective. In fact, if targeted measures leave the users equally well off as with the current USO but cost less than the corresponding reduction in net cost implied by the policy option, it is better for the society to reduce the USO.

Compensation via targeted measures can take the following forms.

Targeted measures within the postal USO could be similar to the current USO requirement of free delivery for the blind. One example of this type of solution could be an obligation to pick-up and deliver mail to specific user groups more frequently than the required by the general USO.

Monetary compensation mechanisms could imply that identified vulnerable users can obtain alternative services that satisfy the needs currently satisfied by the postal USO at a lower price or for free. Examples of this type of solution could be reimbursement of more costly express services, or free transportation to the nearest service point or commercial centre. This approach is for example used in Switzerland where Swiss Post negotiates a compensation to households who do not receive delivery to their house but to a nearby delivery point.

Using alternative and already existing networks might imply giving home care assistants the task to collect and deliver mail (including newspapers) for elderly people who, due to immobility, are unable to visit a postal service point or any other local service point (e.g. a supermarket or a pharmacy). One alternative is to use school busses and morning newspaper distributors to take along ordinary mail in certain areas/to some user groups. However, the rural areas where alternatives are needed are often the areas which other networks do not cover and where it is not commercially attractive to establish a new delivery network.

The promotion of alternative technologies implies that vulnerable users who today are dependent on the universal postal services provided by Posten get assistance to become more digital and less dependent on physical delivery. Examples of this type of measures are training of digital skills directed towards elderly or disabled citizens, or towards small and medium sized enterprises, or the provision of equipment, such as mobile devices or mobile broadband. Poste Italiane, for example, considered the option to provide consumers in areas where delivery does not take place every day with tablets so that they despite the lower service level could read newspapers. The initiative was supposed to rely on government funding to promote digital press, financed by the income from a spectrum auction. As the auction never took place, however, the funding never came through and the initiative was therefore never launched.

Alternative forms of market stimuli could be authorities working together with private companies (e.g. banks) to find alternative solutions to specific user needs. This approach has for example been used in Sweden to ensure provision of basic banking services in rural areas.

Irrespective of the targeted measure chosen, it is imperative to design clear eligibility criteria. If this is not the case, those citizens and businesses who are not truly dependent on the service in question may also use the add-on services. This would increase the cost of providing the service and undermine the solution. Criteria can, for example, be related to age, mobility or location. The need for more precise criteria (e.g. a larger number of criteria) will depend on the advantage that the alternative solution bring to people that are not eligible, i.e. the risk of free riding. Whereas the criteria need to be precise enough, such that the right group is identified, too many or too precise criteria will be expensive to administrate and difficult to verify in practice.

The introduction of alternative measures to compensate for a reduced scope of the universal service obligation has for example taken place in Sweden, where the post and telecom regulator, PTS, introduced a number of alternative solutions to compensate particularly vulnerable users of basic payment services, see Box 5.

Box 5 Alternative measures to banking services in the USO in Sweden

From 2001 to 2008, the provision of basic bank services was covered by a universal service obligation, covered by the national postal operator. The political objective was to ensure that everyone had access to basic bank services, even in the most rural parts of Sweden. The regulator identified that 0.3 percent of the population lacked access to basic payment services in 2007. This included mainly elderly and disabled people living in desolated locations. Under the USO solution, PostNord (at that time Posten AB) provided payment service under the name "Kassaservice". The USO solution was however very costly, with a net cost of up to € 45m per year. With only 3000 users making 58,000 transactions the cost amounted to € 15,000 per user and € 775 per transaction.

As a first alternative to keeping the service in the USO, the government procured the provision of payment service by means of public tendering. This, however, only happened once when the obligation to provide basic banking services was procured for four years to 15 selected small villages (in grocery stores) and 73 geographic areas (reached via rural mailmen). The price was negotiated to approximately € 5m which made the alternative solution very costly as well. Due to the low number of vulnerable users using this service, the unit cost was € 85 per transaction or € 1,750 per vulnerable user.

After the four years, the regulator found that the benefit of providing access to basic banking services in the selected areas did not outweigh the cost of providing the service. Copenhagen Economics assisted the Swedish regulator, PTS, in formulating alternative policy options. Together we developed a menu of options under four headings:

1. Regional support and development (e.g. regional action plan, support for transport services so that the vulnerable users could be transported to nearest town, support for competence building and knowledge sharing)
2. Market stimulation and monitoring (e.g. dialogue meetings with financial sector, market monitoring and ensuring media attention on problem areas)
3. Technical development (e.g. sponsor development of new technology, cash-free payment systems)
4. Managing transition (e.g. informing vulnerable users directly about transition and alternatives)

Source: Copenhagen Economics (2011), Calculation of basic bank services in Sweden.

In the following, we discuss different possibilities with respect to targeted solutions that can cover the critical needs at risk with reduced delivery frequency.

Delivery of prescribed medicines to elderly and disabled citizens

Elderly and disabled citizens' need for home delivery of medicines could be met by at least two different solutions.

One solution could be a *monetary compensation mechanism* where citizens who are not able to pick up their medicines at the nearest pharmacy could be entitled to a (partially or fully) publicly financed home delivery service. This service could be an express delivery service provide by Posten

or any other delivery operator with sufficient geographical coverage. In Sweden, online pharmacies like apotea.se offer free delivery to the recipient's mailbox of any items ordered online (also prescribed medicines). This service is available throughout the country at uniform price irrespective of where the recipient is residing. Similar solutions also exist in Norway, provided at commercial terms by online pharmacies.[102] If policy makers would like to ensure that certain citizens should be eligible for free express delivery, or express delivery at a reduced price, the government could enter into a contract with one or several pharmacies and design a set of eligibility criteria linked to citizens' digital identities (also used for accessing prescriptions online).

Another solution could be to deliver medicines in an *alternative network*. For example, already today, immobile citizens (primarily elderly and disabled citizens) get their medication delivered by a home care assistant who come to visit at a frequent basis. Although not all elderly or disabled citizens in Norway have access to home care services, one could still imagine a solution where elderly or disabled citizens could apply for a partial home care service, covering only the delivery of medicines that the home care assistant could bring from the local post-in-shop to the eligible citizens in the area. The cost of this extra service could be covered by public funding. Taking into account that most immobile citizens already have access to home care assistance, and assuming that citizens who are mobile can access the local post-in-shop or pharmacy to pick up their medicines, the extra cost of expanding the home care service is most likely very low in comparison to the cost of maintaining delivery five days per week to all citizens throughout Norway.

Delivery of daily newspapers to non-digital citizens in rural areas

Due to the existence of alternative delivery networks, complementary infrastructure in terms of supermarkets and kiosks, and digital newspaper subscriptions, reducing delivery frequency below five days per week will only have a negative impact on citizens who do not have access to – or who lack the ability to use - any of these alternatives. As many elderly citizens live in urban areas with access to alternative newspaper delivery networks, the number of elderly citizens dependent on Posten's newspaper deliver is limited to those in rural areas who for different reasons are not mobile enough to visit the nearest service point on a regular basis, or who are unable to use digital alternatives.

In 2016, almost 160,000 elderly citizens above the age of 66 in Norway lived in rural areas.[103] This corresponded to almost 21 per cent of the population within this age category. Access to digital alternatives is very high in Norway[104] as 94 per cent of the households have internet with broadband[105]. Moreover, the ability to use digital alternatives is also relatively high among the elderly population with almost 83 per cent of citizens above the age of 65 accessing the internet at a regular basis today[106]. With close to 160,000 citizens above the age of 66 living in rural areas without access to alternative delivery solutions, and with 73 per cent of elderly citizens in Norway reading paper based newspapers[107], this implies that the number of elderly citizens who are dependent on newspaper delivery with Posten to receive information that is not conveyed by alternative media channels,

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102 See for example Apotek1 (2017), *Bestill medisinen din på nett*.

103 Statistics Norway (2017), Tabell: 05277: Folkemengde, etter alder og kjønn (T).

104 According to a recent study conducted by Analysis Mason on behalf of the regulatory authority Nkom, only 0.02 per cent of the population in Norway is today lacking access to broadband with at least 4Mbit/s downstream capacity, see Analysis Mason (2017), Bredbåndsdekning 2017, p.4, https://www.nkom.no/aktuelt/nyheter/_attachment/30010?_ts=15ea341c791.

105 Statistics Norway (2017), Tabell: 10999: Internettabonnement, etter husholdningstype og husholdningens nettoinntekt (prosent).

106 Statistics Norway (2017) Tabell: 11124: Hyppighet på internett- og PC-bruk siste 12 mnd., etter kjønn og alder (prosent). We have calculated a weighted average based on the two age groups above the age of 65 presented by statistics Norway.

107 Statistics Norway (2017), Norsk mediebarometer, Tabell: 04499 (including citizens of ages 67-79).

such as radio or television[108], is likely to be quite low – at the most 20,000 (assuming that all elderly citizens stating that they do not use internet today cannot read a digital newspaper).[109]

One way to make digital newspapers more accessible to a larger part of the population could be through the *promotion of alternative technologies*. This could for example be through the provision of (partially or fully) subsidized iPads or other devises to citizens living far away from a local supermarket or without access to an alternative delivery network. Already today, there are commercially initiated initiatives in this area where some regional newspapers in Norway offer their subscribers in other parts of the country a free mobile device (tablet) together with a digital newspaper subscription.

Alternatively, another solution could be to use public transportation networks in rural area such as school buses or local bus services to co-distribute newspapers to citizens living in very remote areas with long distances to the nearest service point. This solution is contingent of an existing network that is broad enough to cover the rural areas without a valid alternative today.

Delivery of hospital notifications and invoices with short payment periods
Delivery of hospital notifications and invoices with short payment periods (e.g. 14 days) may be negatively affected in the event that delivery frequency is reduced to one day per week. As discussed already in relation to this option, senders of this type of items can solve this problem either by using a registered letter service, or by sending the notification or invoice electronically instead. Since there is a risk that electronic notifications and invoices are overlooked by the recipient, a registered letter mail service may be preferred (possibly as a complement to the electronic alternative). A registered letter service is, however, significantly more expensive than the current standard delivery.

For this reason, one could consider to introduce partial public funding of registered letter services for specific needs, e.g. notifications from hospitals, where the internal processes of the sending entity cannot be adapted to the longer delivery time.

3.4 Balancing USO costs and benefits

When deciding on the future for the postal USO, policy makers have to consider the impact on both USO costs and benefits. If policy makers can find ways to fulfil user needs that are cheaper than providing the current service level implied by the postal USO, this would be a Pareto improvement[110]. However, even if this is not the case, it could be legitimate to reduce the current service level.

With respect to the cost of each policy option, we have established estimates of the USO net cost (i.e. the basis for Posten's request for public procurement) associated with each policy option evaluated (see section 3.2). With respect to the benefits of a given level of service, these should ideally be evaluated by estimating postal users' (private consumers, businesses, and public authorities) willingness to pay for such level of service. This is the measure of benefits that can be balanced directly

[108] Although most information contained in physical newspapers also is conveyed via radio and television, local newspapers often contain additional information that can be of particular importance for the elderly population. This could, for example, be information about social events for elderly or information about activities arranged by local communities or organisations.
[109] 160,000*0.73*0.17=19.856.
[110] A Pareto improvement is an action that harms no one and makes at least one person better off.

against the level of public procurement in order to make a cost-benefit-analysis. Such estimations of willingness to pay, however, comes with great uncertainty[111] and are in addition very costly to conduct.

In this report, we have therefore assessed the impact of the various policy options on different categories of postal service users by means of qualitative methods (see section 3.3). This approach is in line with the Norwegian Ministry of Finance's guidelines for socioeconomic evaluations[112].

We have also assessed the possibilities to introduce targeted measures which could reduce the negative impact on users of postal services in case the delivery frequency would be reduced. Our analysis shows that there is a group of maximum 30,000-35,000 elderly and disabled citizens in rural areas[113] who today are potentially dependent on the services provided by Posten within the USO and who could risk not having access to alternatives in case the delivery frequency provided by Posten would be reduced. If targeted measures solving the needs for these users of postal services cost less than the corresponding reduction in net cost, reducing the delivery frequency would improve total social welfare.

In the following, we outline our socioeconomic assessment of the different policy options, one by one.

Option 1: Delivery 5 days per week in rural areas and 2.5 days per week in urban areas
Our estimation of USO net costs in section 3.2 revealed that USO net costs could decline by approximately NOK 110 million in 2018, growing to NOK 250 million in 2025, in case the required delivery frequency would be reduced to 2.5 days per week in urban areas, see Table 27. This corresponds to approximately 16 per cent reduction of the net costs in 2018 compared to the situation without any changes to the USO.

Table 27 Reductions in net cost compared to status quo, option 1

Year	2018	2019	2020	2021	2022	2023	2024	2025
Potential cost savings (MNOK)	110	130	150	170	190	210	230	250

111 Such analysis can be conducted e.g. via conjoint analysis (also called contingent choice method), which infers users' valuation of different products from the hypothetical choices or trade-offs that respondents make in a survey. Even when carried out correctly, it comes with great uncertainty, e.g. because of hypothetical bias. It is very difficult for people to relate to hypothetical questions about what they would they would be willing to pay for a higher delivery frequency and the result is therefore very uncertain.

