THE ENERGY REGULATION AND MARKETS REVIEW

SIXTH EDITION

Editor
David L Schwartz

THE LAWREVIEWS

THE ENERGY REGULATION AND MARKETS REVIEW

The Energy Regulation and Markets Review
Reproduced with permission from Law Business Research Ltd.

This article was first published in The Energy Regulation and Markets Review, - Edition 6

(published in July 2017 – editor David L Schwartz)

For further information please email
Nick.Barette@thelawreviews.co.uk

THE ENERGY REGULATION AND MARKETS REVIEW

SIXTH EDITION

Editor
David L Schwartz

THE LAWREVIEWS

PUBLISHER
Gideon Roberton

SENIOR BUSINESS DEVELOPMENT MANAGER
Nick Barette

BUSINESS DEVELOPMENT MANAGERS
Thomas Lee, Joel Woods

ACCOUNT MANAGERS
Pere Aspinall, Sophie Emberson,
Laura Lynas, Jack Bagnall

MARKETING AND READERSHIP COORDINATOR
Rebecca Mogridge

RESEARCHER
Arthur Hunter

EDITORIAL COORDINATOR
Gavin Jordan

HEAD OF PRODUCTION
Adam Myers

PRODUCTION EDITOR
Claire Ancell

SUBEDITOR
Robbie Kelly

CHIEF EXECUTIVE OFFICER
Paul Howarth

Published in the United Kingdom
by Law Business Research Ltd, London
87 Lancaster Road, London, W11 1QQ, UK

www.TheLawReviews.co.uk

ISBN 978-1-910813-66-9

Printed in Great Britain by
Encompass Print Solutions, Derbyshire
Tel: 0844 2480 112

THE LAW REVIEWS

THE MERGERS AND ACQUISITIONS REVIEW

THE RESTRUCTURING REVIEW

THE PRIVATE COMPETITION ENFORCEMENT REVIEW

THE DISPUTE RESOLUTION REVIEW

THE EMPLOYMENT LAW REVIEW

THE PUBLIC COMPETITION ENFORCEMENT REVIEW

THE BANKING REGULATION REVIEW

THE INTERNATIONAL ARBITRATION REVIEW

THE MERGER CONTROL REVIEW

THE TECHNOLOGY, MEDIA AND TELECOMMUNICATIONS REVIEW

THE INWARD INVESTMENT AND INTERNATIONAL TAXATION REVIEW

THE CORPORATE GOVERNANCE REVIEW

THE CORPORATE IMMIGRATION REVIEW

THE INTERNATIONAL INVESTIGATIONS REVIEW

THE PROJECTS AND CONSTRUCTION REVIEW

THE INTERNATIONAL CAPITAL MARKETS REVIEW

THE REAL ESTATE LAW REVIEW

THE PRIVATE EQUITY REVIEW

THE ENERGY REGULATION AND MARKETS REVIEW

THE INTELLECTUAL PROPERTY REVIEW

THE ASSET MANAGEMENT REVIEW

THE PRIVATE WEALTH AND PRIVATE CLIENT REVIEW

THE MINING LAW REVIEW

THE EXECUTIVE REMUNERATION REVIEW

THE ANTI-BRIBERY AND ANTI-CORRUPTION REVIEW

THE CARTELS AND LENIENCY REVIEW

THE TAX DISPUTES AND LITIGATION REVIEW

THE LIFE SCIENCES LAW REVIEW

THE INSURANCE AND REINSURANCE LAW REVIEW

THE GOVERNMENT PROCUREMENT REVIEW

THE DOMINANCE AND MONOPOLIES REVIEW

THE AVIATION LAW REVIEW

THE FOREIGN INVESTMENT REGULATION REVIEW

THE ASSET TRACING AND RECOVERY REVIEW

THE INSOLVENCY REVIEW

THE OIL AND GAS LAW REVIEW

THE FRANCHISE LAW REVIEW

THE PRODUCT REGULATION AND LIABILITY REVIEW

THE SHIPPING LAW REVIEW

THE ACQUISITION AND LEVERAGED FINANCE REVIEW

THE PRIVACY, DATA PROTECTION AND CYBERSECURITY LAW REVIEW

THE PUBLIC-PRIVATE PARTNERSHIP LAW REVIEW

THE TRANSPORT FINANCE LAW REVIEW

THE SECURITIES LITIGATION REVIEW

THE LENDING AND SECURED FINANCE REVIEW

THE INTERNATIONAL TRADE LAW REVIEW

THE SPORTS LAW REVIEW

THE INVESTMENT TREATY ARBITRATION REVIEW

THE GAMBLING LAW REVIEW

THE INTELLECTUAL PROPERTY AND ANTITRUST REVIEW

THE REAL ESTATE M&A AND PRIVATE EQUITY REVIEW

THE SHAREHOLDER RIGHTS AND ACTIVISM REVIEW

THE ISLAMIC FINANCE AND MARKETS LAW REVIEW

THE ENVIRONMENT AND CLIMATE CHANGE LAW REVIEW

THE CONSUMER FINANCE LAW REVIEW

THE INITIAL PUBLIC OFFERINGS REVIEW

THE CLASS ACTIONS LAW REVIEW

www.TheLawReviews.co.uk

ACKNOWLEDGEMENTS

The publisher acknowledges and thanks the following law firms for their learned assistance throughout the preparation of this book:

