



# **ANNUAL REPORT 2016**

LANDSNET

## SPEECHES

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*Sigrún Björk Jakobsdóttir, Chairman of the Board:*

### **“Strengthening the electricity transmission network provides the foundation for energy exchange”**

There has been an increased emphasis on climate change and energy exchange matters this year. The international community has begun its efforts to fulfil the Paris agreement and to achieve the goals set out therein. Iceland is not excluded from this process and there is much work ahead.

We introduced a new network development plan at the end of the year, where four scenarios were introduced, outlining potential developments in the demand and utilisation of electricity by 2030.

We only have to look back on the last 15 years to see the extensive changes that have occurred, both in the development of renewable energy sources and the changes within society. These developments have called for an increase in electricity supply.

The total share of renewable energy in the country's energy budget is 71%, while the share of renewable energy in transport is only 6% and 0.1% for domestic fishing vessels. A parliamentary resolution introduced by the last government stated that the ratio would be 30% for land transport and 10% for marine related operations by 2030.

Icelanders have achieved effective results in energy exchange matters in the last few decades by utilising renewable energy sources for the country's heating and power

supply. However, we are far away from achieving the same results in transport, although we have moved forward with the use of a small number of electric and environmentally friendly vehicles. Shipping and aviation, be it in connection with tourism, transport or processing, are still at the starting point of this process. There are opportunities to achieve great success in these areas.

Achieving progress in these areas will be difficult without strengthening the electricity transmission network. The system plan offers two options. The first option involves strengthening the regional network which runs alongside some of south Iceland's natural wonders and main tourism areas and the second involves the construction of an overhead line across the Sprengisandur highland area. Both options need to be extensively assessed and effective communication between the public and the government will be essential as they will make the final decision.

Landsnet operates a closely knit and powerful team of employees who are dedicated to their work and to considering the overall interests of society. I would like to extend my thanks to this team.



*Guðmundur Ingi Ásmundsson CEO:*

**“It is important to us that the process chosen is transparent.”**

Iceland is rich in renewable energy, and modern society is increasingly dependent on a secure electricity supply. Our mission is to ensure that energy reaches the customer, both in the quantity and of the quality necessary for the community to run smoothly.

A major transition was made in Landsnet's operating environment last year including new decisions on the Company's revenue cap and the introduction of the USD as

Landsnet's reporting and functional currency. We took large steps in refinancing the Company via a bond issue and were very pleased to see investors show us great interest and trust. The bond issue yielded more favourable terms, as well as a reduction of exchange rate risk. We can expect much greater stability in the Company's finances in the coming years.

The most urgent tasks ahead include the strengthening of the main transmission system for the future. We have not been able to ensure a secure electricity supply nation-wide and have been forced to resort to curtailments, which have undoubtedly led to the use of oil instead of renewable clean energy. There has been a great deal of discussion on our projects in Northeast Iceland as well as the new Suðurnesjalína line. The process chosen needs to be transparent but the fact that these projects have been in progress for over a decade needs to be taken into consideration.

Questions have been raised as to whether the process being used is sufficiently transparent and whether changes can be made after the fact. The process has been simplified in most European countries to respond to similar issues that have arisen. A simple and effective process, where disputes and litigation are resolved before construction commences, is beneficial to all parties.

A good relationship and effective communication with stakeholders is an important aspect in all our projects, in all stages of the process. We have recently focused more on information dissemination and consultation. This has been achieved by factors including increased activity and visibility on social media, but also via changes to the network development plan and the dialogue and consensus surrounding this. This has increased the number of options available to communicate information more quickly as well as creating opportunities for dialogue.

We are nothing without our team. Our employees have a diverse educational background, are dedicated to professionalism and are committed to fulfilling the promises we have made.

## ABOUT US

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### Board of Directors

Our Board of Directors is appointed annually and has ultimate authority with regard to all Company decisions. The appointment of the Board must comply with statutory requirements on impartiality and non-discrimination. Directors must therefore be independent of the Company, shareholders or other companies engaged in the generation, distribution or sale of electricity.

The current Board of Directors consists of the following members: Sigrún Björk Jakobsdóttir, Hotel Manager at Icelandair Hotel Akureyri, Ómar Benediktsson, Managing Director/CEO of Farice and Svana Helen Björnsdóttir, Managing Director of Stika. Reserve members include Svava Bjarnadóttir, Executive Vice President and owner of Kapitulí and Jóhannes Sigurðsson, Supreme Court Attorney who was appointed as a reserve member of the Board in December 2016, in order to comply with the Gender Compensation Act on Corporate Governance.



#### **Sigrún Björk Jakobsdóttir**

*Chairman of the Board*

Sigrún Björk Jakobsdóttir was appointed Chairman of the Board at the Annual General Meeting on the 7th of April, 2016. She has served on the Boards of various companies, organisations, institutions and committees and has extensive experience in the field of tourism and local government.



## Ómar Benediktsson

### *Board member*

Ómar Benediktsson was first appointed to Landsnet's Board on the 29th of March, 2012. He has served on the boards of numerous companies, both domestic and foreign, as well as other organisations. He also has extensive experience in business operations, both at home and abroad.



## Svana Helen Björnsdóttir

### *Board member*

Svana was first appointed to Landsnet's Board on the 31st of March, 2009. Svana has served on the boards of numerous companies and organisations and has extensive experience in company operations, both in Iceland and abroad.

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## Landsnet's Executive Board

Landsnet's Executive Board is responsible for the daily operations of the Company. The Executive Board appoints the CEO and the various directors of each division.



### **Guðmundur Ingi Ásmundsson** *CEO*

Guðmundur Ingi Ásmundsson is the CEO of Landsnet. He completed a degree in electrical engineering in 1980 from the University of Iceland and a Master's degree in Electrical Engineering from the Technical University of Denmark (DTU) in 1982. Guðmundur Ingi has worked at Landsvirkjun for 23 years, initially joining the Company as an engineer. He went on to become chief engineer and Managing Director of the Systems Department in 1993. He served as Landsnet's System Manager from the 1st of January 2005 when the Company was founded and became VP of System Operations in November 2005. He went on to become Deputy CEO in January 2008 and President and CEO from January 2015.



## **Guðlaug Sigurðardóttir, CFO**

*Finance Division*

The Finance Division is responsible for Landsnet's finances, accounting, treasury management, procurement, business intelligence, revenue cap compliance, budgeting, financial modelling and risk management. The Finance division includes an Analysis Unit that supports revenue and tariff analysis, the reliability of forecast models, the Company's asset management, and financial assessment of investment and operational decisions. The division is also responsible for asset supervision and specific staff facilities.



## **Einar S. Einarsson, Executive VP**

*Corporate Services and Communication*

The Service and Marketing Division works cross-divisionally and is responsible for providing services to Landsnet's clients. The division serves as the core for internal services and HR within the Company and oversees projects that support synergy, efficiency and cooperation. The division is also responsible for social responsibility matters as well as maintaining external and internal relations.



## **Sverrir Jan Norðfjörð, Executive VP**

*Technology and Development*

The Technology and Development Division prepares grid development plans for all Landsnet infrastructure projects and manages research, environmental impact assessments and preparatory projects necessary to make decisions on infrastructure development. Our division includes a Engineering Services Unit, which prepares infrastructure works and provides cross-divisional technical services.



## **System Operations & ICT**

*Íris Baldursdóttir, Executive VP*

The System Operations & ICT Division is responsible for the grid's operational security which includes maintaining a balance between power generation and consumption, coordinating plans for the disconnection of units and overseeing the response to grid disturbances. Conditions in the electricity system are subject to continual change, requiring constant system monitoring and control. The division is also responsible for Landsnet's information systems and is at the heart of the development of smart grid solutions.



**Nils Gústavsson, Executive VP**  
*Construction & Grid Services*

The Construction & Grid Services Division oversees all construction work within the Landsnet transmission system network. The

## Landsnet's Organization



## Our team

We have focused on human resources development in recent years. Our objective is to ensure that our employees feel equipped and prepared to take on any future challenges. Our human resources policy was reviewed and its main priorities altered in line with the Company's newly re-defined policy, values and future vision.

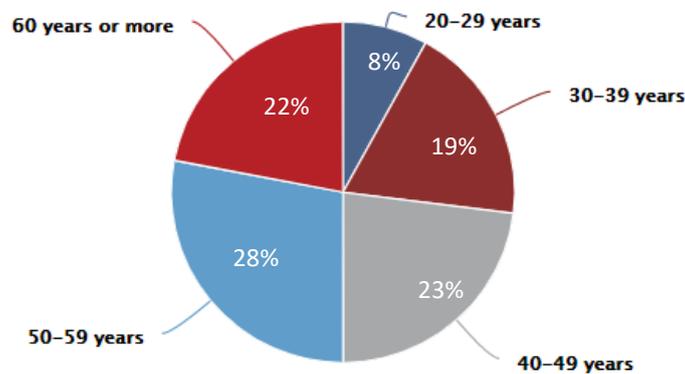
There were a total of 119 positions at year-end 2016, an increase of 9 positions since 2015 and 6 positions when compared with 2014.

Number of full-time equivalent units at end of year



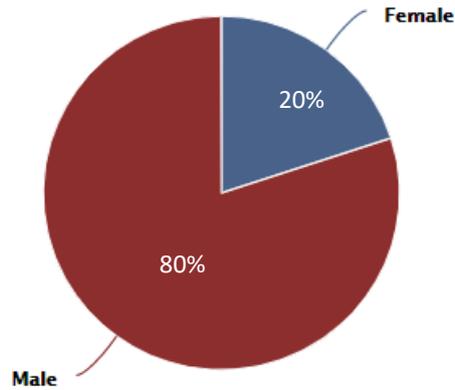
Fifteen new employees joined Landsnet this year and nine employees left the Company. These changes can mostly be attributed to retirement age. The trend will likely continue as approximately one fourth of our employees are aged 60 or older.

Length of service



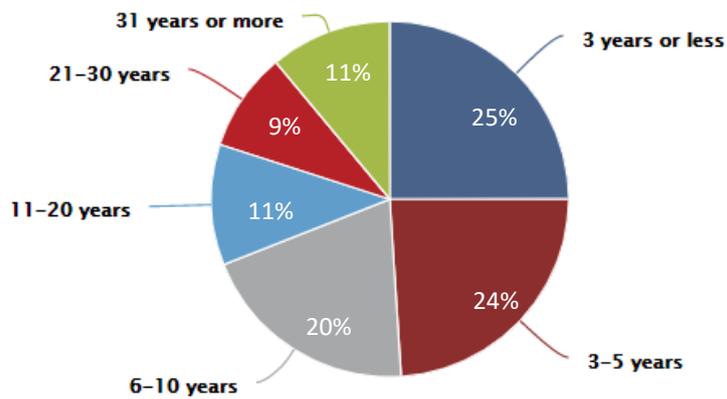
The gender ratio of our team has altered slightly in the last few years. Men account for 80% of our team whereas women account for 20%. However, the ratio is higher at the executive level where women account for 38% and men 62%.

### Gender ratio



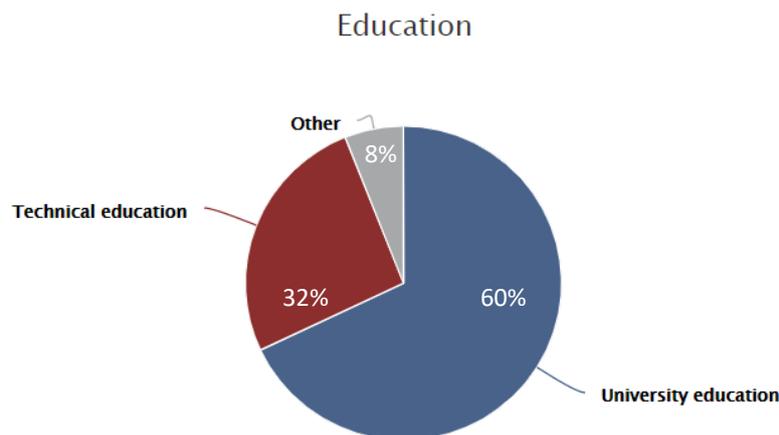
Approximately 31% of our employees have been employed by Landsnet for over 11 years or more. However, approximately 25% have been employed by us for 3 years or less, due to the aforementioned changes.

### Staff age profile



## Education

Our team is well educated, experienced and rich in expertise. Approximately 64% of our employees have a university education, 28% have a technical education and 8% have other types of education. Most of our team are electric technicians or have a university education in engineering or technology. Other employees also have a wide range of experience and education.



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## New premises in Akureyri

Our first employee was hired in North Iceland in 2016. Landsnet has plans to further develop its premises in Akureyri by increasing staff numbers and with the aim of improving its service in North Iceland.

