

ANNUAL REPORT 2017



POST AND TELECOM
ADMINISTRATION
IN ICELAND

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ADDRESS BY THE MANAGING DIRECTOR



ELECTRIC COMMUNICATIONS

Iceland's good position in world electronic communications ranking Iceland is now ranked highest in the index published by the International Telecommunication Union (ITU) in their annual report published last November which shows the status and development of the information society and of electronic communications across the globe. The Union's index is called the IDI or ICT Development Index and is based on three main indicator clusters that relate to access to service, use and competence to take advantage of services of the information society. This position of information technology and communications in this country is something to celebrate and it strongly indicates that the state of the electronic communications market here is absolutely on a par with the best abroad. The core premise of the electronic communications regulatory framework is to support beneficial prices for the public for services, by strengthening competition, by good access to services through competition and other measures and by various measures to support wider distribution of networks and to secure electronic communications. These qualities are all manifested in the use by the public that is subsequently measured by the ITU.

The Digital Agenda for Europe and review of electronic communications legislation

In 2017 the European Union regulatory framework for electronic communications was under review. It is probable that new overall legislation governing electronic communications will be introduced in this country around or before the year 2020. Review of electronic communications legislation is part of the EU Digital Agenda where all legislation related to the Information Society and related issues is subject to comprehensive review.

Under the banner of the Digital Agenda, legislation on data protection, network security, package transmission (as part of purchase of products on the Internet), net neutrality, IPR, development and sharing of infrastructure with the emphasis on high-speed networks etc., will also be reviewed.

The main objective of the review is to make electronic communications markets of EEA states better prepared to

handle the huge changes that will result from developments in technology and commerce in electronic communications. It is likely that this will also result in significant changes to Icelandic electronic communications legislation. The main changes relate to spectrum issues, market analyses, development of infrastructure, access to infrastructure, definition of electronic communications and universal service.

Fast developing fibre-optic

The development of fibre-optic in the country's less populated areas was continued in 2017. This development is part of a government initiative called Iceland Optical Connected, whose objective is that almost all citizens will have access to at least 100 Mb/s broadband in 2020. This initiative has moved Iceland to top world ranking for broadband access for all.

Fibre-optic rollout in urban areas has also continued at a very fast pace. The current situation is that a large number of residences and companies in the Capital City Area and in Akureyri have fibre-optic connections and almost all will have such access within a few years. Two companies, Mila and Gagnaveita Reykjavíkur have implemented the fibre-optic rollout in the Capital City Area, while in Akureyri this has been handled by the company Tengir.

Opinions have been voiced that it would be more efficient to support sharing of these fibre-optic systems rather than having a duplicated investment. There are many facets to this discussion. Many consider competition in infrastructure to be the most advantageous route to follow, in the long-term, to ensure low prices and product development. Such competition could however cost duplication of investment. The other route would be to share existing infrastructure without duplication, with appropriate regulations. The current provisions of the electronic communications regulatory framework in reality only authorise the PTA to impose an obligation for sharing on parties with dominant market power. These obligations are imposed subsequent to detailed market analysis. Up to this point in time, Mila has had a significant market share on this part of the electronic communications market and for this reason has borne obligations for shared access, along with price control and obligations for non-discrimination and

transparency. Gagnaveita Reykjavíkur has also sold access to the active parts of its network, but not to the inactive parts of local loops, i.e. dark fibre, despite requests from Siminn to this effect. A review of market analysis for local loops will take place in 2018 and it will then come to light, whether this situation has changed with respect to obligations for sharing.

Frequent changes on the market - major mergers

Vodafone and 365 miðlar merged during the year and a planned merger of NOVA and Símafélagið was announced. Lines are clearing on the electronic communications market with the decrease in number of companies in active competition. Traditional electronic communications companies are furthermore broadening their operations, e.g. by offering bundled entertainment and media services. The impact of the mergers on competition on the market has not yet fully emerged. It could manifest itself in various ways; a change in service offer, a more comprehensive and broader product line from electronic communications companies, a tendency for these companies to differentiate themselves on the market, improved capacity to handle developments in technology and innovation, increased bundling of service etc.

This development is in line with what is happening abroad as electronic communications companies endeavour to strengthen their position by broadening their product offer, for example with entertainment services.

Rapid development of mobile networks and looking to the future

In 2017 there was an auction of electronic communications spectrum with 230 MHz being allocated in July for 700, 800, 2100 and 2,600 MHz frequency bands. This is an increase in spectrum of more than 60% for mobile networks in this country. The total amount of bids was just under ISK 160 million less the discount for distribution. In the light of development of 5G mobile networks, it can be predicted that there is a need for a further significant increase in spectrum for mobile networks and one can expect up to a 10-fold increase in such frequency bands in this country in the coming years.

It was decided during the year to commence a feasibility study on whether to embark on satellite spectrum filing in this country. Satellite spectrum filing would provide stronger grounds for operations related to the space industry in this country, and this is in line with a parliamentary opinion on the subject.

New legislation on network security being prepared

The CERT-IS cyber-security incident response team operates within the PTA. The team's network jurisdiction today is the electronic communications market. This approach is too narrow, and in addition to this the operational scope of the team with respect to procurements and legal measures is too limited to support network security commensurate with existing threats.

The aim is for new legislation based on the EU Network and Information Security Directive to be adopted in this country in 2019. This will introduce active preparedness measures for network security of all critical national infrastructure: energy, finance, water utilities, digital infrastructure, healthcare and transport. Sufficient support and funding must be ensured to handle this sector in such a manner that trust in electronic communications will increase and thus support positive development of electronic communications in the coming years. In this context, current legal authority must be reviewed with respect to authorisation for the cyber-security incident response team, so that it suffices to handle impending tasks.

The fourth industrial revolution has begun

The fourth industrial revolution has commenced. As a result of technological progress and scientific discoveries, the human race now faces the reality that intelligent machines can perform various tasks that to date could only be handled by humans. In many instances, the machines can perform the tasks quicker, cheaper and more efficiently than man. This industrial revolution has both opportunities and threats. For all facets of society, discussion and preparation must take place for the major changes that will inevitably result from the fourth industrial revolution, and it is important that we Icelanders map out the enormous opportunities e.g. in the field of innovation, increased efficiency, job creation and environmental protection that are inherent in the major changes foreseen. At the same time, measures must be taken to minimise the consequences of threats that result from the fourth industrial revolution. In the year 2018, the PTA will work on a preliminary analysis of those issues that relate to the Administration's scope of operations. The main tasks that are foreseen relate to network security, spectrum, numbering, development and distribution network systems of fixed line networks, development and distribution of mobile networks, particularly 5G networks, in order to support innovation and future services. It is important to strengthen dialogue on this development between parties to the market and the authorities.

Discussion on technology and technical solutions of any kind are no longer simply for nerds. The attitude crystallised in referring technical discussions "to the engine room" is no longer appropriate when technology has become the main driving force for change and progress. Leaders in all reaches of society: government ministers, members of Parliament, ministry first secretaries, CEOs and managers are increasingly acquainting themselves with, and leading the discussion on opportunities and threats that result from the introduction of new technical solutions and on the impact, they will have both in the short and long term. By engaging in the discussion in a timely manner, we will be better prepared to grasp the opportunities on offer and at an early stage to channel necessary preparation or response.

POSTAL AFFAIRS

Postal service regulatory framework in need of review

The time has come to review the Icelandic postal service regulatory framework. It is largely based on the EU regulatory framework from the beginning of the century. A new postal service regulatory framework has come into force in all other EEA states. Great changes have taken place in postal services, where the importance of letter post has declined while the importance of package post has increased, particularly as a result of electronic commerce. The postal distribution system in this country has been simplified, thus reducing costs e.g. with a reduction in distribution days. Better use of the distribution system is furthermore achieved with an increase in packages. This means that it is foreseeable that support for the universal service that guarantees services to all citizens will be relatively small and that in reality the time has come to review the maintaining of monopoly to fund the inefficiencies of this universal service.

ADMINISTRATIVE REVIEW OF POST AND TELECOM ADMINISTRATION

During the year, the National Audit Office conducted an administrative review of specific aspects of PTA operations. The review was conducted at the request of the Ministry of Internal Affairs then in power, as the ministry had received complaints from a few large parties to the market regarding the PTA's administrative procedures.

The review by the National Audit Office was in the form of interviews taken with representatives from Míla, Síminn, Vodafone, Íslandspóstur and Póstmarkaðurinn and from a representative of the Federation of Trade & Services, on the attitudes of these organisations to the PTA. It is appropriate to note in this connection that registered electronic communications companies and post service operators number more than 120. According to conclusions of the review, the National Audit Office considered that the PTA needed to improve its communications with some of these regulated entities and to enhance their trust in the Administration.

It was stated in the report that during the years 2013-2016, the PTA published a total of 136 administrative decisions. Of these, 25 were appealed to the Rulings Committee for Electronic Communications and Postal Affairs which rescinded four of the decisions. This means that of 136 decisions by the Administration, 132 were upheld, which is 97%.

This is well within the defined performance criteria for the Administration and the National Audit Office considers this to show that the Administration generally conducts its operations well and in accordance with the law. It is however pointed out that case procedure rules need to be prescribed for the PTA and that trust must be enhanced with a number of parties regulated by the Administration.

It was further stated in the report that the implementation of the law regarding public finances does not reflect the views evidenced by the Act on the Post and Telecom Administration, in the light of the fact that the Administration does not enjoy its dedicated revenue commensurate with the amounts paid by parties to the market to fund the Administration's regulatory operations. In the Act on the Post and Telecom Administration it is stated that the Administration shall enjoy all of its earmarked revenue.

In addition to this, the Post and Telecom Administration has pointed out that the application of legislation on public finance is contrary to provisions of the European regulatory framework on electronic communications.

The Administration welcomes reasoned discussion on its operations. In this connection it is appropriate to note that the Post and Telecom Administration is an independent regulatory body. It is important that the independence of such bodies should not be threatened by large parties to the market, who have substantial interests to protect, and can complain about the regulatory body to representatives of the executive authority, without the institution which is the subject of the complaints being informed of the material issues in the complaints.

Such procedure makes it actually impossible for the regulator to react in a timely manner to complaints in a reasoned fashion. On this issue, the National Audit Office states in its report:

"In this connection one must e.g. consider it appropriate for the Ministry to inform the Administration about the complaints received regarding its administrative practices and to encourage the Administration to react in an appropriate manner. This has not been the practice."

In the light of indications from the National Audit Office, the Administration is now elaborating procedural rules. The Administration has furthermore enlisted the assistance of a consultant to review communications with stakeholders and the Administration's public relations.

