


Report:
Net Neutrality Report
2017/2018

Report to the European Commission and
BEREC according to regulation (EU)
2015/2120



Net Neutrality Report 2017/2018

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PTS hereby provides an unofficial translation of its Net Neutrality Report 2017/2018.

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1 Background and summary of the report period

1.1 Background

According to article 5.1, second paragraph of the Regulation (EU) 2015/2120 of the European Parliament and of the Council of 25 November 2015 laying down measures concerning open Internet access and amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services and Regulation (EU) No 531/2012 on roaming on public mobile communications networks within the Union, hereinafter the TSM Regulation, the national regulatory authorities shall on an annual basis report their monitoring of open internet/net neutrality. The report shall be published annually and be provided to the Body of European Regulators for Electronic Communications (BEREC) and the European Commission by June 30, covering the period from May 1, to April 30.

This report is the second net neutrality report to be published by PTS since the TSM Regulation entered into force.

This report describes the supervision and activities that PTS has conducted during the period May 1, 2017 to April 30, 2018 in order to monitor and ensure that Swedish end users have access to an open internet access in accordance with the rules of the TSM Regulation.

1.2 Summary of the report period

In the first net neutrality report¹ PTS described in detail its views on the Swedish market and that PTS' perception was that a well-functioning competition on the market for internet access services reduces the risk of operators acting in violation of the rules of an open internet. During the past year, consolidation has taken place on the market, but not to the extent that PTS' perception has changed regarding the competition on the end-user market for internet access services.

The fixed broadband market is still more geographically fragmented than the mobile broadband market. During the reporting period, Hi3G Access AB (Tre) launched mobile subscriptions with unlimited data, which Tele2 Sverige AB (Tele2) and Telenor Sverige AB (Telenor) offered since before. Telia Company

¹ Net Neutrality Report 2016/2017, Report to the European Commission and BEREC according to regulation (EU) 2015/2120, PTS-ER-2017:15, 2017-06-26

AB (Telia) has added another popular service, Snapchat², to its zero-rating offer. No new zero-rating offers have however been launched during the reporting period.³

During the reporting period, PTS continued to supervise and monitor the market, in addition, the authority has analysed how to best fulfil its supervisory responsibilities under Article 5.1 of the TSM Regulation.

During the spring of 2017, PTS conducted an information gathering regarding traffic management measures and the provision of specialised services by internet service providers.⁴ This supervision did not lead to any formal measures, but provided PTS with important information about how operators manage and prioritize traffic in their networks. This is something that PTS may do again for the purpose of continuous monitoring. During the autumn of 2017, PTS conducted a systematic review of internet service providers' contracts. The purpose of the review was to determine whether internet service providers by contractual means restrict end users' rights to an open internet. The review resulted in PTS initiating two formal supervisions, one against Tre and the other against Telenor, further described in section 3.1 below.

PTS continuously tracks the statistics published by the independent measurement tool "Bredbandskollen".⁵ In the past year PTS can conclude that there has been an increase in speed both upstream and downstream, regardless of technology.

Overall, the Swedish market for internet access services is characterized by good options for end-users to choose between internet service providers, which affects the access to an open internet positively. The availability of subscriptions including unlimited data, currently offered by three operators on the Swedish mobile market, further influences the access to an open internet in a positive way.

² https://www.telia.se/privat/telefoni/frisurfsocial?intcmp=mobila-tjanster_fri-surf-sociala-medier, (2018-04-25)

³ After the reporting period, Telenor launched a zero rating offer for Telenor's own TV service "Telenor Stream": <https://www.telenor.se/handla/mobilabonnemang/telenor-stream-film-och-serier/> (2018-05-28).

⁴ Specialized services are services that are not internet access services and which are optimized for specific content, applications or services, or a combination thereof, where the optimization is necessary in order to meet the requirements of the content, applications or services for a specific quality level, see article 3.5, first paragraph of the TSM Regulation and paragraph 101 of BEREC Guidelines on the Implementation by National Regulators of European Net Neutrality Rules, BoR (16) 127.