112 Ministry of Finance (2014) Prinsipper og krav ved utarbeidelse av samfunnsøkonomiske analyser mv. Page 5, 7-8.

113 The estimated maximum number of citizens dependent on the current service level of five days per week consists of (i) disabled citizens aged 15-66 in rural areas, (ii) citizens in rural areas above the age of 66 who read paper based newspapers and who do not access the Internet on a regular basis, and (iii) 5 per cent of remaining elderly citizens living in rural areas (as a conservative proxy for the number of citizens who could be dependent on urgent delivery to the door of e.g. medicines). The number of disabled citizens between the age of 15 and 66 who due to their disability are unable to work were in Q2 2017 24,000. Group (1): Assuming that the distribution of disabled citizens across rural and urban areas mirrors the distribution in the rest of the population indicates that there are approximately 4,800 disabled citizens in rural areas who we could assume not being able to use digital alternatives due to their disability, see Statistics Norway (2017), Personer i alt 15-66 år og personer med funksjonshemning etter arbeidsstyrkestatus og kjønn. Group (ii): According to Statistics Norway (2017): *Tabell 05277*, there are approximately 160.000 citizens above the age of 66 living in rural areas in Norway. According to Statistics Norway (2017), Tabell 11124 and Tabell 04499, the share of citizens between 66 and 79 years old who read paper based newspapers are 73 per cent, and 17 per cent of citizens above 66 years old do not use internet on a regular basis. Based on this information, we estimate the number of elderly, non-Internet users who read newspapers to approximately 20,000. Group 3: Of the remaining 140,000 citizens above 66 years old in rural areas, we conservatively assume that 5 percent, or approximately 7,000, could sometimes find themselves in a situation where they are dependent on urgent delivery of medicines to the door. In total, this amounts to approximately 31,800, or more generally 30,000 to 35,000 people.

Note: Rounded to nearest ten million NOK.

Source: Copenhagen Economics.

At the same time, reducing delivery frequency from 5 to 2.5 days in urban areas is not expected to create negative effects on users of postal services in Norway (see section 3.3). The primary reason for this is that citizens and businesses in urban areas have access to alternative solutions to satisfy their communication needs that currently are met by physical mail delivery with Posten. Examples of such alternatives are competing delivery networks or other types of infrastructure, such as supermarkets selling newspapers or digital subscriptions for newspapers and magazines.

Still, we note that the classification of urban versus rural areas is not waterproof and might result in some households without access to alternative infrastructure being classified as "urban". For this reason, some of the targeted solutions identified for policy option 2 might be considered also in relation to policy option 1. This could for example be alternative measures targeted towards specific groups of elderly or disabled citizens who today rely heavily on the postal services provided by Posten.

The cost of implementing such targeted measures in a situation with reduced delivery frequency in urban areas only will, however, be significantly lower than in a situation with reduced delivery frequency throughout the country.

Option 2: Delivery 2.5 days per week throughout Norway

Reducing the required delivery frequency to 2.5 days per week throughout Norway could potentially reduce USO net costs by NOK 440 million per year in 2018, increasing to close to NOK 650 million in 2025, see Table 28. This corresponds to approximately 68 per cent reduction of the net costs compared to the situation without any changes to the USO.

Table 28 Reductions in net cost compared to status quo, option 2

Year	2018	2019	2020	2021	2022	2023	2024	2025
Potential cost savings (MNOK)	440	470	500	530	560	590	620	650

Note: Rounded to nearest ten million NOK.

Source: Copenhagen Economics.

Our analysis of the impact on users of postal services reveals that reducing delivery frequency from 5 to 2.5 days throughout Norway may have negative effects on some users of postal services. These users are primarily immobile (elderly or disabled) citizens in rural areas. The main reason for this is that citizens and businesses in rural areas have lower access to alternative service offerings that can satisfy the current needs satisfied by the postal USO compared to citizens and businesses in urban areas. Moreover, whereas mobile citizens in rural areas often will have access to alternative solutions in relation to everyday activities (they might pass by a post-in-shop on their way to or from work or they might have access to a pharmacy close to where they do their grocery shopping), this is not always the case for elderly or disabled citizens.

Based on our analysis, we have identified two areas where there is a risk that a reduced delivery frequency to 2.5 days per week leaves users dependent on frequent delivery by Posten without any valid alternatives available.

These are:

(i) Urgent delivery of medicines to elderly and disabled citizens in rural areas, and
(ii) delivery of newspapers to citizens in rural areas that are not covered by alternative delivery networks and who do not have access or ability to use digital alternatives.

In this context, it should be mentioned that citizens who are not mobile enough to use existing alternatives available to them, e.g. who are not able to visit the super market to buy the newspaper, who are not able to pick up their medicines from the nearest post-in-shop or pharmacy, or who are not able to read digital newspapers, often already have access to support functions, such as regular home care services. Extending these existing services with additional elements (e.g. having the home care assistant to take along prescription medicines or the newspaper) could be a cost-efficient alternative compared to financing a completely new solution. Nevertheless, we provide below some estimations of the potential costs associated with the introduction of new solutions that could meet the needs of the identified vulnerable user groups.

As discussed in section 3.3, there might be a few instances where elderly and disabled citizens in rural areas need medicine to be delivered to their home address and where it is crucial that the medicine is delivered in less than three days. In the instances where this is the case, reducing delivery frequency may create significant inconveniences. This risk is largest for a reduction in delivery frequency to one day per week, but there may be some instances where a reduction in delivery frequency from 5 to 2.5 days can have similar impact. In this context, it is important to remember, however, that there already is an arrangement in place where certain users who have difficulties to visit the nearest pharmacy can get the cost of delivery of specific medicines refunded.[114] Any targeted measures put in place would thus have to be complementary to the already existing options.

Assuming (conservatively) that 10 per cent of all elderly and disabled people in rural areas sometime during a year find themselves in a situation where it is crucial that medicine is delivered within two days and where there are no other alternatives available, this gives us a number of approximately 16.500 delivery transactions dependent on five day delivery .[115] Assuming that all these consignments would be sent by express mail at single piece rates implies a cost for covering the unmet need of less than 9 million NOK in 2018.[116]
With regards to delivery of daily newspapers, the critical users (i.e. those without valid alternatives available) are likely to be elderly citizens living rural areas who do not have the possibility to use digital alternatives. We approximate the number of critical users of Posten's newspaper delivery by starting out with the number of citizens above the age of 66 in rural areas.[117] In 2016, this number

[114] Det kongelige helse- og omsorgsdepartement (2016), Prop. 1S (2017-2018), Proposisijon til Stortinget (forslag til Stortingsvedtak) for budsjettåret 2018, p. 57-58, kapittel 717 post 70.
[115] According to Statistics Norway (2017): *Tabell 05277: Folkemengde, ette alder og kjø*nn, there are approximately 160.000 citizens above the age of 66 living in rural areas in Norway. In addition, the number of disabled citizens between the age of 15 and 66 in Norway, who due to their disability are unable to work, were in Q2 2017 24,000. Assuming that the distribution of disabled citizens across rural and urban areas mirrors the distribution in the rest of the population indicates that there are approximately 4,800 disabled citizens in rural areas, see Statistics Norway (2017), Personer i alt 15-66 år og personer med funksjonshemning etter arbeidsstyrkestatus og kjønn. Based on this information, the total number of elderly and disabled citizens in rural areas is approximately 165.000.
[116] The price for sending express mail with Posten today differs across five geographical zones. The unweighted average of the five prices is 537 NOK. Applying this price to 16.500 transactions results in a total cost of almost 8.9 million NOK.
[117] This is a conservative assumption as it implies that all citizens in rural areas get their newspapers delivered by Posten today.

was approximately 160,000.[118] We thereafter narrow this number down to those of these citizens who read paper based newspapers. In 2016, the share of Norwegian citizens above the age of 65 reading paper based newspapers was 73 per cent[119]. This gives us almost 117,000 citizens. As a final step, we use the share of citizens above the age of 65 that that do not use internet on a regular basis (estimated to 17 per cent[120]) as a proxy for the share of elderly citizens who cannot read digital newspapers. This leaves us with less than 20,000 critical users of Posten's newspaper delivery today. This number is expected to decline over time as the Norwegian population (also elderly) becomes increasingly digital.

With a potential reduction in USO net cost of 440 million NOK in 2018 and a cost of providing express delivery for all urgent delivery of medicines of 9 million NOK in the same year, this leaves us with more than 430 million NOK to invest in other targeted measures. With 20,000 critical users dependent on the services provided by Posten, this corresponds to more than 20,000 NOK per critical user in 2018. Assuming a stable number of critical users over time (although the actual number is likely to decline), this sum increases to more than 30,000 NOK per critical user in 2025.

Option 3: Delivery one day per week throughout Norway
Reducing the required delivery frequency to one day per week throughout Norway could, according to our estimations, potentially reduce USO net costs by 440 million NOK in 2018, increasing to 925 million NOK in 2025, see Table 29.

Table 29 Reductions in net cost compared to status quo, option 3

Year	2018	2019	2020	2021	2022	2023	2024	2025
Potential cost savings (MNOK)	440	470	500	650	720	790	860	930

Note: Rounded to nearest ten million NOK

Source: Copenhagen Economics

As discussed in section 3.3, reducing delivery frequency to one day per week throughout Norway comes with a greater risk (compared to option 1 and 2) of creating negative effects that call for the introduction of alternative solutions. However, since reduced delivery frequency only will affect Posten's last mile operations, alternative solutions are often available – at least to mobile citizens who are able to access local service points. Recipients with a critical need for delivery more frequently than once a week can for example rent a post office box at the nearest post-in-shop and senders who require faster delivery can send registered letters which will be delivered to the post-in-shop within two working days. Both these solutions, however, imply a higher cost for the sender or recipient in question. On top of the services identified under option 2, we have identified delivery of urgent notifications as an additional service for which some elderly and immobile citizens may be dependent on delivery more frequently than once a week.

[118] See Statistics Norway (2017), Tabell: 05277: Folkemengde, etter alder og kjønn (T). The number of disabled citizens between the age og 15 and 66 who due to their disability are unable to work were in Q2 2017 24,000. Assuming that the distribution of disabled citizens across rural and urban areas mirrors the distribution in the rest of the population indicates that there are approximately 4,800 disabled citizens in rural areas who we could assume not being able to use digital alrenatives due to their disability, see Statistics Norway (2017), Personer i alt 15-66 år og personer med funksjonshemning etter arbeidsstyrkestatus og kjønn.

[119] Statistics Norway (2017) Norsk mediebarometer, Tabell: 04499. The statistic includes citizens of ages 67-79.

[120] Statistics Norway (2017) Tabell: 11124: Hyppighet på internett- og PC-bruk siste 12 mnd., etter kjønn og alder (prosent). We have calculated a weighted average based on the two age groups above the age of 65 presented by statistics Norway.

It is important to keep in mind that, even if regulation enabled delivery one day per week as of today, the implementation of delivery one day per week would not take place until a few years down the line. This implies that the impact on users of this option is more uncertain than the impact on users of the other options. The main reasons for this are that alternative service offerings might have developed in the meantime and that it is difficult for people to anticipate what their needs will be in a few years' time.

In order to ensure geographical cohesion and avoid that senders and recipients in rural areas are placed at a disadvantage compared to those in urban areas, policy makers could consider to (partially) subsidise the higher costs incurred by senders and recipients in rural areas, for example by subsidising the use of a registered letter services for specific needs where the internal processes of the sending entity cannot be adapted to the longer delivery time. This could, for example, be delivery of urgent hospital notifications or court orders.

Moreover, citizens who (for immobility reasons) are not able to visit the nearest post-in-shop at a regular basis, might require additional assistance. This additional assistance could consist of an extension of existing home care services, or newly designed solutions to make delivery of specific items (such as newspapers or prescription medicines) available more frequently than once a week.

In order to provide a rough approximation of the critical need related to urgent notifications we (again) use, as a starting point, citizens above the age of 65 in Norway who do not use internet[121]. Elderly citizens are more likely to receive important notifications (such as hospital summons) by mail (younger citizens often receive text messages for this purpose). Citizens who use internet at a regular basis are more likely to have a valid alternative to written notifications sent by mail, such as a digital mailbox or a mobile phone. Assuming that all elderly citizens above the age of 65, on average, receive one urgent notification per year results in an estimated number of urgent and critical notifications of approximately 156,000 in 2021. This is most likely a substantial overestimation since most notifications are not urgent and will not suffer from a delivery time of five working days.

One possible targeted measure to satisfy this critical need could be to subsidise delivery via registered mail for these letters. Since Posten is not expected to implement delivery 1 day per week until 2021, this targeted measure will be relevant only after this point in time. Whereas the reduction in USO net costs from reducing delivery frequency to 1 day per week is estimated to 650 million NOK in 2021, the cost of delivering all critical notifications by registered letters amounts to 23 million NOK[122] (corresponding to less than 4 per cent of the potential cost reduction).

Taking into account that urgent delivery of medicine also will constitute a critical need under the policy option with delivery one day per week, the total cost of implementing targeted measures for this product and urgent notifications would in 2021 be 32 million NOK. If daily newspaper delivery to the 20,000 critical users of newspaper delivery could solved by a targeted measure costing less

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121 According to statistics Norway, this is approximately 17 percent. Statistics Norway does not have recent information about the use of mobile phones among the elderly population. A study commissioned by "Statens institutt for forbruksforskning" in 2014, however, reveals that 82 per cent of Norwegian citizens above the age of 80 had a mobile phone in 2014 and that 16 per cent of citizens in the same age group had a smart phone. See Slettemeås, Dag (2014). «Eldres bruk av digitale verktøy og internett: En landsdekkende undersøkelse av mestring, støttebehov, motivasjon og hindringer». Oppdragsrapport nr. 5- 2014. Statens institutt for forbruksforskning. This indicates that using the citizens above the age of 65 who do not use internet at a regular basis as a starting point most likely is a conservative assumption.

122 Based on an assumption of approximately 156,000 critical notifications and an average price of sending a registered letter of 146 NOK.

than 618 million NOK (or more than 30,000 NOK per user and year), this would imply that reducing the USO leave all users equally well off as with the current USO, but at a cost for the Government lower than that of keeping the current USO.

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Appendix A

Assessment of cost and revenue effects

A.1 Delivery speed

As of 1 January 2018, A-mail (currently delivered overnight, D+1) and B-mail (currently delivered within four working days, D+4) will be merged into one service where 85 per cent of volumes have to be delivered within two working days (D+2). Posten's estimate of USO net costs relating to delivery speed corresponds to 22 per cent of the total estimated net costs for 2018.