Hrafnkell V. Gislason

ELECTRONIC COMMUNICATIONS

MONITORING STATUS AND DEVELOPMENTS ON THE ELECTRONIC COMMUNICATIONS MARKET

PTA statistical reports

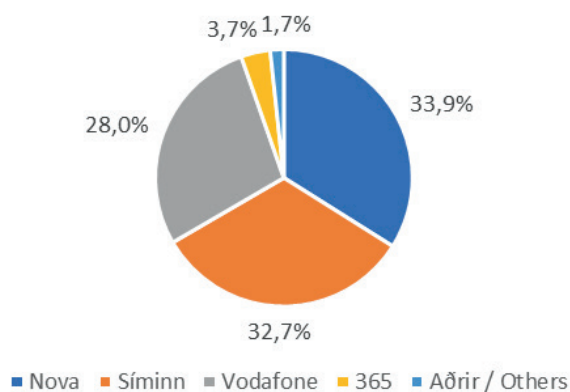
Twice a year, the PTA gathers information from registered electronic communications companies in this country on various statistics in electronic communications operations and services. The Administration processes these numbers to provide statistical reports which show information on the main quantities and companies involved in the Icelandic electronic communications market. The reports are published twice a year, in the second quarter for the whole preceding year and in the fourth quarter for the status in the middle of the same year. The objective is to improve the provision of information and to increase transparency on this market, and the PTA reports correspond to reports published by sister institutions in our neighbouring countries. The reports can be found on the PTA web at

<https://www.pfs.is/english/telecom-affairs/statistics/>

A statistical report for the first half of 2017 shows, among other things, that there is active competition on the mobile network market and that division of the market between the three largest companies is more or less equal, where Nova has 33.9% market share, Síminn 32.7% and Vodafone has 28%. On the market for Internet service, Síminn has a 47.1% share, Vodafone, 26.6%, 365 has 11.4% and other parties have less. The position on the market for fixed line networks has remained fairly stable during the past years where Síminn is by far the largest party with 64.5% market share and Vodafone is next with 22.9%.

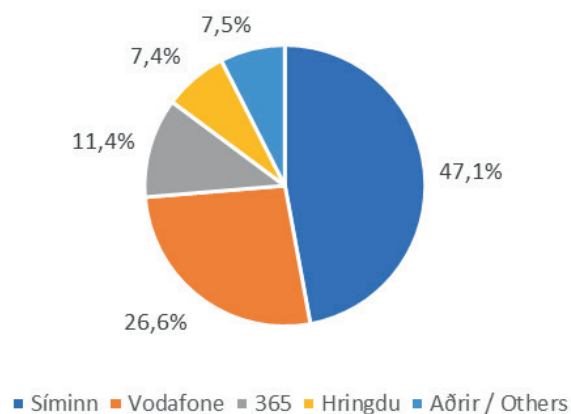
Mobile subscriptions

Market share by company



Internet subscriptions

Market share by companies



Comparative statistics on use of electronic communications in 8 countries

A statistical report is issued annually in cooperation with the PTA and its sister institutions in the Nordic countries and in the Baltics. The report gathers comparative data on the use of the main components of electronic communications service and on developments during the past years, in the eight countries.

On the whole, use of electronic communications is very similar in these countries and their citizens use comparable technology in a similar way. Despite this fact, one can nevertheless see different usage and development of specific features.

The report can be accessed on the PTA website at:

<https://www.pfs.is/english/telecom-affairs/statistics/nordic-telecommunication-statistics>

MARKET ANALYSES 2017

Market analyses of the electronic communications market constitute a large part of PTA operations. They are used to strengthen competition by analysing the position of parties to the market and by imposing appropriate measures where competition is not considered adequate. The market analysis is the basis for decisions on whether to impose, maintain, change or lift specific regulatory obligations on electronic communications companies that have been designated as having significant market power.

The making of market analysis can be divided into 3 phases:

1. Define the relevant service markets and geographical markets.
2. Analyse all markets, determine whether there is active competition on these markets and make a decision on whether one can find one or more companies with significant market power.
3. Make a decision on whether obligations shall be imposed, amended or withdrawn on companies with SMP.

The PTA makes analyses of markets specified in recommendations from the EFTA Surveillance Authority (ESA), the EEA Agreement, in accordance with the Electronic Communications Act and with Iceland's obligations pursuant to the EEA Agreement.

Furthermore, the electronic communications legislation prescribes that the PTA define these markets in accordance with circumstances specific to Iceland. This means that one can expect the PTA market definition to vary from the definition in the Recommendation. The PTA is furthermore authorised to study other electronic communications markets than those listed in the Recommendation. The ESA Recommendation currently in force was issued on 11 May 2016 and it lists fewer markets than in the prior ESA recommendations on the same subject, which were published in 2004 and 2008. It was generally considered that not all markets in the recommendation from 2008 still fulfilled the conditions for being susceptible to ex-ante regulation. This

The markets where there is an obligation to examine pursuant to the current ESA Recommendation from 2016 are the following wholesale markets:

Market 1:

Call termination on individual public telephone networks provided at a fixed location.

Market 2:

Voice call termination on individual mobile networks.

Market 3:

- a) Local access provided at a fixed location.
- b) Central access provided at a fixed location for mass-market products.

Market 4:

High quality access provided at a fixed location.

The PTA analysis on the following wholesale markets based on the ESA Recommendation from 2008 are still in force:

Market 4:

Network infrastructure access (including shared or fully unbundled access) at a fixed location. (PTA Decision no. 21/2014).

Market 5:

Broadband access (PTA Decision no. 21/2014).

Market 6:

Terminating segments of leased lines. (PTA Decision no. 8/2014)

Market 7:

Voice call termination on individual mobile networks. (PTA Decision no. 20/2015).

In addition to this, analysis of the following wholesale market based on the ESA Recommendation from 2014 is still in force:

Trunk line segments of leased lines, which was previously Market 14. (PTA Decision no. 21/2015).

Main PTA tasks in the field of market analysis in 2017

Work was done in 2017 on analysis of the following wholesale markets in accordance with the Administration's annual plan and the analyses on these markets are scheduled to be completed in 2018.

Market 3:

- a) Wholesale local access provided at a fixed location (previously Market 4/2008).
- b) Central access provided at a fixed location for mass-market products (previously Market 5/2008).

Market 4:

High-quality access provided at a fixed location (previously Market 6/2008).

Furthermore, continuing emphasis will be placed on following up the obligations that have been imposed subsequent to market analysis and particularly on cost analysis of wholesale prices and review of reference offers.

Main tasks related to monitoring obligations in 2017

Cost analyses and price decisions

The main tasks related to price decisions and cost analyses in 2017 were as follows:

- 27/2017 – Mila wholesale tariff and conditions for IP voice telephony service on Access Option 3 (Market 5/2008) – 22 December 2017.
- 24/2017 – Review of Mila wholesale tariff for fibre-optic in street cabinets (Market 4/2008) and fibre-optic in access network (Market 6/2008) – 15 November 2017.
- 22/2017 – Wholesale tariff for call termination in individual mobile phone networks (Market 2/2016) – 26 October 2017.
- 21/2017 – Wholesale tariff for call termination in public telephone networks provided at a fixed location (Market 1/2016) – 26 October 2017.
- 7/2017 – Review of Mila wholesale tariff for terminating segments of leased lines (Market 6/2008) – 30 May 2017.
- 6/2017 – Review of Mila wholesale tariff for bitstream access (Market 5/2008) – 30 May 2017.
- 5/2017 – Review of Mila wholesale tariff for copper local loops (Market/2008) – 30 May 2017.

Reference offers

- 3/2017 – Mila reference offer for leased lines in wholesale – 15 February 2017.
- 10/2017 – Mila Reference Offer for wholesale bitstream access – 3 July 2017.

ELECTRONIC COMMUNICATIONS NETWORKS PROVIDED AT A FIXED LOCATION IN RAPID DEVELOPMENT

Universal service in electronic communications – demarcation of geographical scope

Local fibre-optic networks have in recent years been developed by municipalities at various locations around the country, among other things, in connection with the government initiative "Iceland Optical Connected.". Such networks have also been developed by electronic communications companies owned by utility providers, e.g. Gagnaveita Reykjavíkur and Tengir in the Eyjafjörður region (see distribution map page 11). In this way the situation has changed, where Mila, the current universal service provider, is the only electronic communications company in the whole country which connects all residential and non-residential parties with year-round commercial operations to the public electronic communications network.

It is clear that this increase in local fibre-optic networks has an impact on the basis for operating an access network in the copper system, which covers the whole country. In the opinion of the PTA, it is not appropriate to maintain a universal service obligation on Mila in municipalities where users generally have the available option of purchasing a connection to the public electronic communications network from other service providers.

With the PTA Decision no. 4/2016, to designate Mila as a universal service provider with an obligation to provide residences and non-residential premises with year-round commercial activity with a connection to the public electronic communications network, the provision was also made for Mila being able to apply to the PTA for exemption from the universal service obligation within specific municipalities on fulfilment of specific conditions. The conditions were first and foremost made in order to ensure that the service and product offer of operators of local networks were adequate for it to be possible to waive the universal service

obligation without there being unacceptable disruption of electronic communications services in the municipality in question.

The PTA considered it appropriate to elaborate general conditions which should be considered when evaluating what could be considered an adequate offer of connections by operators of local networks, and what should be taken into account with respect to operating conditions on Mila connections. In the light of the fact that such conditions affected the interests of users in general and the interests of the universal service provider and of operators of local networks, it was decided to open consultation on the conditions and this took place in August 2017. The conclusion of the consultation was that the following conditions should be taken into consideration:

1. The local network has at least 90% distribution in the municipality to residences and to non-residential premises with year-round commercial activities.
2. The connection proportion of addresses (residential/non-residential) to Mila ehf. within the municipality has dropped below 50%.
3. In those instances where Mila ehf., or any other electronic communications company, plans not to provide a connection, then all existing or new legal residences or commercial premises with permanent residence/commercial operations in the municipality, shall have the option of a connection with the local fibre-optic network against a one-time charge which shall not be higher than ISK 350,000 given that the cost of laying the local loop does not exceed ISK 1,000,000.
4. Cost amounts in item 3 are updated at the beginning of each year in accordance with price development.

On the basis of these conditions, the PTA endorsed the Mila request, see Decision no. 11/2017, to waive universal service in the municipalities Helgafellssveit and Eyja- og Miklaholtshreppur at Snæfellsnes, Skagabyggð at Skagi, Tjörneshreppur in Norðurland eystra and Ásahreppur in Rangárvallasýsla.