## Health drive

A three week health drive took place in September this year and proved successful. We walked a total distance of 2,900 km which is nearly the distance between Reykjavík and Vienna. We also completed 20,457 health boosting activities and exercises as well as six hours of relaxation based exercises, lasting a total of six days.

The health drive contributed 7,405 litres of water to UNICEF in Iceland and provided 100 polio vaccinations as well as 30 portions of peanut-based paste for malnourished children.

## WOW Cyclothon

Ten employees took part in the WOW Cyclothon in June which challenged participants to cycle around the country. Landsnet employees covered a total distance of 1,358 km.

## Education and training

We are committed to providing education and training, as our operations require extensive and specialist expertise. The aim is to achieve continuous improvement, ensuring that our employees have the capability and knowledge to perform specific tasks as well as the confidence to take on any future challenges. A particular emphasis is placed on providing an education based on the policies and objectives set out by the Company. Needs analyses are utilised to assess training needs and training plans that reflect the specialised nature of Company operations are subsequently developed. One of the main objectives of training is knowledge dissemination and sharing the extensive expertise of our employees.

A total of 46 courses and presentations were held on our behalf this year. Thirty one expert courses were held internally this year, covering topics including underground cables, first aid, cable inspection, a SAReye course and workshops on the IEC61850 and PCM600 standards.

Landsnet's team of directors also completed extensive management training this year, provided by Dale Carnegie.

## Workplace

The social media network 'Workplace by Facebook' was implemented in December this year. The network facilitates the easy access and communication of information via computer or smartphone. The network should help us to connect more closely, anywhere and at any time. The introduction of this medium has already proven its value by changing our workplace culture and strengthening our team spirit, despite the short period of implementation.

## Summer positions

We hired 40 summer employees in 2016, including 24 secondary school students and 14 university students.

Our policy is to support young people in education and thus contribute to society. An emphasis is placed on offering university students interesting placements to give

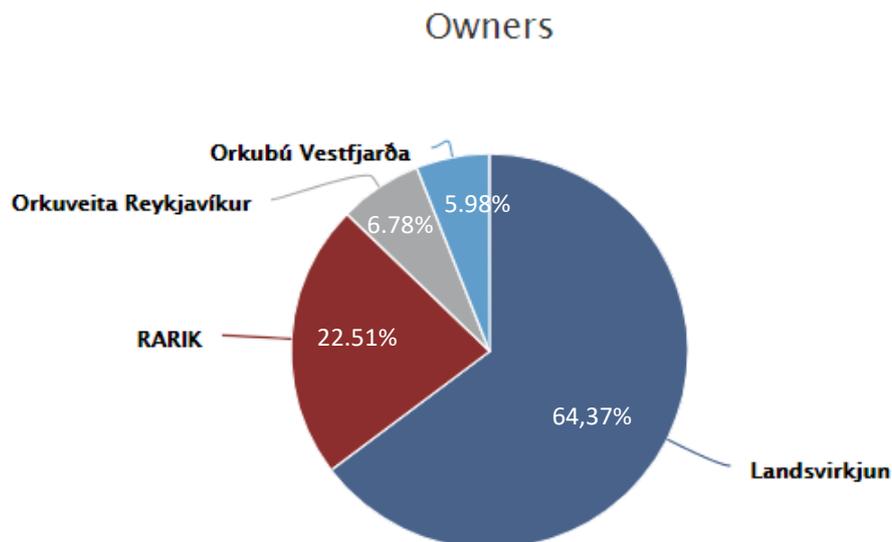
them the opportunity to familiarise themselves with real projects within their field of study.

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## Landsnet's Owners

Landsnet is a public company owned by Landsvirkjun (the National Power Company), the State Electric Power Works RARIK, Reykjavik Energy and the Westfjord Power Company

Landsnet was founded in 2005 and operates under a concession arrangement. The Company is subject to regulation by the National Energy Authority, which determines the revenue framework on which our tariff is based.



# POLICY

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We are a responsible and progressive service company with a powerful team spirit and high level of community awareness. We strive to be at the forefront of the global energy industry.

## Role

Secure and uninterrupted electricity is one of the pillars of modern society.

Our role is to ensure the cost-efficient development and operation of the grid and a secure and uninterrupted electricity supply at any given time, within the electricity system.

## Our future vision

An electrified future, in line with society, is a key principle at the core of our future vision.

Modern societies are increasingly reliant on the secure supply of electricity. We are committed to ensuring the secure supply of electricity for the future and to maintaining a balance between generation and consumption.

We hope to achieve a broad consensus in our future endeavours, are committed to considering the needs of society at any given time and to showing responsibility in environmental matters. We are also committed to promoting a healthy market environment within the electricity market and to the efficient use of funds.

## Values

Our values are responsibility, cooperation and respect and we incorporate these principles, both internally and externally. They shape our corporate culture, approach and behaviour, supporting professionalism and effective decision-making.

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## Policy pledges

Our policy is based on six key pledges to society. These include the secure supply of electricity, a high quality service and secure transmission system for the future, operations in harmony with society and the environment, efficient operations, informed debate, and targeted management and organisation.

## *Secure electricity supply- a reliable and secure transmission system for the future*

We are committed to ensuring nation-wide access to electricity at any given time and in the quantity and of the quality required. Future priorities are identified and defined as well as the criteria for reliability, security and quality. We are invested in achieving a broad consensus on the prerequisites required for construction and investment.

## *In harmony with society and the environment*

Social consensus plays an important part in defining the role and focus of the Company as well as promoting an understanding that the electricity grid is in fact a fundamental part of our modern infrastructure. We actively work towards achieving consensus with regard to Company operations and on creating awareness on our vital role within society. Corporate social responsibility is therefore an intrinsic part of Company policy. We are proactive in engaging in continuous dialogue with stakeholders, characterised by honesty, responsibility, open-mindedness, mutual respect and a willingness to cooperate. Any potential, negative impact on the environment is minimised during the development and operation of the transmission system.

## *Efficient use of funds- effective operations*

The strengthening of the grid and the elimination of any bottlenecks supports a healthy investment environment for energy market participants and also reduces electricity 'waste' within the sector. This requires a 'cradle to the grave" approach in investment and operational decisions including the consideration of macroeconomic interests. We use the funds entrusted to us wisely and prudently and make cost-effective and efficient decisions with regard to the development and operation of our transmission systems.

## *Clear image*

We strive to build an image affiliated with professionalism, trust and social responsibility and are dedicated to creating a cutting-edge, progressive company, unafraid of exploring diverse paths and solutions. We are also committed to the overall interests of society and believe in and practice transparency.

## *Strategic management and organisation*

Landsnet's organisational structure supports the role, policy and main operations of the Company in a clear and purposeful manner and creates the foundation required to fulfil our promises to both our customers and society as a whole. We believe in maintaining a simple and effective structure with clear principles, well defined roles and a holistic and comprehensive approach to process assessment. We also place an emphasis on continuous improvement in order to simplify and increase the effectiveness and overall efficiency of processes. We use structured practices and procedures with a focus on continuous improvement in compliance with international management standards and applicable legal and other related requirements.

## *Positive work environment*

We care for every employee and inspire them to take on new challenges and offer a professional and ambitious working environment. We are committed to creating a positive work environment where our work culture is characterised by our Company values, and staff are given the opportunity to progress and thrive. We are service minded and caring for the needs of customers, employees, society and the environment is an integral part of our operations. We are committed to health protection, personal and operational safety and in promoting an environment where employees have a common vision of the values, purpose and role of Landsnet.

## **Climate and waste objectives**

One of our objectives is the reduction of our carbon footprint. This means that amongst other things, SF6 emissions will be no more than 90 kg (equivalent to 2,052 tonnes of CO<sub>2</sub>) by 2018. Emissions due to power transmission will be minimised, energy losses within the transmission system will not exceed 2% of the total system intake and vehicle utilisation will be improved by 3% per kilometre. We also aim to become carbon-neutral with regard to domestic air travel and the annual volume of general waste from establishments will not exceed 90 kg per employee.

# **OPERATIONS & CONSTRUCTION**

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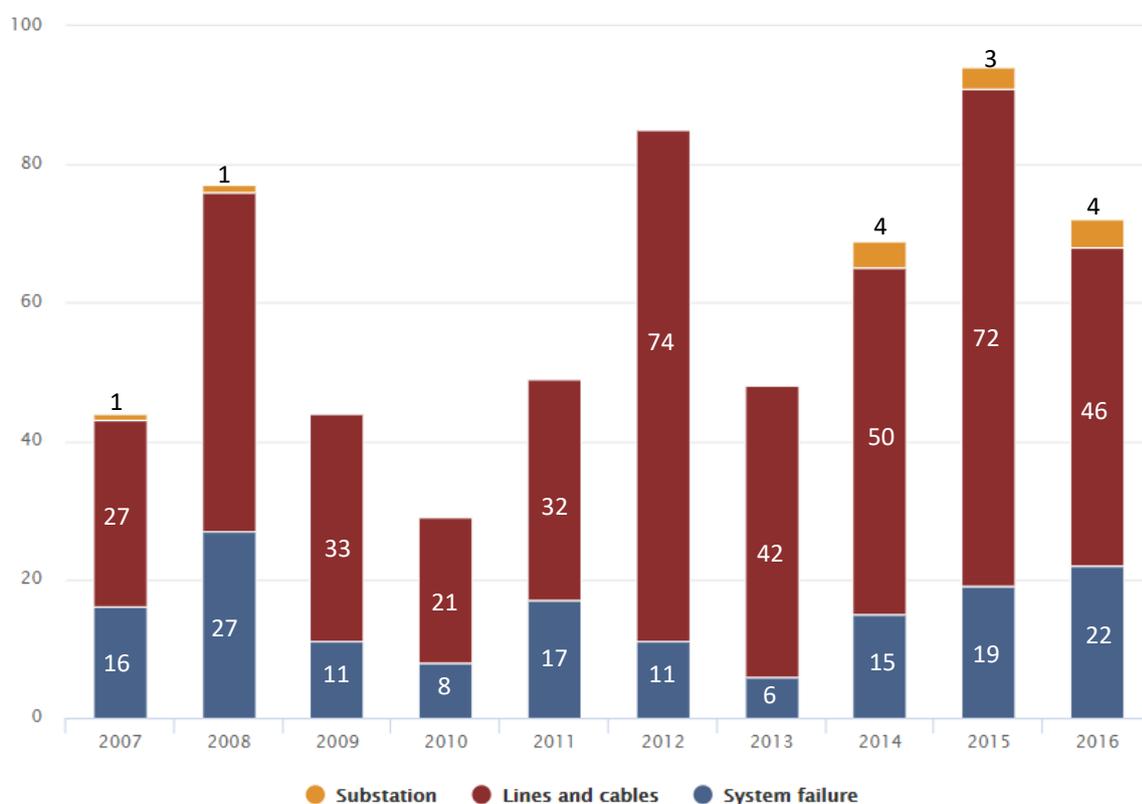
## Transmission system operations

There were no permanent faults this year due to weather conditions but less energy passed through the system than in 2015, due to the reduced energy consumption of curtailable load consumers (non-firm users). The operation of the grid was generally successful and grid interruptions, faults and energy not served were reduced considerably between years.

The reduction of energy delivered to non-curtable (firm users), due to unforeseen grid disturbances, was therefore only approx. 170 MWh and the calculated power outage was approx. 5 minutes, or the lowest recorded level in the last ten years. This performance is comparable to what is happening elsewhere in the Nordic countries and across Europe and can mostly be attributed to favourable weather conditions, better systems protection and increased smart grid technology.

Landsnet is pleased to be able to offer priority consumers such a reliable electricity supply. However, this is unfortunately the exception rather than the rule as the Icelandic transmission system has far fewer and weaker connections than comparable systems in Europe.