ABOU JAOUDE & ASSOCIATES LAW FIRM

AFRIDI & ANGELL

ALC ADVOGADOS

ANDERSON MŌRI & TOMOTSUNE

BASHAM, RINGE Y CORREA, SC

BRUUN & HJEJLE

CMS

COVINGTON & BURLING LLP

DLA PIPER INTERNATIONAL

DR K CHRYSOSTOMIDES & CO LLC

G ELIAS & CO

GENI & KEBE LAW FIRM

HENRIQUES, ROCHA & ASSOCIADOS

HERBERT SMITH FREEHILLS LLP

HOLLAND & KNIGHT

HOLMAN FENWICK WILLAN SWITZERLAND LLP

KOLCUOĞLU DEMIRKAN KOÇAKLI ATTORNEYS AT LAW

LATHAM & WATKINS

LINKLATERS LLP

LOYENS & LOEFF NV

MORAIS LEITÃO, GALVÃO TELES, SOARES DA SILVA & ASSOCIADOS – SOCIEDADE DE ADVOGADOS, SP, RL

ORRICK, HERRINGTON & SUTCLIFFE (EUROPE) LLP

PINHEIRO NETO ADVOGADOS

SIDLEY AUSTIN LLP

SKRINE

SOEMADIPRADJA & TAHER

SOŁTYSIŃSKI KAWECKI & SZLĘZAK

SQUIRE PATTON BOGGS

STEPHENSON HARWOOD MIDDLE EAST LLP

STUDIO LEGALE VILLATA, DEGLI ESPOSTI E ASSOCIATI

TRILEGAL

WILMER CUTLER PICKERING HALE AND DORR LLP

YOON & YANG LLC

CONTENTS

PREFACE

In our sixth year of writing and publishing *The Energy Regulation and Markets Review*, we have seen dramatic changes in global energy policies. Notwithstanding President Trump's announcement that the United States will withdraw from the Paris Agreement, and the referendum in the United Kingdom to leave the European Union, there have been continued efforts to reduce greenhouse gases (GHGs) by the signatories to the Paris Agreement. There is still a significant need to invest in infrastructure, and we have seen significant investment throughout the supply chains in the oil, gas and power sectors globally. The Fukushima nuclear incident continues to impact energy policy, and we continue to see extensive liberalisation of the energy sector.

I CLIMATE CHANGE DEVELOPMENTS

With respect to climate change efforts, the Paris Agreement went into effect on 4 November 2016, and thus far, 148 countries have ratified the Agreement. President Trump has recently announced that the United States would be withdrawing from the Paris Agreement, but we continue to see significant carbon reduction efforts, such as increased development of renewable resources, as well as energy efficiency and demand reduction measures, globally, including in the United States.

In Europe, the European Union adopted 'A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy', and it is expected that there will be a large amount of European secondary legislation to increase the amount of renewable resources. While the United Kingdom voted to exit the European Union, the United Kingdom continues to invest heavily in offshore and onshore renewable projects, and has been particularly active in the battery storage sector to round out intermittent renewable production, offset demand and arbitrage energy prices. President Macron has stated his intent to have France fulfil its goals of closing all coal fired power plants within five years and doubling the capacity of wind and solar renewable generation. Denmark continues to seek to have renewable energy meet all of its electricity demands by 2050. The Netherlands has a goal of reducing GHGs by at least 25 per cent by 2020, and is closing at least two coal-fired power plants. Germany undertook significant steps to increase reliance on renewable energy resources.

China released a plan to have 15 per cent of its energy supplied by non-fossil fuels, 20 per cent from natural gas and no more than 58 per cent from coal by 2020. Korea's goal is to cut GHGs by 37 per cent by 2030. India announced a goal to have at least 40 per cent of its installed electric capacity powered by non-fossil fuels. Japan and Australia are working to improve energy efficiency and conservation and to increase reliance on renewable

energy supply. The United Arab Emirates continues its efforts to reduce its carbon footprint, announcing a goal of having 25 per cent of its capacity from renewables by 2030, and 75 per cent by 2050. Australia is adding significant new renewable resources. Even the United States is seeing significant investment in renewable energy development. While the Trump Administration is seeking to reverse the Obama Administration's Clean Power Plan, individual states are moving forward to achieve reduced reliance on fossil fuels and greater reliance on renewable energy, including California and New York, which are seeking a 50 per cent renewable portfolio standard goal by 2030, and Hawaii, which is seeking 100 per cent reliance on renewables by 2045.

II INFRASTRUCTURE DEVELOPMENT

For many countries, reliable energy supply is the primary concern, regardless of fuel source. Rural electrification and system reliability remain priorities in Indonesia, Mozambique, Angola, parts of Nigeria and Central and West Africa and we are seeing significant efforts to pursue electric generation projects in those regions. Iran is seeking approximately US$200 billion in investments for its oil and gas industries over a five-year period, and Iraq is seeking approximately US$18 billion in foreign investments over a three-year period. Turkey is aggressively diversifying its energy industry and building infrastructure, including the TANAP pipeline from the Caspian Sea to Europe, and is pursuing shale gas opportunities. Malaysia is constructing a 2,000MW coal plant to meet its growing energy demands. South Africa has taken steps to add 863MW of coal generation, and is seeking to add over 3,000MW of natural gas-fired generation. Denmark has a new North Sea Agreement to secure future exploration and production of hydrocarbons from the North Sea, and Cyprus, Mozambique, Lebanon and Mexico are establishing mechanisms to license offshore oil and gas exploration and production.