When renewing the Mila universal service designation at the end of 2017, it was decided to go even further in limiting the geographical scope of the universal service obligation on Mila in those municipalities which have developed local fibre-optic networks with adequate service offer. With the PTA Decision no. 31/2017, it was decided that with a notification to the PTA, Mila could divest itself of the universal service obligation within specific municipalities where the conditions pursuant to items 1 and 2 were fulfilled. It was then for the PTA to evaluate conditions 3 and 4 and if no objections were raised to the notification within 2 months then it would be deemed to have been endorsed. It is therefore a matter for Mila to decide whether there is reason to diminish the geographical scope of universal service if conditions for this are fulfilled.

Iceland Optical Connected – Continuously improved access to next generation fixed line networks

In this country as elsewhere, there is now rapid development of the next generation of fixed line networks, that is to say fibre-optic and VDSL connections. The development is most rapid in the urban area in the south-west corner of the country, where it is market driven. There is also a very substantial development in less populated parts of the country where the government project initiative, Iceland Optical Connected, is the driving force. The situation in very sparsely populated areas and in smaller urban kernels not reached by the Iceland Optical Connected initiative, currently with access to xDSL service, must also be given attention in the coming years. Up to this point in time, the authorities have no plans for subsidising fibre-optic development in urban areas as it is assumed that where such development takes place it will be market driven.

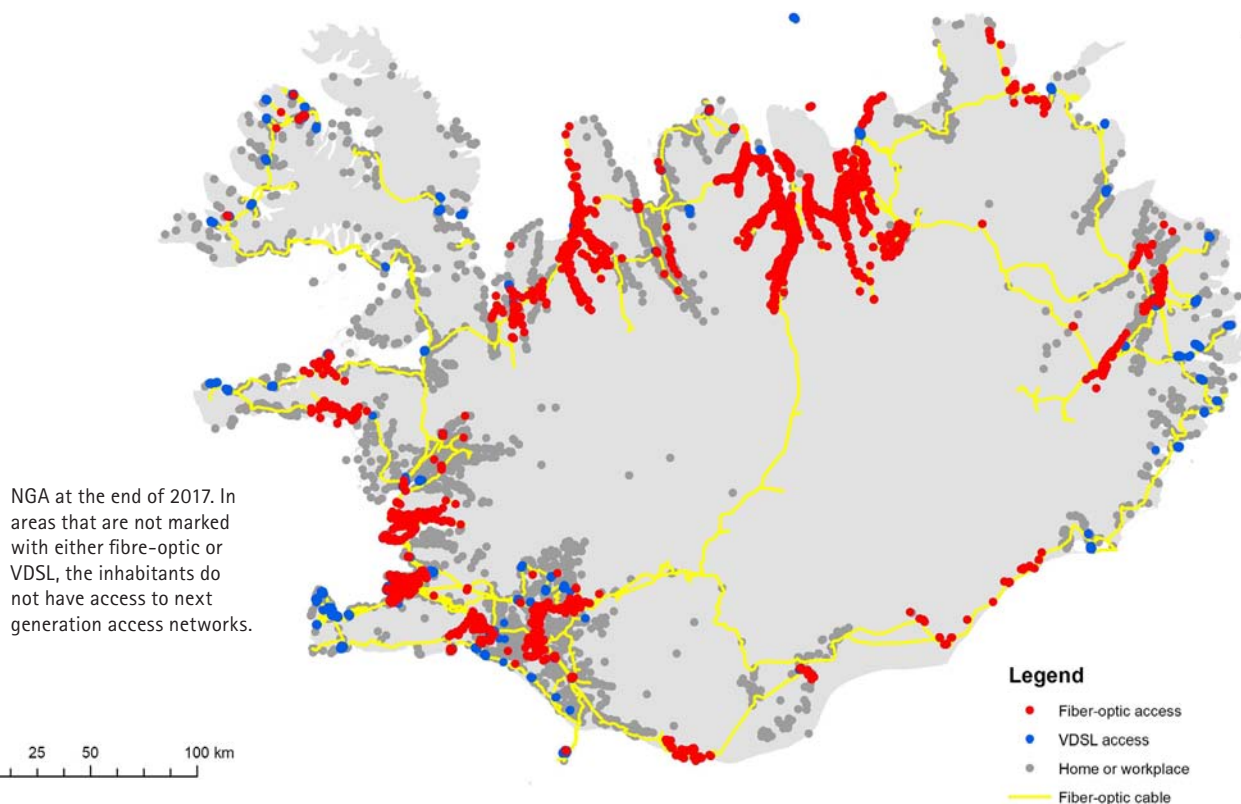
Project initiative for fibre-optic rollout in rural areas

The year 2017 was the fourth year of the government project initiative to roll out fibre-optic to homes and businesses in the countryside. In 2014, an agreement was made for the years 2015-2017 between the Post and Telecom Administration and the Ministry of Industries and Innovation. The agreement was made with the mediation of the Telecommunications Fund, and according to this agreement, the Administration had the role of preparing and disseminating instructions for municipalities and other public bodies on fibre-optic rollout and state support.

The Iceland Optical Connected project for fibre-optic rollout to residences and commercial premises in countryside areas outside market areas commenced in 2016, when the Telecommunications Fund made its first grants for development of access networks. The Post and Telecom Administration has been responsible for various tasks related to this development and public bodies, such as municipalities, which plan fibre-optic rollout in their areas can receive assistance from the Administration and can access information and instructions on the Administration's website.

In 2017, 24 municipalities received competition grants from the Telecommunications Fund for such development compared to 14 during the preceding year. The Ministry of Transport and local government also provided grants to the least populated municipalities in the year 2017. By the end of 2017, a total of 35 municipalities had participated in the project initiative, Iceland Optical Connected, and the objective is to provide grants for the initiative to the remaining locations in the year 2020.

Next Generation Access (NGA)



RAPID DEVELOPMENT OF MOBILE NETWORKS

Spectrum allocations for high speed mobile networks more than doubled

There was an auction in May of spectrum for high-speed mobile networks in the 700, 800, 2000 102,600 MHz frequency bands. There has never before been such a large allocation of spectrum at the same time in this country, where the allocated spectrum subsequent to the auction totalled more than double of that previously allocated for mobile networks in Iceland. This was a 55% increase. There was a total of 230 MHz on offer. Four companies participated in the auction and they were all allocated spectrum: Síminn was allocated 4 spectrum licences, Fjarskipti hf. and Nova hf. were allocated 3 spectrum licences and 1 was allocated to Yellow Mobile B.V.

The total amount of bids for the licences was ISK 159,800,000. These funds accrue to the state treasury, less a discount on the prices for spectrum licences on 700 and 800 MHz, which was given according to the conditions of the auction in connection with requirements for distribution of high-speed mobile networks. Licences on the 700 and 800 MHz bands are contingent on a requirement to offer high-speed mobile network service to 99% of inhabited areas and to develop a total of 14 new transmitters in unpopulated areas.

Measurements of electronic communications connections on roads – Interactive web map

In the year 2016, at the request of the Telecommunications Fund, the Post and Telecom Administration began measuring electronic communications coverage on the country's roads. In the first phase, the country's main roads were driven and connections measured. In figure A here below the roads that were measured in 2016 are marked green. Mountain roads and tracks that were then planned to be measured in phase 2 in 2017 are marked red. Those measurements were made in August and September 2017. In addition to the mountain roads, a large part of the main road system was also measured again. In figure B here below the roads that were measured in year 2017 are shown.



Picture A. Green shows measurements made in 2016



Picture B. Measurements made in 2017

After the measurements made in 2017 it was possible for the first time to display an overall picture of the status of electronic communications in the country. The tables below show this status. As coverage on mountain roads is much worse than on the main roads, it is normal that the overall picture should show a worse status for the GSM system (2G) than when only viewing the status on the main roads. Conclusions of the measurements show that there has been a positive development of high speed mobile networks (3G and 4G) and that the overall status in this respect is better than was shown by measurements in 2016.

Electronic communications on roads – conclusions of measurements

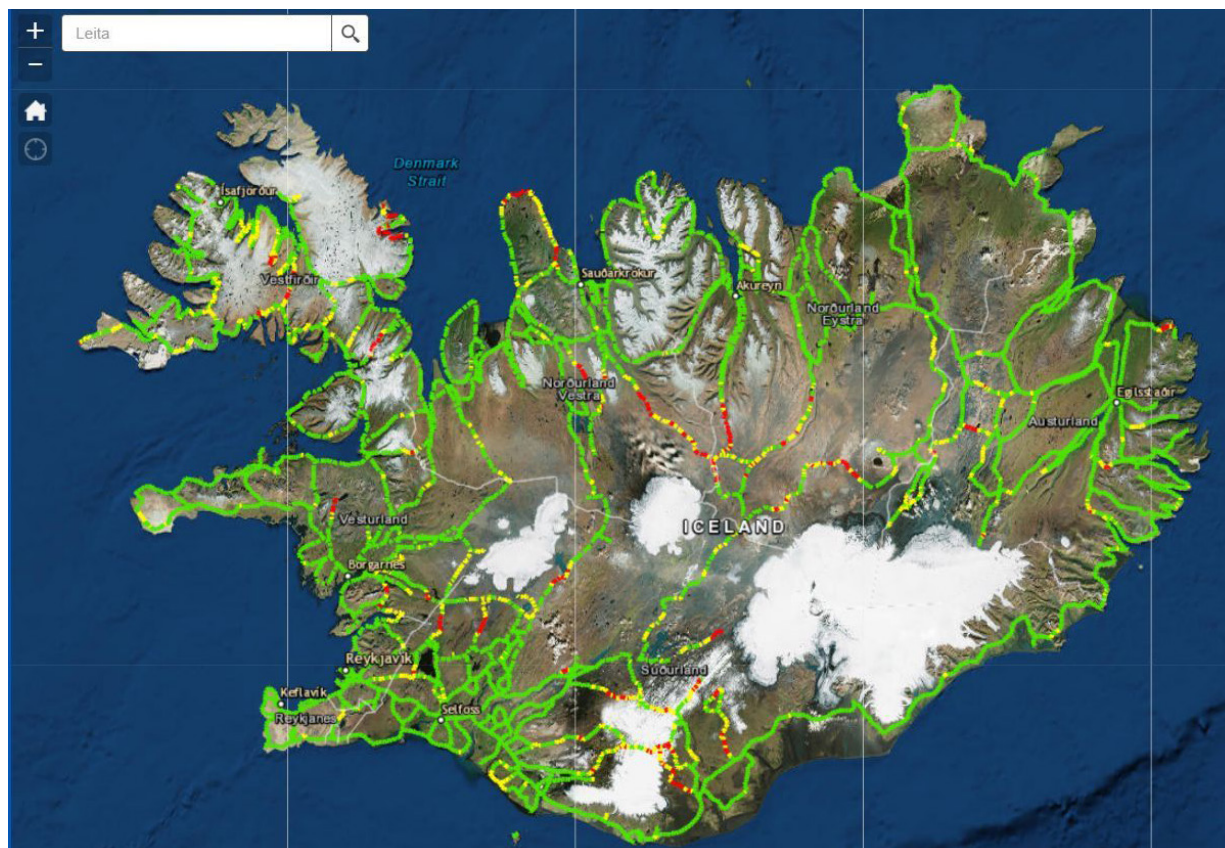
Main roads – measurements in 2016			
System	Good connection	Medium connection	Bad connection
LTE (4G)	6,40%	21,40%	72,20%
UMTS (3G)	46,10%	32,30%	21,60%
GSM	88,10%	10,10%	1,80%

The whole country – all measurements in 2016 and 2017			
Kerfi	Good connection	Medium connection	Bad connection
LTE (4G)	19,65%	25,86%	54,49%
UMTS (3G)	60,11%	22,98%	16,91%
GSM	81,99%	13,69%	4,31%

Interactive web map of electronic communications coverage on roads

An interactive web map was made in-house using the conclusions of the road measurements where the conclusions of measurements of all electronic communications mobile systems, GSM, 3G and 4G, can be viewed.