Grid Disturbances and Location

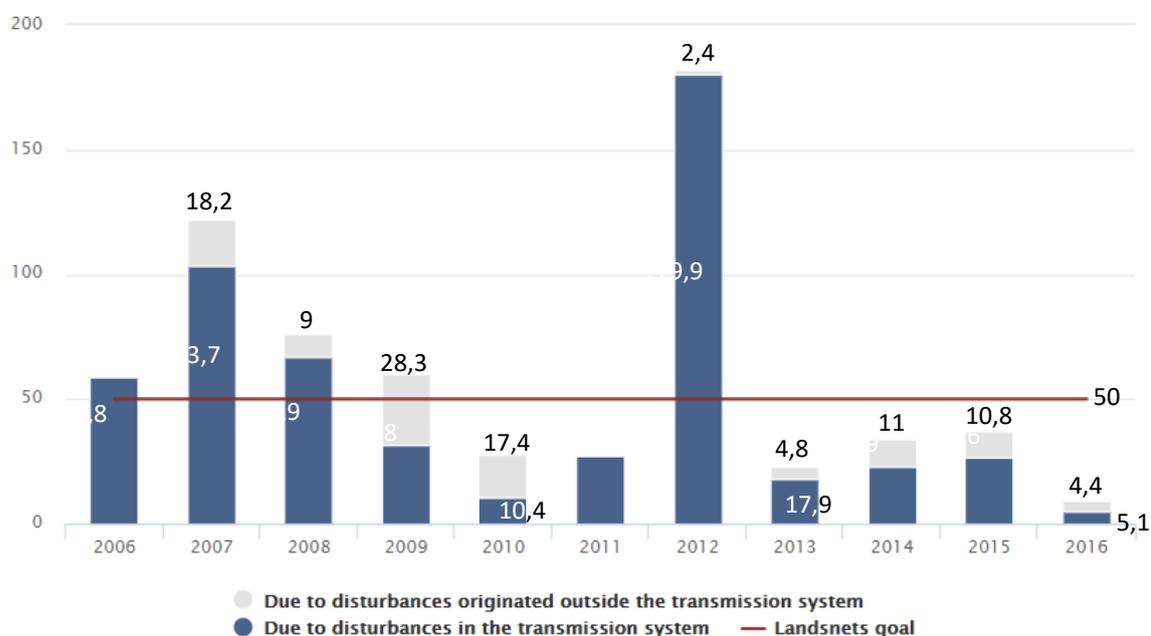


## Operational disturbances in the transmission system

Calculations on 'outage minutes due to grid disturbances have been used to measure the reliability of the Icelandic grid since 1987. Our objective is to keep the number of outage minutes experienced by priority consumers (firm users) below 50 per year.

The total number of unforeseen grid disturbances decreased from 95 in 2015 to 72 in 2016, or 16% above the average of the last 10 years. The number of faults also decreased significantly between years with a total of 85 in 2016, compared with 123 in 2015.

Outage Minutes Due to Disturbances

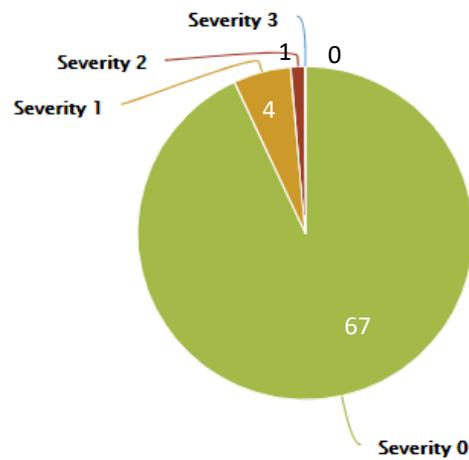


*Skerðingar notenda á skerðanlegum flutningi eru ekki taldar til straumleysismínútna og eru því ekki taldar með í þessu grafi*

The reduction of energy delivered to priority consumers due to unforeseen grid disturbances was therefore only approx. 170 MWh and the calculated power outage was approx. 5 minutes, or the lowest recorded level in the last ten years.

However, the outage minutes for priority consumers (firm users) does not provide an accurate overview of the reliability of the grid as the volume of reserve power used during disturbances and curtailments to curtailable load consumers (non-firm users) also need to be taken into account.

## Number of Disturbances in Each Severity Class

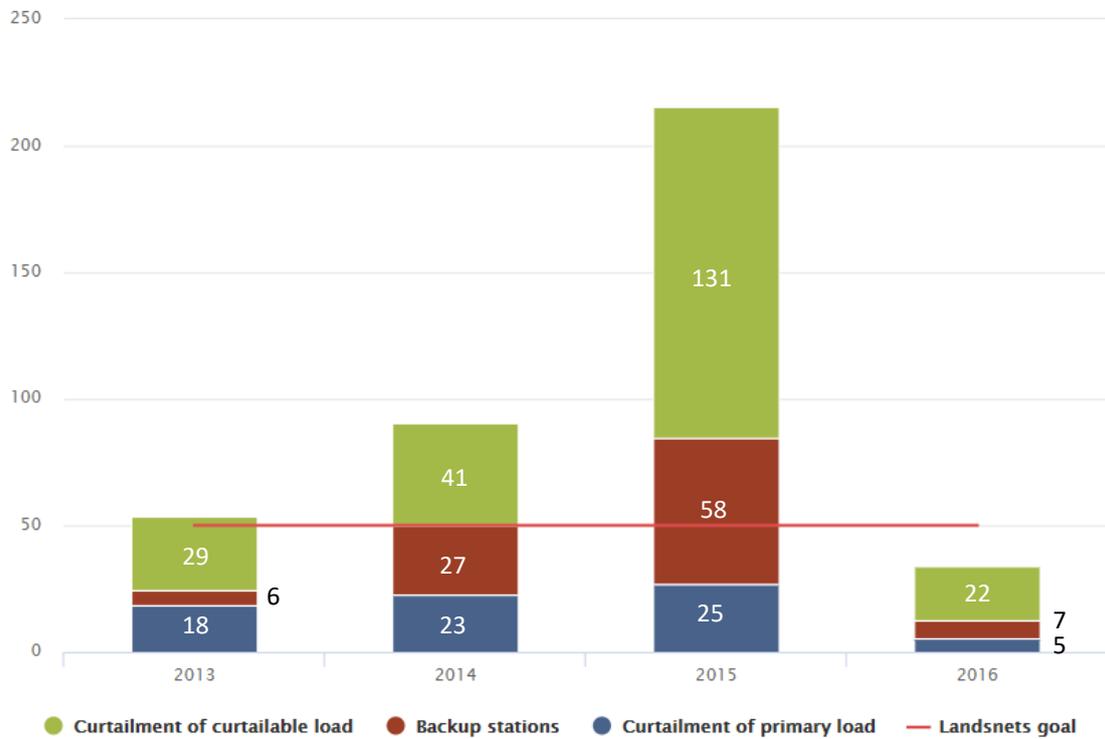


Unforeseen grid disturbances are classified according to severity and the colour indicates the severity level of each event or incident. An overview of the main disturbances that caused a reduction in the supply of electricity to customers can be found in the Performance Report 2016.

### *Security of supply*

Increased strain on the transmission system and the rise in grid interruptions has resulted in the use of back-up energy and curtailments to non-firm users. However, smart grid solutions and rapid response times have minimised or eliminated absolute outage to priority consumers and helped to achieve last year's goal on the security of delivery, despite a large number of interruptions. The number of outage minutes for 2016 would be much higher or approx. 34 minutes, without access to a back-up power supply and curtailment measures to non-firm users.

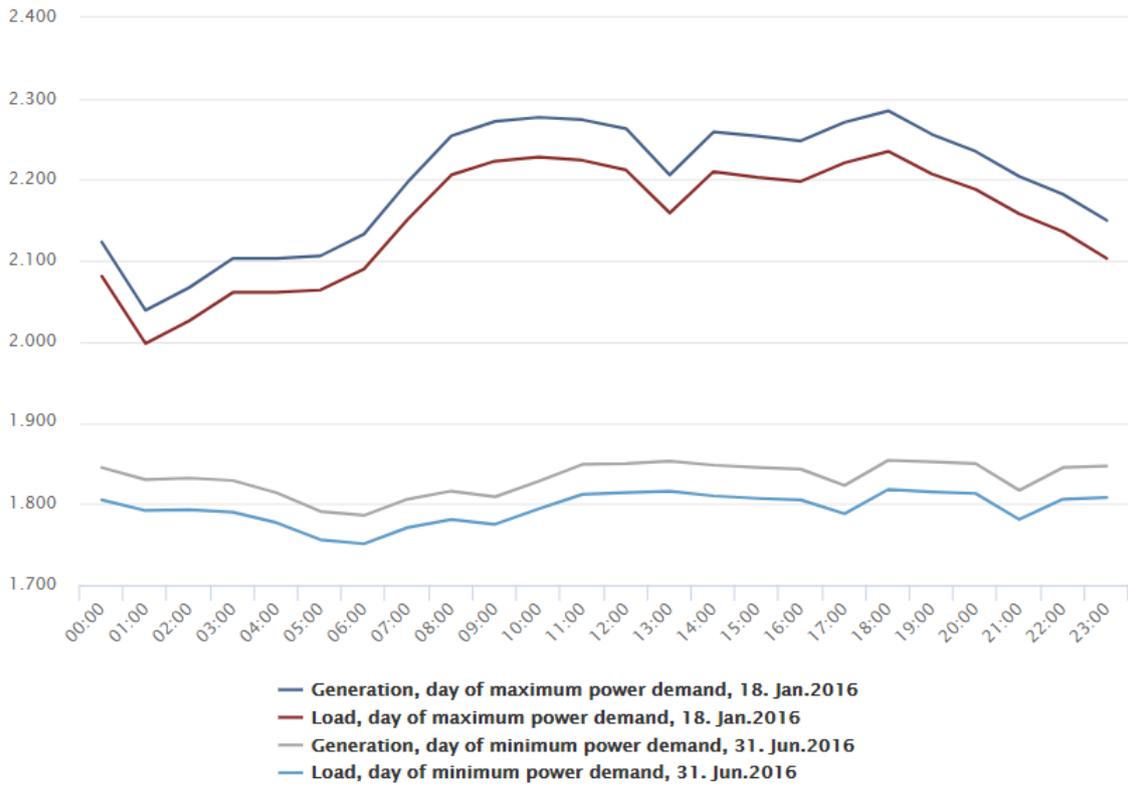
Curtailment and Power Produced in Backup Power Stations in Landsnets System 2013–2016 in System Minutes



### Peak load

The highest peak in power fed into the transmission system was recorded on the 29th of November, reaching 2,291 MW, which is 0.44% lower than in the previous year. The total system demand in 2016 was 17.8 TWh, or a total increase of 1.47% between years. Transmission losses totalled 360 GWh.