III NUCLEAR POWER GENERATION

Six years after the Fukushima disaster, Japan has shut down 45 out of its 48 nuclear power stations pending new detailed safety reviews. Germany continues its phase out all nuclear generation, and has agreed to assume the responsibility for nuclear waste management following shut-down, decommissioning and dismantlement by existing owners. France is seeking a reduction of nuclear power generation to 50 per cent of total electricity production within five years. Switzerland and Korea are planning to limit the life of their nuclear generation units. On the other hand, Turkey is continuing with development of the Akkuyu nuclear power plant, and the United Arab Emirates is still proceeding with construction of the Barakah nuclear power plant, both of which are expected to be operational in 2020. The United Kingdom continues to push forward with the Hinckley Point C new nuclear facility. South Africa is facing substantial resistance to its efforts to develop 9,600MW of new nuclear generation capacity. In the United States, the early retirement of certain nuclear plants has been driven by cost and power market considerations, rather than safety concerns. Some nuclear owners in the United States have sought state subsidies in New York, Illinois, Ohio and Pennsylvania, among others, in order to avert premature retirements. Illinois and New York have implemented legislative and regulatory payment programmes for nuclear facilities in those states, but they are currently being challenged in federal district court on constitutional grounds.

IV LIBERALISATION OF THE ENERGY SECTOR

We have seen significant energy sector regulatory reforms in many countries. Australia is continuing to move toward retail choice, and is seeking to implement a new energy market operator and market rule change committee. Italy is seeking to develop more competitive retail markets. Spain has been engaged in regulatory reforms to reduce its 'tariff deficit' and re-establish the correlation between costs and rates. Portugal continues to work on liberalising its electricity and gas markets. Japan is actively working on developing competitive retail electric and gas markets and is seeking to unbundle electric transmission and gas transportation sectors to improve competition. And we are seeing continued efforts to partially privatise state-owned energy companies in the United Arab Emirates, Turkey, Brazil and Colombia.

I would like to thank all the authors for their thoughtful consideration of the myriad of interesting, yet challenging, issues that they have identified in their chapters in this sixth edition of *The Energy Regulation and Markets Review*.

David L Schwartz
Latham & Watkins LLP
Washington, DC
June 2017

Chapter 32

SWITZERLAND

Georges Racine[1]

I OVERVIEW

The Swiss energy sector has its own distinctiveness. Switzerland has been referred to as the 'water tower' of Europe; indeed, hydropower accounts for about 59 per cent of electricity production in the country, while nuclear power accounts for about 32.8 per cent. Other conventional thermal and 'new' renewable energies, including solar, wood, biomass, wind, geothermal and ambient heat, account for about 8.2 per cent.[2]

Despite the country's high dependence on nuclear energy, the Federal Council has decided to gradually phase out nuclear power. On 21 May 2017, Swiss voters endorsed (by a majority of 58.2 per cent) Energy Strategy 2050, thereby paving the way for a new Energy Act to come into force on 1 January 2018. The new law sets forth extensive measures to reduce energy consumption, increase energy efficiency and promote renewable energy. This followed an earlier referendum on 27 November 2016, by which Swiss voters rejected (by a majority of 54.2 per cent) the introduction of a cap on the lifetime of existing nuclear power plants in Switzerland, and the Swiss Federal Council's decision of 4 May 2016 to indefinitely delay the full liberalisation of the Swiss electricity sector.

The Swiss electricity market has been described as being highly fragmented due to the number of market participants. Such a high number is peculiar, considering the size and population of the country.

Electricity represents approximately 25 per cent of Swiss energy consumption, while oil and gas represent about 50.6 per cent and 13.5 per cent respectively. Coal, wood, industrial waste and other renewable energies constitute the remaining 10.3 per cent.[3]

Switzerland produces neither oil nor gas. As such, this chapter focuses on the electricity industry.

II REGULATION

i The regulators

The Swiss energy institutional framework comprises a number of federal offices, regulatory authorities and specialised agencies. The Federal Office of Energy (FOE) is the office

1 Georges Racine is a partner at Holman Fenwick Willan Switzerland LLP. He would like to thank Alex Smith for his assistance in researching materials for this chapter.

2 https://www.admin.ch/gov/en/start/documentation/media-releases.msg-id-66433.html.

3 Confédération Suisse/OFCL, 'Aperçu de la consommation d'énergie en Suisse au cours de l'année 2015', Extrait de la statistique globale suisse de l'énergie 2015, 23 June 2016.

responsible for all questions relating to energy supply and energy use. It sits under the Federal Department of the Environment, Transport, Energy and Communications (DETEC), which is responsible for ensuring sustainable development and the provision of basic public services in the interests of society, the environment and the economy.

The FOE pursues the following objectives:

a it creates the necessary conditions for ensuring a sufficient, well diversified and secure energy supply that is both economical and ecologically sustainable;

b it imposes high safety standards in the areas of production, transportation and distribution of energy;

c it sets out to promote efficient energy use, increase the proportion of renewable energy in the overall energy mix and reduce the level of carbon dioxide emissions; and

d it promotes and coordinates energy research and supports the development of new markets for the sustainable supply and use of energy.

A number of commissions support the FOE, including the Energy Research Commission (CORE), the Commission for Radioactive Waste Disposal (CRW), the Administrative Commission of the Decommissioning Fund and the Disposal Fund for Nuclear Installations (ACDFDFNI), the Nuclear Safety Commission (NSC) and the Commission for Connection Conditions for Renewables Energies (CCRE).

The CORE assists with the formulation of guidelines governing energy research and the implementation of research findings. Its members represent the industrial sector, the energy industry, universities and various energy agencies and research institutions in Switzerland.

The CRW is an independent body that is responsible for advising the FOE and the Federal Nuclear Safety Inspectorate (ENSI) (see below) on geological aspects of nuclear waste disposal.