It is possible to zoom in precisely to individual places and see the locations of the measurement points and the status at the time of the latest measurements.



A screenshot of the interactive web map

Interactive web maps and information on the measurements can be accessed on the PTA web:

<https://www.pfs.is/fjarskipti/maelingar-a-fjarskiptasambandi-a-vegum/>

ELECTRONIC COMMUNICATIONS AND THE MEDIA

Consultation on allocation of spectrum for radio

Early in 2017 it was decided to open consultation on allocation of spectrum for radio in the Capital City Area. This was done as it was not clear whether there was sufficient offer of spectrum for FM radio in the region.

The conclusions from the consultation were considered among other things to have confirmed that demand for FM

spectrum in the Capital City Area is persistently in excess of supply and that, for the long term it is not possible to fulfil all requests for additional spectrum. On the other hand, the PTA considers that for the short-term it is possible to meet requests from companies that have not previously been allocated additional spectrum and that do not have transmitter facilities at Úlfarsfell.

Parties to the consultation were queried about how necessary they felt it was to assure suitable transmission points for the Capital City Area for the future. Concerns were voiced about the status of transmission locations at

Vatnsendi and Úlfarsfell, as there was uncertainty about their future. The PTA subsequently sent a memo to the Ministry of Transport and Local Government and to the Association of municipalities in the Capital City Area in order to draw their attention to the necessity to define future transmission locations in the area.

Increased importance of electronic communications companies in TV distribution

Major changes have occurred in TV distribution in recent years. The importance of electronic communication companies in the distribution of TV content has greatly increased in this country, much more than is the case elsewhere in Europe. This applies not least to the electronic communications companies' IPTV - systems, that is to say TV distributed with a fixed Internet connection. This situation and development brings positive changes for consumers because of increased and improved service, and at the same time questions have arisen regarding rights and competition issues which are now being discussed by the Post and Telecom Administration.

Other TV distribution in Iceland is through the UHF distribution system where there have also been developments in recent years and the current situation is that all TV distribution is through digital systems. This means among other things that it is possible to distribute more programs on the available spectrum.

TV transmission by wireless is now decommissioned

It was a watershed in 2017, when TV transmission by wireless was discontinued when Vodafone disconnected its last MMDS wireless transmitters in the Capital City Area. The operation of analogue TV through the MMDS system commenced in 1993 and at most there were 20 TV stations on that system. In 2004, the company 365 miðlar commenced digital TV transmissions (DVB-T) through the MMDS system and it was then possible to offer many more stations. There were about 80 TV stations in digital transmission on the MMDS system at the peak. RÚV and a number of other Icelandic TV stations were part of the digital distribution system of 365 miðlar on the MMDS system while at the same time owning and operating their own analogue TV transmitters on this system. It is estimated that between 50 and 60 thousand residences received TV transmissions through the MMDS system at its peak, but since the year 2010 this number decreased rapidly when the electronic communications companies, Siminn and Vodafone began to place more emphasis on development of their IPTV systems. In 2006, Vodafone purchased and took over 365 miðlar operations on the MMDS system and its other TV and radio distribution systems.

Vodafone had wished to continue operating the MMDS system for a number of years and had requested extension of the duration of its spectrum licences for this purpose. Taking into consideration the fact that the frequency band on which the system operated is intended for use in high speed mobile network services, the PTA had to weigh up the pros and cons, among other things in the light of a steady increase in demand for spectrum for use in high-speed mobile phone network services, or whether there were arguments to support extension of the duration of the spectrum licences for MMDS TV transmission. The frequency band in question is used almost everywhere in Europe for high speed mobile phone network services, which means that there is a wide offer of devices (transmitters and handsets) that the frequency band supports. With the above in mind and the obvious needs for additional spectrum for high speed mobile networks service (data volume in mobile networks increased by a factor of almost 10 in the years 2011-2015), it was the conclusion of the PTA that it should reject with its Decision no. 1/2016, the extension of the spectrum licence for TV transmissions.

According to this PTA Decision, Vodafone was to make a scheduled work plan for decommissioning the system which should be completed no later than in June 2017. Subsequent to making agreements with content providers, to design and procurements for development of the UHF system which was intended to counteract in part the impact of the closure, Vodafone commenced the phased process of closing down its wireless transmitters at the beginning of 2017. In order to provide users with greater latitude to use the summer months to install digital UHF aerials to replace the wireless aerials, an extension was granted to August 2017 to close down the operations in the Capital City Area.

In the opinion of the PTA, one must consider that the decommissioning of the MMDS system went well in general, even though there was discontent among some users who did not wish to purchase Internet subscription to be able to watch TV or to install a UHF aerial where such was not already in place at the property. The PTA received more than 20 complaints from users on this issue and the Administration made every effort to answer all complaints and to explain the reasons for the closure. The PTA feels that the parties who made the complaints were generally understanding about this measure when the reasons had been explained to them and when they were told about the other options available for receiving TV transmissions.

SECURITY IN ELECTRONIC COMMUNICATIONS

SECURITY OF ELECTRONIC COMMUNICATIONS INFRASTRUCTURE

Security of electronic communications infrastructure is an important task in PTA operations. Despite the fact that public electronic communications systems are not configured for security communications, the trend has nevertheless been such that they are in use today to call people out, e.g. in the health service system, by the police, fire service and for messages for evacuation in the event of natural catastrophes. According to the PTA rules on functionality of public electronic communications systems, electronic communications companies are obliged to take appropriate measures to assure secure operation of their systems. Increased emphasis has recently been placed on PTA surveillance activities of security of electronic communications systems, particularly in the light of natural catastrophes which are always a threat to the inhabitants of Iceland. Meetings were held during the year with electronic communications companies on response preparations and inspection of distribution of electronic communications in the area below the Öraefajökull glacier.

Development of technology in recent years has brought new devices which connect to the country's electronic communications infrastructure, in addition to smart phones and computers. This development will continue at an even more rapid pace in the foreseeable future. This is the development of connected devices, i.e. devices that either talk directly to each other or to a computer. As example one can mention monitoring and sensor equipment of various kinds (weather measurements, seismic activity measurements etc.), sensors for lighting, security systems, tele-monitoring of patients and many other examples. This development imposes even greater demands on operational security of electronic communications infrastructure and on the quality of the service, particularly for service in the health system. The good cooperation with PTA sister institutions in the Nordic countries, in connection with physical security was continued in 2017 where the main emphases were on inspections of electronic communications systems.

SURVEILLANCE OF SPECTRUM - PTA INTERFERENCE EVENT MONITORING

There were many notifications of interference events in 2017. There was a total of 78 notifications, slightly fewer than the year before. Interference is however often more complex than before, and there are no indications that interference events will decrease, rather the opposite. It is likely that the large increase in the number of connected devices, which one may expect in the coming years, will result in an increase in interference events and that they will become both more complex and more difficult to resolve.

The fourth industrial revolution, the introduction of 5G electronic communications technology with the varying services generated by this development, will increase even further the need for an increase in frequency bands.

As stated here above, allocation of spectrum in 2017 more than doubled. In the next 8 to 10 years, one may even expect allocations of spectrum to increase by a factor of 5. This will further increase the importance of the PTA work on monitoring and response to interference, as experience shows that the greater the number of frequency bands taken into use, the greater the number of interference events that may be expected, and that their level of complexity will also increase.

REVIEW OF SECURITY OF ELECTRONIC COMMUNICATIONS TRAFFIC INFORMATION

At the beginning of the year, the conclusions were published of a review made by the Post and Telecom Administration at the end of 2016 on the handling and security of electronic communications traffic by the electronic communications companies Vodafone and Nova. Such information is sensitive and it is important that it is handled using the proper work procedures. Both companies passed the inspection and no exceptions were observed in the on-site checks of security measures for this information.

The inspection was made at these two companies in this instance, but during recent years, the Administration has strengthened its checks on whether the use of recognised security measures and internal procedures by electronic communications companies are in order, for the purpose of ensuring the security of information on traffic in electronic communications networks. Among other things, an inspection of Siminn databases was made in 2012 and an inspection of electronic communications company rules on handling and deletion of electronic communications traffic information was made in 2014.

Caller Data Record - CDR is connection information on electronic communications, e.g. regarding which numbers call which, which IP address looks up another IP address, the duration of telephone calls, the amount of data downloaded etc.

The main purpose of processing this information, apart from initiating a specific electronic communications connection, is to charge for electronic communications services. Article 42 of the Electronic Communications Act no. 81/2003 deals with this processing of information. According to the provision, this information enjoys specific protection and it is e.g. obligatory to delete it after a given period of time. It is furthermore necessary to have the permission of the user in question if this information is to be used for any other purpose than for establishing an electronic communications connection and charging for it. The reason is that these are specific personal data of such a nature that one can use them to generate a personal profile which can provide information on behaviour and consumption of a specific individual.

Information on electronic communications traffic is also sensitive because it can specify interconnection traffic in networks and is necessary for settlements between electronic communications companies for termination of telephone calls at wholesale level, i.e. with which company a telephone call terminates which originates with another company. This information can therefore specify the volume of electronic communications traffic and usage patterns of customers of an electronic communications company, which is information that marketing departments in other electronic communications companies should not have access to, see the obligation for confidentiality, pursuant to Article 26 of the Electronic Communications Act.