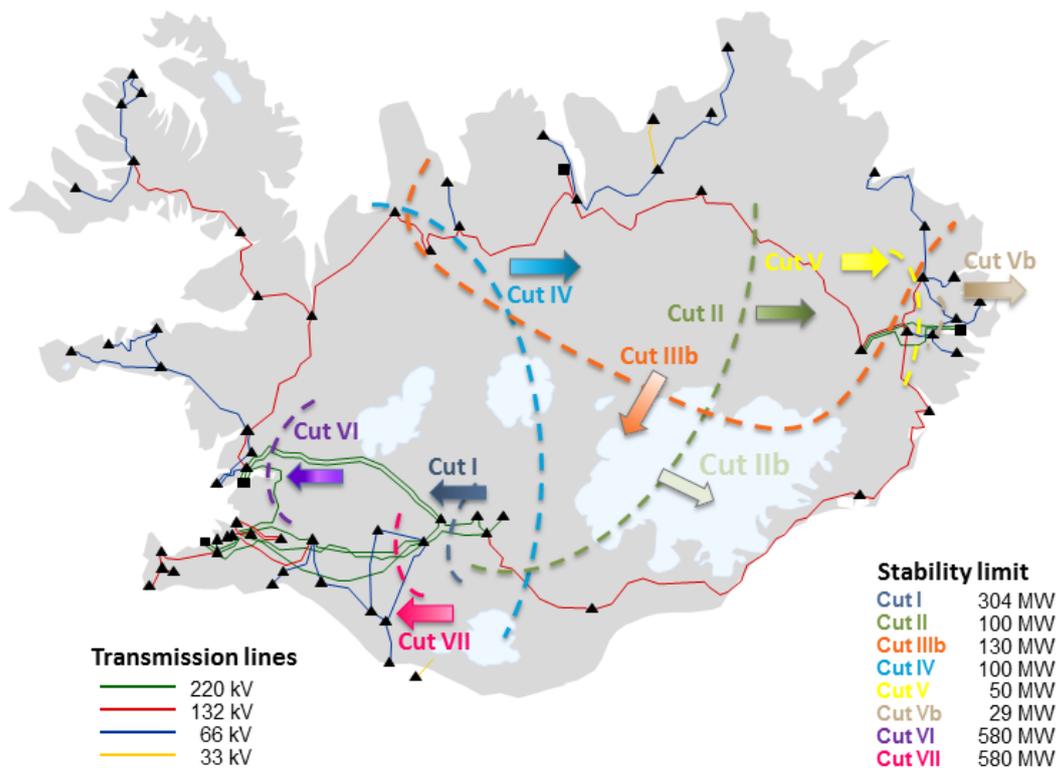
Intra-day load curves



*Exceeding security limits*

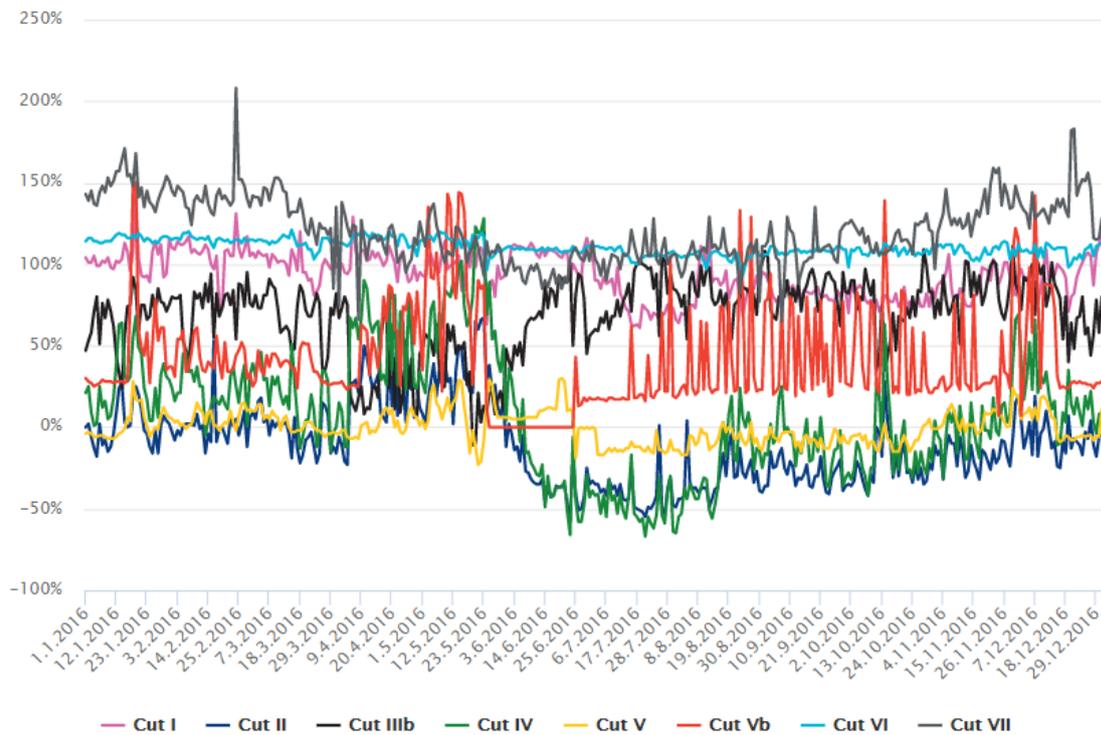
We continuously monitor transmissions via defined transmission cuts or bottlenecks in the grid (see map) to minimise the impact of disturbances without compromising the transmission capacity.

### Defined transmission cuts and security limits



Grid disturbances increase the risk of an outage when the level of transmission through a cut nears or exceeds security limits (80%). The figure below shows that grid operation exceeded the security limits for a large part of the year. Landsnet's Control Centre must require generators to change their generation plans under these circumstances, i.e. issue dispatch instructions, and sometimes enforce prolonged curtailments in certain regions. This is problematic for all those connected to the grid.

Main transmission cut-planes in the electricity system in 2016 (daily averages)



## Mitigation measures

Our Control Centre is technologically advanced in energy management and grid operation matters. Our team is specifically trained to assess grid performance and operational risks in accordance with the correct procedures.

Future smart grid solutions were assessed this year as these could ensure the rapid curtailment of load for non-firm users. They could also improve the regional load balance through the load management of aluminium plants and other industrial loads and control the splitting of the grid into separate components during disturbances to ensure operational security.

Communication routes were redefined according to their level of importance and equipment was updated to meet increased management and security requirements.

Extensive work was also carried out on preparation measures for projects beginning in 2017. These include a smart grid in the south of Iceland (in connection with the voltage increase to the Westman Islands), a smart grid in Reykjanes, load management for an energy intensive user in the southwest and the upgrade of smart grid equipment in east Iceland in connection with the European research project Migrate.

Preparations are also underway for ‘fast control’ in connection with the control of generating units during disturbances, as well as continuous weather monitoring and prevention measures in cooperation with our customers. This will ensure targeted responses designed to minimise the impact of weather- related disturbances.

### *Strengthening the transmission system*

A significant increase in the use of backup power during grid interruptions and curtailment measures (non-firm users) shows that the transmission system is widely overloaded.

The security of the grid would be well below the criteria generally used to assess the reliability of transmission systems without readily available access to back-up energy and the aforementioned curtailment measures.

The grid provides the whole of Iceland with electricity and its infrastructure must be strengthened to continue the provision of this vital service. Smart grid solutions and the increased use of reserve power are temporary solutions which do not solve the grid’s capacity problems or ensure its long-term reliability.

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## **IT and telecommunications**

IT and telecommunications are an increasingly important factor in Landsnet’s operations and the transmission system as a whole. We updated key systems, improved telecommunications, safety and security and brought new energy management system terminals into service.

### *Software system for the regulating power market*

The development of a new software system for the regulating power market was mostly completed this year and became operational in the beginning of 2017. The system manages tenders and bids and sends control values to Landsnet’s Energy Management System to maintain balance in the electricity system. The project was tendered out in the European Economic Area and was awarded to the software company Kolibri.

## *Security and telecommunications*

Landsnet is committed to ensuring the security of its software and IT systems, which are integral to the transmission system's operational security. The assessment of security matters in relation to the Energy Management System and control equipment and subsequent improvements are a part of our every day operations, as is the safety and security training of the personnel responsible for the aforementioned systems.

Our Control Centre's Wide Area Monitoring System plays an increasingly important role in the daily management of the grid. The transfer of electronic communications equipment (PMU) to a closed electronic communications network, in cooperation with the company Orkufjarskipti, was also carried out this year and should reach completion in 2017.

The telecommunications network for Orkufjarskipti in Reykjanes was strengthened during the year. A fiber optic cable was built between Fitjar and Hamranes, which allows the control centre to develop real-time controllers based on much higher data levels, ensuring faster and more secure communications.

## *Landsnet's Energy Management System (EMS)*

The EMS terminal units at Brennimel and Korpa were renewed this year and the control equipment in the new substations in Akranes and in Helguvík was connected to the system. The next upgrade of the EMS was also prepared.

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## **Research and innovation**

### *Research on energy security matters in Iceland*

Landsnet and the National Energy Authority asked the MIT-EI (Massachusetts Institute of Technology – Energy Initiative) and the Comillas Pontifical University in Spain to conduct research on the “Electricity security of supply in Iceland” and to answer the question of “How to ensure long-term security of electricity supply in an economic manner” by 2030.

The research team conducted an extensive investigation on the current status of the security of the national electricity supply and offered various solutions for improvement including the strengthening of the transmission system, investment in new hydropower, geothermal power and wind power stations, the use of diesel and gas storage stations as well as the construction of a sub-sea cable connection to

Europe. Proposals were also put forward with regard to administration and legislation as the leader of the project (Dr José Ignacio Pérez Arriaga) is one of the world's greatest experts in this area. The project began in 2015 and the two universities cooperated with steering and project committees from Landsnet, Landsvikjun and the National Energy Authority. The final report is already available online.

## **GARPUR**

Landsnet has been an active participant in the GARPUR (Generally Accepted Reliability Principle with Uncertainty Modelling and through Probabilistic Risk Assessment) European research project. The aim of the project is to maintain “power system performance at a desired level, while minimising the socio-economic costs of keeping the power system at that performance level.” The four-year project received an ISK 1.2 billion grant from the EU's 7th Framework Programme for Research in 2013.

The second part of the project focuses on the testing of a new methodology with the participation of European TSOs, under Landsnet's leadership. Landsnet's work on assessing the reliability of the system in real-time is progressing well. The assessment is detailed as testing must be as close to the system's real-time management as possible, involving large quantities of data on reliability, customer costs due to electricity shortages and real-time weather data.

GARPUR's key objective is to revolutionise the prevailing methodology in grid reliability calculations and develop new and more effective indicators to enable European TSOs to better deal with the substantial changes that have taken place in the development and operation of electricity systems in Europe and work on their further development. <http://www.garpur-project.eu/>

## **BUSINESS**

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### **Customers**

Our main customers include electricity producers, distributors, energy intensive users and suppliers:

**Distributors**

RARIK  
 HS Veitur  
 Norðurorka  
 Veitur  
 Orkubú Vestfjarða  
 Rafveita Reyðarfjarðar

**Producers**

Landsvirkjun  
 ON  
 HS Orka  
 Orkusalan  
 Fallorka

**Energy intensive users**

ADC  
 Verne Holding  
 United Silicon  
 Becromal  
 ISAL  
 Alcoa  
 Elkem  
 Norðurál

We supplied electricity to two new energy intensive users this year and made improvements to customer services via new and improved service processes and a new approach to accessing information on our website. The goal is to ensure that the service process takes a holistic approach to the issues presented by our customers and to ensure the correct solutions and processing.

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**Grid code**

Changes were made to the terms for technical requirements for operating units (D1) this year, alongside a prototype for grid codes for the system contribution (D3). These were introduced to representatives of Landsnet's Business Council in October 2016 and were subsequently submitted for a review process. Both grid codes will take effect in 2017.

Changes to Grid Code D1 include important adaptation measures for a variety of processing units, e.g. wind turbines. We also reviewed technical requirements and processing units below 10 MW with the option of connecting directly to our transmission network.

Our terms on system contribution are new and were requested by the EFTA Surveillance Authority (ESA) to ensure transparency in cost decisions for the connection of new power stations or users of the transmission system.

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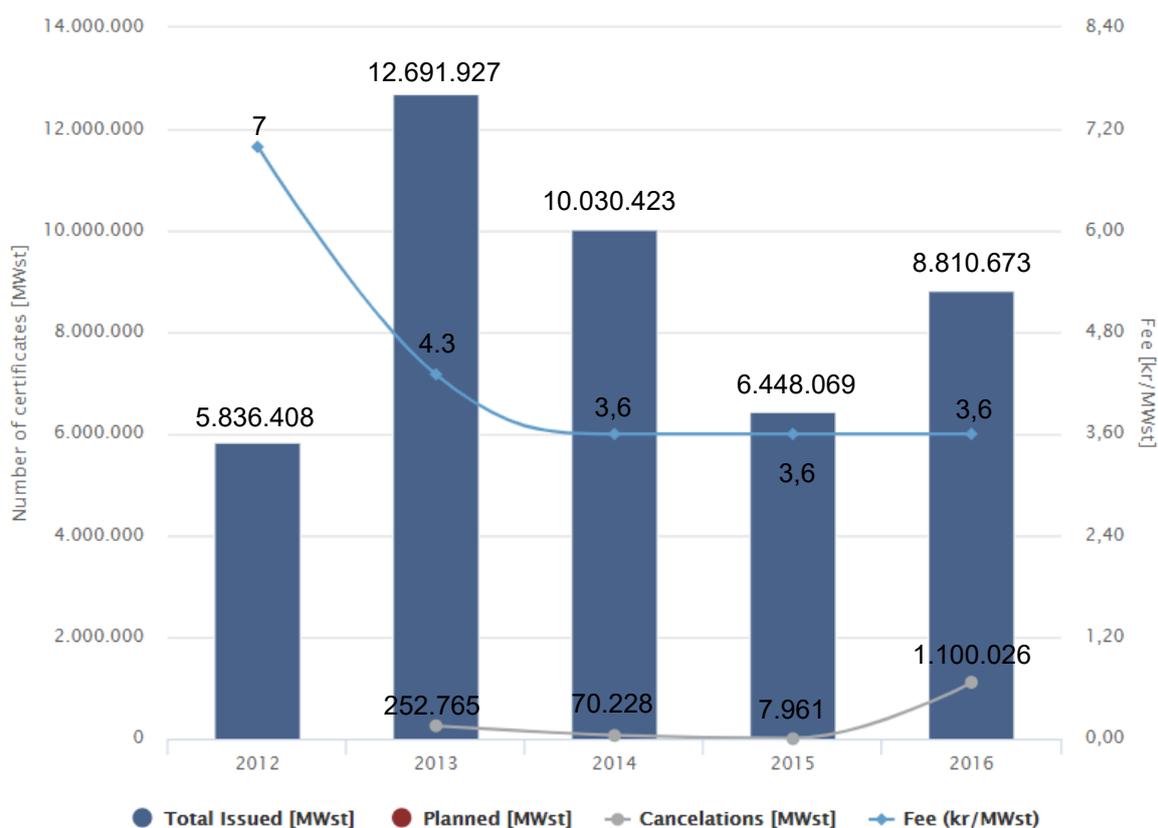
## Guarantees of Origin of electricity (GOs)

Landsnet issues Guarantees of Origin of electricity (GOs) which confirm that a certain amount of electricity is generated from renewable energy sources. The issue of these certificates increased by a third between 2015 and 2016, reaching a total of nine million or a similar number to those issued in 2014.