Assessment of cost effects

Merging A-mail and B-mail into one mail stream with delivery within two days will allow Posten to realise cost savings. Without the USO, Posten would have merged the two mail streams on January 1st, 2016. As Posten only is allowed to make the change in 2018, this results in a net cost of the USO in the years 2016 and 2017.

However, as Posten assumes some lag in the realization of cost savings (i.e. that it would not have been able to realise all cost savings immediately on January 1, 2016, and therefore will not be able to do so immediately on January 1, 2018 either), this implies a shift in the distribution of net cost between the years. As a result, a share of the net cost related to delivery speed still remains in 2018. In order to assess whether the assumption about lagging cost effects is reasonable or not, one would have to assess whether the assumed lag reflects the lag resulting from an efficient implementation of the merging of the two mail streams. This has not been part of our analysis, and we therefore take the shift as given in our analysis. In chapter 3, however, we also present figures for the development in net costs assuming that the full cost savings of one mail stream are realised in 2018.

Merging the two mail streams has three main cost saving effects for Posten's operations.

1. A shift from air to land transport for most of the mail that is currently transported by air, due to reduced need for fast transport mail across Norway.
2. Centralisation of the terminal structure (going from nine to three sorting terminals)
3. Increased efficiency due to more time freed up for sorting and route preparation

The main driver of cost savings linked to slower standard delivery of letter mail is the cancellation of existing contracts for air transport for overnight delivery. The cancellation of these contracts also reduces costs in terms of a reduced need for handling of mail at airports as well as a reduced need for transport of mail to and from airports.

Despite the longer delivery time allowed for standard letters, Posten assumes that it will still be dependent on air transportation between the Northern and the South Eastern parts of the country, because of the long distance. Since the air transportation for the old overnight service is cancelled, a new route will have to be established for this purpose. This implies a cost increase. The movement from air to ground transportation also means that costs for ground transportation will increase. The cost of ground transportation is, however, much lower than that of air transportation.

We find the operational changes and associated assumptions included in Posten's calculations to be reasonable. Similar changes and assumptions are also applied in other countries, e.g. in Sweden, where the universal postal operator PostNord from January 2018 will be allowed to increase the delivery time for standard letters from one to two working days. One main motivation for the change in Sweden is a reduced need for overnight delivery in combination with a significant cost savings potential linked to reduced air transportation. The investigation conducted by the Swedish government offices in 2016 as preparation for the regulatory changes stated, for example, that PostNord in Sweden could save 250-300 million SEK per year (corresponding to approximately 245-295 million NOK) by replacing air transport of D+1 mail items with rail transport.[123]

With the change to one mail stream, Posten will centralise its sorting terminal structure by going from nine sorting terminals to three. In recent years, the continuous decline in mail volumes made room for improvements in production efficiency, which were partly realised by closing down two terminals in the eastern district[124]. Although further room for cost savings existed also after this, further centralisation and closing down of terminals could not be realised under the constraint of the overnight delivery obligation. The reason for this is the short time available from the time when the last letter is received at the terminal until the first route has to begin in order to deliver the letter in time. When overnight delivery is no longer an obligation, Posten has one more day until the letters have to be delivered. This time opens up for efficiency in transportation (by transporting via road instead of air) as well as a longer time window for production in the terminals. This enables further centralisation from nine to three terminals.

The terminals will be closed down sequentially to minimise the operational and quality risk associated with the change. In general, Posten assumes that the closing down of six terminals will make the costs of these terminals disappear, while the three terminals still in operation will have to increase costs slightly to accommodate a larger volume. This is a reasonable assumption since the mail volume handled per terminal will grow. According to Posten's calculations, the cost savings will outweigh the cost increases. The reason for this is economies of scale and the fact that the terminals that will remain in operation are more efficient than the ones which will be closed down. In addition to these cost savings, property costs for distribution centres are expected to decline due to centralised route preparation. Also this is a reasonable assumption as centralised route preparation reduces the space needed for manual sorting at the distribution centres.

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123 Statens Offentliga Utredningar (2016), SOU 2016:27, Som ett brev på posten, Postbefordran och pristak i ett digitaliserat samhälle, p. 17, 126, http://www.sou.gov.se/wp-content/uploads/2016/04/SOU_2016_27_Webb.pdf.

124 The terminals in Hamar and Drammen were closed in 2011.

To avoid having potential implementation problems affecting the quality of the deliveries, Posten will not close down all affected terminals at the start of 2018. Instead, Posten will close down four of the six terminals on January 1, 2018. On April 1, 2018, Posten will close down the last two affected terminals. From then on the structure with three terminals will be in place.

We find Posten's assumptions regarding cost effects of one mail stream reasonable. Economies of scale are important in the postal industry and should imply reductions in costs with more volumes per terminal, given that there is enough capacity. It is also reasonable that Posten will choose to keep its most efficient terminals in operation while closing down less efficient operations, and that larger volumes per terminal will make efficiency-enhancing investments more profitable. The fact that the calculations are based on the same data from internal control systems that are used for commercial decision making in Posten also adds to the reliability of the calculations. We have no reason to believe that this data should be deliberately biased for the purpose of inflating USO net costs. We do therefore not propose any changes to the calculated full year costs effects of merging the two mail streams into one.

Assessment of revenue effects

Today, Posten delivers A-mail and B-mail at different prices and speed. Whereas A-mail is delivered overnight[125], B-mail is delivered within four working days[126], but at a lower price. From January 2018, Posten will merge A-mail and B-mail into one product delivered within two working days. Current customers will thus experience a change in service level, and some customers will also experience a change in price (higher or lower, depending on the mail category). This will affect Posten's volume as well as its revenue per delivered item.

Due to the fact that Posten will de facto merge the two mail streams in 2018, revenues with and without the USO will be equal in 2018. Therefore, Posten's net cost calculations *do not contain any revenue effects for 2018*. Revenue effects for 2016 and 2017 have been included in previous years' net costs. This is consistent with the fact that Posten should be compensated for two years of delay in implementing a single mail stream for A-mail and B-mail. As the assumed revenue effects of one mail stream will influence the Posten's mail volumes in 2018 (and thereby Posten's costs in that and coming years), it is nevertheless important to review Posten's assumptions about revenue effects.

In late 2016, Posten conducted an analysis of the likely demand effects of the merging of A-mail and B-mail based on internal business intelligence within the sales department. The analysis indicated that the largest demand effects of the introduction of one mail stream would be for [redacted] whereas the demand for delivery of [redacted] would be unaffected by the change. Product categories that are not delivered overnight at the outset (e.g. un-

[125] Paragraph 3.8.3 of Posten's temporary concession requires 85 per cent of A-letters to be delivered within one working day and 97 per cent of A-letters to be delivered within three working days.

[126] Paragraph 3.8.3 of Posten's temporary concession requires 85 per cent of B-letters to be delivered within four working days and 97 per cent of B-letters to be delivered within six working days.

addressed mail) would per definition not be affected by the change. In total, Posten estimated that implementing delivery within two days as the standard product in 2016 would result in losses corresponding to less than five per cent of its mail segment[127] revenues.

As the material submitted by Posten to the Ministry of Transport and Communications lacks sufficient documentation of the estimated revenue effects, we have requested additional documentation from Posten in order to assess the robustness of the assumptions made. We have also conducted a number of interviews with large mailers and competing delivery operators in Norway.

Our interviews with large senders confirm most assumptions made by Posten. In particular, we find that senders and recipients often are not dependent on overnight delivery. This is also true for senders who use this service today. The fact that Posten has not experienced any reactions, that largely deviates from the assumptions they have made, from clients in the contract negotiations for the new D+2 service further supports this conclusion.

Although we find most of Posten's estimates of revenue effects reasonable, we propose two main changes to be implemented in the base case for net cost calculations in chapter 3:

1. *Bulk mail*: [redacted]
2. *Stamped mail, franking machine mail, and mail items of varying sizes*: [redacted]

Our proposed changes to the demand (volume) effects assumed by Posten are summarized in Table 30 and discussed in more detail below.

Table 30 Demand effects from merging A and B mail

Mail category	Share delivered D+1 today	Posten's assumed impact on volumes	Copenhagen Economics' assumed impact on volumes
Bulk mail	[redacted]	[redacted]	[redacted]
Stamped mail, franking machine mail, and mail items of varying sized	[redacted]	[redacted]	[redacted]
Small packets	[redacted]	[redacted]	[redacted]
Newspapers with delivery between regions	[redacted]	[redacted]	[redacted]
Inbound international mail	[redacted]	[redacted]	[redacted]
Unaddressed mail	[redacted]	[redacted]	[redacted]

Note: Copenhagen Economics' assumed impact on volumes represents a reasonable but conservative base case. The assumptions are used in the calculation of USO net costs in chapter 3 and will be varied in a sensitivity analysis.

Source: Copenhagen Economics.

[127] Including both addressed and unaddressed mail which is delivered together in the last mile.

Bulk mail

Today, 25 per cent of all bulk mail in Norway is sent as A-mail and 75 per cent is sent as B-mail. For a 20 gram letter, the price of a B-letter is currently 23 per cent below the price of an A-letter. As the new D+2 product will have a price similar to the current B-letter, this will lead to a reduction in price and service level for customers currently sending A-mail. For current B-mail customers, the price will not change significantly whereas the service level will increase. As there are currently no alternative delivery operators in Norway offering delivery of bulk mail within less than three working days with full geographical coverage[128], mailers who due to the change in 2018 would substitute away from Posten's bulk mail offering would most likely turn to electronic means of communication instead.

[redacted] our interviews with large senders of bulk mail[129] where large senders of bulk mail indicated that they do not intend to change their mail consumption due to the merging of the two mail streams in 2018. Respondents who currently use A-mail to some extent, because they still prefer next day delivery for some items compared to slower delivery, stated that they are able to adjust their expectations with respect to delivery speed and will continue to use Posten for physical mail distribution at a slower delivery speed.

[redacted] In fact, it is possible that some of the items that are sent as A-mail today are so time critical that they cannot be sent as D+2. Further, even if there is no *dependence* on next day delivery, there may still be a very strong *preference* for some items to be delivered next day. We therefore suggest assuming that [redacted] per cent of all bulk mail items will be lost to other means of communication. This corresponds to a loss of [redacted] per cent of bulk mail currently being sent as A-mail.

Stamped items, franking machine mail, and mail items of varying sizes

Senders of stamped mail, franking machine mail, and items of varying size do currently not have access to alternative providers of physical mail delivery.[130] As the conditions change from 1 January 2018, senders using Posten's A-mail service today will have to choose between i) using Posten's B-mail service, ii) using an express service (provided by Posten or alternative providers), iii) using electronic communication alternatives or iv) discontinuing the communication.

Posten assumes that the changes associated with one mail stream will [redacted] for stamped mail, franking machine mail and mail items of varying size [redacted]

[128] Postnord in Norway provides an offering with delivery of bulk mail within three working days with 100 per cent geographical coverage. However, as Postnord in Norway is acting as a consolidator, this implies that mail is distributed with other delivery operators, primarily Posten. Postnord (2017), Sende post til bedrifter eller private?, http://www.postnord.no/sende/post.

[129] Interviews with the Municipality of Oslo, the Norwegian Tax Administration, Lindorff and Telenor.

[130] Postnord is acting as a consolidator in Norway, providing delivery of these types of items using Posten's existing delivery network.

Today, [redacted] per cent of stamped and franking machine mail is sent as A-mail whereas only [redacted] per cent is sent as B-mail. The price difference between A-mail and B-mail is about 10 per cent. After the change, the price level of today's A-mail will apply to all items. For the [redacted] per cent of items currently sent as B-mail, this will imply a price increase as well as an increase in service level (from delivery within four days to delivery within two days). [redacted] For the [redacted] per cent of items currently sent as A-mail, the change will only imply a decrease in service level without a corresponding price reduction. Despite the negative impact on senders of A-mail, Posten assumes [redacted] This assumption is based on two observations.

First, the option of sending B-mail is not available to most customers currently sending A-mail.[131] The customers' current choice of A-mail should therefore not be interpreted as reflecting a need for fast delivery, but rather a lack of delivery options. *Second*, historical price increases for stamped and franking machine mail varying between 2 and 6 per cent per year in Norway have been accompanied by a stable volume decline at around [redacted] per cent per year between 2013 and 2015, driven by a general trend of increased e-substitution. This indicates that senders in this segment are insensitive to price increases. This observation is very similar to what can be observed in other countries.

Although we agree with both observations above, we [redacted] In order to apply a conservative approach, we therefore suggest assuming a volume loss of [redacted] per cent for this mail segment.

Small packets

Today, [redacted] per cent of small packets are delivered as A-mail and [redacted] per cent as B-mail. The price of the new product with delivery within two days will be approximately 5 per cent above today's price for a B-packet, and approximately 15 per cent below today's price for an A-packet.

[redacted] Customers currently sending overnight will experience a decrease in price as well as in service level (delivery time increasing by one day), whereas customers using the slower B product will experience an increase in service level (delivery time reduced by two days) and price. Posten assumes that these changes will [redacted]

A recent study from PostNord[132] shows that only one percent of Norwegian consumers purchasing online expects their items bought online to be delivered within one day. This finding strongly indicates that increasing delivery time from one to two days will not impact demand for Posten's small packet service significantly. Moreover, whereas alternative providers of small packet delivery services in Norway (e.g. PostNord and Helthjem)

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131 In order to send mail items as B mail today, the sender must send at least 20 mail items per batch.

