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Swiss Confederation

Federal Department of the Environment,
Transport, Energy and Communications DETEC

Federal Office of Energy FOE
Office for the Exemplary Role of the Confederation in Energy ERCE

The Confederation: exemplary in energy

How the Confederation and parastate enterprises perform their exemplary role in energy

The Swiss Post example

Annual report 2014

www.confederation-exemplary-in-energy.ch

Masthead

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A truly exemplary club

The Energy Strategy 2050 can only be implemented if everybody – from companies down to private individuals – makes their contribution. To this end, in 2014 the Federal Administration and parastate enterprises established a group called "The Confederation: exemplary in energy".

This group intends to meet its consumption of power and heat as far as possible with renewable energies and to follow the "best practice" principle in many areas, from buildings to mobility.

The group's second report describes the great achievements that have already been made: it was able to increase its energy efficiency by 23.7% compared to 2006. The FOE supports the various partners in their efforts to maintain this high level and to attain further improvements. To do so, successful methods and gratifying results should continue to be published.

The Federal Administration, the ETH Domain, the Federal Department of Defence, Civil Protection and Sport (DDPS), the Federal Office for Buildings and Logistics (FBL), the RUMBA programme (Resources and Environmental Management programme of the Federal Administration) and the parastate enterprises (SBB, Swiss Post, Skyguide and Swisscom) are together responsible for more than 2% of Switzerland's energy consumption. These institutions have already undertaken efforts in the areas of heat, energy and electricity and now intend to achieve even more. Specifically, their energy efficiency should be improved by 25% by 2020.

I am very pleased to be able to note that the Federal Administration and the parastate enterprises are on the road to energy efficiency. This road will lead us to the targets set in the Energy Strategy. It is not an easy journey. But the results achieved show that it can be completed. I would like to see further partners join the group. They should form a truly exemplary club whose activities can be imitated by others.

Daniel Büchel

Deputy Director, Federal Office of Energy

Setting a good example

Energy efficiency in the Confederation and parastate enterprises should improve by 25% between 2006 and 2020. The Confederation wants to perform an exemplary role.

On September 4, 2013 the Federal Council adopted the message on the first package of measures of the Energy Strategy 2050 and forwarded it to Parliament. The Confederation's exemplary role in the energy sector is one of twelve explicitly stated measures in this first package. Its role is defined as follows in the Federal Council's message:

"In future, the Confederation – which is responsible for about 2% of Switzerland's total energy consumption – is to take appropriate measures to reduce and optimize energy consumption. In this way it is performing its exemplary role in the framework of the Energy Strategy 2050."

According to the message, the Confederation level comprises the federal administration, the Federal Department of Defence, Civil Protection and Sport (DDPS), the ETH Domain and the parastate enterprises that are strategically managed by the Federal Council (Swiss Post, Swiss Federal Railways, Skyguide and Swisscom – and others later on). Starting from the base year 2006, the objective is to increase energy efficiency by 25% by 2020. Efficiency is measured in relation to full-time equivalents (FTE), or a mix of different reference variables, depending on the actor; some actors have defined their own efficiency key figure, others rely on the methodology of the Energie-Agentur der Wirtschaft for the calculation.

The existing objectives and measures of the organizational units are to be aligned more closely with the objectives of the Energy Strategy 2050. In principle, it is necessary to include the administrative activities, the services and products as well as the employees' user behaviour.

A coordination group has been established for overall control and coordination of the Confederation's exemplary role in energy. It has adopted the name "The Confederation: exemplary in energy". The office of the coordination group CG-ERCE is run by the Federal Office of Energy. The Confederation: exemplary in energy works on a consensus basis. It defines the joint action plan for performing the Confederation's exemplary role in the Energy Strategy 2050 and coordinates communication of the results.

Swiss Post moved into its new headquarters in Bern-Wankdorf in spring 2015. The building was designed to the standards of the German Sustainable Building Council (DGNB). All the actors involved in construction aim for the DGNB Gold Label, which stands for DGNB certification after completion of the building. It is awarded to buildings and urban districts which focus on user well-being and outstandingly fulfil sustainability criteria.


DIE POST

The Confederation intends to motivate

The measures of The Confederation: exemplary in energy plan are based on existing structures (Resources and Environmental Management programme of the Federal Administration RUMBA and large consumers in the Confederation) as well as on the experience gained from already-completed projects and programmes. One priority for the work is reporting; the aim is to publicize The Confederation: exemplary in energy plan and to motivate further enterprises and organizations to make contributions to the Confederation's Energy Strategy 2050.