The two funds administered by the ACDFDFNI were established to secure the necessary financing for the disposal of radioactive waste and spent-fuel elements, and the decommissioning of nuclear installations after their shutdown.

As an advisory body for the Federal Council, DETEC and ENSI, the NSC examines fundamental issues relating to nuclear safety and may submit comments for the attention of the Federal Council and DETEC regarding reports by ENSI on nuclear safety. It took over the duties of the former Federal Commission for the Safety of Nuclear Facilities on 1 January 2008.

The CCRE advises cantonal authorities and the FOE on the formulation of recommendations and enforcement tools for the implementation of connection conditions for independent producers.[4]

The Federal Office for the Environment (FOEN), which also sits under DETEC, plays an important role alongside the FOE. It is responsible for ensuring that natural resources are used sustainably, that the public is protected against natural hazards, and that the environment is protected from unacceptable adverse impacts.

In accordance with DETEC's sustainability strategy, the FOEN pursues the following goals:

a long-term preservation and sustainable use of natural resources (land, water, forests, air, climate, biological and landscape diversity) and elimination of existing damage;

4 www.uvek.admin.ch/index.html?lang=en; www.bfe.admin.ch/index.html?lang=en.

b protection of the public against excessive pollution (noise, harmful organisms and substances, non-ionising radiation, wastes, contaminated land and major incidents); and

c protection of people and significant assets against hydrological and geological hazards (flooding, earthquakes, avalanches, landslides, erosion and rock falls).

In order to achieve these goals the FOEN has been assigned the following responsibilities:

a environmental monitoring to provide a sound basis for the management of resources;

b preparation of decisions, to secure a comprehensive and coherent policy of sustainable management of natural resources and prevention of natural hazards; and

c implementing the legal foundations, supporting enforcement partners and providing information on the state of the environment and on the appropriate use and protection of natural resources.[5]

The Federal Electricity Commission (ElCom) is the independent regulatory authority for the electricity sector. It is responsible for monitoring compliance with the Federal Electricity Act and the Federal Energy Act, taking all necessary related decisions and pronouncing rulings where required.

When the new Electricity Supply Act entered into force on 1 January 2008, ElCom was formally entrusted with the task of supervising the liberalisation of Switzerland's electricity market. As an independent regulatory authority at the federal level, ElCom is responsible for securing the smooth transition from a monopoly situation in the electricity supply sector to an electricity market based on the principles of competition. ElCom's duty is to ensure that the liberalisation of the market does not result in excessive tariff increases and that the network infrastructure is properly maintained and expanded in order to guarantee an adequate supply of electricity.

ElCom has been entrusted with extensive judicial powers to effectively perform its various duties. It monitors compliance with the provisions of the Electricity Supply Act and the Energy Act, and can pronounce legally binding decisions and rulings as necessary.

The specific duties of ElCom are to:

a verify the electricity tariffs of customers who do not have free access to the network, as well as the remuneration paid for the input of electricity into the grid. It is authorised to prohibit unjustified increases in electricity prices, and may order the reduction of excessively high tariffs, taking action on the basis of complaints or in its official capacity;

b mediate and pronounce rulings on disputes relating to free access to the electricity network;

c rule on disputes relating to cost-covering remuneration of electricity input that is to be paid to producers of electricity from renewable energy sources;

d monitor supply security and the condition of the electricity networks;

e in the case of shortfalls in cross-border transmission lines, to regulate the allocation of network capacities and coordinate its activities with the European electricity market regulators; and

f ensure that the transmission network is handed over to the national system operator (Swissgrid) according to schedule.

5 www.bafu.admin.ch/?lang=en.

ENSI is the national regulatory body with responsibility for the nuclear safety and security of Swiss nuclear facilities. It is an independent body constituted under public law.

ENSI is supervised by an independent board elected by the Federal Council and reports directly to it. Its regulatory remit covers the entire life of a facility, from initial planning, through operation, to final decommissioning, including the disposal of radioactive waste. Its remit also includes the safety of staff and the public and their protection from radiation, sabotage and terrorism. ENSI is also involved in transport of radioactive materials to and from nuclear facilities and in the continuing geo-scientific investigations to identify a suitable location for the deep geological disposal of radioactive waste.[6]

ii Regulated activities

Articles 76 and 89–91 of the Swiss Federal Constitution address energy matters and bind the Confederation and the cantons to provide a satisfactory, diversified, secure, economic and environmentally compatible energy supply.

According to the Constitution, the Confederation is in charge of determining the principles of the use of all domestic and renewable energies in particular, as well as legislating in certain specific areas such as nuclear energy, hydropower generation and transmission and delivery of electricity. Legislation concerning all other areas is to be provided by the cantons. Consequently, energy laws can vary considerably among cantons.

At the federal level, the principal pieces of legislation are:

a energy: the Energy Act 1998;
b hydropower: the Hydropower Act 1916 and the Water Protection Act 1991;
c electricity: the Electricity Act on Electric Facilities for Low and High Voltage 1902 and the Electricity Supply Act 2007;
d nuclear: the Nuclear Energy Act 2003, the Federal Inspectorate Nuclear Security Act 2007 and the Liability in Nuclear Matters Act 1983;
e CO2: the CO2 Emission Reduction Act 1999; and
f pipelines: the Pipelines Act 1963.

The Federal Electricity Supply Act, which was adopted by Parliament in 2007, provides for an opening of the market in two stages, starting on 1 January 2009. In the first five years (2009–2013), only end-consumers with an annual consumption of more than 100,000kWh per site were granted free access to the market. Households and other small-scale end consumers were also supposed to be able to freely choose their electricity supplier as of 1 January 2014, but that full market liberalisation has been delayed, due to the main objective of market liberalisation – the creation of a competitive and secure electricity supply with transparent pricing – not having been achieved.