132 Only 1 per cent of respondents expect delivery within one weekday, whereas 7 per cent expect delivery within two weekdays and 26 per cent within three weekdays. PostNord (2016), E-handel i Norden 2016.

offer prices similar to those of Posten's small packet service, the delivery speed offered by these providers is normally slower. For example, Helthjem delivers to the door of recipients every morning, but in order to qualify for an (express) overnight delivery service, senders must pay a higher price, have a yearly volume of at least 10,000 packets and have their warehouse located centrally in Eastern Norway. This service is thus not available to all senders who today use Posten's small packet delivery service and is also likely to be more expensive. There are also alternative operators (e.g. DB Schenker and PostNord) providing parcel delivery services, but as prices for parcel delivery normally are significantly higher than prices for Posten's small packet (letter) service, these alternatives only constitutes valid options for senders and recipients who are dependent on overnight delivery.

The fact that online retailers and e-shoppers generally value low prices above high delivery speed indicates that Posten's new service is a better value proposition for many senders compared to the alternatives available. Consequently, most senders and recipients of small packets will likely not stop using Posten as delivery time increases by one day. As there nevertheless may be some users of Posten's small packet service who are dependent on overnight delivery, we find the assumption of [redacted] per cent volume effect made by Posten reasonable (and most likely conservative). It is also worth noting that this effect may [redacted]

Daily newspapers

Publishers deliver newspapers into Posten's network either locally, regionally or nationally. Newspapers delivered to local or regional distribution centres will not be affected by the change to one mail stream, since the change does not affect the delivery frequency from distribution centres. However, newspapers delivered between regions (so-called national deliveries), representing 8–10 per cent of Posten's total newspaper volume, will no longer be delivered over night. This means that remote subscribers no longer will be able to receive newspapers delivered by Posten on the day of publication.

According to Posten, publishers have expressed concerns about losing subscribers if it takes two days to deliver their newspapers. For this reason, Posten assumes a loss of 50 per cent of the national deliveries of newspapers. These volumes would instead be delivered by alternative delivery networks, such as the publishers' own delivery network (Helthjem). As the alternative networks do not provide nationwide delivery (some geographical areas are only served by Posten), some of the lost volume may re-enter into Posten's network via the alternative providers.

There is no reason to believe that the increase in delivery time by one day will cause a volume loss of more than the 50 per cent assumed by Posten. The main reason for this is that 65 per cent of national newspapers already are delivered within two days, since publishers do not deliver the newspapers to Posten in sufficient time to enable overnight delivery.[133] There is thus only 35 per cent of the volume that would experience a lower service level after the change. To maintain a conservative approach, we propose to keep the assumption of 50 per cent volume loss made by Posten.

[133] Information from Posten.

International mail

Current price agreements for international mail require delivery overnight of inbound international letters. Replacing the overnight service with a slower (D+2) service may therefore imply a penalty for Posten in terms of lower prices received for the delivery of these items (so-called terminal dues). It may also imply that senders and recipients of cross-border letter post items substitute away from Posten to faster delivery solutions.

Posten assumes that the extra delivery day would [redacted] As the exact implications for the international agreements are still unknown, the revenue effect will be calculated retroactively.

We consider these assumptions reasonable. As more and more countries are moving towards delivery within two days as the standard delivery speed for domestic letters, international agreements will have to follow this trend. It is also possible that a decrease in terminal dues due to lower delivery speed might be outweighed by annual increases in terminal dues stipulated by the updated UPU convention.

In addition, it should also be noted that the requirements of overnight delivery in Norway is only part of the delivery time experienced by the sender or receiver of international letter post items. For example, if the delivery time from the origin country to the destination country currently is four days at the outset, one additional day of delivery time for the last mile will not increase the delivery time from one to two days, but from four days to five days. According to a recent study by the International Post Corporation[134], 75 per cent of European consumers expect delivery from another European country within 6-7 days whereas 25 per cent expect delivery within 2-3 days. The expected delivery time is mostly likely even longer with respect to items bought from web shops outside Europe[135]. These observations support the assumption that the volumes of international mail will [redacted] when one extra day is added to the total delivery time.

Unaddressed mail

Posten assumes there will be no impact on volume or revenue from unaddressed mail. The reason is that unaddressed mail is not sent with the requirement of overnight delivery today, and will therefore not be affected by the removal of the overnight service. We agree with this approach.

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134 International Post Corporation (2017) *Cross-border e-commerce shopper survey 2016*. Page 11.

135 According to a recent study conducted by Postnord, the United States and China are among the top-three countries from which Norwegian e-shoppers buy online. Whereas 36 per cent of Norwegian e-shoppers who buy online cross border have bought something from the US, 31 per cent of cross-border e-shoppers in Norway have bought something from China. See Postnord (2017), E-handel i Norden 2016, p.29, https://www.postnord.com/globalassets/global/danmark/dokument/publikationer/e-handel/e-handel-i-norden-2016-dkx.pdf.

A.2 Delivery frequency

Today, Posten is obliged by the USO to deliver mail 5 days per week throughout Norway. Posten assumes that it without the USO would reduce the delivery frequency to every other day, i.e. 2.5 days per week, throughout Norway starting from January 1, 2018. Posten's calculated net cost relating to reduced delivery frequency corresponds to 70 per cent of total net costs for 2018.

Assessment of cost effects
Posten's calculated cost savings from reducing delivery frequency consist of four elements; (i) reduced time in distribution (salaries), (ii) reduced number of cars, (iii) additional sorting and storage, and (iv) reduced costs following volume decline due to reduced delivery frequency (direct variable costs).

Posten assumes that all cost savings would have been fully realised in 2018 had Posten had the ability to plan the operational change at least one year in advance. This is reasonable as long as the costs affected by reduced delivery frequency are such that they under normal conditions can be changed within one year.

Posten's leasing contracts for cars span over four years. In any given year, approximately [redacted] percent of the cars have more than one year left on their contract time. Reducing delivery frequency to 2.5 days per week would [redacted] To be able to realise all cost savings relating to leased cars from day one with reduced delivery frequency, Posten would have to prepare by reorganising its portfolio of contract lengths. Posten could for example keep the oldest cars a little longer in operation and abstain from signing new four-year leasing contracts during this period. The same may be true for employment contracts. Some of these changes are likely to require more than 12 months to prepare. However, since the regulatory process takes time and a decision to allow Posten to reduce the delivery frequency is likely to be taken in advance of the actual day of implementation, it is reasonable to assume that Posten can start the preparation process in sufficient time before implementation.

There would be more necessary changes than terminating contracts. However, they are all operational and can be done in less than a year. Some delivery routes would have to be changed, but route-optimisation is already an integral part of Posten's operations and is done several times per year. Some minor changes in sorting at the distribution centres would also be necessary to accommodate the fact that not all mail arriving at the distribution centre should be delivered the same day. However, one year should be enough to organise this.

To be more conservative, Posten could, despite cost savings being relatively easy to realise, have assumed that not all cost savings could be realised during the first quarter of 2018. It should be noted that if the costs savings are not realised in 2018 they would be

assumed to be realised at another point in time. The total cost reduction would therefore be the same[136].

Reduced time in distribution
Most of the cost effects from reduced delivery frequency relate to reduced time in distribution. This is explained by the cost structure of mail delivery (see section 2.2) and the fact that mail delivery is a very labour intensive process[137] where often nearly 50 per cent[138] of the postal operators' costs are incurred in the distribution part of the value chain.

The calculation takes the costs of distribution today with delivery 5 days a week as starting point. From this, Posten subtracts savings in direct variable costs related to expected general volume decline in 2018.

Distributing mail on each route every other day means that the need for mail carriers and cars is significantly reduced, compared to delivering five days per week. As a starting, point Posten assumes that the need for labour (mail carriers) and car leases can be reduced by 50 per cent. However, delivery every other day implies that (almost) the same amount of mail that would otherwise have been distributed on two days need to be delivered on one day. The larger volume per delivery day increases the costs of serving a route on a specific delivery day for two reasons:

1. The number of mail boxes to deliver to (the so-called hit rate) per delivery route increases. This increases the time necessary to serve a route and thereby the cost.
2. It takes more time to deliver mail to a mail box if it receives more items. This also increases the total time necessary to serve a route and thereby the cost.

In the net cost calculations submitted to the Ministry of Transport and Communications, Posten has accounted for these cost increases by reducing the cost of distribution by [redacted] per cent instead of 50 per cent. However, there were no accompanying substantiation for why the cost increase was equal to [redacted] per cent of total distribution costs. On our request, Posten has made an analysis of the magnitude of the above-mentioned two effects which we have analysed in-depth.

Posten's supplementary analysis consists of two part. The *first* part analyses the costs associated with the increased hit rate due to more items per delivery day. Posten has simulated the difference in the number of stops necessary with delivering 5 days per week and with delivering 2.5 days per week. The analysis is done separately for urban and rural areas as well as for mail boxes of private households and of companies. The simulation accounts for factors that affect the hit rate, such as the average number of items per delivery

136 If the cost savings were to be realised in the distant future, the net cost calculation should take into account the fact the value of forgone profit today is not the same as the value of the foregone profit in the future.

137 For a majority of European universal service providers, labour costs amounted to more than half of total costs in 2011, cf. WIK (2013), Main developments in the postal sector (2010-2013), p. 263.

138 Approximately 45 per cent of postal operators' costs are incurred in the delivery phase where the bulk of costs are incurred by mail carriers who manually deliver letters and parcels to individuals and businesses in more or less sparsely populated areas. Crew & Kleindorfer (2010), p. 24.

day, the number of mail boxes at each stop, and the share of mail boxes receiving unaddressed mail. The costs associated with the additional stops is calculated using estimates of the additional time required per stop and hourly salary costs.

The *second* part analyses the costs associated with delivering additional volume per delivery day given that a mail carrier has already stopped at a mail box[139]. For this calculation, Posten uses information on the increase in volume per delivery day resulting from reducing the delivery frequency to 2.5 days per week, internal estimates on the additional time required to deliver one item for three different sizes of letters, and hourly salary costs.

The analysis shows that the cost increase associated with the increased volume per delivery day is [redacted] per cent of costs for time in distribution with delivery 5 days per week. This is consistent with Posten's assumption of cost reductions of [redacted] per cent[140].

We have reviewed and assessed the abovementioned analysis. We have also compared the analysis Posten has made with a similar analysis that we recently have made for another European postal operator. Based on this review, we find Posten's analysis reasonable. In particular, we also find that applying a different method for estimating cost reductions in delivery yields results very similar to those of Posten.

To be conservative, however, Posten could have assumed cost reductions of [redacted] per cent instead of [redacted] per cent, reflecting the upper bound of the estimated cost increases. We therefore change the assumption to [redacted] per cent when we calculate future net costs of the USO in chapter 3. Keeping all other assumptions unchanged, this reduces the net cost for reduced delivery frequency by less than 2 per cent. In chapter 3, we also vary this assumption in our sensitivity analysis to check what the impact of the parameter is on USO net costs.

Reduced costs for cars
Reduced need for cars due to fewer delivery routes served per day in case of 2.5 days delivery results in cost savings. The calculation and the assumptions are similar to that of reduced time in distribution, but the starting point is the total cost for cars in distribution today, with delivery 5 days per week. Based on a similar principle as used for reduced distribution time, the total cost for cars in distribution is reduced by [redacted] per cent, which reflects that only approximately half of the current car fleet is needed. Changing to [redacted] per cent cost reduction would reduce the net cost for reduced delivery frequency by less than 1 per cent.

Additional sorting and storage
Increased salary costs due to necessary additional sorting and storage of mail at distribution centres results in cost increases according to Posten.

At distribution centres, mail arrives and is prepared for the routes. In practice, this means a final sorting in which the mail is prepared on racks. With delivery 5 days per week, all

[139] The costs for additional stops is calculated in the first part of the analysis.
[140] The cost reduction with no cost increases would be 50 per cent. Cost reductions of [redacted] per cent assumes cost increases of [redacted] per cent.

mail arriving at distribution centres is prepared to be distributed directly. With delivery every other day, some of the mail arriving at the distribution centre on a given day shall be distributed almost immediately and some of the mail shall be stored one day. This introduces a need for additional sorting at the distribution centres depending on when the mail is to be distributed as well as a need for storing mail at the distribution centres.

Posten has calculated the estimated time required for the additional sorting and storage. The calculations are made bottom up and based on the volume expectations for 2018, assumptions about the share of items needing additional sorting and storage, sorting speed, the time required for storage and hourly salary costs. The assumptions are based on Posten's internal knowledge about its operations, and are in line with what we observe in many other countries. However, one assumption is worth discussing.

Posten assumes that [redacted] per cent of all manually prepared mail will require extra sorting. Without any efficiency in the sorting process, 50 per cent of manually prepared mail would need additional sorting. This is the share of mail that would be delivered the day after it arrives at the distribution centre. However, Posten expects to develop efficient processes that enables them to distinguish between mail to be delivered on the day of arrival and mail to be delivered on the next day. This reduces the need for extra sorting by [redacted] per cent and results in a share of mail requiring extra sorting of [redacted] per cent.[141]

Whereas it is reasonable to assume that Posten will develop process that allows them to avoid extra sorting and storage to some extent, it is difficult to assess how much extra sorting and storage can be avoided. At our request, Posten has made an additional analysis showing that slightly more than [redacted] percent of the mail would not need additional sorting had reduced delivery frequency been implemented today without additional efficient processes in sorting. This suggests that Posten's assumption is conservative, since some efficiencies could be expected.

A very conservative assumption that Posten cannot avoid extra sorting for any of the mail and develops no efficiency in the sorting process would reduce net costs for reduced delivery frequency by less than 2 per cent.

Reduced costs following volume decline due to reduced delivery frequency
The volume losses caused by implementing reduced delivery frequency, described below, means that Posten saves direct variable costs. This is reasonable. We propose no changes other than what is discussed below regarding volume effects. These changes will affect direct variable costs proportionally.