The overriding aim of a 25% improvement in energy efficiency should be targeted both as a group and by each individual actor. In addition to 39 joint measures, company-specific measures are also being implemented, in which the respective actors make use of their own additional leeway for action.

In terms of content, The Confederation: exemplary in energy has defined the following areas of action for the joint measures:
– buildings and renewable energy
– mobility
– data centers and Green IT

Cooperation within The Confederation: exemplary in energy is defined in a joint declaration of intent by all partners.

A successful launch

At the media conference held to mark the signing of the declaration of intent for "The Confederation: exemplary in energy" plan in November 2014, Federal Councillor Doris Leuthard said that the Federal government, SBB, Swiss Post, Swisscom, Skyguide and the ETH Domain had not waited for the Energy Strategy 2050 to be adopted by Parliament. "For a number of years, the actors in The Confederation: exemplary in energy plan have been guided by the Federal Council's new reference values. And they do not spend much time talking, they act: they observe the progress made and are constantly integrating new technologies." This is also the philosophy of Energy Strategy 2050.

As Skyguide CEO Daniel Weder stated to the media, it is not only a matter of saving energy and improving efficiency in one's own company or organization. For Skyguide, he said, it was at least as important to help others to save energy. For example, by means of continuous descent approaches to Geneva and Zurich airports, Skyguide has attained an energy consumption reduction equivalent to 133 gigawatt hours a year – a saving that benefits the airlines which fly to Geneva and Zurich.

Federal Councillor Doris Leuthard with Susanne Ruoff, Swiss Post Group CEO, and Andreas Meyer, CEO of SBB, at the launch event of The Confederation: exemplary in energy in Bern.

Exemplary role models are also needed in Europe

In October 2014 the European Union set itself new targets for 2020 as a further development of the "20-20-20 objectives". Greenhouse gas emissions are to be reduced by at least 40% by 2030 compared with 1990 and the proportion of Renewable Energies increased to at least 27% of final energy consumption. These targets are deemed binding EU-wide. Primary energy consumption is to be reduced by at least 27% by 2030, compared with a reference trend. This target is to be reviewed in 2020 and increased to 30% if necessary.

In Germany as well the public sector performs an exemplary function: the Federal government is to draw up an energy restructuring schedule for the exemplary improvement of the energy profile of service buildings. The federal states, municipalities and other public institutions will also receive assistance with preparing energy-efficiency renovation road maps for their buildings. Germany defines the following key points for its energy efficiency strategy In the "National Action Plan for Energy Efficiency" (NAPE), which was published at the end of 2014: stepping up energy efficiency in buildings, establishing energy efficiency as an investment and business model and increasing individual responsibility for energy efficiency. In order to achieve these objectives, key short-term measures were defined, in addition to long-term work processes, inter alia. They include introducing competitive tendering models for energy efficiency, increasing funding for building renovation, introducing tax incentives for efficiency measures in the building sector and setting up energy efficiency networks together with business and industry.

Sectors start to take action

The International Union of Railways (UIC) presented its initiative for low-carbon rail transport at the UNO Climate Summit in New York in September 2014. Its aim is to attain a 50% reduction of specific final energy consumption by rail transport by 2030 and a 60% reduction by 2050, compared with 1990. In addition, average specific CO_2 emissions in rail transport are to be reduced by 50% before 2030 and by 75% before 2050, compared with 1990. This target is to be achieved through electrification, optimization of the load factor, more efficient trains, traffic and energy management systems and through more energy-saving train driving. The International Post Corporation (IPC) has set itself the goal of reducing greenhouse gas emissions by 20% between 2008 and 2020. A 19.2% reduction had already been attained by 2013. Therefore a new objective is currently being developed and an efficiency target is to be approved in 2015. ETNO, the European telecoms association, deals mainly with topics such as reducing energy consumption through more efficient networks and data centers and the use of Green IT. Skyguide's environmental targets are determined by the European Commission within the framework of the performance plan of the FABEC countries (Belgium, Germany, France, Luxembourg, Netherlands and Switzerland).

The Confederation: exemplary in energy – the actors

The members of The Confederation: exemplary in energy do not all have the same leeway for action. But they all contribute to the Federal government's Energy Strategy 2050 by improving their energy efficiency.