Re-certification was carried out for production facilities that received their first certification in 2011. A decision was made not to charge for re-certification in cases where there had been no change in equipment or the operation of the stations. Landsnet's tariff list for certification management was also increased by 4%. This will take effect from the beginning of 2017. The list was last updated in May 2014.

The accompanying figure shows developments in the issue of certificates of origin in MWh, the number of registered certificates in MWh and price developments.

Issuing of GO 2012 – 2016



## SOCIETY

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Numerous meetings were held with stakeholders where a wide range of topics were discussed. A new procedure was introduced, focusing on increased consultation, dialogue and disclosure which are reflected, among other things in a modified system and community policy. This has resulted in a changing attitude towards the company, based on knowledge dissemination and trust.

### Scholarships and community grants

Each year, we support community projects within our field as well as projects carried out on our behalf.

### Cooperation with the Kolviður Fund

A contract was signed this year between Landsnet and the Kolviður Fund to carbon “neutralise” all domestic flights on our behalf.

Co-operation with Reykjavik University During the year, Landsnet continued to support Reykjavik University (RU) by providing internships for students at RU’s School of Science and Engineering. The agreement aims to promote students’ expertise in the fields of risk analysis and electricity transmission. Landsnet and RU’s Centre of Risk and Decision Analysis (CORDA) collaboration on scholarships for doctoral students also continued this year. The aim is to increase knowledge and expertise in risk and decision analysis.

### Support to University of Iceland engineering students

Landsnet supports the Team Spark initiative where engineering students at the University of Iceland compete in building electric racing cars. The team entered the car into the Formula Student race at the Silverstone Circuit in England this year.

### Charity support

Instead of sending Christmas cards to its customers, Landsnet annually contributes an equivalent amount to charities and welfare organisations. This year we supported UNICEF.

## Co-operation agreement with ICE-SAR

Landsnet continued its collaboration with Landsvirkjun, RARIK and the Icelandic Association for Search and Rescue (ICE-SAR). The agreement ensures that the three electricity companies receive the assistance of search and rescue teams in emergencies and in other cases where assistance is required. The agreement also provides the electricity companies' employees with access to training at the ICE-SAR Search and Rescue Academy and outlines defined response procedures for the rescue teams whenever the energy companies need their assistance

## TRANSMISSION

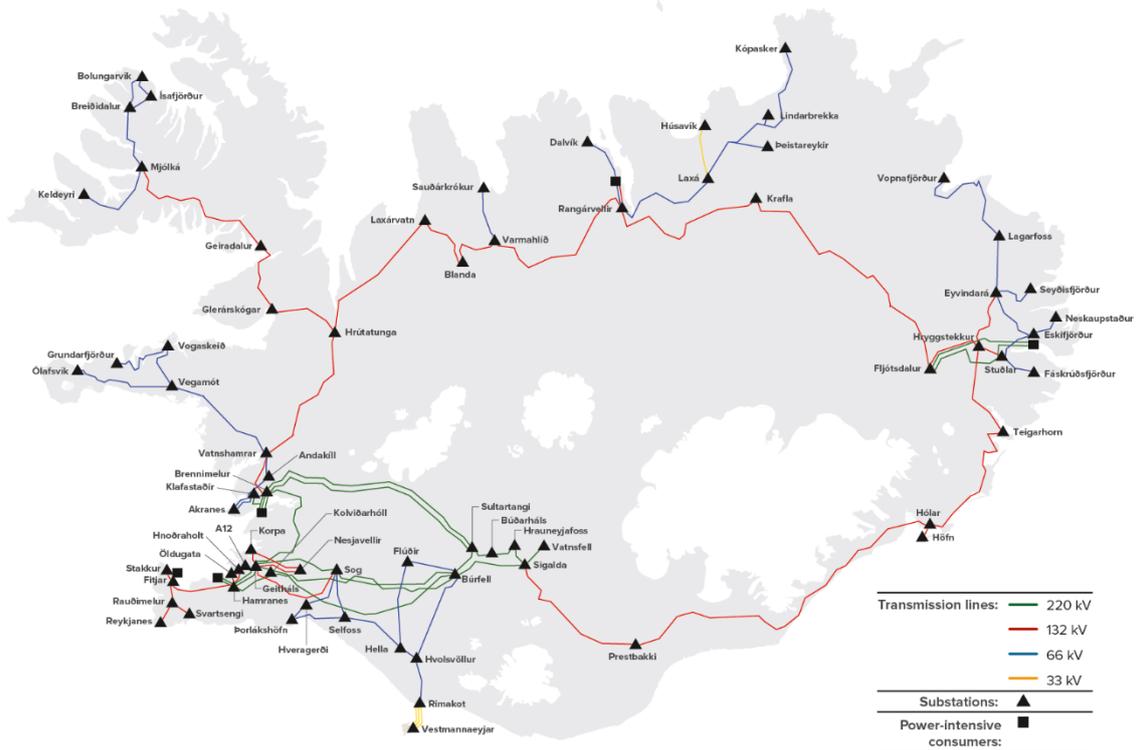
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<u>Landsnet's grid</u>
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### The grid 2016

Iceland has only one single defined grid but a number of regional or distribution networks. Landsnet owns and operates all bulk transmission lines in Iceland. The grid also includes all main substations in the country.

The grid receives electricity directly from power stations and transmits it to distributors and power-intensive users. All power stations that are 10 MW or larger connect to the grid, which transmits the electricity to energy intensive consumers and distribution system operators around the country. The distributors then carry the electricity onwards to individual consumers.



## Electricity cables at year-end 2016

Our transmission network covered a distance of 3,283 in 2016 including 251 km of underground cables. The network includes voltages of 66 kV and higher as well as a number of 33 kV lines. The grid's highest operating voltage is 220 kV. A large part of the grid operates at 132 kV and some parts at 66 kV and 33 kV. Transmission lines in the south-west and east of Iceland were built as 420 kV lines but operate at 220 kV.

## Transmission line network in 2016

Voltage [kV]	Name	KKS code	First year in service	Connected substations	Length [km]	Of which underground [km]	
220	Brennimerur Line 1	BR1	1977 / 2006	Geitháls-Brennimerur	58.6		
	Búðarháls Line 1	BH1	2014	Búðarháls-HR1 (Langalda)	5.6		
	Búrfell Line 1	BU1	1969	Búrfell-Írafoss	60.8		
	Búrfell Line 2	BU2	1973	Búrfell-Kolviðarhöll	86		
	Búrfell Line 3 (partly built for 400 kV)	BU3	1992/1998	Búrfell-Hamranes	119.07	0.07	
	Fljótsdalur Line 3 (built for 400 kV)	FL3	2007	Fljótsdalur-Reyðarfjörður	49		
	Fljótsdalur Line 4 (built for 400 kV)	FL4	2007	Fljótsdalur-Reyðarfjörður	53		
	Hamranes Line 1	HN1	1969	Geitháls-Hamranes	15.1		
	Hamranes Line 2	HN2	1969	Geitháls-Hamranes	15.1		
	Hrauneyjafoss Line 1	HR1	1982	Hrauneyjafoss-Sultartangi	19.5		
	Ísal Line 1	IS1	1969	Hamranes-Ísal	2.4		
	Ísal Line 2	IS2	1969	Hamranes-Ísal	2.4		
	Jámblendi Line 1	JA1	1978	Brennimerur-Jámblendivk	4.5		
	Kolviðarhöll Line 1	KH1	1973	Kolviðarhöll-Geitháls	17.3		
	Norðurál Line 1	NA1	1998	Brennimerur-Norðurál	4.2		
	Norðurál Line 2	NA2	1998	Brennimerur-Norðurál	4		
	Sigalda Line 2	SI2	1982	Sigalda-Hrauneyjafoss	8.6		
	Sigalda Line 3	SI3	1975/2015	Sigalda-Búrfell	36.8		
	Sog Line 3	SO3	1969	Írafoss-Geitháls	35.8		
	Sultartangi Line 1	SU1	1982	Sultartangi-Brennimerur	121.6		
	Sultartangi Line 2	SU2	1999	Sultartangi-Búrfell	12.5		
	Sultartangi Line 3 (built for 400 kV)	SU3	2006	Sultartangi-Brennimerur	119		
	Vatnsfell Line 1	VF1	2001	Vatnsfell-Sigalda	5.8		
					<b>Total 220 kV</b>	<b>856.67</b>	<b>0.07</b>
	132	Blanda Line 1	BL1	1977/1991	Blanda-Laxárvatn	32.7	
		Blanda Line 2	BL2	1977/1991	Blanda-Varmahlíð	32.4	
		Eyvindará Line 1	EY1	1977	Hryggstekkur-Eyvindará	27.5	
Fitjar Line 1		MF1	1991	Rauðimerur-Fitjar	6.8		
Fitjar Line 2		FI2	2015	Fitjar-Stakkur	8.5	8.5	
Fljótsdalur Line 2		FL2	1978	Fljótsdalur-Hryggstekkur	25	7	
Geiradalur Line 1		GE1	1980	Glerárskógar-Geiradalur	46.7		
Glerárskógar Line 1		GL1	1983	Hrútatunga-Glerárskógar	33.5		
Hafnarfjörður Line 1		HF1	1989	Hamranes-Öldugata	4	4	
Höfn Line 1		HA1	1987/2014	Hólar-Höfn	8	8	
Hnoðrahoft Line 1		AD7	1990	Hamranes-Hnoðrahoft	9.7	2	
Hólar Line 1		HO1	1981	Telgarhorn-Hólar	75.1		
Hrútatunga Line 1		HT1	1976	Vatnshamrar-Hrútatunga	77.1		
Korpa Line 1		KO1	1974	Geitháls-Korpa	6	0.3	
Krafla Line 1		KR1	1977	Krafla-Rangárvellir	82.1		
Krafla Line 2		KR2	1978	Krafla-Fljótsdalur	123.2	0.1	
Laxárvatn Line 1		LV1	1976	Hrútatunga-Laxárvatn	72.7		
Mjólka Line 1		MJ1	1981	Geiradalur-Mjólka	80.8		
Nesjavellir Line 1		NE1	1998	Nesjavellir-Korpa	32	16	
Nesjavellir Line 2		NE2	2010	Nesjavellir-Geitháls	25	25	
Prestbakki Line 1		PB1	1984	Hólar-Prestbakki	171.4		
Rangárvellir Line 1	RA1	1974	Rangárvellir-Varmahlíð	87.5			
Rangárvellir Line 2	RA2	2009	Rangárvellir-Krossanes	4.4	4.4		
Rauðimerur Line 1	RM1	2006	Reykjanes-Rauðimerur	15			