Assessment of revenue effects
Revenue effects due to reduced delivery frequency are calculated assuming that the merging of A-mail and B-mail into one D+2 stream is already implemented and that all revenue effects associated with this change have been realised. The revenue effects associated with reduced delivery frequency therefore only reflect a change from a situation where all

141 [redacted]

items are delivered within two working days to a situation where half of the items are delivered within two working days and half of the items are delivered within three working days.

Posten assumes that reduced delivery frequency would affect demand for [redacted] Demand for [redacted] is assumed to remain unchanged.

The material Posten has submitted to the Ministry of Transport and Communications lacks detailed documentation of the estimated revenue effects. To assess Posten's estimates, we have requested additional documentation from Posten. We have also conducted a number of interviews with large mailers and competing delivery operators in Norway, see section 2.3.

The findings from our analysis generally supports Posten's assumptions. Nevertheless, we propose to adjust Posten's assumptions about revenue effects slightly with respect to [redacted], see Table 31. The results from our assessment are discussed in more detail below.

Table 31 Demand effects from reduced delivery frequency

Mail category	Posten 2.5 days per week	CE 2.5 days per week	CE 1 day per week
Unadressed mail	[redacted]	[redacted]	[redacted]
Daily newspapers	[redacted]	[redacted]	[redacted]
Small packets	[redacted]	[redacted]	[redacted]
Weekly magazines	[redacted]	[redacted]	[redacted]
International mail	[redacted]	[redacted]	[redacted]
Bulk, stamped, etc.	[redacted]	[redacted]	[redacted]

Note: Copenhagen Economics' assumed impact on volumes represents a reasonable but conservative base case. The assumptions are used in the calculation of USO net costs in chapter 3 and will be varied in a sensitivity analysis.

Source: Copenhagen Economics.

Unaddressed mail

[redacted]

Today, Monday is the most important delivery day for unaddressed mail with [redacted] per cent of all unaddressed volume. The reason is that many senders of unaddressed advertising want their unaddressed mail delivered early in the week.[142] With delivery 2.5 days per week, half of the households receive mail on Tuesdays instead of Mondays. [redacted]

[142] Our interviews also reveal, however, that there are large senders who prefer delivery towards the end of the week, e.g. in order for the recipients to have time to browse through the advertising during the weekend before the new week begins.

[redacted] Another concern raised by senders of unaddressed items in our interviews is the fact that fewer delivery days per week imply that more advertisements will be delivered on the same day. This might reduce the impact of the advertisement for some senders and make them more inclined to use an alternative service provider who can deliver on a day when the mailbox of the recipient is less full.

In late 2016, Posten made an analysis of the expected behaviour of its 50-75 largest customers of unaddressed mail (representing [redacted] per cent of the turnover for unaddressed mail) should delivery frequency be reduced to 2.5 days per week. Expected volume losses were estimated for each client and varied from [redacted] per cent of volume per sender. Based on this analysis, Posten estimates that on average [redacted] per cent of unaddressed volume would be lost with 2.5 days per week compared to 5. We have not had access to this analysis.

However, based on cross-checks and experience from other countries on unaddressed mail customers' sensitivity to changes in service level, we find a volume loss of approximately [redacted] per cent to be reasonable. This is based on a conservative assumption where we assume that [redacted] per cent of Posten's current customers in this market segment considers the new offering by Posten inferior to that of alternative operators. We also assume, however, that some of the volume sent with alternative delivery networks re-enter into Posten's network due to incomplete geographical coverage of some alternative providers.

With a further reduction in delivery frequency from 2.5 to 1 day per week, Posten would likely lose even more of its unaddressed mail volume. The reason for this is that very few senders would accept to have their advertisements delivered only once a week and on different weekdays for different households. Senders who still would consider Posten's offering relevant with delivery one day per week could for example be those who would like a specific piece of unaddressed mail to be delivered during a specific week (without any requirement on when it arrives in the recipient's mailbox). Examples of such pieces of unaddressed mail could for example be advertising from a toy store before Christmas, or leaflets informing about a political party before an upcoming election. For this reason, we include a further reduction in Posten's unaddressed mail volume by [redacted] per cent in our estimations of future USO net costs in chapter 3. This leaves Posten with [redacted] per cent of the original unaddressed mail volume in 2017. Our assumptions used in chapter 3 are also altered in a sensitivity analysis, allowing us to assess the impact on USO net costs in the case that volume effects turns out smaller or larger than anticipated.

Daily newspapers

Posten's estimated revenue loss on daily newspapers is based on the assumption that distribution of daily newspapers will be completely lost. Delivery every other day makes it impossible to deliver newspapers every day, which subscribers of daily newspapers normally require. The assumptions is conservative as some publishers of daily newspapers may be dependent on Posten for delivery in certain areas. In other words, even if Posten

loses volume to other delivery operators, some of this volume might return into Posten's network due to incomplete geographical coverage of other operators.

Posten has also estimated the effect on newspapers published once a week. As the effect on this category of mail is very small, it is not accounted for in the calculations. As weekly newspapers often are not required to be delivered on a certain day, volumes should not be expected to decline significantly as a result of reduced deliver frequency. We therefore support Posten's approach to refrain from including a volume effect from these newspapers in the calculations.

In order to maintain a realistic but robust assumption about the volume effects on newspapers, we keep the already conservative assumptions made by Posten in our estimations.

Small packets
Based on an analysis of the likely behaviour of Posten's 50 largest small packets customers, representing approximately [redacted] per cent of the revenue in this segment, Posten expects a [redacted] per cent of its small packets volume in response to a reduction in delivery frequency from five to 2.5 days per week. We have not had access to this analysis.

We find this assumption [redacted] The main reason for this is that reduced delivery frequency will only increase delivery times by one day (from D+2 to D+3) for half of the volume. Prices are assumed to remain constant at today's level. Although longer delivery time at a constant price may make small packet delivery with Posten less attractive, the minor increase in delivery speed is unlikely to reduce volumes by more than [redacted] per cent. [redacted]

As highlighted in relation to the discussion about one mail stream for A- and B-letters, the majority of small packet delivery users (primarily consumers buying online) do not expect their small packets to be delivered within less than three days. In fact, a study conducted by PostNord amongst Norwegian consumers reveal that only eight per cent of online shoppers in Norway expect their items ordered online to arrive within less than three days. As only 50 per cent of the volume will be delivered D+3 (whereas the rest are deliverer D+2), we propose to reduce the assumed volume loss to [redacted] per cent with delivery 2.5 days per week. This reduction assumes that some senders and recipients will consider alternative options, such as early morning delivery with Helthjem or parcel delivery with DB Schenker or PostNord a better value proposition than the offering provided by Posten. This volume loss is assumed to grow if delivery frequency would be further reduced to one day per week. In this case, we propose to assume a loss of additional [redacted] per cent of Posten's small packet volume (resulting in a total net loss of approximately [redacted] per cent of the volume). As already mentioned, this might correspond to a larger loss of small packets than [redacted] per cent where some of the users substitute to alternative services offered by Posten.

Weekly magazines

Posten's estimated revenue loss on weekly magazines is based on a conservative assumption [redacted]

More specifically, Posten expects that clients representing [redacted] per cent of current volume will switch to competing delivery operators. [redacted] This would result in an effective volume loss for weekly magazines of [redacted] per cent. Our interview with Aller Media indicates that this may be a conservative assumption. This is mainly because most of the delivery of weakly magazines can be planned in advance and therefore is not dependent on delivery within two days.

A further reduction in delivery frequency to one day per week may trigger additional substitution away from Posten. As weekly magazines not always are dependent on delivery on a specific day of the week, however, we expect a share of the volume to remain with Posten. A reasonable, yet conservative, assumption would be to assume an additional loss of [redacted] per cent of the volume (corresponding to a total volume loss of slightly more than [redacted] per cent of Posten's volume of weekly magazines).

Other mail

Bulk mail, stamped mail, mail from franking machines, mail items of varying sizes, and inbound international mail are all mail categories for which Posten assumes [redacted] The implicit assumption is thus that reduced precision and reduced delivery speed by one day for 50 per cent of the mail [redacted]

Our interviews with large senders of bulk mail confirms that a reduction in delivery frequency from 5 to 2.5 days per week is not likely to create a significant volume effect for this type of mail. Instead, our interviews reveal that the main driver for reduced demand for bulk mail is digitalisation. Despite this, we propose to assume a small ([redacted] per cent) volume effect for bulk mail to take into account that some senders of bulk mail might switch away from Posten to alternative means of communication as a result of the lower delivery frequency. The same assumption could also be applied to stamped mail, mail from franking machines and mail items of varying sizes where senders are normally indifferent between two or three days delivery time, but where there can be certain instances where delivery within three days is not sufficiently fast.

We assume that this volume effect will increase with a further reduction in delivery frequency from delivery 2.5 days per week to 1 day per week as more senders might consider delivery within five days insufficient. As most bulk mail (invoices, information letters, addressed advertisements etc.) can be planned well in advance, however, we still expect the impact of reduced delivery frequency to be relatively moderate – around [redacted] per cent.

With respect to international letters, we again point to the fact that increasing delivery time by one day for 50 per cent of the volume is a minor change in delivery experience for

a recipient who in any event would have to wait three or four days (or even weeks in some instances) for the letter to arrive. This supports the assumption that the volumes for international mail will [redacted] when one extra day is added to the total delivery time. Delivery one day per week is [redacted] with respect to international mail. The main reason for this is, again, the acceptance of longer delivery times for cross-border consignments, [redacted]

A.3 International mail

International registered mail is a loss-making service because of international agreements with unfavourable terms for Posten. In the counterfactual scenario, Posten would have charged a price making the service commercially viable. Posten's calculated net cost relating to inbound international mail corresponds to 5 per cent of net costs for 2018.

The net cost is calculated as the difference between profits with commercial prices on in- and outbound international mail and today's (negative) profits. In doing so, Posten also accounts for the fact that its surplus from outbound international mail would be reduced with a commercially based system.

The commercially viable price, as calculated by Posten, includes direct costs for providing the service as well as overhead costs and a profit margin. Input for direct costs come from Posten's internal model. Overhead costs are added as a share of direct costs. This represents what Posten expects to avoid if the registered mail service would be discontinued, and it is lower than average overhead costs of Posten. [redacted]

We find these calculations reasonable and conservative.

An operator with freedom to define its service offering and prices would only offer a service if it was sufficiently profitable. All other services would be discontinued. Posten has calculated a cost-oriented counterfactual price for the handling of inbound international registered mail based on the costs directly related to offering the service and the avoidable costs should the service be discontinued. In line with the Postal Directive[143], Posten has also included the right to a reasonable profit. A return on sales of [redacted] is also reasonable and in line with what has been used in other European countries.[144]

There is no volume loss due to the higher counterfactual price included in Posten's net cost calculation. We find this assumption reasonable. The reason is that the largest part of the volumes that would substitute from Posten's registered mail service, would substitute to Posten's other products with lower service levels, e.g. standard mail. In the counterfactual scenario, Posten would also earn a reasonable profit on these products, which means

[143] Directive 2008/6/EC.

[144] The Dutch Ministry for Economic Affairs, Agriculture and Innovation has for example used a return on sales of 10 per cent for calculating the USP PostNL's tariffs.

that the volume loss does not affect the total result for Posten. Customers for which registered mail is necessary would most likely not substitute to alternative operators, because their prices would be more expensive than Posten's.

The handling of inbound international standard mail at UPU-rates is less loss-making than registered mail and provides insufficient margins to cover network costs. The fact that Posten does not seek compensation for this, makes its net cost calculations conservative.

A.4 Delivery to blind and visually impaired people

Posten currently has an obligation according to the USO to deliver mail to blind people for free. No commercial operator would offer such a service for free had it the option not to do so. Posten therefore seeks compensation equal to the revenue it would have received had all deliveries to blind people been charged the standard prices available to other senders. Posten's calculated net cost relating to free delivery to blind people corresponds to 2 per cent of net costs for 2018.

We suggest changing three assumptions to make the calculations more reasonable.

First, Posten assumes that it in the counterfactual scenario would deliver the same volume to blind people even if customers had to pay a standard price. This is neither a reasonable nor a conservative assumption. Some customers sending physical mail today would substitute to digital alternatives if they had to pay for physical mail. Some of the largest customers benefiting from sending free mail today are libraries sending audio books. As audio books can easily be sent digitally instead, some of this volume that has not yet been digitalised would likely be lost following a price increase. Although many recipients would accept digital audio books, some people, e.g. elderly lacking digital skills, will still be dependent on physical mail. The fact that some of the deliveries to blind will be lost following a price increase should be accounted for in the net cost calculations.

Second, Posten assumes in its calculations that the volume in 2018 in the actual scenario with free delivery will be the same as in 2016. This is neither a reasonable nor a conservative assumption. Posten should change this assumption to be in line with the trend of volume decline between 2016 and 2018.

Third, in the calculation there is no price increase for deliveries to blind people between 2017 and 2018 in the counterfactual scenario. Although this is conservative, it is not reasonable. Posten assumes that the price will increase by 14.9 per cent between 2016 and 2017, and prices of mail are in general increasing. Posten could include a price increase between 2017 and 2018 in its net cost calculations.

The changes proposed above are all included in our estimation of future net costs in chapter 3.

A.5 Basic bank services

The USO in Norway today entails an obligation to provide basic bank services in Posten's rural delivery network. Absent the USO, Posten would stop providing these services. Posten therefore calculates the net cost as the actual loss in 2018 of providing the service. The net cost correspond to 2 per cent of net costs in 2018.

The cost effect is estimated as the direct costs associated with offering the service today. The costs are calculated bottom up using assumptions on time and resource necessary to provide the service as well as developments in volumes and salary costs. This is reasonable since these are the costs that would be avoided absent the obligations.

Discontinuing the service would also imply loss of revenues. Posten assumes that the lump sum revenue from DNB for providing will be lost as well as the revenue per transaction performed. This is reasonable.