For this reason, it is important that electronic communications companies take the appropriate security measures and that they have internal procedures to assure the security of the information and that they are processed in accordance with the law.

INTERNET SECURITY

Network and information security are becoming an increasingly important factor in response and security issues for society as a whole. The Post and Telecom Administration plays a key role here. The Administration operates the Computer Security Incident Response Team CERT-ÍS, monitors physical security of electronic communications networks and is a party to the network security board, which is the platform for cooperation with the official body which has the role of implementing government policy on network and information security. The Administration also maintains a website with information for the public on network security, www.netoryggi.is, and cooperates with parties who work with network security issues, such as the SAFT project of Heimili og skóli (Home and School), which works on network security issues concerning children and teenagers.

There are major projects pending in the near future in this field, such as adoption of the EU Network and Information Security Directive, which is intended to ensure active preparedness for cyber-security of all vital national infrastructure.

COMPUTER SECURITY INCIDENT RESPONSE TEAM CERT-IS

The CERT-IS cyber-security incident response team operates within the Post and Telecom Administration pursuant to the Electronic Communications Act and to Regulation no. 475 from 2013. The role of the team is to prevent and mitigate the risk of cyber-attacks and other security events in its network jurisdiction and to impede and minimise damage from such sources to the community's critical information infrastructure. The response team jurisdiction covers electronic communications companies that operate public electronic communications networks and/or provide access to the Internet and Internet services, but not to general public users. Preparations were made during the year to broaden the team's network jurisdiction and work was done on making a service agreement between the team and the parties that operate vital information infrastructure. The plan is to make such agreements until new legislation on cyber-security comes into force.

In order to strengthen the operations of the team and to prepare for the next steps in its development, the team's operational premises were moved to a joint operational location with the Police in the Greater Reykjavik Area during the year, where the police authorities have brought together its experts in various fields relating to cyber-security and computer crime.

CERT-ÍS is a participant and contact party for the Icelandic authorities in national and international cooperation on response and defence on the field of network security and is the CERT National Point of Contact. The team is party to the Nordic cooperation group of CERT teams, known as the NCC group, and its staff regularly attend meetings and courses in the Nordic countries and elsewhere.

The team maintains the website www.cert.is.

Some visible CERT-IS projects during 2017

- Phishing is becoming one of the favourite methods used by parties trying to gain money fraudulently from the public or companies, and it is also the method used to breach companies' network security or to access computers owned by members of the public. CERT-IS and the PTA published good advice to keep in mind for the purpose of avoiding such traps.
- A malware programme called WannaCry appeared in May. This programme targeted computers using the Windows operating system. This was ransomware, i.e. it encrypted data on computers and the perpetrators subsequently demanded ransom payments to release the data.
- There was another wave of ransomware in June, this time based on a version of a programme called Petya. This was the same type of malware as WannaCry and mostly attacked countries such as Denmark, Ukraine, Russia and the United Kingdom.
- In October there was news of a security breach in Wi-Fi connections. Users were advised not to use Wi-Fi (KRACK) while upgrades were installed on routers.
- In December it came to light that a large volume of user names and passwords were distributed on hacker websites. CERT-IS and the PTA published good advice on the use of passwords on the Internet.

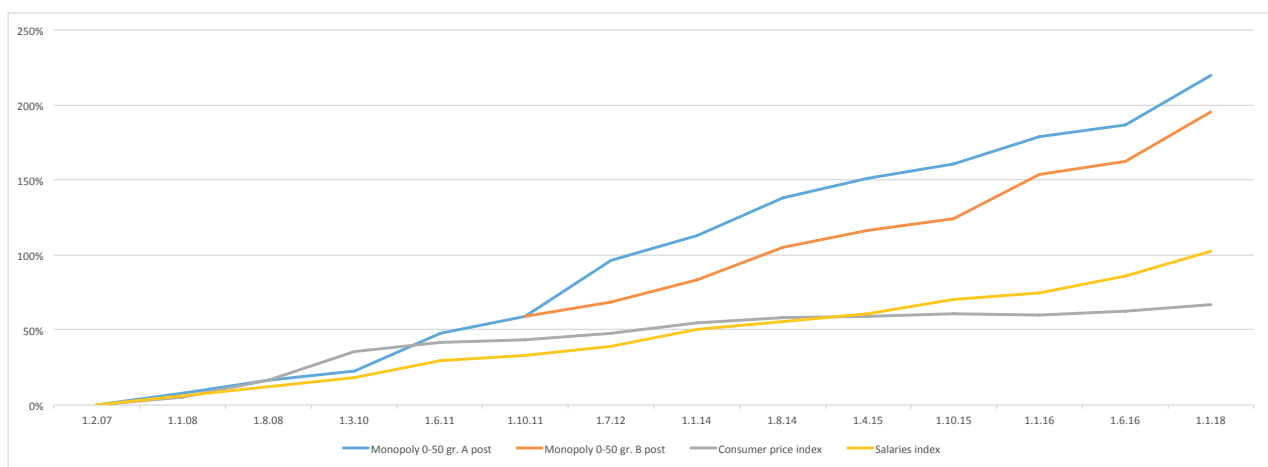
The main advice from CERT-IS and PFS on cyber-security:

- Backups should be reliable and taken regularly to ensure that sensitive data is not lost in such attacks. It is preferable to store backups in such a way that they are not connected to a computer or network.
- Operating system and virus protection should be updated regularly with the newest manufacturer security updates.
- Do not click on attachment or link that arrives with unsolicited email, regardless of whether the sender is a trusted party or not.

POSTAL AFFAIRS

TARIFF WITHIN MONOPOLY AND ECONOMIES IN POSTAL DELIVERIES

The Íslandspóstur tariff within monopoly increased on 1 February 2017 by about 11%, using weighted mean. As has been the case in recent years, there was a drop in volume of letter post within monopoly, which was the main reason for the increase. This development has among other things led to the price for a 50 g letter being among the highest known in Europe.



Source: Post and Telecom Administration

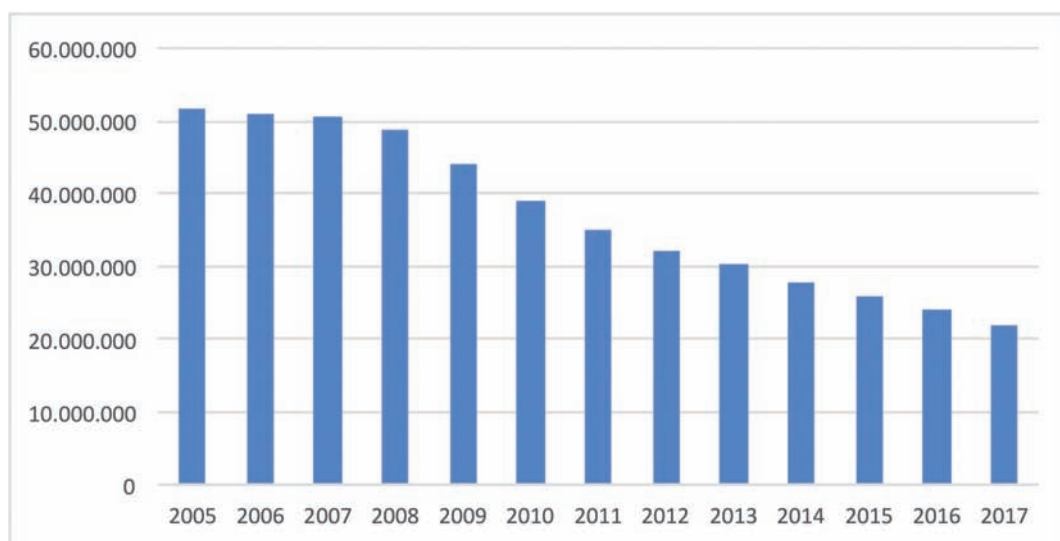
Price development for letters in monopoly 0–50 g, with reference to the consumer price index and salaries 2007–2017

This development has taken place despite the fact that various economy measures have been taken in recent years in Íslandspóstur distribution and in the company's service location network. One more step was taken in this direction in 2017 with an amendment to the Regulation on universal service no. 364/2002. With Regulation no. 595/2017, Article 10 of the Regulation, which dealt with postal delivery, was changed in such a manner that it was authorised to reduce the number of delivery days to a minimum of two working days per week on the fulfilment of specific conditions. These conditions are:

- the demand from the public and from companies for service within monopoly has diminished significantly and is not commensurate with the service offer,
- that there is a risk, given unchanged level of service, that the service will not be affordable for the public in the understanding of Paragraph 4 of Article 16 of the Postal Services Act.

Íslandspóstur sent a notification to the PTA in September, to the effect that the company planned to change the organisation of distribution in accordance with this amendment to the Regulation. The Administration subsequently requested the opinions of stakeholders as this was a change that could have a significant impact on how companies on the market organised their operations. In the PTA Decision no. 2/2018, which was published in January 2018, it was the Administration's conclusion that the conditions were not in place for alteration of the Íslandspóstur decision.

Subsequent to this change, standardised service within universal service will be introduced for the whole country with deliveries every other working day.



Source: Íslandspóstur

Total volume of letters within monopoly

SEPARATION OF ACCOUNTANCY AND COSTS FOR UNIVERSAL SERVICE

The Post and Telecom Administration completed its review of separation of accountancy at Íslandspóstur for the operational year 2016 with a statement published on 21 December 2017 on the Administration's website. Íslandspóstur is obliged to provide the PTA with a breakdown of bookkeeping and financial information in accordance with the provisions of Article 18 of Act no. 19/2002 on postal services and Regulation no. 313/2005 on separation of accountancy and financial separation in operations of postal service operators.

The conclusion of the Administration after having examined the data was that the Íslandspóstur cost accounting and separation of accountancy was in accordance with recognised practice and with the provisions of the postal services Act and of the above-mentioned regulation separation of accountancy and financial separation in operations of postal service operators.

The statement of categories of operations showed that the performance of operations in monopoly was positive by about ISK 497 million, operations in competition within universal service showed a loss of about ISK 791 million and operations in competition not in universal service showed a profit of about ISK 176 million.

The negative performance shown in the company's statement of categories of operations for competition within universal service can be mostly explained by distribution of foreign post which accounted for ISK 649 million of the ISK 791 million loss. This loss can mainly be attributed to the international endpoint agreements by which Íslandspóstur is bound. The large increase in foreign post has furthermore, had an impact on shifting of costs within the Íslandspóstur cost model, from monopoly over to competition within universal service. This means that the products categorised under competition within universal service bear a proportionately higher cost of operation of the distribution system than before.