Negotiations between the EU and Switzerland to enter into a comprehensive long-term energy treaty began at the end of 2007. The primary aim of such an accord (obtaining this agreement is considered one of the top priorities for Switzerland) would be the mutual access to the free energy market. The negotiations, which were at an advanced stage, came to a halt immediately following the adoption by the Swiss people (9 February 2014) of the Swiss popular initiative 'Against Mass Immigration'.

6 www.bfe.admin.ch/radioaktiveabfaelle/01275/01292/index.html?lang=en.

iii Policy

The Swiss Federal Constitution, the Energy Act, the CO2 Act, the Nuclear Energy Act and the Electricity Supply Act are all integral parts of the instruments defining a sustainable and modern Swiss energy policy. In addition to legal instruments, the energy policies of the federal government and the cantons are both based on the presentation of energy perspectives as well as on strategies, implementation programmes and the evaluation of energy-related measures at the municipal, cantonal and federal levels.

Energy policy was only anchored in the Swiss Federal Constitution in 1990, when provisions were added stipulating that the federal government and the cantons are obliged to use their competences to ensure an adequate, broad-based, secure, economical and ecological energy supply, and the economical and efficient use of energy. This comprehensive list of requirements places high demands on energy policy at the federal and cantonal levels, while demonstrating how difficult it is to find suitable solutions.

Since 1990, all cantons have drawn up their own energy legislation and regulations, and with the enactment of the Federal Energy Act and the Federal Energy Ordinance on 1 January 1999, the Federal Council fulfilled the mandate it had received following the approval by the electorate of the energy provisions in 1990.

The energy perspectives as drawn up by the Federal Council have served as a basis for all political decisions in the energy field and have been reviewed and updated regularly since the establishment of the General Energy Plan in the mid-1970s.

On 4 May 2016 the Federal Council confirmed that it was indefinitely delaying the full liberalisation of the Swiss electricity market. Due to the economic and political implications of full liberalisation, the Federal Council launched a public consultation process, which took place between 8 October 2014 and 22 January 2015. Following its review of the report on the consultation process and in light of the conflicting views expressed therein, the Federal Council has indicated that full liberalisation will depend on:

a the evolution of the energy pact with the European Union;
b the progress achieved with Energy Strategy 2050;
c the prevailing market conditions; and
d the revision of the Federal Electricity Supply Act.

III TRANSMISSION/TRANSPORTATION AND DISTRIBUTION SERVICES

i Vertical integration and unbundling

The most significant change in the structuring of the transmission and distribution grid in the Swiss electricity market has been the gradual liberalisation in the past decade of the high-voltage transmission network, and more specifically the separation of the transmission network from other core elements in the electricity market such as distribution, power generation and trading.

The liberalisation of the transmission network was facilitated in large part by the foundation of Swissgrid in 2005 as the Swiss transmission system operator (TSO) and the gradual transfer since then of operational responsibility and legal ownership of the network to Swissgrid.

The transfer of the transmission grid to Swissgrid has consolidated the network (which was previously split up into eight control areas) into one zone covering the entire country. The combined Swiss transmission system is now 6,700km long and connects to transmissions systems of neighbouring countries at over 40 points.[7]

On 1 January 2009, the number of Swissgrid shareholders increased overnight from eight electricity companies, directly or indirectly majority-owned by the Swiss cantons (Alpiq AG, Alpiq Suisse SA, Axpo Power AG, Axpo Trading AG, BKW FMB Energie AG, CKW AG, ewz and Repower AG) to 17 shareholders as part of the opening up of the previously closed system. There are now over 30 electricity generators and distributors that share ownership of Swissgrid.[8]

The Swiss Electricity Supply Act mandated that the transfer of the transmission network from the original owners to Swissgrid be completed by the end of 2012. By the beginning of 2013, most of the network components had been transferred with the remainder completed at the beginning of 2015.

The separation of the transmission network from vertically integrated generation and supply companies occurred in three separate stages (principally between January 2009 and January 2015):

a separation of accounting functions from distribution, production and trading activities;
b legal separation and restructuring of operating entities into subsidiaries; and
c transfer of legal ownership of the network to national operator Swissgrid.[9]

Swissgrid now owns and operates the Swiss transmission system and has overall responsibility for ensuring security of supply. Its main areas of responsibility are:

a the transportation of electricity from the producing power plant to the end consumer via regional and local distributors; and
b the trading of electricity exported and imported from the rest of Europe.

To regulate the behaviour of Swissgrid and other players in a newly liberalised market, the Swiss Transmission Code was introduced in December 2013 as a regulatory mechanism to define the technical and organisational principles governing the Swiss transmission system.[10] The regulations govern the relationship between Swissgrid and the distribution system operators, power generators and end consumers, as well as other market players and defines the minimum requirements for the operation, use and connection to the Swiss transmission system.

Due to Switzerland's central location in Europe, approximately one-third[11] of all electricity flow through the Swiss transmission network is transmitted from one neighbouring country to another. Swissgrid coordinates its transnational activities through its membership of the European Network of Transmission System Operators for Electricity.