We suggest no changes to these calculations.

Appendix B
Posten's forecasting model

Posten uses its internal forecasting model as basis for calculating its USO net cost. The model is a detailed bottom-up model of Posten's costs and revenues associated with the postal division of its business.

The main purpose of the forecasting model is to provide internal decision makers in Posten with reliable information for operational and commercial decisions. The model has for example been used to analyze the effects of several commercial and operational decisions, e.g. implementation of a new distribution structure with centralized route preparation and implementation of increased automation of production processes, and the model is used for pricing of addressed and unaddressed mail. Since the model is used in operational and commercial decision making, Posten should have incentives to make it an as accurate reflection of reality as possible.

The model has a baseline scenario of revenues and costs (EBIT) for the postal division's Norwegian business. This scenario entails no operational or commercial changes other than price adjustments and cost savings following an exogenous volume development over time. The baseline scenario is based on historic product-level information about direct variable costs, other costs, volumes and prices. The forecast of future years' outcomes uses assumptions regarding the development of each of these parameters.

The level of detail of the model can be exemplified by a short description of how direct variable unit costs are calculated. These costs are calculated for 158 different categories of deliveries, where the categories depend on franking method, format, machine or manual sorting, and different degrees of pre-sorting. For each category, sorting and production costs are calculated bottom-up using the actual number of items sorted, sorting speed and salary costs. Transportation costs are calculated top down, using information from the annual accounts to allocate variable costs to product categories based on actual volume.

The baseline of the model can be modified with a range of operational changes. Examples of changes included in the model are those which Posten states that it would implement in the absence of the USO, e.g. the combination of A-mail and B-mail into one mail stream, and a reduction of delivery frequency from 5 to 2.5 days per week. Revenue and cost effects of each change are calculated separately from the baseline.

Appendix C
Assessment of intangible benefits applying to Posten

Access to public registers

Universal service providers may be allowed exclusive access to certain public registers or databases and to use the data to create or supplement proprietary databases, e.g. the recipient database. Where this is the case, the right for exclusive access represents a privilege of having the USO. The CERP (2008) highlights the value of the benefit by referring to the difficulties for other postal operators if they were to reproduce the information gathered by the USP:

> *"In many countries the recipient database is owned by the USP. Even if this information would be public owned, there will take lots of resources and effort for competitors to create similar knowledge of local conditions as the USP's postmen have gathered during centuries."*
>
> Source: CERP (2008), p. 19.

The Norwegian legislation does not grant Posten any exclusive rights to the use of public registers. We therefore conclude that this benefit does not apply to Posten.

Better bargaining position

An example of a benefit, raised by competitor postal operators is that due to having the USO, the universal service provider enjoys a better bargaining position with the national regulator, politicians or workforce. Such a bargaining position can give the arguments of the universal service provider extra weight in policy formulations. The benefit, being raised by competitor postal operators, is mentioned in Postcomm (2001), though no concrete example is given.[145]

London Economics (2002) refers to "strategic options" for the universal service provider to allocate costs and revenues and with regard to disclosure of information, although the benefits are reduced by having "to deal with a powerful workforce".[146]

ERGP (2011) takes the above potential benefits into account, though it raises doubt as to whether the benefit can be substantiated in any way:

> *"It is argued that the universal service provider, in general, has a more direct channel to politicians and the postal regulator than its competitors, though there is a little evidence as to be the benefit of this."*
>
> Source: ERGP (2011), p. 29.

[145] Postcomm (2001), p. 61.
[146] London Economics (2002), p. 19.

We find no evidence that having the USO puts Posten in a better position vis-a-vis the Norwegian government. We therefore conclude that this benefit does not apply to Posten.

Brand effects and consumer preference

Many sources discuss that having the USO may boost brand image, reputation or recognition. CERP (2008) develops a general argument that corporate brands create value: "*The brand (...) generates certain and regular demand and consequently offers its owner the certainty of present and future profits.*"[147] Moreover, CERP (2008) states that "*A customer relationship build up during decades could be difficult to compete with for new postal operators in the market.*"[148]

ARCEP (2010) explains brand effects by arguing that they stem from high-quality and country-wide coverage, as well as the serving of unprofitable customers or areas:

> *"Most incumbents/USP provide high-quality postal services, throughout the entire country. This results in a high corporate reputation and an accordingly high brand value. Customers perceiving this high-quality (and recognizing that the USP offers some unprofitable services) may buy other (non-USO) services from the USP instead of choosing another operator. Reducing the quality below USO levels may lead to a reduction of the company's reputation and the brand value, respectively."*
>
> Source: ARCEP (2010), p. 9.

Postcomm (2001) essentially develops the same arguments, while London Economics (2002), points to brand effects from the "*trust in the reliability of the operator*".[149]

London Economics (2002), however, acknowledge the difficulties with estimating the value of such effects, e.g. from the ability to charge premium prices to customers "*on services otherwise identical to those of competitors*"[150] or due to "*changes in perception can affect market share*"[151] should the postal operator discontinue the USO

While we agree that consumer relationships and brand loyalty are important in the postal business, we do not believe that they are created by the USO. In a study for the European Commission on consumers' USO preferences,[152] we concluded that price, product range and quality – and not the USO – are the three most important motivations for deciding on the choice of a postal service supplier by business customers. We also concluded that individual customers have little awareness about to the existence of the USO, as such. Therefore, the USO in itself is unlikely to generate a stronger brand.

In other words, consumers respond to the service they experience, and not to regulatory requirements. The brand is created via the services provided regardless of whether they

[147] CERP (2008), p. 36.
[148] CERP (2008), p. 19.
[149] London Economics (2002), pp. 19-20.
[150] London Economics (2002), pp. 19-20.
[151] Frontier Economics (2008), p. 33.
[152] Cf. Copenhagen Economics (2010), chapter 5.

are service inside or outside the USO. The commercial approach already captures the demand effects caused by changes in the service offered by Posten in the counterfactual situation without the USO. Thus, there is no extra image benefit caused by the USO.

Posten would probably use the designation to boost its image, if the USO was a selling argument in itself. However, Posten does not make use of the fact that it is the universal service provider in marketing materials. Based on the above, we conclude that the benefit does not apply to Posten as a benefit of the USO. The benefit of having a strong brand will continue to exist without the USO and any effects on demand from changes in the network and service level will be captured by revenue effects in the net cost model.

Customer life-cycle

The customer-life cycle benefit refers to the possibility that today's unprofitable USO customers can become profitable in the future.[153] CERP (2008) illustrates consumer life cycle effects using an example of telephone consumption for a couple with children: consumption is low initially but increases when children grow, although it then drops sharply when children leave home.[154] This means that customers that are unprofitable today can become profitable in the future. Apart from that, the more customers are connected to the network, the greater the use of the network, which explains why an operator "*may wish to connect an area or a subscriber currently non-profitable in expectation of the future evolution of the costs and revenue.*"[155]

If there are customer life-cycle effects for Posten, they will continue to exist in the absence of USO – and is thus not related to USO. Consumers care about the service they get – not whether it is a mandatory service or not.[156] According to Jaag et al. (2011):

> *"In telecommunications, a key benefit is the "Life Cycle Effect". This relates to the benefit of serving a group of unprofitable customers today with the view that they will become more profitable in the future. However, with large volume decline, falling revenues, and increased competition in the postal sector such benefits are unlikely to exist."*
>
> Source: Jaag et al. (2011), p. 118.

We therefore conclude that this benefit does not apply to Posten.

Demand complementarities

Demand complementarities refer to the possibility for the universal service provider to supply non-USO products along the USO products, via the postal outlet network (which itself is as a part of USO). Demand complementarities may reduce the net cost of the USO when the sale of loss-making USO products stimulates the sale of profit making non-USO products or non-mail products. The same arguments are repeated in ARCEP (2010), ERGP (2011) and Baraktullah et al (2002).[157]

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[153] CERP (2008), p. 43.
[154] CERP (2008), p. 41. NB. it can be argued whether this example, based on telephone consumption, is parallel to the use of postal services. E.g. it is not likely that mail consumption would increase significantly when children grow up.
[155] Ibid.
[156] Cf. Copenhagen Economics (2010), chapter 5.
[157] Cf. respectively: ARCEP (2010), p. 5, ERGP (2011), p. 28, Barkatullah et al (2002), pp. 2-3, pp. 14-15.

London Economics (2002) has found some evidence of such complementarities in the UK:

> *"We find some evidence of complementarities among mail products. (...) We computed the benefits to Consignia of these complementarities, and obtained the following numbers, for the more conservative scenario: £0.93 million due to cross product demand effects among USO products and £3.5 million corresponding to an overall estimate of benefit due to demand complementarities between USO and non-USO products."*
>
> Source: London Economics (2002), p. viii.

Posten will make use of a modified network and enjoy demand complementarities without the USO if the USO is removed. However, the revenue effect due to fewer delivery days is already captured in the counterfactual scenario in the commercial approach. Thus, no separate analysis of the benefit is necessary.[158]

We therefore conclude that the benefit does not accrue (separately) to Posten.

Economies of scale and scope

The source of the benefit for the universal service provider is that it can achieve cost savings in those cases where it generates extra volumes as a result of having the USO.[159] Where this is the case, Barkatullah et al (2002) reports that "*The presence of both economies of scale and economies of scope may reduce the net burden of the USO*. (...)."[160]

ERGP (2011) defines economies of scale as:

> *"Economies of scale between USO products arises when the unit cost of producing a product decreases with the total quantity of another product; i.e. the total costs of offering mail service A together with mail service B is less than the sum of the costs that two different firms would have if offering them separately."*
>
> Source: ERGP (2011), p. 28.

The commercial approach takes into account economies of scale and scope when estimating the revenue effects of the changes that would occur in the counterfactual scenario where there is no USO. Thus, no separate analysis of the benefit is necessary.[161]

Posten does not realise any economies of scale or scope from being the designated universal service provider. Economies of scale and scope are determined by volumes, but having the obligation is not something that generates letter mail volume by default. Moreover, the presence of USO means that Posten may in fact be prevented from achieving economies of scale. For example, the obligation to deliver five days per week means that the number of items per delivery is lower than what Posten would choose on a commercial basis. Not having the USO does not mean that economies of scale would disappear – they may actually be strengthened.

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[158] Cf. also Copenhagen Economics (2011), p. 145.
[159] CERP (2008) p. 19.
[160] Barkatullah et al (2002), p. 3.
[161] Cf. also Copenhagen Economics (2011), p. 145.

Based on the above, we conclude that this benefit does not apply to Posten.

Stamp issuance: Right to print state name

Literature identifies a potential benefit linked to the philately market in the right of the universal service provider to be able to affix the name of the issuing country, i.e. "Norge" or "Noreg" in the case of Posten.

London Economics (2002) refers to the USP position in the philately market, which can be profitable: "*The USP is often able to sell at significant margins to the philately market. Even when the USP does not have the exclusive right to issue stamps, it may still have a large advantage compared to other potential issuers of stamps.*"[162] Other studies find similar benefits.[163]

The Norwegian postal law states that: *Det kreves tillatelse fra myndigheten for å utgi frimerker eller andre frankeringsmidler påført «Norge» eller «Noreg». Slik tillatelse* ***kan bare gis til leveringspliktig tilbyder***.

Without the USO, Posten would thus not have this right. Consequently, the relevant question is whether Posten's sales of stamps would drop absent this right.

It is possible that philatelists demand for Posten's stamps would drop if Posten stopped printing "Norge" or "Noreg" on its stamps and instead printed something else, for example "Posten". Some collectors might stop buying Posten's stamps altogether when completing their collection of stamps from Posten printed "Norge" or "Noreg".

This is in line with London Economics' (2002) finding that it is rather the universal service provider's position as an incumbent postal operator that gives it a competitive edge in the sales of stamps.[164] As Posten's position as incumbent provider remains without the USO obligation, preferences for Posten's stamps may consequently be largely intact.

On balance, we find that while Posten's exclusive right is an intangible benefit. However, due to the small size of the philately market, the benefit is likely to be limited and should thus not be included in the calculation of USO net costs.

Stamp issuance: Interest free loan

Literature identifies a potential benefit of stamp issuance which comes from the fact that the universal service provider can have an (indirect) interest free loan from sold which remain unused. As CERP (2008) notes, there can be many reasons for why the stamps are unused; in general the more such reasons, the greater the potential benefit for the universal service provider:

> *"Some have been purchased by stamps collectors, while others have become to old to be used or will newer be used as they are lost. The amount of the loan differs between countries, but are in general notable."*

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[162] London Economics (2002), p. 19.
[163] ARCEP (2010), p. 10. and ERGP (2011), p. 29.
[164] See footnote 162.

Source: CERP (2008), p. 19.

ARCEP (2010) points to a similar benefit for the universal service provider from the use of franking machines

> *"Postal incumbents achieve a financial advantage (interest) by selling stamps that are devalued at a future date. This prepaid system analogously applies to franking machines which are charged (valued) before franking. Private postal operators usually do not charge their customers in advance, and they frequently grant additional time for payment. With this prepaid stamp system the incumbent has an advantage compared to its competitors as it earns (or saves) interest."*
>
> Source: ARCEP (2010), p. 7.

The ERGP (2011) summarises the benefit.[165]

Regarding the "interest free" loan, the argument behind the benefit is based on the fact that stamps are a form of a payment in advance. However, the possibility of issuing stamps will remain in the absence of the USO. Therefore we do not consider the benefit to be related to the USO. In other words Posten will, if there is no USO, continue to have the benefit of stamps as interest free loan. We therefore conclude that the benefit does not apply to Posten as the benefit will continue without the USO.

Low transaction costs due to uniform tariffs

Having uniform tariffs as a part of USO can be a benefit as it saves time for both the universal service provider and customers. Postcomm (2001) points to transaction costs savings for customers taking advantage of uniform tariffs.