⁵ Bredbandskollen is a free of charge tool helping internet users to evaluate their internet access either via a mobile phone or a computer.

2 Description of the Swedish market

2.1 The market for internet access services

The Swedish market for internet access services is characterized by good accessibility for end users, both in terms of fixed and mobile broadband. Furthermore, end users' access to the latest technologies and the most futureproof access forms fibre and 4G technology (LTE) is relatively good. Operators are investing in order to meet an increasing demand for higher bandwidth and transmission speed.

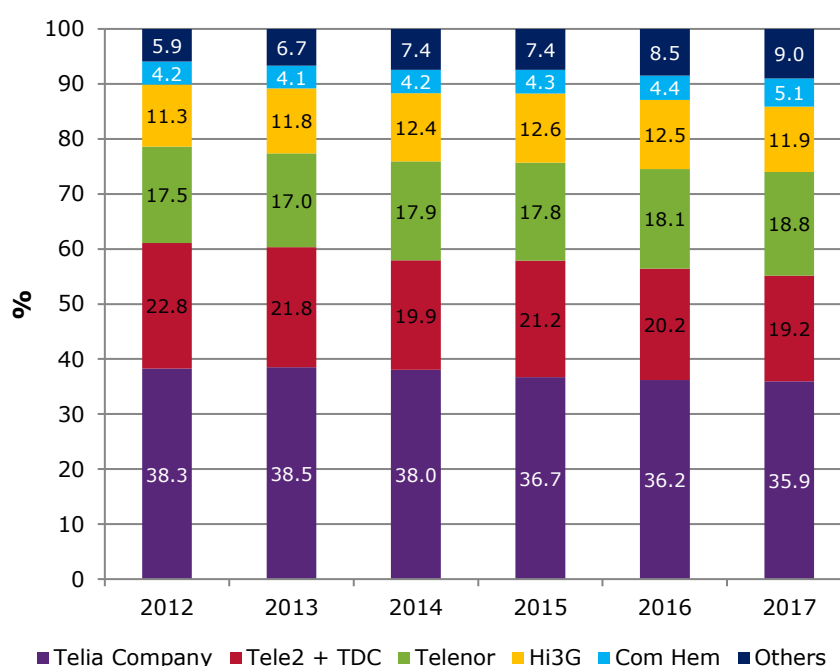
At national level, Sweden has five major operators in the total market for internet access services (fixed and mobile), with varying market shares. The mobile broadband market is more concentrated compared to the fixed broadband market, which is more characterized by local and regional operators (municipal networks).

Overall, the possibility for end users to choose internet service providers has a positive impact on the end users' access to an open internet.

2.1.1 Market shares

The level of market shares of the five major operators on the Swedish broadband market has been relatively stable in recent years. Telia and Telenor are to a greater degree active in both the fixed and mobile broadband markets, whilst Tele2 and Tre are primarily active in the mobile broadband market. Com Hem Holding AB (Com Hem) is primarily active in the fixed broadband market.