What is called the universal service burden resulting from an obligation for universal service has diminished in recent years, among other things as a result of better use of the service location network.

With the changes in distribution that are to be made in 2018, and that are described here above, the universal service burden borne by the company it is expected to diminish even further if one uses the criteria that have been used to date when evaluating the burden.

As explained here above, the Íslandspóstur loss as a result of post from abroad, particularly from China, has been on the increase. When reviewing existing legislation on postal services. It is necessary that the authorities carefully examine whether and/or how this loss from foreign post can be addressed, as there is every likelihood that this type of post will continue to increase in the coming years.

LOCATIONS OF POSTBOXES - INTERPRETATION OF RULES VARY BETWEEN MUNICIPALITIES

According to Paragraph 4 Article 31 of the Electronic Communications Act no. 19/2002, postal services operators are authorised to return post to sender if the letter slot or letterbox of the recipient is not according to building regulations.

The provision in the building regulations in question is now in Article 6.13.1 in Building Regulation no. 112/2012 and was previously in Article 80.2 in Building Regulation no. 441/1998, see Regulation no. 133/2002.

With a notification from Íslandspóstur on 5 January 2017, the company requested that house committees in a number of multi-dwelling buildings in Vallarhverfi in Hafnarfjörður fit communal letterboxes or otherwise deliveries would be stopped to the multi-dwelling buildings in question.

The PTA subsequently received a large number of complaints about this. The dispute in the case revolved mainly about whether there was a common entrance in the understanding of the building regulations and thus an obligation to fit a block of letterboxes in accordance with the provisions of the regulation.

A similar case was referred to the PTA in 2010 with respect to a multi-dwelling building in Reykjavik. In that PTA Decision no. 16/2010, the PTA conclusion was based on a statement from the Reykjavik Building Officer, who prescribed that residents were obliged to fit a block of letterboxes on the ground floor in each stairwell, with reference to Article 80.2 in Building Regulation no. 441/1998 as amended.

In a statement from the Building Officer in Hafnarfjörður in this case, it was however the conclusion that there was no common entrance in the buildings in question and for that reason it was not possible to require that a block of letterboxes should be fitted pursuant to the provisions of the building regulations. The Building Officer furthermore stated that the existing location of letter slots, which are on the external doors of each individual apartment, are fully in compliance with the provisions of the building regulations.

As stated here above, the Reykjavik Building Officer came to another conclusion on interpretation of Article 80.2, concluding that residents were obliged to fit a block of post-boxes on the ground floor of the multi-dwelling building.

The PTA considers that the building officers in Reykjavik and Hafnarfjörður are two adjacent and independent authorities where the jurisdiction is demarcated by their municipality boundaries. In its decision, the Administration therefore took no position on whether there was some inconsistency in the interpretation of these authorities of the provisions of the building regulations and on the possible consequences this might have.

It was however clear that in this case the PTA was obliged to use the conclusion of the Building Officer in Hafnarfjörður regarding interpretation of the provisions of Article 80.2 in the Building Regulation no. 441/1998, see Regulation no. 133/2002, which the Building Officer deemed to apply.

With the decision of the Building Officer in Hafnarfjörður in mind, the PTA therefore considered that Íslandspóstur was not authorised to demand that the residents of the multi-dwelling building who had complained to the PTA, fit post boxes on the ground floor of the building as demanded by Íslandspóstur.

Íslandspóstur has appealed this conclusion to the Rulings Committee for Electronic Communications and Postal Affairs.

ÍSLANDSPÓSTUR TERMS OF BUSINESS, DISCOUNT ON BULK POST

With its Decision no. 23/2017, the PTA demanded that Íslandspóstur recall its notification to its customers from 7 April 2017 on the cancellation of what is called additional discount for bulk post within monopoly, or that it make other amendments to the discount arrangement which would ensure that parties sending post and/or parties making collections would receive the discount to which they were entitled by law. The decision was made with reference to Paragraph 1 of Article 16 of the postal services Act no. 19/2002.

The Administration's Decision was appealed to the Rulings Committee for Electronic Communications and Postal Affairs.

CONSUMER MATTERS

One of the Post and Telecom Administration's main tasks is to protect consumer interests on the electronic communications and postal markets and to support consumer protection in their transactions with electronic communications companies and postal service operators. Consumers are faced with varied and complex options on the electronic communications market, both with respect to choice and configuration of equipment and connections and not least with respect to choice of service provider. The Administration publishes information for consumers, participates in measures to protect personal data and personal privacy and works on assuring maintenance and security in public electronic communications networks.

The Administration's main tool for the provision of information is its website www.pfs.is, where part of the web is dedicated to consumers. Consumers can also send communications and complaints to the Administration if they feel that their rights have been infringed with respect to legislation and regulation on electronic communications or postal services. Such complaints are in their hundreds every year though only some end in the formal complaint process.

ROAM LIKE AT HOME IN EEA

From and including, 15 June 2017, special charges for roaming within the EEA were abolished. From that time, consumers from countries within the EEA will pay the same for use of telephone and for data volume on their journeys within the EEA as they pay at home.

This is according to an EU regulation which has been transposed into the EEA agreement and implemented in this country. Provisions were set in the regulation on fair maximum use of roaming service on the basis of normal journeys in what will be called a "fair use" caveat. It is authorised to impose a surcharge on use considered to be in excess of fair use, such as during extended stays or when moving home to another state in the EEA. With regards to telephone calls and SMS, the same tariff applies for all use. Included minutes and included SMS also apply, equally if the subscription in question offers unlimited minutes and/or SMS.

The same rules on fair use supply to data volume and the telephone companies have the authority to define limits as to the volume of data one can use at domestic rates. If such limits are set, the telephone company is obliged to inform its users what these limits are. The provisions of the roaming rules on "Roam Like at Home" set conditions on minimum limits, which are generous and should be adequate for all normal use, network use, email, reading of web pages and news channels. If these limits are exceeded, then the mobile phone company is authorised to collect a roaming surcharge which is currently set at the maximum of ISK 1,110.91 for each gigabyte used.

DIRECT IMPACT OF PTA MARKET AND COST ANALYSES ON CONSUMER INTERESTS

Market and cost analysis of various parts of the electronic communications market are a major element in the work done by the Post and Telecom Administration, and such

analyses and decisions have a direct impact on terms enjoyed by consumers on this market. One such example worthy of mention is wholesale termination prices for both fixed line telephony and on the mobile phone market. This refers to the price that an electronic communication company charges for terminating a telephone call in its system that originates in the system of another company. These prices have dropped very significantly in this country from the time that the PTA began to decide the prices in accordance with the ESA Recommendation regarding intervention by regulatory bodies in termination rates in mobile and fixed line telephony in 2013.

On the basis of obligations imposed in market analysis on monitoring wholesale tariffs, the PTA published its decisions during the year on a 21% reduction in prices for call termination both in fixed line telephony (Decision 21/2017) and in mobile phone networks (Decision 22/2017).

The reduction and levelling of prices between electronic communications companies in this manner has been an important factor in reducing prices to consumers during the last years, particularly in mobile phone service. This has also opened opportunities for electronic communications companies to further develop their service, e.g. with subscriptions where charges by the minute are no longer made for telephone calls.

PTA ASSESSMENT OF DISSEMINATION OF TELEPHONE DIRECTORY INFORMATION

During the year, the PTA assessed for the second time, the procedures for recording and disseminating telephone directory information in the database held by the phone number allocation company (Hið íslenska númerafélag ehf. (HÍN)). The assessment focused on the one hand on those electronic communications companies that allocate telephone numbers and are part owners in HÍN, and on the other hand on providers of telephone directory in-

formation. In Article 45 of Act no. 81/2003 on electronic communications one can find provisions on telephone directory information, where the main rule regarding processing of personal data is that the data is correct and is updated as needed.

The assessments aimed at fulfilling this objective.

The assessment was made by the consultancy company MMR and was implemented in phases from spring, and into the summer and the company submitted its report on reassessment in July. The same kind of assessment had been made the year before and its conclusion was that there were significant failures in information being recorded in the HIN database, variously setting up a telephone number or requests for changes to information, such as change of address, recording of unwanted call indicators etc., and this is classified as processing of personal data for which electronic communications companies are responsible pursuant to Article 45 of the Electronic Communications Act.

Subsequent to the assessment in 2016, the PTA instructed the electronic communications companies to make specific improvements to the information processing. It was specified that when the companies had had sufficient latitude to introduce remedies then the assessment would be repeated, which was done.

In short one can say that the conclusion of the report was such that there is still a significant likelihood that there are failures in information being recorded in the HIN database. This means that there are anomalies in completed actions in 38% - 80% of instances. Although in this respect performance by electronic communications companies varies to a degree in this assessment, one can in the opinion of the PTA draw the conclusion that none of them passed the test, and in the letter of notification from the Administration it was specified that anomalies should not exceed 10%, though this must be considered to be a relatively high proportion of anomalies. The conclusion of the assessment thus closely matches the conclusion from the prior assessment.

VARYING NATURE OF UNSOLICITED ELECTRONIC COMMUNICATIONS

During the year, the Post and Telecom Administration received an abnormally large number of complaints from individuals about unsolicited electronic communications. In this context one can mention a large number of complaints about marketing by small loan companies and about messages from two political parties in the run-up to the last parliamentary elections. It is difficult to state the reasons for this with any certainty. It seems however, that the sending of SMS for advertising purposes to individuals' mobile phones has been on the increase.

For it to be permissible to send an SMS to a mobile phone for the purposes of direct marketing, the marketing party in question must have received prior consent from the recipient for the sending of such a message. The same applies to sending emails. Such consent is often acquired when commencing a commercial relationship of some kind, e.g. when an individual signs a commercial agreement for the purchase of some product or service. In the agreement one can find a reservation by the marketing party that he may send messages to the individual for the purposes of advertising which the individual endorses with his signature.