> *"Lower transaction costs are often cited as a benefit of providing a UPS at a uniform tariff. Certain customers may not want to invest time in determining the correct rate for low value items, the uniform tariff saving transaction costs of both customers and Consignia. Therefore, although moving to non-uniform prices may be cost reflective, it might not be the most cost-effective option for a universal service provider such as Consignia. For example, extra costs could be incurred from customer confusion and the generation of more enquiries and call centre traffic."*
>
> Source: ARCEP (2010), p. 60.

Essentially the same arguments are repeated in ARCEP (2010) and ERGP (2011).[166]

The counterfactual scenario, where there is no USO, contains uniform prices across the country, so the USO does not change the pricing model on this point. Therefore, the benefit is irrelevant to Posten.[167]

Ownership of post office (PO) boxes

If the universal service provider owns a network of post office boxes to which only the universal service provider has access as a part of the USO, it may make it difficult for competition to develop both in the market for addressed street mail and the market for

[165] ERGP (2011), p. 29.
[166] Cf. ARCEP (2010), p. 7, cf. also ERGP (2011), p. 29.
[167] Copenhagen Economics (2011), p. 57.

post-box addressed mail. The restraint of competition would be an advantage to the universal service provider.

Panzar (2008) observes that:

> *"It is difficult (but not impossible) to envision an entrant competing successfully in the market for street addressed mail without being granted access to the incumbent's PO Box addresses."*
>
> Source: Panzar (2008), p. 23.

Moreover, he observes that:

> *"As long as the incumbent has an overwhelming dominance in the market for PO Box service, its dominance in end-to-end provision of service for PB-addressed mail is largely a matter of definition."*
>
> Source: Panzar (2008), p. 24.

ARCEP (2010) presents the above as an example of a benefit of the USO as well.[168]

However, the post office boxes are not part of the USO in Norway. In fact, the Norwegian postal law requires the owner of a PO box infrastructure to provide access to this infrastructure for other operators at cost covering prices. For this reason, we conclude that ownership of PO boxes cannot be an intangible benefit for Posten.

Strategic advantage for funding predation and expansion

The universal service provider might use the revenues generated in the reserved area in order to fund acquisitions of competitors that would not have occurred on commercial terms. This benefit appears in London Economics (2002):

> *"(...) USPs (can) use the revenues generated in the reserved area are used in order to, first, fund acquisitions of competitors that would not have occurred on commercial terms otherwise and, second, cross-subsidise predatory behaviour in the commercial services (e.g. the parcel market)."*
>
> Source: London Economics (2002), p. 20.

Implementation of the Third Postal Directive removed the reserved area from Norway, which renders this benefit out of date.

Ubiquity

Ubiquity refers to the advantage to use an already installed, nation-wide network for the universal service provider, compared to competitor postal operators who do not have such a network. Postcomm (2001) provides two practical illustrations for how having an installed network can benefit the universal service provider. ARCEP (2010) and ERGP (2011) refer to essentially the same two sources for benefits from network ubiquity.[169]

The first illustration is about customer awareness. Customer are likely to have a much higher awareness of the postal operator with an established, nation-wide network than competitor operators with partial coverage. According to Postcomm:

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[168] ARCEP (2010), p. 11.
[169] Cf. ARCEP (2010), pp. 8-9, cf. also ERGP (2011), pp. 29-30.

"The provision of a universal postal service might provide beneficial effects based on customer awareness that, even when they move to a new address, Consignia will supply a service. At the new location the customer may not know of potential competitors. As a result of this lack of knowledge, a proportion of customers will choose Consignia over alternative suppliers where they are available."

Source: Postcomm (2001, p. 60)

The second illustration of ubiquity is about the certainty that consumers have that the universal service provider's services cover the entire country:

"Another benefit arising from ubiquity derives from the likelihood that customers will choose to use Consignia when sending mail to wide ranging or new addresses given that, by virtue of the universal service obligation, they can be sure that Consignia will deliver to all addresses. In this sense, ubiquity may also serve to reduce customer switching."

Source: Postcomm (2001, p. 60)

We do not find that Posten derives such an advantage due to the USO. Posten intends to keep countrywide coverage in the counterfactual scenario without USO, which would maintain the ubiquitous nature of the network. Since this benefit would continue also without the USO, we conclude that it does not apply to Posten.

Exemptions from customs legislation

The USP can be entitled to certain exemptions or special treatments for customs clearance with regard to cross border mail from outside the EU. Such exemptions apply to the postal operator providing the universal service, under the Universal Postal Union (UPU) convention and the Community Customs Code (CCC).

Postcomm (2001) outlined the situation and benefits accruing to Consignia:

"Customs and Excise regulations currently exempt Consignia's "Royal Mail" operations from the usual customs regulations in relation to Universal Postal Union mail carried under a universal service obligation. This facilitates the passage of Consignia international postal packets through the postal system whilst at the same time allowing Customs and Excise, either itself or through Consignia, to secure payment of all outstanding duties. Private operators on the other hand are subject to general import/export trade customs control and documentation requirements, which they claim involve considerable added costs."

Source: Postcomm (2001) p. 58.

The exemptions remain a relevant issue nowadays, as illustrated in ARCEP (2010).[170]

There are no specific rules for customs clearance linked to the Norwegian USO. Even if there were, the presence of simplified customs procedures for the designated postal operator would not automatically imply a benefit. In practice, the designated may not be able

[170] Cf. ARCEP (2010), p. 11.

to achieve benefits in cases when documentation, such as evidence of originating status for incoming mail is inadequate and does not satisfy requirements. In such cases, mail bags must be opened in order to verify the content, which means that the designated operator incurs delays. Such delays cancel out any of the advantages that the operator is entitled to. As the designated universal service provider, Posten cannot refuse the delivery of items with incomplete or missing customs documents. And since Posten submits the declarations in own name, it bears the risk of fines for submitting incorrect or incomplete documentation.

Based on the above, we conclude that simplified customs procedures do not constitute an intangible benefit for Posten.

Parking/stopping exemptions

Delivery cars of the universal service provider can be exempt from parking regulations and fees by law. According to London Economics (2002): *"USPs often have special rights with regard to stopping on the street, night transport etc."*[171] Postcomm (2001) writes that: "*While there is no general exemption from traffic regulations for Consignia, there are many exemptions written into Local Traffic Orders for Royal Mail liveried vehicles engaged in the collection and delivery of mail.*"[172] ARCEP (2010) refers to the same examples.[173]

Posten has no specific parking or stopping exemptions linked to its USO. We therefore conclude that this benefit does not apply to Posten.

Special rights to marketing

Special rights to marketing are a potential benefit suggested in CERP (2008). The source of the benefit is in the exclusive right to use certain marketing elements, such as symbols that can create goodwill among consumers:

> *"The USP had the exclusive right to sell USP stamps and to use the postal symbol. These features symbolises a certain quality granted by the state. Without the USO the operator would have to spend much more resources in advertising to achieve such high levels of consumer recognition."*
>
> Source: CERP (2008), p. 19

Posten has no special rights to marketing and we therefore conclude that this benefit does not apply to Posten.

VAT exemption

According to art. 132 (1)(a) of the Common VAT System Directive, public postal services in the EU are to be exempted from the VAT. There are numerous references to the VAT exemption being a source of benefit for universal postal service providers. According to CERP (2008), "*If the USP would be able to profit from VAT exemption (...) it would have a notable advantage compared to the other postal operators*."[174]

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[171] London Economics (2002), p. 19.
[172] Postcomm (2001), p. 59.
[173] ARCEP (2010), p. 10.
[174] CERP (2008), p. 19.

As Norway is not part of the EU, however, the VAT exemption implied by EU regulations does not apply to Posten. We therefore conclude that this benefit does not apply to Posten.

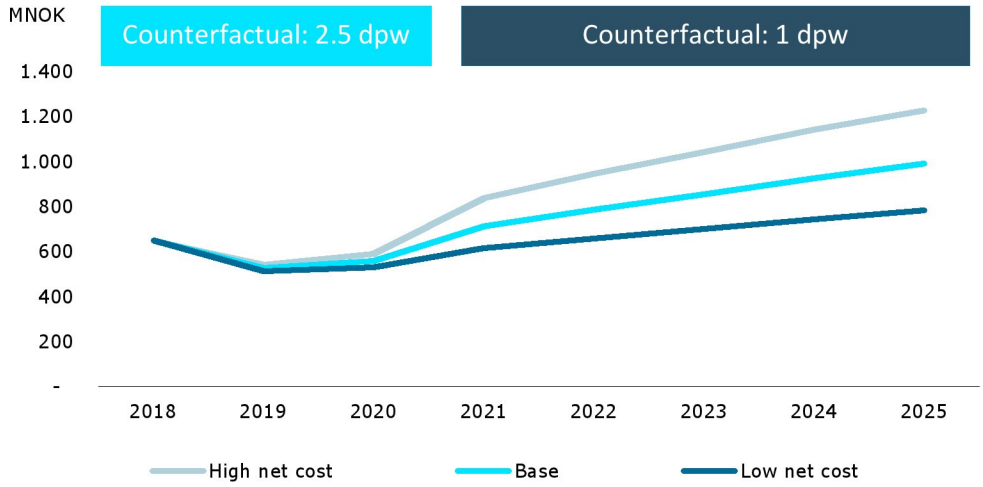
Appendix D

Results of sensitivity analysis

In this appendix, we present the results of the sensitivity analysis of internal, external and combined effects. For each type of effect, we present the result for options 5 days per week (Option 0), 2.5 days per week in urban areas and 5 days per week in rural areas (Option 1), and 2.5 days per week. The scenario with 1 day per week is left out, because it is almost insensitive to assumptions.

Sensitivity analysis: External volume and cost developments

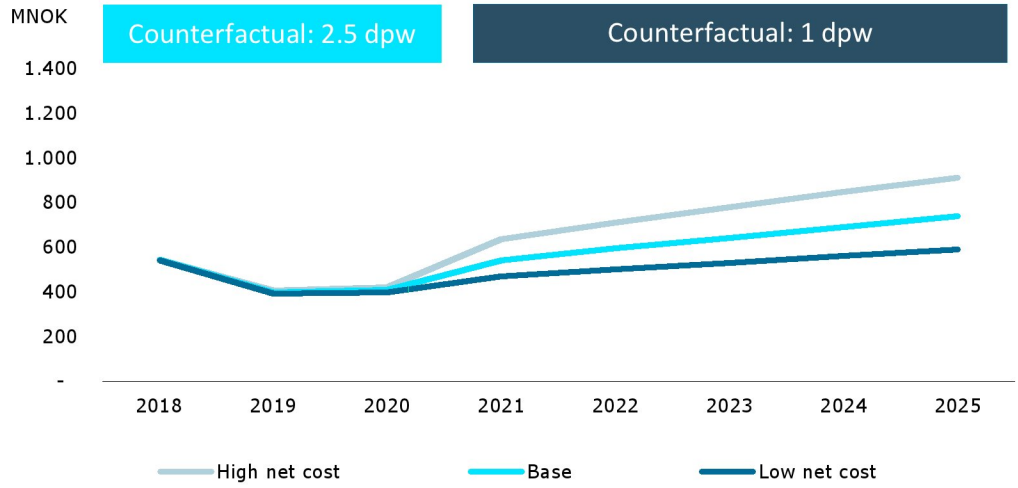
Figure 16 Option 0: 5 dpw, total net cost sensitivity of external effects, 2018-2025



Note: The graph shows the total net cost of Option 0 (status quo – delivery 5 days per week throughout Norway) in three scenarios (high, base, and low net cost) of volume and salary development. Net cost includes the elements reduced delivery frequency, international mail, delivery to blind people, and basic bank services for all years as well as delivery speed for 2018.

Source: Copenhagen Economics based on Posten's forecasting model adjusted by Copenhagen Economics.

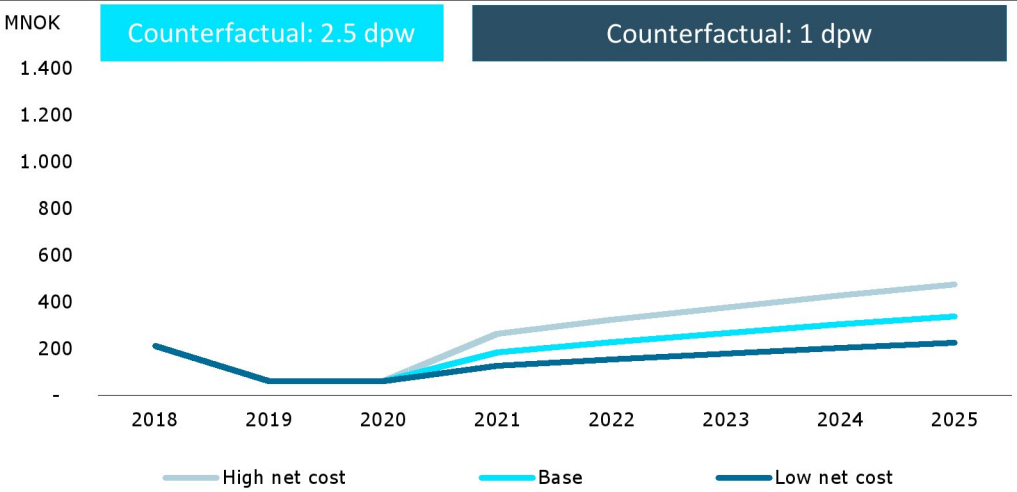
Figure 17 Option 1: 2.5/5 dpw, total net cost sensitivity of external effects, 2018-2025



Note: The graph shows the total net cost of Option 1 (delivery 2.5 days per week in urban areas and 5 days per week in rural areas) in three scenarios (high, base, and low net cost) of volume and salary development. Net cost includes the elements reduced delivery frequency, international mail, delivery to blind people, and basic bank services for all years as well as delivery speed for 2018.