	Sigalda Line 4	SI4	1984	Sigalda-Prestbakki	78.1	
	Sog Line 2	SO2	1953	Írafoss-Geltháls	44.4	
	Stuðlar Line 1	SR1	2005	Hryggstekkur-Stuðlar	16	16
	Suðurnes Line 1	SN1	1991	Hamranes-Fitjar	30.7	0.1
	Svartsengi Line 1	SM1	1991	Svartsengi-Rauðimelur	4.9	
	Teigarhorn Line 1	TE1	1981	Hryggstekkur-Teigarhorn	49.7	
	Vatnshamrar Line 1	VA1	1977	Vatnshamrar-Brennimelur	20.2	
				<b>Total 132 kV</b>	<b>1334.1</b>	<b>92.3</b>
66	Akranes Line 1	AK1	1996	Brennimelur-Akranes	18.5	18.5
	Andakill Line 1	AN1	1966	Andakilsvirkjun-Akranes	34.85	1.3
	Bolungarvík Line 1	BV1	1979/2014	Breiðdalur-Bolungarvík	17.1	1
	Bolungarvík Line 2	BV2	2010/2014	Ísafjörður-Bolungarvík	15.3	15.3
	Breiðdalur Line 1	BD1	1975	Mjólka-Breiðdalur	36.4	0.8
	Dalvík Line 1	DA1	1982	Rangárvellir-Dalvík	39	0.1
	Eskifjörður Line 1	ES1	2001	Eyvindará-Eskifjörður	29.1	0.3
	Fáskrúðsfjörður Line 1	FA1	1989	Stuðlar-Fáskrúðsfjörður	16.8	
	Flúðir Line 1	FU1	1978	Búrfell-Flúðir	27.4	0.6
	Grundarfjörður Line 1	GF1	1985	Vogaskelð-Grundarfjörður	35.4	
	Hella Line 1	HE1	1995	Flúðir-Hella	34.4	1.7
	Hella Line 2	HE2	2015	Hella-Hvolsvöllur	13	13
	Hveragerði Line 1	HG1	1982	Ljósafoss-Hveragerði	15.4	0.1
	Hvolsvöllur Line 1	HV1	1972	Búrfell-Hvolsvöllur	45.1	0.25
	Ísafjörður Line 1	IF1	1959/2014	Breiðdalur-Ísafjörður	13	3
	Kópasker Line 1	KS1	1983	Laxá-Kópasker	83.3	0.1
	Lagarfoss Line 1	LF1	1971	Lagarfoss-Eyvindará	28	6
	Laxá Line 1	LA1	1953	Laxá-Rangárvellir	58.4	0.7
	Ljósafoss Line 1	LJ1	2002	Ljósafoss-Írafoss	0.6	0.6
	Neskaupstaður Line 1	NK1	1985	Eskifjörður-Neskaupstaður	18.2	1.9
	Ólafsvík Line 1	OL1	1978	Vegamót-Ólafsvík	48.8	
	Rímakot Line 1	RI1	1988	Hvolsvöllur-Rímakot	22.2	0.1
	Sauðárkrökur Line 1	SA1	1974	Varmahlíð-Sauðárkrökur	21.8	
	Selfoss Line 1	SE1	1981	Ljósafoss-Selfoss	20.3	2.7
	Selfoss Line 2	SE2	1947	Selfoss-Hella	32	0.7
	Selfoss Line 3	SE3	2016	Selfoss-Þorlákshöfn	28	28
	Seyðisfjörður Line 1	SF1	1996	Eyvindará-Seyðisfjörður	20.1	0.3
	Steingrímsstöð Line 1	ST1	2003	Steingrímsstöð-Ljósafoss	3.4	1
	Stuðlar Line 2	SR2	1983	Stuðlar-Eskifjörður	18.2	2.4
	Tálknafjörður Line 1	TA1	1985	Mjólka-Keldeyri	45.1	
	Vatnshamrar Line 2	VA2	1974	Andakilsvirkjun-Vatnshamrar	2	0.2
	Vegamót Line 1	VE1	1974	Vatnshamrar-Vegamót	63.8	
	Vogaskelð Line 1	VS1	1974	Vegamót-Vogaskelð	24.8	
	Vopnafjörður Line 1	VP1	1980	Lagarfoss-Vopnafjörður	58	0.15
	Þeistareykir Line 2	TR2	2013	Þeistareykir-KS1 (Höfuðreiðarmúli)	11	11
	Þorlákshöfn Line 1	TO1	1991	Hveragerði-Þorlákshöfn	19.3	0.1
				<b>Total 66 kV</b>	<b>1018.1</b>	<b>111.9</b>
33	Húsavík Line 1	HU1	1948	Laxá-Húsavík	26	0.1
	Vestmannaeyjar Line 1 (sub-sea cable)	VM1	1962	Vestmannaeyjar-Rímakot	16	16
	Vestmannaeyjar Line 2 (sub-sea cable)	VM2	1978	Vestmannaeyjar-Rímakot	16	15
	Vestmannaeyjar Line 3 (sub-sea cable)	VM3	2013	Vestmannaeyjar-Rímakot	16	16
				<b>Total 33 kV</b>	<b>74</b>	<b>47</b>
				<b>Total</b>	<b>3283</b>	<b>251</b>

**Energy terms/abbreviations**

kV=kilovolt

kW=kilowatt

MW=megawatt=1000 kW

kWh=kilowatt hour

MWh=megawatt hour=1000 kWh

GWh=gigawatt hour=1000 MWh

## Substations at year-end 2016

The transmission network now includes 74 substations and 85 supply locations, 20 of which are power stations, 8 energy intensive users and 59 supply locations for distributors.

### Substations in 2016

Substations	KKS code	Co-owner	Voltage [kV]	First year in service	No. of switchyard bays	Number of transformers
Aðveitustöð 12 / Substation 12	A12	OR	132	2006	1	0
Akranes	AKR	OR	66	2016	4	0
Andakill	AND	OR	66	1974	3	0
Ásbrú	ASB		33	2011	8	0
Blanda	BLA	LV	132	1991	5	0
Bolungarvík	BOL		66/11	2014	3/8	0
Breiðidalur	BRD	OV	66	1979	4	0
Brennimelur	BRE	RA	220/132/66	1978	9/4/3	3
Búðarháls	BUD		220	2013	2	0
Búrfell	BUR		220/66	1999	8/4	0
Dalvík	DAL	RA	66	1981	1	0
Eskifjörður	ESK	RA	66	1993	5	0
Eyvindará	EYV	RA	132/66	1975	1/5	1
Fáskrúðsfjörður	FAS	RA	66	1998	3	0
Fitjar	FIT	HS	132	1990	5	0
Fjótisdalur	FLJ		220/132	2007	10/4	2
Flúðir	FLU	RA	66	1995	3	0
Geiradalur	GED	OV	132	1983	3	0
Geitháls	GEH		220/132	1968	7/9	2
Glerárskógar	GLE	RA	132	1980	3	0
Grundarfjörður	GRU	RA	66	1987	1	0
Hamranes	HAM		220/132	1989	7/8	2
Hella	HLA	RA	66	1995	4	0
Hnoðraholt	HNO	OR	132	1990	2	0
Hólar	HOL	RA	132	1984	5	0
Hrauneyjafoss	HRA	LV	220	1981	5	0
Hrútatunga	HRU	RA	132	1980	4	0
Hryggstekkur	HRY	RA	132	1978	6/5	1
Húsavík	HUS	RA	33	1978	2	0
Hveragerði	HVE	RA	66	1983	3	0
Hvolsvöllur	HVO	RA	66	1995	4	0
Írafoss	IRA	LV	220/132	1953	3/6	2
Ísafjörður	ISA	OV	66	2014	4	0
Keldeyri	KEL	OV	66	1979	2	0
Klafastaðir	KLA		220/16	2013	1/4	1
Kolviðarhóll	KOL		220	2006	7	0
Korpa	KOR	OR	132	1976	6	0

Kópasker	KOP	RA	66	1980	1	0
Krafla	KRA	LV	132	1977	4	0
Lagarfoss	LAG	RA	66	2007	5	0
Laxá	LAX		66/33	2003	6/1	1
Laxárvatn	LAV	RA	132	1977	3	0
Lindarbrekka	LIN	RA	66	1985	1	0
Ljósaþfoss	LJO	LV	66	1937	6	0
Mjólká	MJO	OV	132/66	1980	2/5	2
Nesjavellir	NES	OR	132	1998	6	0
Neskaupstaður	NKS	RA	66	1994	3	0
Ólafsvík	OLA	RA	66	1980	1	0
Prestbakki	PRB	RA	132	1984	3	0
Rangárvellir	RAN	RA	132/66	1974	8/7	2
Rauðimelur	RAU		132	2006	3	0
Reykjanes	REY	HS	132	2006	3	0
Rímakot	RIM	RA	66/33	1990	2/5	1
Sauðárkrúkur	SAU	RA	66	1977	3	0
Sølfoss	SEL	RA	66	2005	5	0
Seyðisfjörður	SEY	RA	66	1957	2	0
Sigalda	SIG	LV	220/132	1977	7/1	1
Silfurstjarnan	SIL	RA	66	1992	1	0
Stakkur	STA		132	2016	3	1
Steingrímsstöð	STE	LV	66	1959	1	0
Stuðlar	STU	RA	132/66	1980	3/5	2
Sultartangi	SUL		220	1999	6	0
Svartsengi	SVA	HS	132	1997	4	0
Telgarhorn	TEH	RA	132	2005	3	0
Varmahlöð	VAR	RA	132/66	1977	3/1	1
Vatnsfell	VAF		220	2001	2	0
Vatnshamrar	VAT	RA	132/66	1976	4/6	2
Vegamót	VEG	RA	66	1975	4	0
Vestmannaeyjar	VEM	HS	33	2002	4	0
Vogaskelð	VOG	RA	66	1975	3	0
Vopnafjörður	VOP	RA	66	1982	1	0
Þelstareykir	THR		66	2013	1	0
Þorlákshöfn	TOR	RA	66	1991	3	0
Öldugata	OLD		132	1989	3	0

RA=RARIK (Iceland State Electricity)

OV=Westfjord Power Company

HS=Sudurnes Regional Heating

LV=Landsvirkjun

OR=Reykjavík Energy

#### Energy terms/abbreviations

kV=kilovolt

kW=kilowatt

MW=megawatt=1000 kW

kWh=klowatt hour

MWh=megawatt hour=1000 kWh

GWh=gigawatt hour=1000 MWh

## KEY FIGURES

Key figures (usd thousands)	2015*	2016
Output (GWh)	17.736	17.485
Transmission losses (GWh)	370	360
Transmission losses as a ratio of input	2,0%	2,0%
Operating revenue	122.735	129.743
Investing activities	35.732	42.007
Investing activities as a ratio of operating revenue	29,1%	32,4%
Earnings before interests and taxes (EBIT)	56.815	49.717
EBIT as a ratio of operating revenue	46,3%	38,3%
General operating cost **	27.310	30.011
General operating cost as a ratio of operating revenue	22,3%	23,1%
Profit	30.412	-12.967
Profit as a ratio of operating revenue	24,8%	-10,0%
Assets	794.610	770.817
Equity	323.756	308.411
Liabilities	470.854	462.406
Return on equity *	13,1%	-4,1%
Equity ratio	40,7%	40,0%
Length of overhead transmission lines (km)	3.037	3.283
Length of underground and sub-sea cables (km)	207	251
Full - time equivalent positions at year end	113	119

## Calculation of key figures:

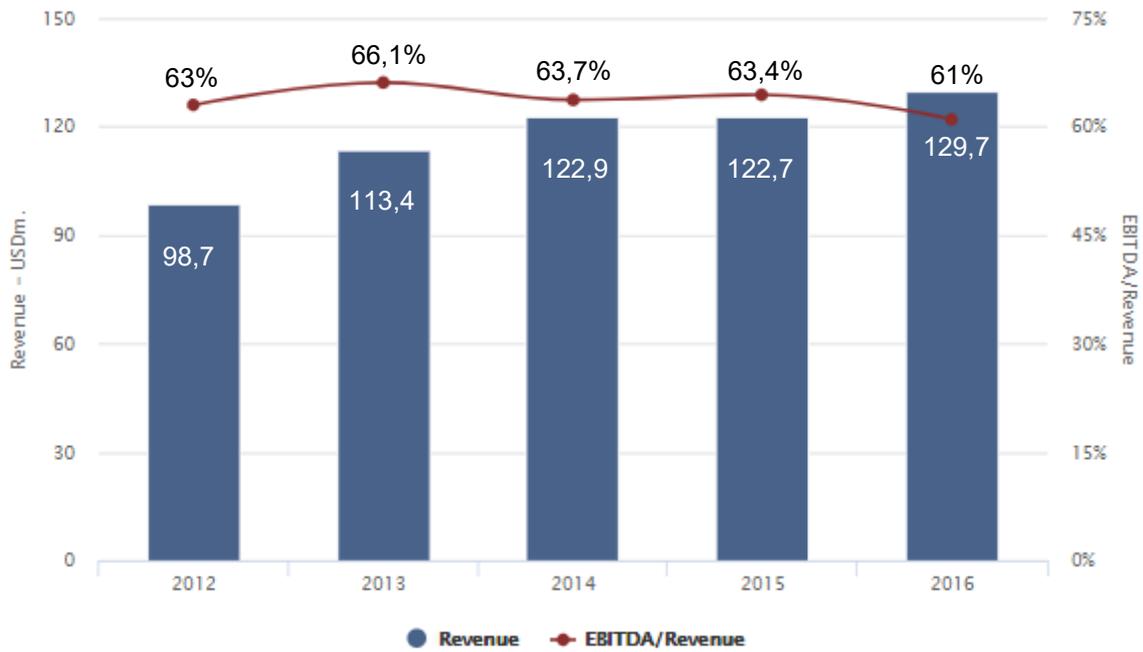
*Return on equity = Profit/Equity at the beginning of year*