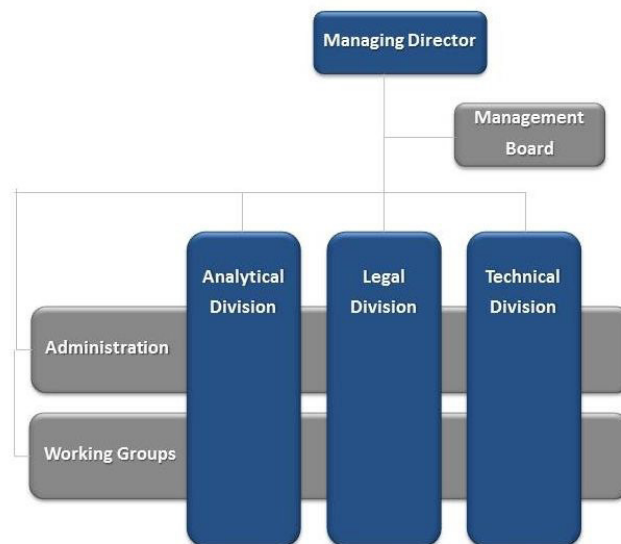
This is an example of what is called a *rule of consent*, which is a stricter rule than the one that applies when calling an individual on the telephone for the purpose of advertising or marketing, where care only has to be taken to ensure that the recipient of the call is not marked with a ban on unwanted calls in the telephone directory. The latter rule is named the *ban register rule*.

The reason for making a distinction between whether an individual is sent an SMS/email, or whether he receives a telephone call, is the technical characteristics of the former marketing method. It requires relatively little effort to send a message, SMS/email, to a huge number of recipients in a very short space of time. Prior to the last parliamentary elections, SMS were sent, to more than a hundred thousand individuals who had the right to vote, over a period of a few hours. In marketing where a sales representative makes a call on the other hand, it is considered that this method is self-limiting with respect to scope and speed of the marketing, as it demands employing people with the attendant costs, e.g. for equipment and facilities. For this reason, it is considered appropriate to impose tighter controls on SMS marketing, i.e. by making the requirement for prior consent of the recipient, while on the other hand is considered sufficient to give an individual the option of putting a ban mark on his telephone number in the telephone directory in order to avoid marketing through telephone calls.

In the case of promotional activities of political parties, one could argue that this is not real marketing in the same way as promoting products or services. It has also been pointed out that promotion of political views constitutes the expressing of views which is a right protected in provisions of the constitution that deal with freedom of expression. It has however not been considered appropriate to make a distinction between promotional activities of political parties and general marketing operations when it comes to unsolicited electronic communications.

This relates to views on personal privacy, which is also a fundamental right protected by the constitution. This means that it is not possible to consider an individual's telephone number or email address as public media which can be used to disseminate political views or messages encouraging the use of voting rights, if the individual has not consented to this in advance or has declined calls of this nature with a ban mark in the telephone directory.

POST AND TELECOM ADMINISTRATION 2017



The Managing Director of the Post and Telecom Administration is Hrafnkell V. Gíslason

The Management board is composed of the managing director and of the directors of the divisions.

There are 24 staff positions at the PTA.

Analytical Division is responsible for market analyses, imposition and follow-up on financial obligations on electronic communications companies that have been designated as having significant market power subsequent to analysis, including cost analysis and separation of accountancy. The Division collects information on pricing and statistics and is responsible for processing and publishing of such information. The Analytical Division also deals with various financial analyses on the post and electronic communications market.

Legal Division is responsible for handling administrative communications, settling disputes, the imposition and surveillance of obligations that are not financial in nature, universal service and consumer issues. The division also handles international communications.

Technical Division is responsible for organisation and management of matters relating to spectrum and it monitors the use of spectrum. This Division monitors the market for electronic communications devices, is responsible for the collection and recording of information on electronic communications infrastructure along with processing of geographical information and inspects radio equipment on board ships. The Technical Division also provides other divisions with consultancy on technical issues that may affect the Administration's surveillance role. The national Computer Security Incident Response Team, CERT-IS, is also operated within the division.

Administration is responsible for matters related to operations, information systems, human resources, quality issues and promotion and it provides support for all internal work of the Administration.

Two specialist groups were operating within the PTA during the year; a team on market analysis and the emergency response team, CERT-IS.

PTA ADMINISTRATIVE DECISIONS AND THEIR OUTCOME

In November 2017 the National Audit Office published its report to the Althingi on case procedure and administrative procedures at the Post and Telecom Administration. The Ministry of Internal Affairs (now Ministry of Transport and Local Government) under which authority the PTA operates, requested in November 2016, that the National Audit Office make such a report.

In the report, the Administration is urged to set clearer case procedure and operational procedural rules for itself and to improve its communications with regulated entities. The Ministry of Transport and Local Government is furthermore urged to provide the Administration with the necessary support and restraint, to strengthen the operations of the professional committee in the field of electronic communications, to complete work on the new electronic communications plan and to introduce regulation on the execution of surveillance by the Administration.

It was stated in the report that during the years 2013–2016, the PTA published a total of 136 administrative decisions. Of these, 25 were appealed to the Rulings Committee for Electronic Communications and Postal Affairs which rescinded four of the decisions. This means that of 136 decisions by the Administration, 132 were upheld, which is 97%.

This is well within the defined performance criteria for the Administration and the National Audit Office considered this to show that the Administration generally conducts its operations well and in accordance with the law. It was however pointed out that PTA case procedure rules needed to strengthen trust with the parties regulated by the Administration.

The PTA has managed statistics on the outcome of administrative decisions since 2007, when the current organisation of the Administration was adopted. Here is a table showing decisions from that time until 2016:

Administrative decisions by the PTA 2007–2016							
Year	PTA decisions	Appealed decisions	Appeal proportion	Total rulings	Rescinded decisions	Upheld decisions	Upheld - proportion/ appealed
2007	27	9	33%	9	1	8	89%
2008	33	7	21%	7	1	6	86%
2009	23	5	22%	5	0	5	100%
2010	41	10	24%	10	3	7	70%
2011	35	5	14%	5	2	3	60%
2012	40	7	18%	7	1	6	86%
2013	33	4	12%	4	0	4	100%
2014	42	5	12%	5	2	3	60%
2015	37	10	27%	10	2	8	80%
2016	24	6	25%	6	0	6	100%
Total	335	68	20%	68	12	56	82%
Of total number	100%			3,6%			
	Average upheld proportion*						82,4%

* Using weighted mean



A PTE employee is seen here holding a small satellite like those following an earth close orbit and which are among other things used to map and research the surface of the earth.

A NEW TASK AT PTA - DEVELOPMENT OF KNOWLEDGE ON THE SATELLITE SPECTRUM FILING PROCESS

At the end of the year, the PTA made an agreement with the company ManSat on the development of knowledge on the satellite spectrum filing process,

The company ManSat was founded in 1998, has its head offices in the Isle of Man and also has offices in the United Kingdom and the United States. The company specialises in satellite spectrum filing, has experienced specialists at its disposal and is known as a leader in this field.

Spectrum for electronic communications transmissions by satellite are registered with the International Telecommunication Union (ITU) and member states of the Union can submit applications for such filing. The filing procedure is complex, and each registration takes a number of years. The agreement between the PTA and ManSat deals with development of knowledge in this field during the next months, subsequent to which the Administration will evaluate whether it is a viable option to commence the filing of registration applications in this country.

What is called the space industry has grown greatly in recent years and is the driver of innovation in many related fields, e.g. in the development and manufacture of equipment and in the offer of services based on satellite technology. This industry has a huge annual turnover, estimated according to an OECD report from 23 October 2014 as having had revenue in 2013 of ISK 25,600 billion which is divided between parties in the manufacturing value chain (33%), satellite operators (8.4%), and service providers who use satellite technology in their service offer (58%).

As the above numbers show, it can be to the nation's advantage to participate in the space industry. Participation in this field is not limited to those countries that manufacture and/or launch satellites, but there are also various tasks and derived work related to the industry. Operations related to the space industry constitute, for example, one of Luxembourg's key industries. With these opportunities for innovation in mind, a plan was for example tabled by the EU Commission, to achieve specific objectives in this field by the year 2020, see COM (2013) 108.



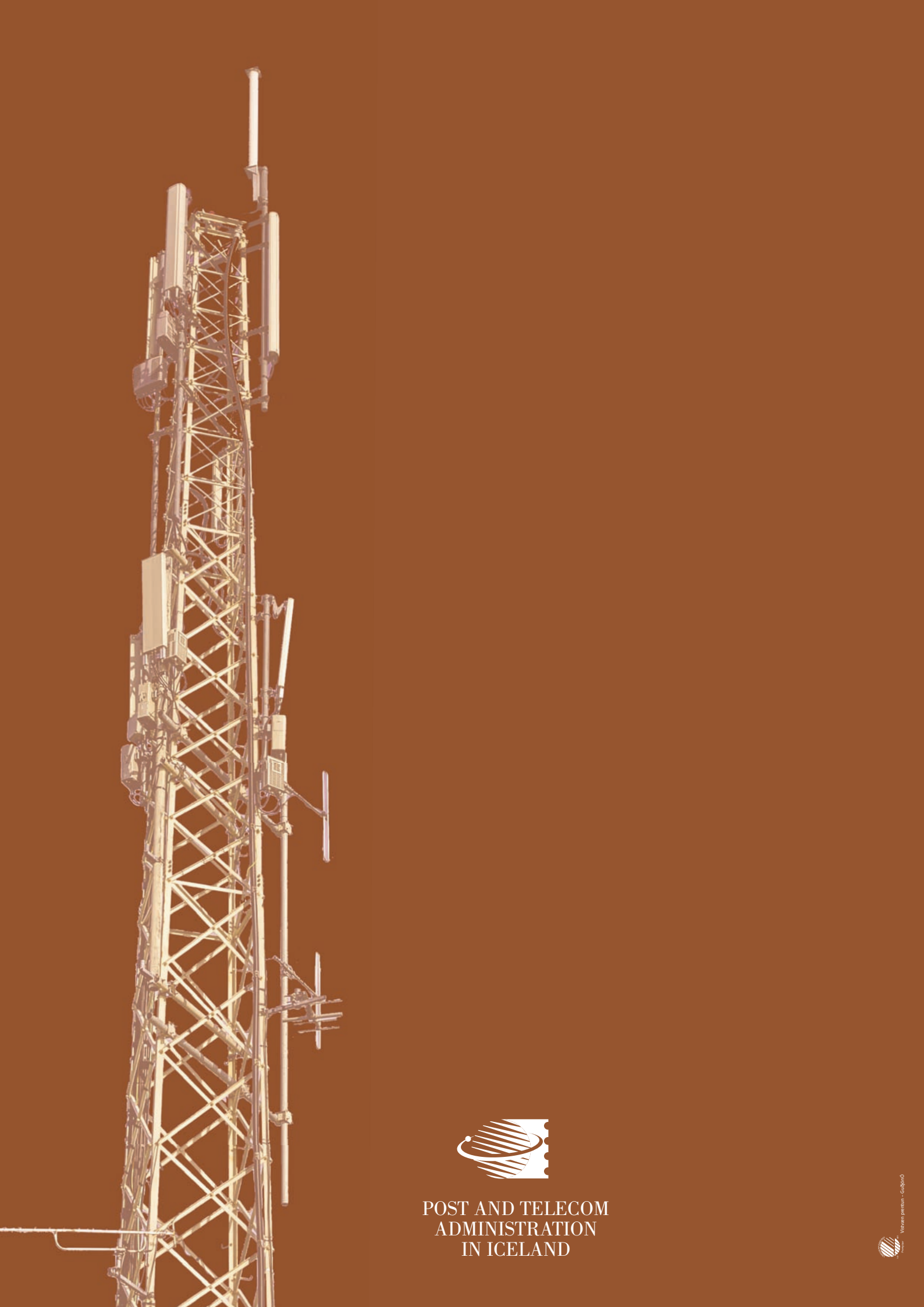
REGISTERED PROVIDERS OF ELECTRONIC COMMUNICATIONS NETWORKS AND SERVICE AT END OF YEAR 2017