Figure 1 Market shares – Total broadband subscriptions

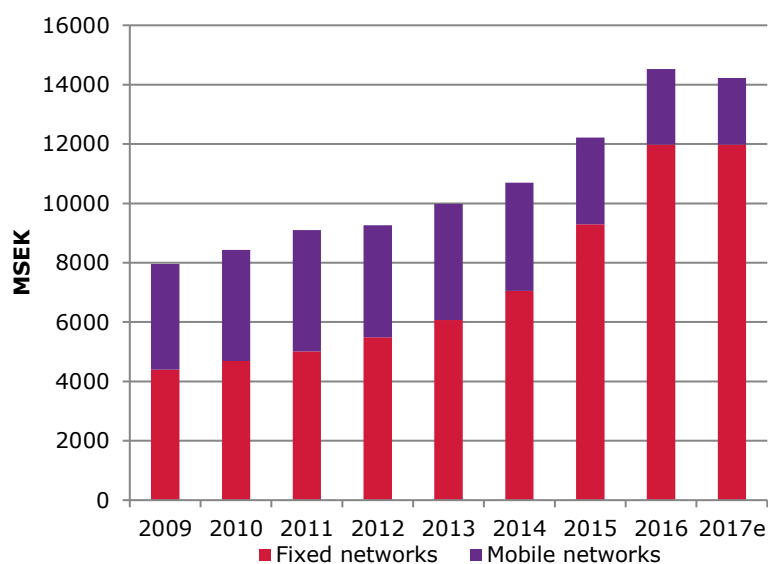


Source: Svensk Telekommarknad, PTS-ER-2018:16

2.1.2 Investments

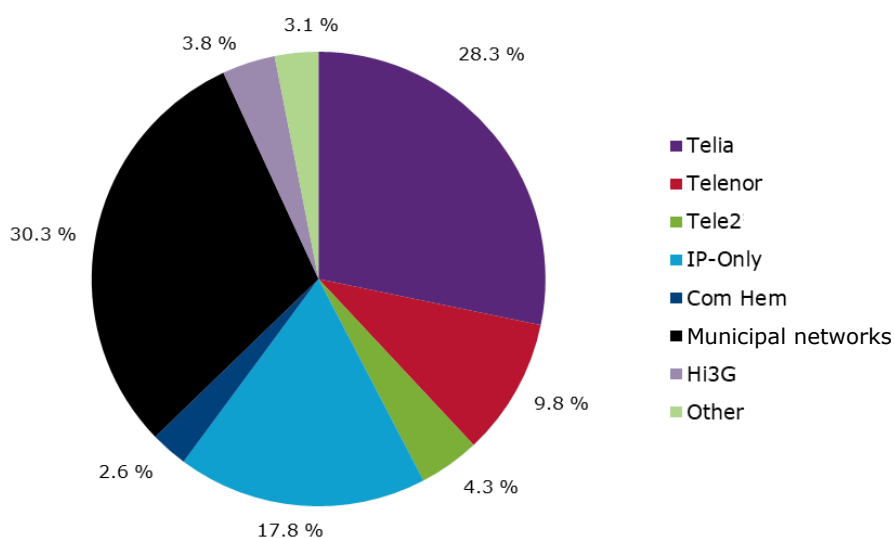
To meet the end users' demand for increased bandwidth, many operators invest heavily in infrastructure. Figure 2 below shows that in recent years, investments in fixed broadband infrastructure have increased, mainly as a result of the ongoing roll-out of fibre. PTS estimates that the level of investments in fixed networks in 2017 was at the same level as in 2016. Investments in mobile infrastructure have declined slightly over the years, partly due to the fact that the roll-out of 4G (LTE) has reached good geographic coverage and almost a full population coverage.

Figure 2 Investments in fixed and mobile infrastructure



Source: PTS and operators' annual reports.

Figure 3 Investments in fixed and mobile infrastructure per network owner 2017

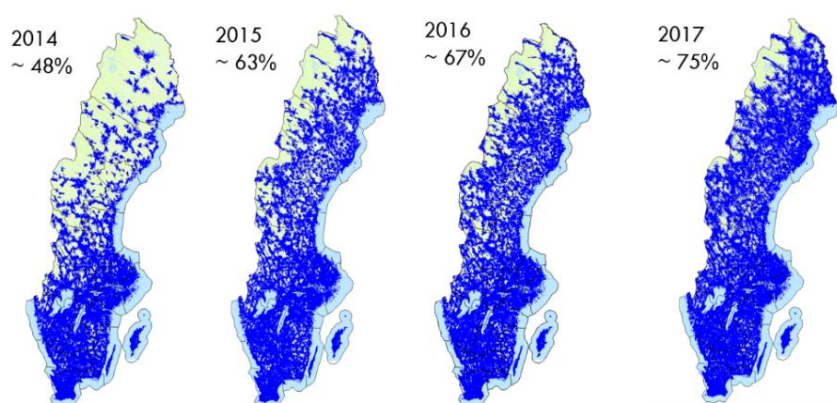


Source: PTS and operators' annual reports. Investments in joint network companies are distributed according to ownership interests of the respective companies.