*Equity ratio = Equity/Assets*

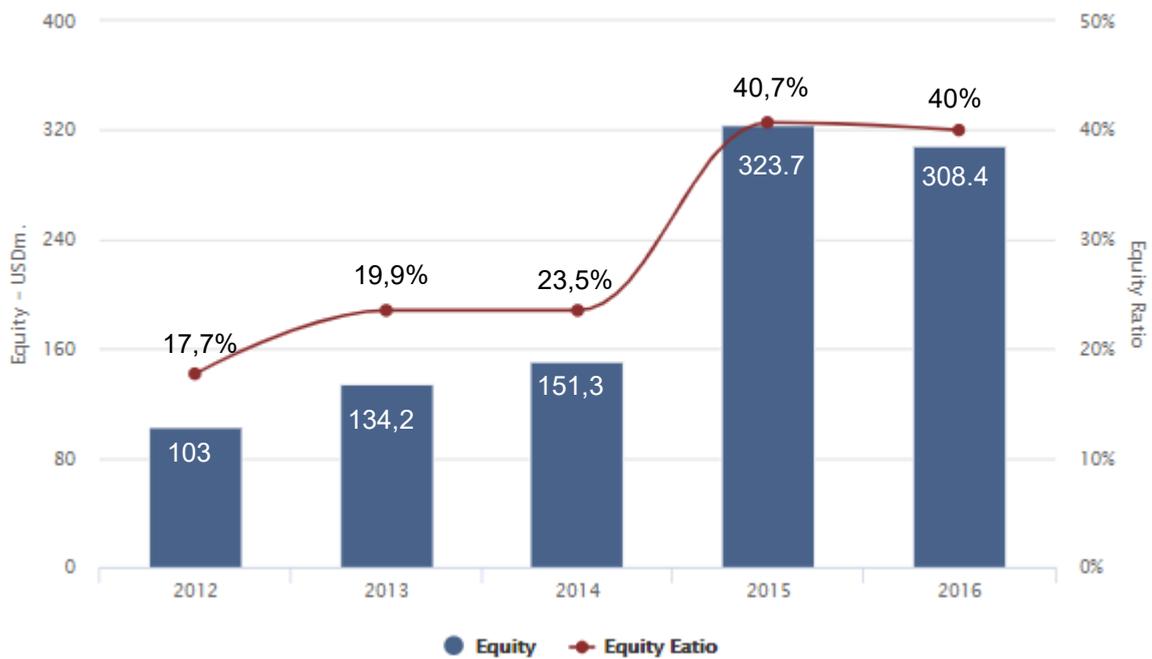
*\*Samanburðarfjárhæðum ársreiknings hefur verið umbreytt í Bandaríkjadali samkvæmt gengi Seðlabanka Íslands. Fjárhæðir rekstrar umbreytast á meðaltali miðgengis tímabilsins, fjárhæðir efnahags á miðgengi tilgreindrar dagsetningar, sjóðstreymi eftir atvikum á meðaltali miðgengis tímabilsins eða á dagsetningu þess dags sem viðskiptin áttu sér stað. Kennitölur eru ekki endurreiknaðar og birst því óbreyttar frá fyrri uppgjörum.*

*\*\* General operating cost = Operating expenses - Depreciation - Ancillary services and losses*

Operating Revenue and EBITDA



Equity and equity ratio



## FINANCE AND OPERATIONS

The operating currency of the company was converted from Icelandic Kroners (ISK) to US Dollars (USD) at the beginning of the year. This will be the first year that Landsnet's annual accounts are published in USD. Earnings before interest, taxes and depreciation are virtually unchanged between years. Operations are built on a solid foundation and this year's losses can mostly be explained by the strengthening of the ISK and its impact on financial expenses.

A large step was taken in refinancing and debt restructuring of Landsnet this year when an agreement was concluded with the parent company on a payment on a start-up loan, followed by an agreement to convert the remaining balance of the loan to USD.

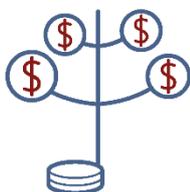
The Company raised funds by issuing unsecured notes in the amount of 200 million USD on the United States Private Placement market. Approximately 80% of Landsnet's long-term debt was consequently denominated in USD and 20% in other currencies. These changes to the loan portfolio serve to substantially reduce future currency risk and the risk of inflation with regard to operating results and the balance sheet.

### Highlights of the 2016 financial statements (USD)



#### OPERATING REVENUE

2015 **122,735** 2016 **129,743**



#### EBIT

2015 **56,815** 2016 **49,717**



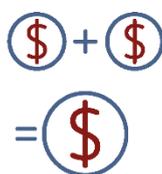
#### PROFIT (LOSS)

2015 **30,412** 2016 **(12,967)**



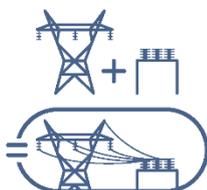
#### CASH FLOW FROM OPERATING ACTIVITIES

2015 **61,536** 2016 **52,396**



#### TOTAL LIQUID ASSETS

2015 **67,953** 2016 **18,253**



#### TOTAL ASSETS

2015 **794,610** 2016 **770,817**



#### INTEREST-BEARING LIABILITIES

2015 **376,624** 2016 **383,312**



#### EQUITY RATIO

2015 **40.7%** 2016 **40.0%**

*This year's losses can mostly be attributed to the strengthening of the ISK*

### *Thirteen million USD losses*

Landsnet suffered losses of 13 million USD in 2016, compared with a profit of 30.4 million USD in the previous year. Earnings before interest and taxes (EBIT) were 49.7 million USD, compared with 56.8 million USD in 2015 which can mostly be attributed to higher depreciation levels as a result of the re-valuation of assets in 2015. Operating revenue amounted to 129.7 million USD, an increase of 7 million USD between years. Revenue from energy intensive users decreased by 2.6 million USD this year and can mostly be attributed to a decrease in prices.

Revenue from transmission to distribution system operators was up by 5.2 million USD this year. The tariff for distribution system operators was increased twice this year, whereas the supply to consumers with interruptible service contracts was reduced.

Revenue from the sale of ancillary services and from charges for transmission losses increased by ISK 3.9 million USD between years. The tariff for ancillary services was increased by 4.5% on the 1st of January. The tariff for energy losses was raised by 12%. The tariff increases were due to higher purchasing prices for these items, as the tariffs are determined on a cost-price basis, with a 1.5% margin.

Operating expenses, excluding depreciation and amortisation, were 50.6 million USD, an increase of 6.8 million USD between years. This increase was primarily due to higher purchasing prices for ancillary services and energy losses, which amounted to 4.1 million USD.

Depreciation amounted to 29.5 million USD, an increase of 7.3 million USD between years and was mostly due to the re-valuation of assets carried out at the end of 2015.

Net financial expenses for 2016 were 66.2 million USD, compared with 19,0 million USD in 2015, an increase of 47.2 million USD between years. The Company's funding was mostly denominated in ISK, or 90% of the loan portfolio. Interest expenses amounted to 45.2 million USD as the ISK strengthened by 13% against the USD. The loan portfolio at year-end and is now mostly denominated in USD, or approximately 80%.

### *A large step taken in re-financing*

Total assets amounted to 770.8 million USD at year-end 2016, compared with 794.6 million USD from the previous year. Fixed assets accounted for 735.4 million USD, compared with 709.8 million USD at year-end 2015. Fixed assets in operation were valued at 665.1 million USD at year-end, compared with 666.9 million USD at year-end 2015.

Long-term liabilities and obligations amounted to 425.8 million USD whereas short-term liabilities amounted to 36.6 million USD at year-end 2016. Long-term liabilities and obligations amounted to 435.9 million USD whereas short-term liabilities amounted to 34.9 million USD at year-end 2015. Annual repayments of long-term liabilities amounted to 7.4 million USD and two instalments were paid on a loan from the parent company, or a total of 143.9 million USD.

The issuance of unsecured notes on the United States Private Placement market in the amount of USD 200 million was finalised before the end of the year.

Concurrently, Landsnet paid an indexed ISK loan from the parent company, with the remaining balance converted to USD and maturing in 2020.

The financing and debt restructuring of the balance is part of a change to the composition of loans and transferring them to the Company's functional currency to reduce the exchange rate and inflation risk. Half of this amount was issued and finalised in December, with the other half to be completed in March 2017. The average interest rate of the issue is a fixed rate of 4.56%.

Net assets amounted to 308.4 million USD in 2016 including share capital in the amount of 45.5 million USD according to the balance sheet. Net assets amounted to 323.8 million USD in 2015. The equity ratio was 40% at year-end 2016 compared with 40.7% at year-end 2015.

### *First dividend payments to owners*

Net cash from operating activities amounted to 52.4 million USD in 2016, compared with 61.5 million USD in 2015. Working capital from operations, excluding financial items and taxes, amounted to 79.2 million USD, compared with 79 million USD in 2015. Investment activities amounted to 42 million USD and capital movements amounted to 55.8 million USD. Net cash at the end of 2016 amounted to 18.3 million USD and decreased by 45.4 million USD during the year. Payments of long-term liabilities and loans excess new borrowings amounted to 52.6 million USD. Dividends were paid to the Company's owners for the first time, amounting to 3.2 million USD.

### *Purchasing and inventory control*

The year was busy in regards to procurement matters, due to increased construction work at the Company and because of large-scale and very complex projects in the north-eastern part of Iceland. Twenty-seven tenders were released this year which is comparable to the total number released in 2015.

A review was conducted on procurement processes at the Company and new procurement requirements were introduced in the third quarter, as well as the completion of general terms of delivery. Inventory management focused on increased automation in processes and bar code and handheld computers were introduced in the warehouse at the Company's HQ.

	2011*	2012*	2013*	2014*	2015*	2016
<b>Distributors</b>	5,53%	5,12%	4,50%	4,69%	5,26%	5,92%
<b>Intensive Users</b>	6,64%	5,60%	4,80%	4,52%	4,92%	5,46%

*\*The WACC decision from the National Energy Authority was finalized on July 21st 2015*

## Revenue cap and tariffs

Landsnet operates in accordance with the Electricity Act No. 65/2003. Under Article 12 of the Act, the National Energy Authority (NEA) determines a revenue cap for Landsnet, which decides a tariff for its services in accordance with the cap.

This is a dual system: The transmission of electricity to distribution companies and transmission to power-intensive users. The revenue cap is set for five years at a time, taking into account the Company's historical operating expenses, depreciation of fixed assets, taxes and allowed profitability, decided annually by the National Energy Authority. The Company shall determine the tariff for its services in accordance with the set revenue cap: In ISK for Icelandic distributors and in USD for power intensive users.

The previous revenue cap period has now been settled and a new period began in 2016 and will be valid until 2020. Landsnet's authorised profit for 2016 was released in April and the revenue cap for the period 2016 to 2020 was set in May. The decisions of the National Energy Authority on profitability can be seen in the table below, after tax.

## Changes to the transmission tariff for distributors

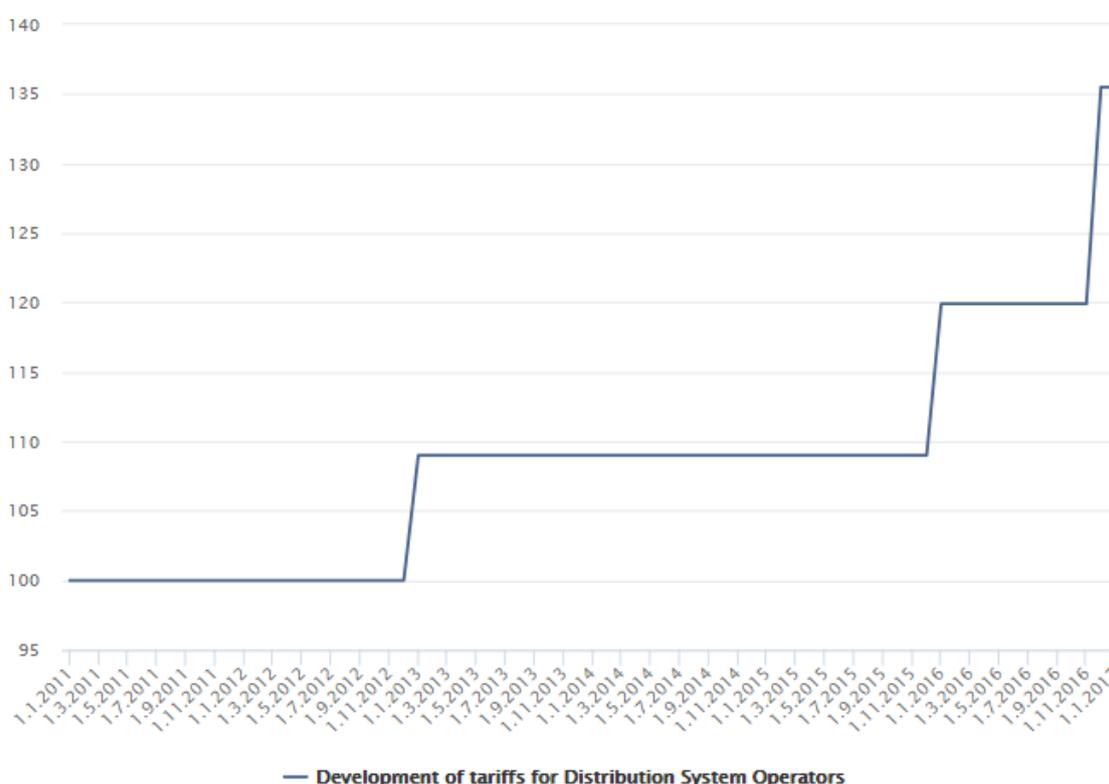
Allowed earnings are an important consideration in the revenue cap decision making process and subsequently in decisions made regarding the transmission tariff. The

transmission tariff for distributors was increased twice in 2016: By 10% on the 1st of January and by 13% on the 1st of December.