Swissgrid is also part of the TSO Security Cooperation, an initiative between 13 TSOs to ensure secure energy supplies among its members. The initiative brings together a standing

7 https://www.swissgrid.ch/swissgrid/en/home/grid/transmission_system.html.
8 Swissgrid press release, 4 January 2013: www.swissgrid.ch/dam/swissgrid/current/media/media_releases/2013/MM_Vollzug_en.pdf.
9 The transfer to Swissgrid was registered in the commercial register on 3 January 2013.
10 www.swissgrid.ch/swissgrid/en/home/experts/topics/transmission_code.html.
11 25TWh of 78TWh in 2014, according to Swissgrid (2015).

security committee and uses a joint real-time information system (the Real-time Awareness and Alarm System) and shared IT platform to meet its main objective of increasing security on Europe's high voltage transmission network.[12]

Swissgrid has been a shareholder of the auction platform Capacity Allocation Service Company since 2010, which acts as a service company and single point of contact for the implementation and operation of the power transmission capacity allocation between counties in Europe.

ii Transmission/transportation and distribution access

The Electricity Supply Act stipulates that electricity grid operators must allow power generators access to the transmission and distribution network. The expenses incurred for making these connections are borne by the individual generators. Power generators of electricity from renewable sources (particularly hydropower) are given priority when it comes to allocating capacity on the grid.

Swissgrid must also by statute allow other regulated third parties access to the grid without discrimination, on a transparent and non-discriminatory basis. Access to the network may be denied, however, for 'legitimate business reasons', including when the safe operation of the network could be endangered or when the network is congested.

iii Rates

Swissgrid sets the rates for use of the transmission grid. These are subject to provisions of the Electricity Supply Act and also to review by ElCom. The legislation stipulates that the tariffs (for all distribution and transmission grids) shall not exceed the recoverable costs, fees and royalties. Recoverable costs consist of the operating and capital expenditure associated with Swissgrid's operation of the grid.

ElCom acts as a price monitor and regulator for the Swiss transmission network operated by Swissgrid. ElCom is vested with the power to order reductions and to prohibit tariff increases.

ElCom takes a proactive approach to its price monitoring duties and has ordered the lowering of grid usage tariffs on several occasions, notably in four consecutive years from 2009 to 2012. These tariff reduction orders were, however, struck down by the Federal Supreme Court in 2013. The method by which ElCom calculates tariffs was subject to another Supreme Court Ruling in 2016 that is expected to have a significant impact on how ElCom is able to regulate tariffs in future.

ElCom also rules as a judicial authority on general disputes relating to network access and tariffs. ElCom monitors electricity supply security and regulates issues relating to international electricity transmission and trading.[13]

Swissgrid sets the tariffs for use of the grid in accordance with statutory requirements and publishes them at the end of March annually.[14]

Swissgrid announced in March 2017 that tariffs for the transmission grid will be 'drastically' reduced in 2018. It attributes this reduction to the 'drop in operating costs

12 www.swissgrid.ch/swissgrid/en/home/future/europe/cooperations/tsc.html.

13 www.elcom.admin.ch/elcom/en/home.html.

14 www.swissgrid.ch/swissgrid/en/home/experts/topics/grid_usage.html.

brought about by Swissgrid's ongoing efforts to increase efficiency'.[15] According to Swissgrid's plan, the tariff for general ancillary services will decrease by 20 per cent in 2017 and grid usage tariffs by between 6 and 8 per cent (grid usage tariffs are predicted to be 20 per cent lower in 2018 than five years ago). Lower ancillary costs are made possible, according to Swissgrid, as a result of lower control power costs. Swissgrid attributes these lower costs to the increase in the number of providers, leading to more competition.

Swissgrid's grid usage tariff[16] (charged to the distribution system operators directly connected to the transmission grid) is split up in three components:

a working tariff (the energy component);
b power tariff (the power component); and
c fixed basic tariff (per weighted outflow point).

The working tariff is calculated on the basis of the active energy consumed by end consumers directly connected to the transmission grid, and in the case of a grid operator (of which there are more than 800 in Switzerland), the active energy used by end consumers connected to its grid and all lower-level grids. The actual active energy being consumed is multiplied by the working tariff published by Swissgrid.[17]

The power tariff is calculated on the basis of the annual average of the actual monthly 'quarterly-hour' peak demand values used by each end consumer directly connected to the transmission grid and by end consumers connected to its grid and all lower-level grids. Deductions are made for the energy required for a power plant's own consumption and the pump energy used by pumped storage power plants (if declared by the grid operator directly connected to the transmission grid).

If a customer (either end customer or distribution system operator) has feed-out points into the transmission grid, then the tariff calculation is based on the 'quarter-hourly' netted values after the appropriate deductions are made. Similar deductions are made to take into account the energy required for power generation and pump energy.

For the fixed basic tariff calculation, each feed-out point for a grid distribution operator is weighted using the 'K-factor', where the share of energy being fed out is considered in relation to a formula based on the sum of energy being fed in and out; from an average taken over the previous 12 months.[18]

The grid usage tariff is therefore the result of the following formula:

a multiplying the energy volume by the working tariff;
b multiplying the monthly peak output by one twelfth of the power price; and
c multiplying the number of weighted feed-out points by the fixed basic tariff per weighted fee-out point.

15 Swissgrid press release, 29 March 2017: www.swissgrid.ch/dam/swissgrid/current/media/media_releases/2017/MM_Tarife-2018_en.pdf.

16 The grid use tariff covers the cost of renewal, development and maintenance of the transmission grid, as well as of operations and monitoring via the control centres.

17 www.swissgrid.ch/dam/swissgrid/experts/grid_usage/Factsheet_Netznutzung_en.pdf.

18 www.swissgrid.ch/dam/swissgrid/experts/grid_usage/Factsheet_Netznutzung_en.pdf.