2.1.3 Technology

The roll-out of the latest technologies for both fixed and mobile broadband infrastructure (4G and fibre) across the country is far advanced in Sweden. By the end of 2017, Sweden had a 75 percent geographical coverage of 4G networks, almost a full population coverage allowing a 10 Mbit/s surf speed.

Figure 4 Geographic coverage with 4G network allowing 10 Mbit/s

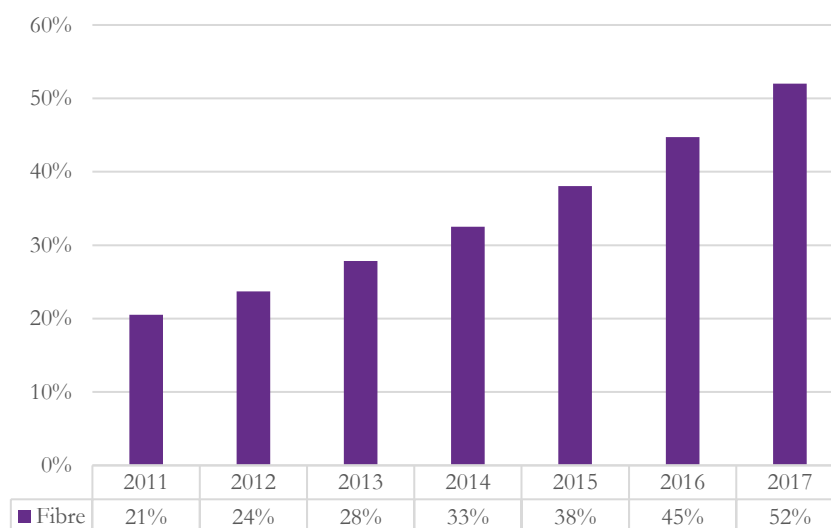


Source: PTS mobile coverage- and broadband survey 2017, PTS-ER-2018:7

There is a continuous increase in the number of fibre subscriptions and today 52 percent of all households in Sweden have a broadband subscription via fibre.

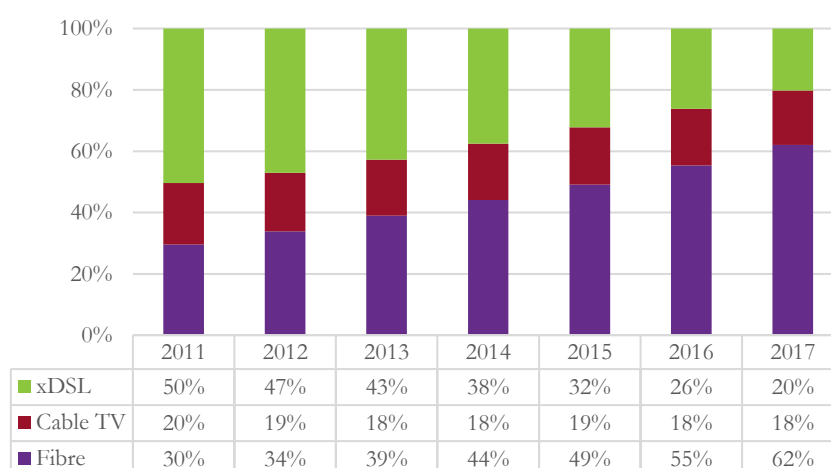
Approximately 83 per cent of households in multi-dwelling units have the opportunity to obtain broadband subscriptions via fibre. In multi-dwelling units that have fibre access, 60 percent also have access to cable TV. In multi-dwelling units that do not have access to fibre, approximately 57 percent have access to broadband via cable TV networks. In other words, in many multi-dwelling units there are both fibre and cable television networks in parallel.

The demand for fibre to single-dwelling units is high in Sweden and a large proportion of households in single-dwelling units is willing to pay the cost for deploying fibre access to the house. More than 42 percent of households in single-dwelling units have broadband subscriptions via fibre.