Licence holder	Issued/ Registered	Services
1819 – Nýr valkostur ehf	20.6.2014	Directory enquiry service
365-miðlar ehf.	17.1.2013	Mobile and data transmission service
Advania Iceland ehf.	17.4.2002	Data transmission service
Alterna Tel ehf.	8.1.2010	Voice telephony, mobile and data transmission
Alza ehf.	1.9.2017	Data transmission service via fixed and wireless electronic communication networks
Alþingi	23.3.2015	Transmission of radio and television signals
Austurljós ehf.	5.3.2015	Data transmission and service
Ábótinn ehf.	28.3.2003	Data transmission and service
Árvakur hf.	26.1.2015	Directory enquiry service
Ásaljós	18.8.2015	Operation of fixed electronic communication network
Backbone ehf.	25.8.2010	Data transmission and service
Bloomberg Finance L.P.	19.7.2007	Leased line and network
Boðleið Þjónusta ehf.	1.12.2015	Voice telephony, mobile telephony and operation of fixed data transmission network
Brimrún ehf.	3.4.2008	Data transmission via satellite
BT Solutions Limited, útibú á Íslandi	28.7.2014	Data transmission services
Colt Technology Services AB	29.9.2015	Data transmission services
Comprehensive Nuclear Test Ban Organisation (CTBTO)	19.7.2017	Data transmission via satellite
Dalaveitur ehf.	14.2.2017	Operation of fixed electronic communications network
DataBox ehf.	13.12.2010	Voice telephony and network
Datacell ehf.	25.8.2010	Data transmission services
Davið og Goliát ehf.	3.5.2010	Voice telephony and data transmission
DCN Hub ehf.	10.12.2012	Mobile and data transmission services
DVD-Margmiðlun ehf.	6.2.2004	Broadcast cable network
Equant á Íslandi ehf.	7.7.2004	Data transmission service
Evja- og Miklaholtshreppur	29.9.2015	Fixed data transmission network
Factor ehf.	30.5.2013	Data transmission and service
Farice ehf.	2.9.2003	Submarine cable
Feris ehf.	6.1.2014	Data transmission service
Fjarskiptafélag Mývatnssveitar ehf.	10.4.2017	Data transmission service via fixed electronic communication network
Fjarskiptafélag Skagabyggðar	8.6.2016	Data transmission network
Fjarskiptafélag Skeiða- og Gnúpverjahrepps ehf.	8.3.2013	Data transmission network
Fjarskiptafélag Svalbarðshrepps ehf.	14.2.2017	Operation of fixed electronic communications network
Fjarskipti hf.	27.3.2007	Voice telephony, mobile, data transmission and network
Fjölnet ehf.	26.10.2001	Voice telephony, data transmission and network
Fónn ehf.	26.5.2009	Voice telephony, data transmission and network
Gagnaveita Helgafellssveitar ehf.	18.8.2015	Operation of fixed electronic communication network
Gagnaveita Hornafjarðar ehf.	13.2.2013	Electronic communication networks
Gagnaveita Reykjavíkur ehf.	23.3.2007	Data transmission and service

Gagnaveita Suðurlands ehf.	9.12.2013	Data transmission service
Gagnaveitan ehf.	8.6.2011	Electronic communication services
Global Mission Network ehf.	16.12.2014	Transmission of radio and/or television signals
GlobalCall ehf.	4.9.2008	Voice telephony
Halló ehf.	23.5.2014	Directory enquiry service
Hátíðni hf.	24.1.2001	Voice telephony, data transmission and network
Hitaveita Tálknafjarðarhrepps	24.6.2015	Data transmission network
Hljóðsmárinn	24.10.2017	Transmission of radio and television signals
Hópkaup ehf.	28.4.2015	Directory enquiry service
Hótel Laki ehf.	10.4.2017	Operation of fixed electronic communication network
Hringdu ehf.	9.11.2010	Voice telephony and data transmission service
Hringiðan ehf./Vortex Inc.	3.12.1998	Voice telephony, data transmission and network
Húnanet ehf.	23.10.2017	Fixed line network
Hvalfjarðarsveit	31.3.2014	Electronic communication networks
Icelandair ehf.	14.2.2014	Network
IMC Ísland ehf.	27.6.2000	Mobile DSC 1800
Internet á Íslandi hf.	3.2.1998	Network, voice telephony and data transmission
Isavia ohf.	30.12.2010	Voice transmission service for aircrafts and operation of fixed electronic communication network
Já hf.	21.11.2007	Publication of directories, directory enquiry service
Kópavogsbær	11.12.2017	Operation of fixed and wireless electronic communication networks, data transmission via fixed and wireless electronic communications networks
Kukl ehf.	20.3.2009	Voice telephony, data transmission and network
Landhelgisgæsla Íslands	1.1.2011	Management and lease of NATO's optical fibre network
Leiðarljós ehf.	14.2.2017	Operation of fixed electronic communications network
Level 3 Communications Iceland ehf.	1.12.2015	Operation of fixed electronic communication network and data transmission service
Lindin, kristið útvarp	26.1.2015	Transmission of radio and television signals
LÍF í Mýrdal ehf.	15.9.2014	Fixed line network data transmission
Ljós og gagnaleiðari ehf.	10.8.2009	Data transmission network
Ljósfesti ehf.	19.12.2016	Operation of fixed electronic communication network
Ljósunktur ehf.	24.10.2017	Fixed line network
Loki Telecom ehf.	4.5.2015	Fixed and wireless telecommunication networks, fixed and wireless data transmission and transmission of radio and television signals
Magnavík ehf.	1.4.2004	Data transmission service
Martölvan ehf.	26.11.2007	Voice telephony, data transmission and network
MessageBird B.V	1.9.2017	Voice telephony and mobile services
Mila ehf.	4.4.2007	Electronic communication network
Mobiweb Telecom Limited	19.12.2016	Mobile service
Nepal hugbúnaður ehf.	21.2.2005	Data transmission service and wireless data transmission
Netvarp og Sport ehf.	18.7.2017	Transmission of radio and/or television signals
Nextgen Mobile Ltd.	11.11.2013	Mobile and data transmission service
Neyðarlínan ohf.	6.10.1999	Voice telephony - emergency service
Nordic Networks ehf.	24.11.2016	Submarine cable and data transmission service
Nova ehf.	12.7.2006	Voice telephony and data transmission
Nýherji hf.	12.12.2011	Data transmission service
OnAir S.A.R.L.	29.4.2008	Mobile communication services on aircraft (MCA)
Opex Upplýsingatækni ehf.	13.3.2017	Voice telephony, operation of wireless data transmission network and data fixed and wireless data transmission service

Opin kerfi hf.	25.2.2011	Data transmission service
Origo hf.	12.12.2011	Data transmission service
Orkufjarskipti hf.	26.10.2001	Electronic communication network
Premis ehf.	24.10.2017	Voice telephony and mobile services, operation of fixed and wireless electronic communication networks and fixed and wireless data transmission services
Radíó ehf. - Íslensk fjarskipti	22.8.2006	Telecommunication service
Rafey ehf.	18.8.2015	Operation of wireless electronic communication network
Rangárljós	29.8.2016	Operation of fixed electronic communication network
Rekstrarráðgjöf og bókhald ehf.	24.3.2014	Data transmission service
Ríkisútvarpið ohf.	29.7.1997	Transmission of radio and television signals
Sensa ehf.	19.12.2016	Data transmission service via fixed electronic communication network
Símafélagið ehf.	15.10.2008	Voice telephony
Símabjónustan ehf.	28.6.2013	Voice telephony
Síminn hf.	30.7.1998	Voice telephony, mobile, data transmission and network
Sjónvarpsmiðstöðin ehf.	8.10.2009	Data transmission service
Snerpa ehf.	17.8.2000	Network, voice telephony and data transmission
Softverk ehf.	20.3.2009	Voice telephony, data transmission and network
Streaming Media ehf.	10.10.2014	Wireless network, fixed and wireless data transmission and transmission of radio and television signals
Stykkishólmsbær	2.5.2002	Data transmission network
Sumarsól ehf.	1.12.2015	Directory enquiry service
Sýn hf.	27.3.2007	Voice telephony, mobile, data transmission and network
Tech Support á Íslandi ehf.	3.3.2017	Voice telephony and fixed and wireless data transmission services
TELE Greenland A/S	24.6.2008	Submarine cable
Tengir hf.	20.9.2002	Fiber optical network
Thomson Reuters (Markets) Norge AS	1.9.2017	Fixed line network data transmission
Thor Telecom Ísland ehf.	15.10.2014	Fixed and wireless data transmission and transmission of radio and television signals
Tismi BV	5.3.2015	Voice and mobile telephony
Truphone Limited	22.11.2017	Mobile telephony and data transmission via wireless electronic communications networks
TSC ehf.	18.1.2002	Voice telephony, data transmission and network
Tölvu- og rafeindabjónusta Suðurlands ehf.	29.3.2004	Data transmission service
Tölvun ehf.	25.4.2003	Data transmission and service
Tölvustofa ehf.	15.4.2009	Data transmission service
Upplýsingatæknifélagið Omnis ehf.	28.1.2013	Data transmission service
Veðurstofa Íslands	18.7.2017	Operation of fixed and wireless electronic communication networks, data transmission via fixed and wireless electronic communications networks
Vegagerdin	7.1.2016	Operation of fixed electronic communications network
Yellow Mobile B.V.	18.7.2017	Voice and mobile telephony, operation of fixed and wireless electronic communication networks, data transmission via fixed and wireless electronic communications networks
Þekking - Tristan hf.	16.1.2004	Data transmission and service
Þorvaldur Stefánsson	14.10.2014	Maritime mobile
Öryggisfjarskipti ehf.	6.10.2008	Telecommunication service and network / TETRA





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