Swissgrid forecasts that, in 2018, 6 per cent of electricity price paid by end consumers will go towards the operation and maintenance of the national transmission grid and that 48 per cent of costs will be attributed to the distribution grids.[19]

iv Security and technology restrictions

The most significant technology restrictions (and sources of vulnerability) on the Swiss transmission and distribution grids are caused by the fact that most of the network is 40 to 50 years old (and only a third of the network dates from after 1980). Until 2013, planning for the development and expansion of the network was carried out at a local level and therefore considerable work remains to be done to modernise the grid.

Additionally, the limited number of transfer points on national borders with main trading partners Germany, France, Italy and Austria (approximately 40) means that capacity is limited and congestion can occur. The Strategic Grid 2025 is an initiative put in place with the main objective of upgrading the grid in order to ensure that it is technically secure, environmentally friendly and economically efficient.[20]

Swissgrid acts as the single point of contact for other national TSOs and foreign electricity distributors in the negotiation and scheduling of cross-border supply to fill gaps in the Swiss domestic supply. Swissgrid also facilitates capacity auctions for cross-border supply.

Swissgrid is responsible for the safe operation of Switzerland's high-voltage network from two linked control rooms, operational around the clock and every day of the year.[21] Swissgrid controls a comprehensive IT infrastructure from which it is able to map a real time model of the Swiss transmission network from approximately 40,000 data points. Thousands of measurements and switch positions from the network are collected and processed in cycles of less than 20 seconds.[22] With these many data points, the system is unquestionably vulnerable to cyberattacks.

The Swiss Federal IT Steering Unit is tasked with implementing a national strategy for the general protection of Switzerland against cyber risks.[23] Produced annually, the latest report on progress was published in 2016.[24] The report does not, however, contain any specific policy for dealing with cyber threats to the electricity grid.

Swissgrid announced in January 2016 that it would establish a new Technology business unit in order to design and implement a digitisation and automation strategy.[25] The Swissgrid research and development unit is tasked with developing new technologies for the efficient transmission of electricity, including the new 'smart grid' and 'super grid' initiatives. The R&D unit also provides support for third-party innovation projects through sponsorship deals and partnership programmes.[26]

19 www.swissgrid.ch/swissgrid/en/home/company/electricity_price.html.

20 http://grid2025.swissgrid.ch/en/.

21 www.bfe.admin.ch/themen/00612/04481/index.html?lang=en.

22 www.swissgrid.ch/swissgrid/en/home/grid/transmission_system.html.

23 www.isb.admin.ch/isb/en/home/themen/cyber_risiken_ncs.html.

24 www.isb.admin.ch/dam/isb/en/dokumente/themen/NCS/NCS-Jahresbericht- 2016-en.pdf.download.pdf/NCS-Jahresbericht-2016-en.pdf (2016 Annual Report).

25 www.swissgrid.ch/swissgrid/en/home/current/media/media_releases/media_releases_2016/_15_01_2016_01.html.

26 www.swissgrid.ch/swissgrid/en/home/future/innovation.html.

IV ENERGY MARKETS

i Development of energy markets

The decision by the Federal Council to indefinitely delay the full liberalisation of the electricity market followed an earlier announcement on 7 March 2016 by major hydropower producer ALPIQ of its intention to divest up to 49 per cent of its hydropower portfolio with a total installed capacity of 5.2GW. The stake for sale represents roughly 8 per cent of the total Swiss hydropower production or 5 per cent of Switzerland's total power production.

The sale process initiated by ALPIQ is a testament to the challenges facing Swiss hydropower producers. Under Energy Strategy 2050, the share of hydropower is expected to be well over 50 per cent. Yet for the time being, hydropower producers are struggling. Wholesale prices remain low and the Swiss franc remains strong. Profitability of Swiss power plants has come under strain due to:

a high subsidies for new renewable energies (e.g., wind and solar power);
b low prices for primary energies (e.g., oil, gas and coal);
c the stagnation of the world economy;
d lower carbon dioxide taxes; and
e high duties.

Producers like ALPIQ lack access to end consumers in the non-liberalised segment of the Swiss market, while their traditional clients (including power distributors and large-scale consumers that benefit from partial liberalisation) have been buying abroad.

The Swiss energy market comprises several hundreds of players, including a small number of major consortia with vertically integrated operations, and about 80 power producers, who differ considerably in terms of size and operations. The vast majority of market players are publicly owned regional and local utilities that distribute electricity to their local municipalities. Only some of these regional and local distributors can produce electricity. The largest utilities are responsible for approximately 80 per cent of the power production and 90 per cent of the energy supplied in the country.

ii Contracts for sale of energy

As there is no power exchange in Switzerland, Swiss trading companies trade on the Powernext in Paris, the Energy Exchange in Austria and the Leipzig-based European Energy Exchange.

The Dow Jones Swiss Electricity Price Index (SWEP), which was initiated by Aare-Tessin AG für Elektrizität and Elektrizitäts-Gesellschaft Laufenburg AG, and launched in cooperation with Dow Jones in March 1998, provides price indications for over-the-counter electricity trading in Switzerland for next-day delivery. The SWEP is the volume-weighted average of the profile adjusted price for hour 12 of all transactions having an impact on hour 11am to 12pm, also taking into account the Index for the past 20 days.[27]

On 30 October 2013, Elcom gave its green light to an accord between Swissgrid and the European power exchange EPEX Spot. This accord paved the way for the introduction of market coupling at the Swiss border, which is expected to make power trading more efficient. As a power exchange, EPEX Spot is already overseeing short-term electricity wholesale trade in Switzerland.

27 www.djindexes.com/mdsidx/?event=ene.