The changes to the tariff can mostly be attributed to the settlement of the revenue cap for 2015 and the new revenue cap introduced for 2016. The decision was made not to utilise the revenue cap for 2016 in order to counter price increases, but final calculations on the revenue cap for distribution in 2015 found that the accumulated accrued income of the Company exceeded the permissible revenue (10% of the revenue cap). The decision process on the revenue cap for 2016, regarding the allowed return on assets, also revealed an increase in the current tariff. The tariff increases in 2016 were therefore twofold, but the transmission tariff for distribution companies had only risen once in five years before that, or by 9% in 2013.

The accompanying chart shows the development of tariffs for distribution system since 2011.

Development of tariffs for Distribution System Operators



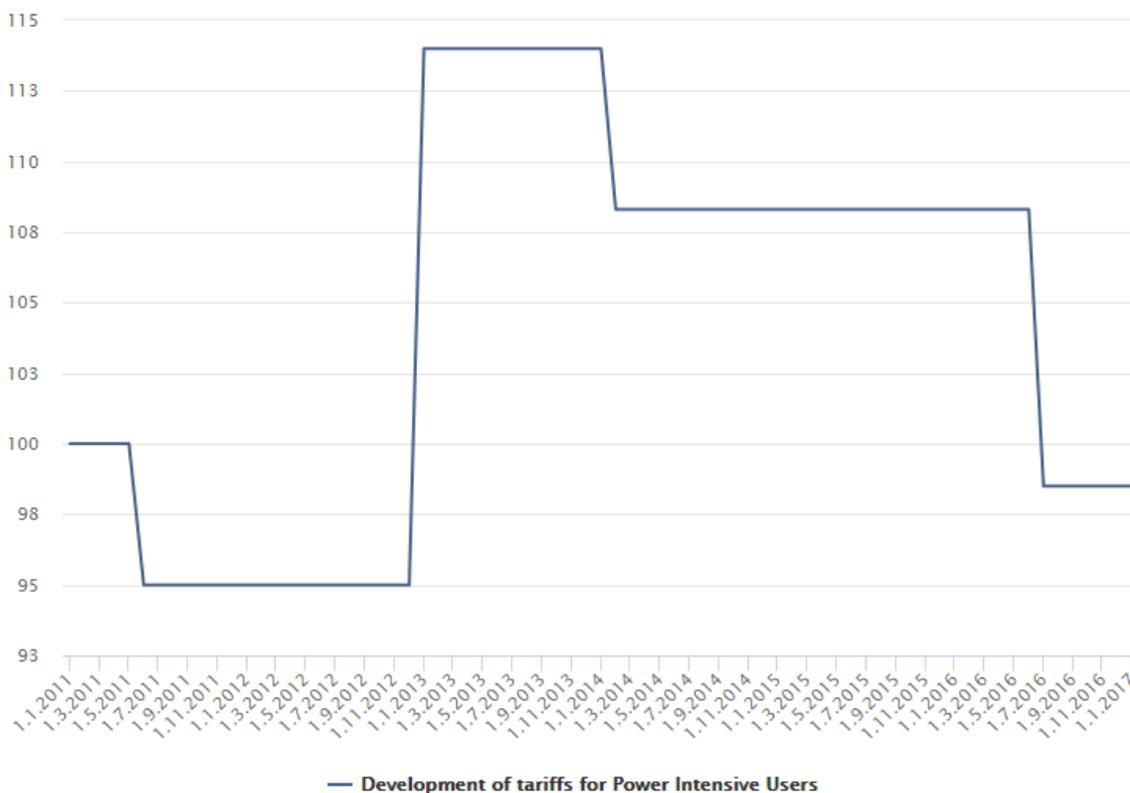
### *Transmission tariff for power intensive users decreased*

The tariff for power intensive users decreased by 9% on the 1st of July based on a decision from the National Energy Authority on the revenue cap for power intensive

users and the criteria for authorised revenue limits. Allowed return on assets are an important consideration in the revenue cap decision making process and subsequently in decisions made regarding the transmission tariff. The estimated revenue cap for power intensive users was higher for 2016 than the conclusions made by the National Energy Authority and the tariff was therefore decreased to reflect this change.

The accompanying graph shows the development of tariffs for power intensive users since 2011.

Development of tariffs for Power Intensive Users



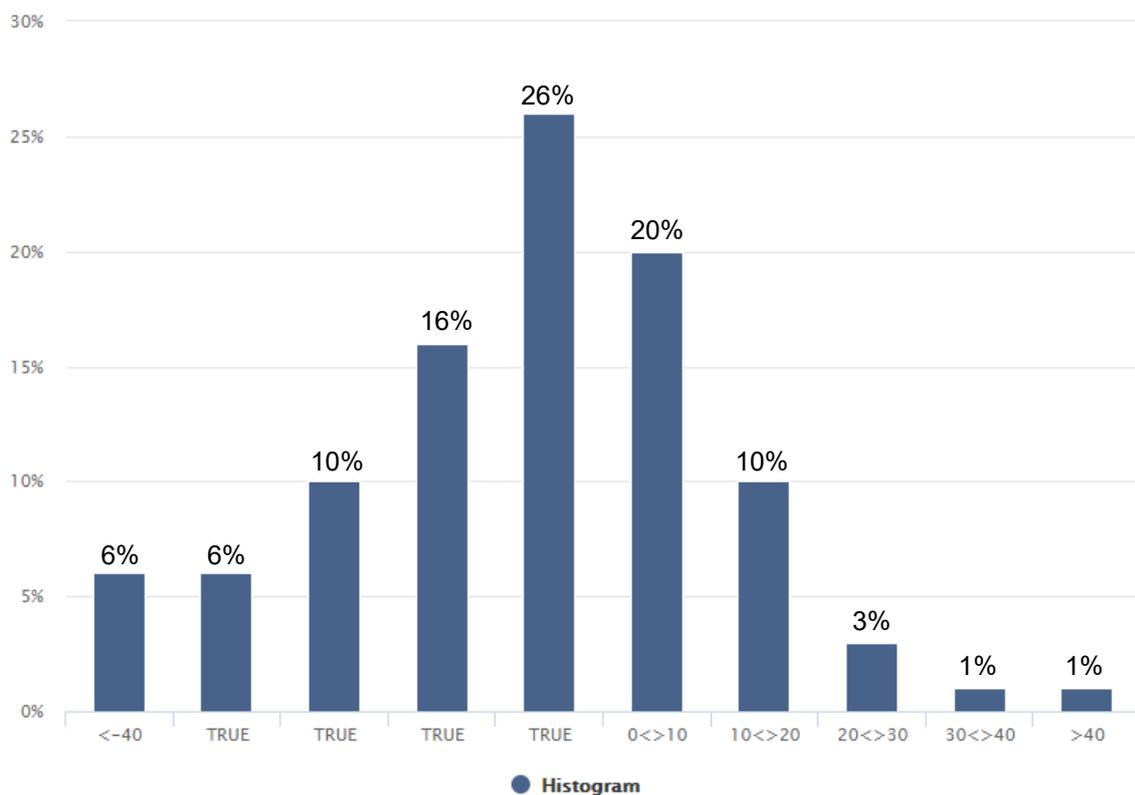
### Tariff increase for ancillary services

Ancillary services are the services Landsnet provides to maintain operational security and balance between supply and demand of electricity at any given time. The tariff increased by 4.5% at the beginning of 2016 to meet increased prices on regulating power which is the power Landsnet procures to balance differences between the forecast and the actual overall energy use in the electrical network.,

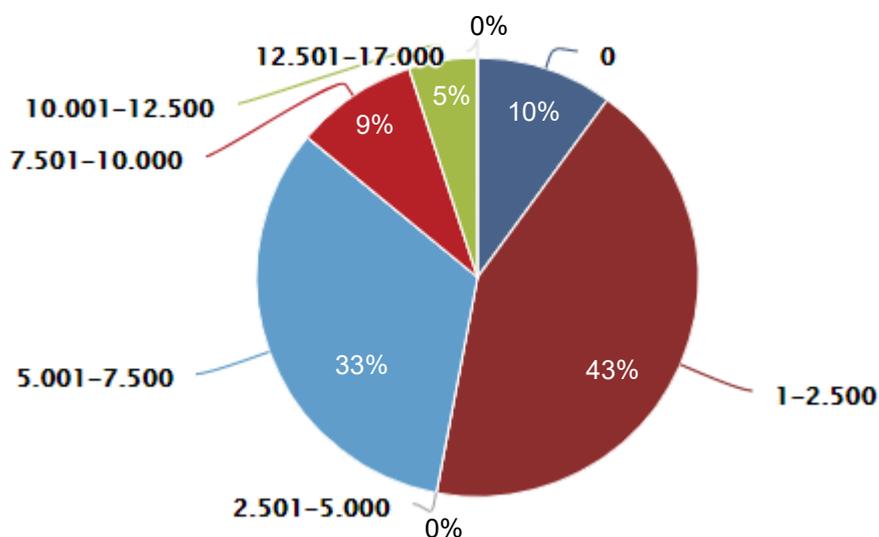
This includes spinning reserves, additional power that a production unit with automatic frequency control is capable of producing without notice and guaranteed regulating power to operate a balancing energy market and reserve power.

Landsnet obtains resources from processing companies and access to power generation at distribution networks in order to fulfil these statutory obligations. Long-term contracts which ensured the availability of 100 MW of electricity every year expired this year and a new agreement was reached with Landsvirkjun on spinning reserves of 40 MW at the power stations at Blanda, Þjórsá and Tungnaá. Regulating power (40 MW) was also guaranteed and 40 MW for non-spinning in the regulated power market for the period May 2016 to April 2017. The average price of balancing power in the regulated power market was ISK 3,843, and the price distribution is shown on the accompanying pie chart.

Histogram of regulating power 2016



## Distribution of balancing energy prices



## Risk assessment

Landsnet is committed to meeting its legal obligations in order to ensure safety and security of its employees, customers and equipment. Landsnet's financial position must remain solid and the company must be able to perform core functions in harmony with the environment and society. The objective of risk assessment is to ensure continuous operation under any circumstances that may arise and to try to secure an acceptable performance, at any given time, with regard to underlying risk factors in operations. A major factor in Landsnet's approach to risk is the fact that the company provides an essential service to society. Accordingly, the Company's risk appetite and risk tolerance are low.

### *New risk assessment system*

A new risk assessment system was implemented at the Company this year to meet the requirements of ISO standards. The risk factors that can arise in the Company's operations are defined as well as their potential impact on operations. Organised mitigation measures were also defined to prevent or minimise the impact of these risks and monitor their development.

Landsnet estimates risk in operations according to a defined plan. The risks are assessed according to severity, but Landsnet's main financial risk factors are operational risk and financial risk.

The types of risk covered by the assessment include operational risk, counterparty risk and financial risk.

- Operational risk is defined as the risk of negative impact on Landsnet's performance. This includes aspects relating to generation fed into the grid, the grid itself, information and surveillance systems, management, the legal environment, contracts, etc.
- Counterparty risk is the risk of a counterparty to a financial or other commercial agreement failing to meet its obligations thereunder.
- Financial risk primarily concerns financial aspects of the Company's activities, i.e. the risk of financial losses on both on- and off-balance-sheet items, including as a result of changes in the market price of such items. This includes changes in interest rates, exchange rates and inflation. Landsnet's defined financial risk consists of market risk, liquidity risk, exchange rate risk and inflation risk.

Efforts were made to reduce market risk by refinancing and repaying a start-up loan from Landsnet's parent company, which was indexed and in ISK. The refinancing and debt restructuring of the loan is in USD and has therefore moved the Company closer to the objective of achieving a normal distribution of payments over the long-term repayment process.

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## Changes to energy purchases due to grid losses

The tariff for losses, distributors and power intensive users is published in ISK and increased by 12% at the beginning of 2016. It takes into account the purchase price, as well as a 1.5% charge to meet the cost of administration. The Company is obliged to supply electricity to replace grid losses.

Energy costs due to losses have risen in recent years on the one hand, as a result of increased transmission losses alongside increased electricity consumption and on the other hand as a result of the rise in average prices on tenders. The average price of electricity, purchased by the Company to meet losses, increased by 17% between years based on tender processes in the autumn of 2015. A tender process in the autumn of 2016, to meet losses for the first half of 2017, led to further increases (from 4,447 ISK / MWh to 4,965 ISK / MWh), or equivalent to a 12% average increase. Offers were not secured for all the energy auctioned in 2015 and 2016.

An electronic procurement process and a framework agreement will be introduced for electricity sales covering several years at a time in response to this and will then be offered electronically for a shorter period of time. This will result in more effective

feedback on prices to market participants and greater flexibility, efficiency and efficiency of procurement.