Source: Copenhagen Economics based on Posten's forecasting model adjusted by Copenhagen Economics.

Figure 18 Option 2: 2.5 dpw, total net cost sensitivity of external effects, 2018-2025

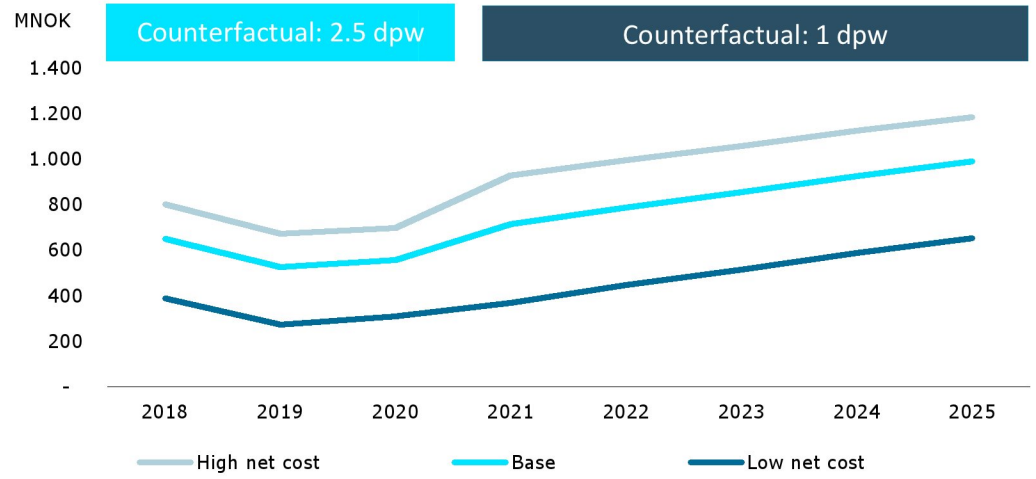


Note: The graph shows the total net cost of Option 2 (delivery 2.5 days per week throughout) in three scenarios (high, base, and low net cost) of volume and salary development. Net cost includes the elements reduced delivery frequency, international mail, delivery to blind people, and basic bank services for all years as well as delivery speed for 2018.

Source: Copenhagen Economics based on Posten's forecasting model adjusted by Copenhagen Economics.

Sensitivity analysis: Internal cost and revenue effects

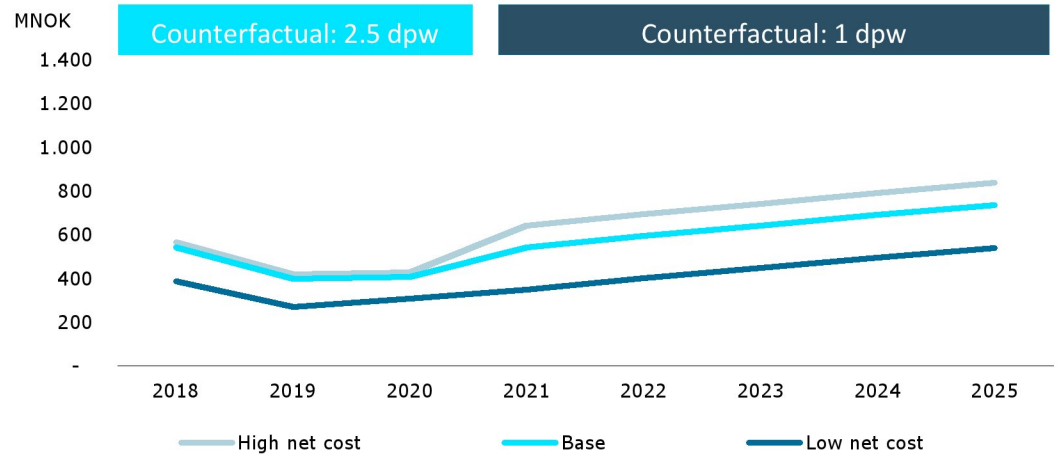
Figure 19 Option 0: 5 dpw, total net cost sensitivity of internal effects, 2018-2025



Note: The graph shows the total net cost of Option 0 (status quo – 5 days per week throughout Norway) in three scenarios (high, base, and low net cost) of cost and revenue effects resulting from implementing reduced delivery frequency. Net cost includes the elements reduced delivery frequency, international mail, delivery to blind people, and basic bank services for all years as well as delivery speed for 2018.

Source: Copenhagen Economics based on Posten's forecasting model adjusted by Copenhagen Economics.

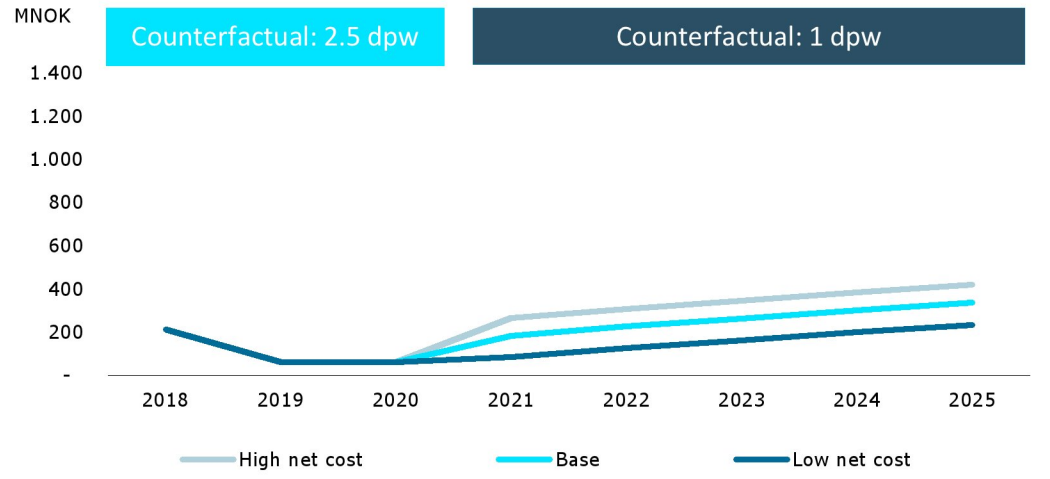
Figure 20 Option 1: 2.5/5 dpw, total net cost sensitivity of internal effects, 2018-2025



Note: The graph shows the total net cost of Option 1 (delivery 2.5 days per week in urban areas and 5 days per week in rural areas) in three scenarios (high, base, and low net cost) of cost and revenue effects resulting from implementing reduced delivery frequency. Net cost includes the elements reduced delivery frequency, international mail, delivery to blind people, and basic bank services for all years as well as delivery speed for 2018.

Source: Copenhagen Economics based on Posten's forecasting model adjusted by Copenhagen Economics.

Figure 21 Option 2: 2.5 dpw, total net cost sensitivity of internal effects, 2018-2025

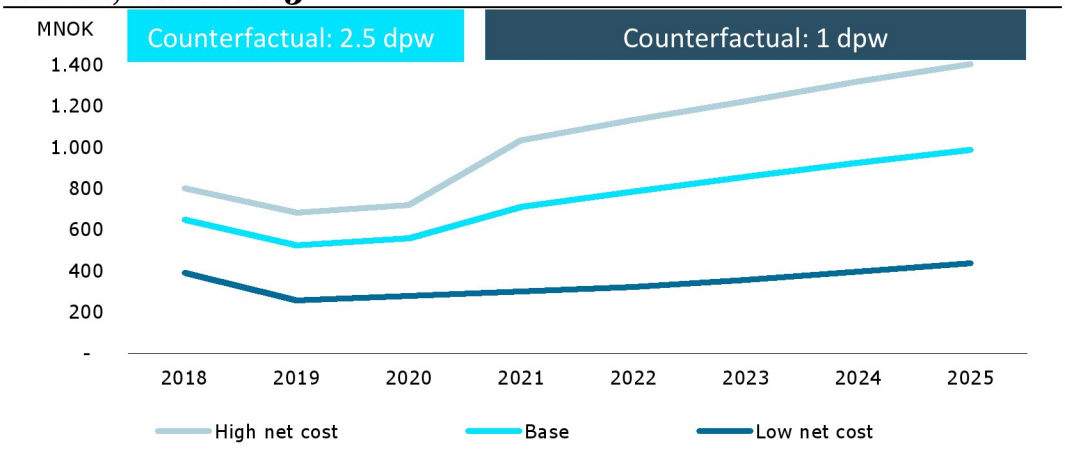


Note: The graph shows the total net cost of Option 2 (delivery 2.5 days per week throughout Norway) in three scenarios (high, base, and low net cost) of cost and revenue effects resulting from implementing reduced delivery frequency. Net cost includes the elements reduced delivery frequency, international mail, delivery to blind people, and basic bank services for all years as well as delivery speed for 2018.

Source: Copenhagen Economics based on Posten's forecasting model adjusted by Copenhagen Economics.

Sensitivity analysis: Combined internal and external effects

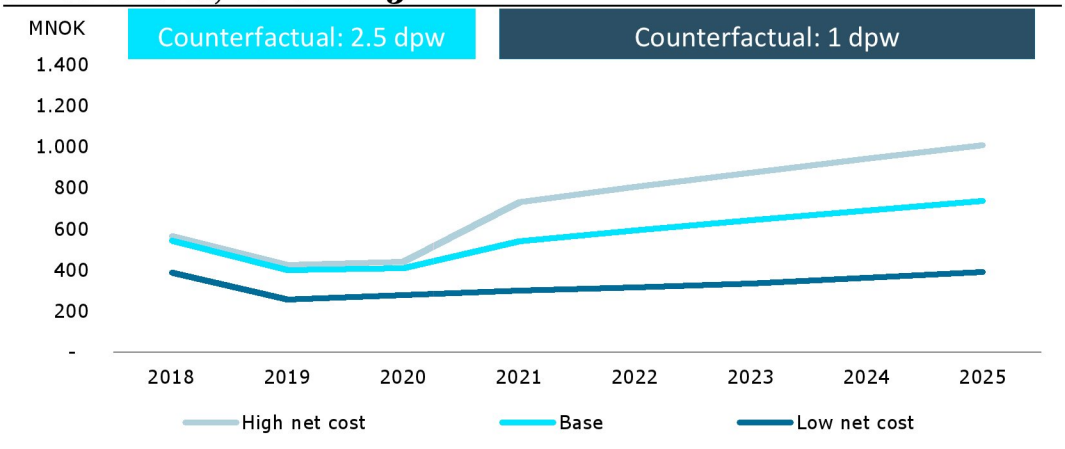
Figure 22 Option 0: 5 dpw, total net cost sensitivity of combined effects, 2018-2025



Note: The graph shows the total net cost of Option 0 (status quo – 5 days per week throughout Norway) in three scenarios (high, base, and low net cost) of combining scenarios with effects of volume and salary cost developments as well as cost and revenue effects and resulting from implementing reduced delivery frequency. Net cost includes the elements reduced delivery frequency, international mail, delivery to blind people, and basic bank services for all years as well as delivery speed for 2018.

Source: Copenhagen Economics based on Posten's forecasting model adjusted by Copenhagen Economics.

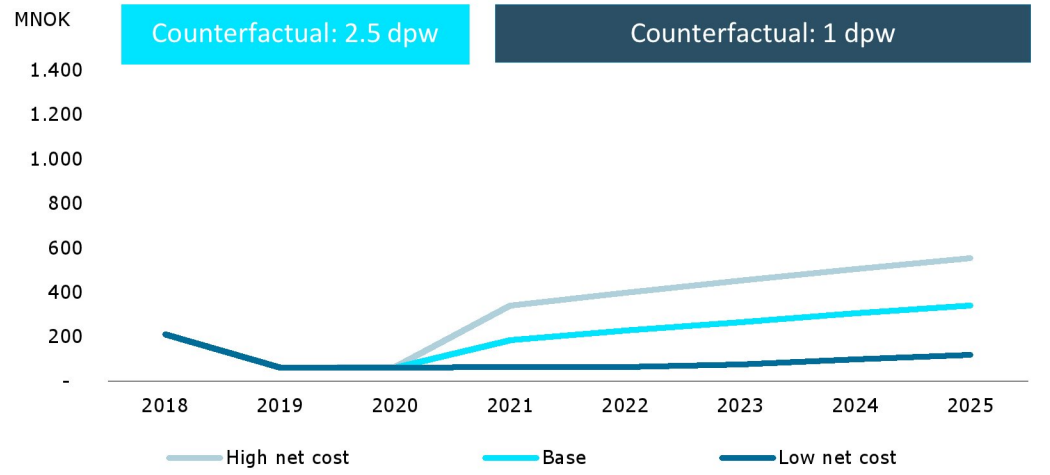
Figure 23 Option 1: 2.5/5 dpw, total net cost sensitivity of combined effects, 2018-2025



Note: The graph shows the total net cost of Option 1 (delivery 2.5 days per week in urban areas and 5 days per week in rural areas) in three scenarios (high, base, and low net cost) of combining scenarios with effects of volume and salary cost developments as well as cost and revenue effects and resulting from implementing reduced delivery frequency. Net cost includes the elements reduced delivery frequency, international mail, delivery to blind people, and basic bank services for all years as well as delivery speed for 2018.

Source: Copenhagen Economics based on Posten's forecasting model adjusted by Copenhagen Economics.

Figure 24 Option 2: 2.5 dpw, total net cost sensitivity of combined effects, 2018-2025



Note: The graph shows the total net cost of Option 2 (delivery 2.5 days per week throughout Norway) in three scenarios (high, base, and low net cost) of combining scenarios with effects of volume and salary cost developments as well as cost and revenue effects and resulting from implementing reduced delivery frequency. Net cost includes the elements reduced delivery frequency, international mail, delivery to blind people, and basic bank services for all years as well as delivery speed for 2018.

Source: Copenhagen Economics based on Posten's forecasting model adjusted by Copenhagen Economics.