Figure 5 Households with broadband subscription via fibre

Source: Svensk Telekommarknad, PTS-ER-2018:16

Fibre connections accounted for 62 percent of the total number of fixed broadband subscriptions in 2017. The trend shows that the number of fibre connections continues to increase at the expense of xDSL subscriptions, which are decreasing in number. The number of subscriptions via cable TV has been relatively constant in recent years.

Figure 6 Fixed broadband subscriptions per technology

Source: Svensk Telekommarknad, PTS-ER-2018:16

2.2 Offers on the Swedish market

Operators on the Swedish market for fixed broadband services provide subscriptions with different bandwidth. It is common for fixed broadband services to be bundled with other services such as TV and telephony. It is common for operators to provide mobile broadband services bundled with SMS, MMS and voice calls as well as the cost of terminal equipment. End users can often choose between different price plans and subscriptions for different combinations of data volume, SMS, MMS, voice call and cost of terminal equipment.

There is an overall trend with increasing data usage. To meet the trend some operators on the Swedish market for mobile broadband services have launched subscriptions including a higher amount of data. Telenor, Tele2 and Tre all provide unlimited data plans among their mobile subscriptions.⁶ In addition, Telia and Tre provide mobile subscriptions where data traffic for selected services and applications is not deducted from the data volume included in the subscription, so called zero-rating. Zero-rating as well as Telia's and Tre's offers are described more in detail below under section 3.⁷

⁶ See Telenor:

https://www.telenor.se/abonnemang/?gclid=cl_gr9quptqcfvgmgodai4avw&gclsrc=aw.ds (2018-04-13), Tele2: <https://www.tele2.se/handla/mobilabonnemang?gclid=COfl4uvptQCFdqCsgod3m4Diy> (2018-04-13), and Tre: <https://www.tre.se/privat/webshop/abonnemang/> (2018-04-30).

⁷ Telenor has launched a zero rating offer for Telenor's own TV service "Telenor Stream", however, it was launched after the reporting period: <https://www.telenor.se/handla/mobilabonnemang/telenor-stream-film-och-serier/> (2018-05-28).

3 Supervision and activities during the reporting period

3.1 Supervision according to article 3

During the reporting period, two operators, Telia and Tre, offered zero rated services on the Swedish mobile market.⁸ Zero-rating is a commercial practice according to which, the consumption of data for specific applications or services (selected by the operator) is not deducted from the data volume included in the subscription for the internet access service. Corresponding practices are currently not found in the market for fixed internet access. PTS has not found reason to review any specific offers on the fixed broadband market during the reporting period.⁹

In May 2016, PTS initiated supervision of Telia's and Tre's offers; see more under section 3.1.1 and 3.1.2 below.

3.1.1 Supervision according to article 3.3 – Telia

Telia launched two mobile offers on April 18, 2016, "Free surf on social media" (Sociala) and "Free surf listening" (Lyssna).¹⁰

The zero-rating offer on social media allows subscribers to use a number of social media applications and services (Facebook, Instagram, Messenger, Whatsapp, Twitter and Kik) without deduction of data. The subscriber has unlimited use of the selected social media services without the data usage affecting the volume of data included in the subscription. The social media services included in Sociala are always accessible, even after the end user has consumed the data volume included in the subscription. Applications such as Pinterest, Viber, LINE and Welcome App were later included in the offer.

The mobile offer Lyssna allows the subscriber free streaming of selected services and applications for music, radio and audio books. Lyssna is offered with two of Telia's mobile subscriptions. For 59 SEK per month the subscriber is free to stream music, radio or audio books up to 100 GB, without

⁸ Telenor has after the reporting period launched a zero rating offer for Telenor's own TV service "Telenor Stream" <https://www.telenor.se/handla/mobilabonnemang/telenor-stream-film-och-serier/> (2018-05-28).

⁹ During the reporting period, PTS initiated supervision of both fixed and mobile internet service providers, inter alia regarding the occurrence of traffic management measures and the provision of specialized services; see section 3.1.6. The supervision was not related to any specific offers.