V RENEWABLE ENERGY AND CONSERVATION

i Development of renewable energy

Historically, Switzerland's longest-serving and most important source of renewable energy has been hydropower, but the 'new' renewables including solar, wood, biomass, wind, geothermal and ambient heat also play an increasingly important role in today's Swiss energy mix. Such role will be accelerated with the endorsement by the Swiss people of Energy Strategy 2050. The revised Energy Act that will come into force on 1 January 2018 specifically aims to increase the use of renewable energy, especially from domestic sources, in addition to securing an economic and ecological supply and distribution of energy and using energy economically and efficiently. To that effect, it sets forth specific goals and measures, including the following:

a the domestic production of hydroelectric power will be increased to 37,400GWh by 2035, while domestic electricity production from other renewable sources will be increased to 4,400GWh by 2020 and 11,400GWh by 2035;

b the current feed-in compensation for energy from renewable sources (i.e., solar, wind, biomass and geothermal energy) will be extended until 2022, and large-scale hydroelectric power plants and photovoltaic and biomass power plants may obtain subsidies until 2030;

c subsidies for local renewable sources and energy efficiency measures will be financed by increases in the grid fee;

d promotion of the construction and expansion of power plants, by declaring that renewable sources use is a national interest equal to the protection of nature and heritage; as a result, it will become more difficult to object against new power plants by referring to nature and heritage protection;

e the cantons will have to provide fast approval procedures for the construction and expansion of power plants;

f recourse to the Federal Supreme Court regarding disputes over planning approvals for power plants, will be possible only for legal issues of fundamental importance; and

g the right to use self-produced energy will be expanded.

ii Energy efficiency and conservation

The new Energy Act that will come into force on 1 January 2018 also presents goals and measures targeting energy saving and efficiency, including the following:

a a substantial reduction in energy and electricity consumption is to be achieved by 2035. Compared to the 2000 figures, average energy consumption per person per year is to be reduced by 16 per cent by 2020 and 43 per cent by 2035. Average electricity consumption per person per year is to be reduced by 3 per cent by 2020 and 13 per cent by 2035;

b the existing subsidy programme for energy building refurbishments is to be continued after 2019. The subsidies will be increased and partly financed from revenues of the carbon dioxide (CO2) tax. In addition, tax deductions for such refurbishments will be extended;

c as of 2021, the average CO2 emission of new passenger cars must be reduced to 95g of CO2/ km (currently 130g of CO2/km). The average CO2 emission of delivery vans and light-duty vehicles must be reduced to 147g of CO2/km; and

d the existing mechanical electricity meters are to be replaced by smart metering systems that provide more specific data and allow efficient electricity supply and consumption.

VI THE YEAR IN REVIEW

Five major events have marked the Swiss energy sector within the past 12 months or so. Firstly, the announcement on 7 March 2016 by major hydropower producer ALPIQ of its intention to divest up to 49 per cent of its hydropower portfolio sent chilling waves across the sector. Second, the decision on 4 May 2016 by the Federal Council to indefinitely delay the full liberalisation of the electricity market, entailing that only those consumers with an annual consumption of more than 100,000KWh remain free to access the market. Third, the adoption on 30 September 2016 by the Parliament of a revised Energy Act. Fourth, the rejection on 27 November 2016 by the Swiss people of an initiative aimed at imposing a cap on the lifetime of the existing nuclear power plants in Switzerland. Finally, the endorsement in 2017 by the Swiss people of Energy Strategy 2050, which was a clear vote in favour of a sustainable, renewable and local power supply and against new nuclear power plants.

VII CONCLUSIONS AND OUTLOOK

The tremors of Fukushima are still being felt on Swiss soil more than six years after the disaster. Added to prevailing market conditions and technological developments, these have caused the Swiss government to go for a major shift in its energy policy, the Swiss Parliament to pass new legislation that gives a clear green light to increased use of renewable energy and greater energy efficiency, and a majority of the Swiss people to adopt a new state of mind toward Energy Strategy 2050. It remains to be seen whether market conditions will evolve positively as a result and whether end consumers will benefit from it all. 41.8 per cent of Swiss voters voted against Energy Strategy 2050 and the abandonment of nuclear energy, while 57.7 per cent of eligible voters never made it to the polls.

Appendix 1

ABOUT THE AUTHORS

GEORGES RACINE

Holman Fenwick Willan Switzerland LLP

Georges Racine is a partner of Holman Fenwick Willan. He is a dual-qualified civil and common law lawyer with intimate knowledge of Switzerland, developing countries and emerging markets. He has wide-ranging experience in corporate, commercial and international business law, with particular emphasis on projects (energy, infrastructure, telecoms and transport), construction, licensing and concessions, privatisations, mergers and acquisitions, joint ventures, public-private partnerships (PPPs), foreign investment and public procurement. Mr Racine has acted as lead counsel in international projects and transactions in over 25 countries worldwide. He was a member of the expert group that advised the Secretariat of the United Nations Commission on International Trade Law (UNCITRAL) on its draft Legislative Guide on Privately Financed Infrastructure Projects. He has written several articles on energy, infrastructure, telecommunications, PPPs and other subjects for international publications and attended several international conferences as a speaker. He has also acted for several international investment banks, international financial institutions (e.g., World Bank, IFC, EBRD), foreign governments, regulatory authorities, sponsors, developers, independent power producers, utilities, trading firms, contractors, service providers, suppliers, investors and consulting, engineering and accounting firms.

HOLMAN FENWICK WILLAN SWITZERLAND LLP

13-15 Cours de Rive
1204 Geneva
Switzerland
Tel: +41 22 322 48 00
Fax: +41 22 322 48 88
georges.racine@hfw.com
www.hfw.com