¹⁰ PTS has described this supervision in the Net Neutrality Report 2016/2017 (PTS-ER-2017-15). Since the Administrative Court has not yet settled the case, PTS included this supervision in this Net Neutrality Report as well.

deduction from the data volume included in the subscription. The services included in Lyssna are always accessible, although the end user has consumed the data volume included in the subscription. The applications included in Lyssna are Spotify, Storytel, Sveriges Radio and Radio Play.

In summary, PTS has found in its supervision that Telia, in connection with the two offers, is applying traffic management measures in violation of Article 3.3 of the TSM Regulation. Telia was instructed by PTS to discontinue the traffic management in due course when the end user is still able to use the specified services and applications included in each of the offers, whilst other data usage is blocked.¹¹

Telia appealed PTS' decision to the Administrative Court and called for suspension, i.e. that the decision should not apply until the final ruling of the court. The Administrative Court of Appeal approved Telia's request in March 2017.¹² In the appeal Telia has also called for the Administrative Court to request a preliminary ruling from the European Court of Justice on the issue of whether Telia's procedures constitute traffic management measures in contravention of Article 3.3 of the TSM Regulation. The administrative court rejected the request.¹³ The administrative court has not yet reached a final ruling on the issue of fact.¹⁴

Within the scope of this case, PTS has not investigated whether commercial practices with elements of zero-rating are consistent with Article 3.2 of the TSM Regulation. This issue is covered by another case, see section 3.1.3 below.

3.1.2 Supervision according to article 3.3 – Tre

Tre launched a mobile offer on August 31, 2015, "Free data on music streaming" (3Musiksurf).¹⁵ 3Musiksurf allows the subscriber, regardless of subscription type (pre-paid excluded), to stream selected music applications without any deduction from the data volume included in the subscription. Since February 2017, the offer includes Tre's existing customers, consumers

¹¹ See PTS decision with ref. no. 16-5475 and 16-5476.

¹² See Administrative Court in Stockholm, decision from 8th March 2017 in case no. 1178-17 (ruling only on inhibition).

¹³ Decision by the Administrative Court 2018-03-07 case no. 4207-17.

¹⁴ The appealed decision has case number 4207-17 at the Administrative Court in Stockholm. The appealed case has ref. no. PTS (17-1243).

¹⁵ PTS has described this case in the Net Neutrality Report 2016/2017 (PTS-ER-2017:15). Since PTS has taken action regarding this case, within the period 1 May 2017 to April 30, 2018, PTS has chosen to report on this supervision also in this Net Neutrality Report.

and enterprises, for both mobile and broadband subscriptions. 3Musiksurf includes, among others, Spotify, Deezer, Tidal, and Google Music.

Tre has informed PTS that the company intends to adjust its offer to comply with PTS' interpretation of the TSM Regulation. Therefore, PTS has not notified a formal decision regarding Tre's traffic management measures within the offer 3MusikSurf. Tre also presented a time plan, outlining the voluntary rectification;¹⁶ which PTS monitors the compliance with on a regular basis.

3.1.3 Supervision according to article 3.2 – Telia

PTS initiated supervision of Telia regarding Telia's offer Sociala, in May 2017.¹⁷ Contrary to the earlier supervision regarding the offer Sociala, previously described in Section 3.1.1, the scope of this supervision is the compliance with article 3.2 of the TSM Regulation, of Telia's commercial practice (zero-rating) applied to Sociala. The investigation is still on going.

3.1.4 Supervision according to article 3.2 – Tre

PTS initiated supervision of one of Tre's contractual terms, in January 2018.¹⁸ In the contractual term, it appeared that Tre charges a separate fee to enable e-mail, web browsing and other data traffic for BlackBerry mobile phones.

According to the reply submitted by Tre, the contractual condition is intended for an additional service, and users' access to the internet is not restricted, regardless of whether the BlackBerry owner choose to pay for the additional service or not. PTS considered that the contractual condition and its application did not constitute a breach of the TSM Regulation, and dismissed the case.

3.1.5 Supervision according to article 3.2 – Telenor

In January 2018, PTS initiated supervision of a contractual term under which Telenor's prepaid card customers was restricted from using mobile VoIP or internet tethering unless otherwise agreed.¹⁹ The supervision resulted in rectification by the company by removal of the current condition. Thus, PTS dismissed the case.

3.1.6 Supervision according to article 3.5

In May 2017, PTS initiated supervision of a number of internet service providers regarding traffic management measures and the provision of

¹⁶ PTS supervision of Tre ref. no. 16-5477.

¹⁷ PTS supervision of Telia ref. no 17-5685.

¹⁸ PTS supervision of Tre ref. no. 18-963.

¹⁹ PTS supervision of Telenor ref. no. 18-964.

specialized services optimized for specific content.²⁰ The purpose of the supervision was to establish the extent of and the basis for such measures on the Swedish market and to ensure compliance with article 3 of the TSM Regulation. PTS collected information through questionnaires addressed to a selection of internet service providers, representing approximately 90 percent of the fixed and mobile accesses. PTS received the requested information from the majority of the internet service providers. The information collected did not indicate any breach of article 3 of the TSM Regulation. Therefore, the supervision was dismissed.

3.2 Review of secondary regulation – PTS' provisions and guidelines on contract content

Chapter 5 of the Electronic Communications Act (2003:389) contains provisions on services to end users, etc. including information requirements on information to be provided in contracts between a consumer and the provider of a publicly available communications network or publicly available electronic communications services, see chapter 5, article 15. This article also applies to agreements with other end users, such as enterprises and organizations when requested.

In relation to chapter 5, article 15 of the Electronic Communications Act, PTS has issued secondary regulation in the form of provisions and general advice (PTSFS 2013:3) on contract content. The secondary regulation entered into force on July 1, 2013. Since then, the TSM Regulation entered into force. According to article 4.1 of the TSM Regulation, providers of internet access services shall ensure that contracts on internet access services contain information about traffic management measures, limitations, download and upload speeds, etc.

Article 288 of the Treaty on the Functioning of the European Union states that a regulation is binding and directly applicable in each member state. It is also an EU legal basis that regulations neither shall nor may be implemented in national law. In the event of conflicting or compliant national provisions, in relation to a regulation, the national provisions shall be repealed.

PTSFS 2013:3 contained certain provisions that the TSM Regulation now covers, thus, PTS has taken necessary measures during the late half of 2017 to avoid the occurrence of double regulation. PTS has therefore amended the secondary regulation in such a way that what was stipulated in both the TSM Regulation and the secondary regulation has been removed from the secondary regulation. On January 1, 2018, the amendments concerning PTSFS 2013:3

²⁰ PTS supervision of internet service providers ref. no. 17-5686--17-5695.

entered into force. There are currently no national provisions in the secondary regulation that are also found in the TSM Regulation.

3.3 Measurements of internet access

At present, PTS does not conduct any measurements of the performance of internet access services. PTS uses measurements²¹ made by consumers via a third party service called Bredbandskollen. Bredbandskollen is a tool offered to consumers free of charge, which helps internet access customers to evaluate the speed of their broadband connection. Bredbandskollen measures the speed at which the user's phone (app in iPhone or Android) or computer (web browser) can send and receive data, i.e. the actual speed available. The speed is measured from the phone or computer, to the geographically closest national focal point (IXP) run by Netnod.²² Bredbandskollen also measures latency towards this server.

Measurements via Bredbandskollen have been available for several years, resulting in a relatively high awareness among consumers in Sweden about the possibility to measure the speed of their internet access service. Bredbandskollen's web tool for fixed networks was launched in October 2007 and for mobile networks, an iPhone app was launched at the end of 2008 and for Android in February 2011.

By January 2018, more than 250 million measurements had been carried out, of which 170 million were carried out via the web tool and 80 million through mobile applications. Approximately 100 000 measurements are carried out by internet users in Sweden every day.

Netnod together with IIS²³ has launched a project bringing together operators, technicians and other stakeholders to make a common definition of what an internet access service is. The purpose is to make it easier for both users and

²¹ All measurements in this paragraph refer to measurements made with Bredbandskollen. The values represents measurements made by consumers, results therefore are based on their individual connection and which subscription they hold. The measurements are hence not representative for the population of Sweden as a whole.

²² Netnod: Netnod Internet Exchange i Sverige AB is a subsidiary of "Stiftelsen för Telematikens utveckling (TU-stiftelsen) (the Foundation for Telematics Development). The company operates national hubs for internet traffic. In doing so, the company will work to ensure that all internet service providers have competition-neutral hubs. Furthermore, the company should develop and logically operate operator-wide internet functions and compatible business. In Sweden, the company has six hubs: Gothenburg, Malmö, Sundsvall, Luleå and two in Stockholm.

²³ Internetstiftelsen i Sverige (The Internet Foundation in Sweden), IIS, is an independent, publicly-owned organization that works for the positive development of the internet. IIS is located in Sweden and is responsible for the Swedish top-level domain .se and the operation of the top-level domain .nu.

suppliers to know and agree on what is expected of the internet access service you buy.

The project is divided into three main phases (subprojects):

1. Define internet access service.
2. Develop a measurement tool that end users and providers of internet access services can use to measure internet access services.
3. Introduce a quality label that can be used by providers of internet access services and for public procurement activities by the public sector.

The ambition is to define what internet access service is, in 2018. Thereafter, work on developing a measurement tool and the quality mark of the internet access service will be carried out.

PTS intends to follow the work of the project by e.g., attending workshops. At present, PTS does not have the ambition to participate actively but acts more as a regulatory speaking partner.

3.3.1 Development of average up- and download speeds

The average speed of receiving data through all technologies (fibre, cable TV, 3G/4G, and xDSL) in Sweden in 2017 was 67 Mbit/s and the average speed of sending data through all technologies was 44 Mbit/s. The average speed of sending and receiving data over fixed broadband has increased in all regions in Sweden over the past year.

The tables below present the average speed (Mbit/s) of the measurements carried out with Bredbandskollen for sending and receiving data distributed by technology.

Table 1 Average speed (Mbit/s) to send data per technology

Technology	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Mobile	1	1	1	1	3	5	7	10	9	9
xDSL	1	1	1	1	2	2	2	3	3	4
Cable TV	2	4	4	6	7	9	14	16	16	17
Fiber	17	21	22	23	24	30	39	44	56	67
Total	5	6	6	6	9	14	22	29	35	44

Source: IIS report: "10 år med Bredbandskollen, Surfhastighet i Sverige 2008-2017".

Table 2 Average speed (Mbit/s) to receive data per technology

Technology	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Mobile	2	3	4	5	9	12	16	19	17	18
xDSL	8	9	9	9	10	11	12	13	14	15
Cable TV	12	21	26	38	39	49	69	84	94	99
Fiber	35	43	46	47	50	57	71	76	86	99
Total	12	15	17	17	21	29	44	53	59	67

Source: IIS report: "10 år med Bredbandskollen, Surfhastighet i Sverige 2008-2017".

3.4 PTS' work in BEREC

PTS works actively and collaborates with other EU regulatory authorities within BEREC. PTS participates in BEREC's working group in the field of net neutrality in order to meet the established work programme for the organization.

Within BEREC, PTS shares experiences and issues that have come up within the net neutrality field. National regulatory authorities play an essential role in ensuring that end users are able to exercise effectively their rights under the TSM Regulation and that the rules on the safeguarding of open internet access are complied with.²⁴ BEREC acts as a forum that supports national regulatory authorities in applying the TSM Regulation and its principles.²⁵ BEREC facilitates for regulatory authorities to exchange experiences of their net neutrality activities, which promote the consistent application of the rules on open internet in Europe.

²⁴ See recital 19 of the TSM Regulation.

²⁵ Page 21, Body of European Regulators for Electronic Communications BEREC, Work Program 2018.