Some very different actors are engaged in The Confederation: exemplary in energy. They differ in respect of their task, organizational form, size and their relationship with the Confederation:

– The Confederation is represented by the Resources and Environmental Management programme of the Federal Administration RUMBA and the Federal Office for Buildings and Logistics (FBL), furthermore by the Federal Department of Defence, Civil Protection and Sport (DDPS).

– Of the parastate enterprises, Swiss Post, the Swiss Federal Railways, Skyguide and Swisscom have signed up. The Confederation sets these organizations strategic objectives, which in some cases also concern energy targets or at least require a sustainable corporate strategy.

– The Federal Institutes of Technology and four research institutes are grouped together in the ETH Domain. In the ETH law, the Confederation has determined the purpose of the two institutes of technology and four research institutes; a performance mandate from the Federal Council and Parliament translates the corresponding objectives into practice.

Implementation of the Energy Strategy 2050 requires a great effort from all actors in The Confederation: exemplary in energy plan. By using their individual leeway for action, they make an important contribution to the credibility of the Energy Strategy. In addition, they can position themselves as organizations that act sustainably and energy-efficiently vis-à-vis employees, customers, business partners, investors and lenders. And finally, energy efficiency also means cost effectiveness for one's own organization: anyone who saves energy also saves money.

On the next four pages you will find a brief portrait of all the actors involved in The Confederation: exemplary in energy plan, and a summary of their respective energy strategy. The pictures show the representatives of the actors in The Confederation: exemplary in energy plan.

Swiss Post

As a mixed group, Swiss Post Ltd operates in the communication, logistics, retail finance and passenger transport markets. Every year Swiss Post carries about 2.2 billion addressed letters and about 112 million parcels. PostBus transports nearly 141 million passengers, while PostFinance has more than 4.8 million customer accounts. With nearly 55,000 employees in Switzerland (37,000 full-time equivalents), Swiss Post is one of the largest employers in the country.

Energy strategy implementation
As the largest logistics company in Switzerland, Swiss Post operates an energy-intensive business. To increase its energy efficiency, Swiss Post is renewing its vehicle fleet and building stock, is using more alternative drive systems and optimizing delivery rounds. Furthermore it is replacing fossil fuels with renewable energies.

www.swisspost.ch

Anne Wolf, Head of Sustainability

"Thanks to the increasing commitment of our staff, last year we were able to attain further energy reductions."

ETH Domain

Academic achievements at the highest level: This is what the ETH Domain provides with over 20,000 staff members, more than 28,500 students and doctoral students and a faculty of about 800 people. The ETH Domain encompasses the Federal Institutes of Technology in Zurich (ETH Zurich) and Lausanne (EPFL), the research institutes Paul Scherrer Institute (PSI), Swiss Federal Institute for Forest, Snow and Landscape Research (WSL), Swiss Federal Laboratories for Materials Science and Technology (Empa) and the Swiss Federal Institute of Aquatic Science and Technology (Eawag), along with the ETH Board as the strategic supervisory body.

Energy strategy implementation
Together with the institutions, the ETH Board revised the environmental model of the ETH Domain in 2014 so as to prepare for the challenges of the Energy Strategy 2050 and to be able to take even better account of the Federal government's environmental objectives within the ETH Domain.

www.ethboard.ch

Christoph Affentranger, Energy and Environment Management Expert

"With innovative energy and environmental concepts, we enhance the energy efficiency of teaching and research infrastructure and increase the share of renewable energies."

Swiss Federal Railways SBB

With about 33,000 employees, the Swiss Federal Railways move people and goods, open up and connect centers and different parts of the country at home and abroad. As an efficient, forward-looking and sustainable railway, SBB provides its customers with positive travel experiences and transports their goods reliably and resource-efficiently. Because a rail journey in Switzerland is about 4 times more energy-efficient and emits twenty times less CO_2 than a journey by car over a comparable distance. With its sustainable and energy-efficient mobility offering, SBB thus contributes significantly to the implementation of the Confederation's Energy Strategy 2050.

Energy strategy implementation
From 2025 onwards, SBB intends to operate with electricity from 100% renewable energies. To do so, about 20% of the annual consumption forecast for 2025 – or a total of 600 gigawatt hours of electricity per year – is to be saved with a comprehensive package of measures.

www.sbb.ch

Arnold Trümpi, Head of Energy Management

"Energy efficiency is economically worthwhile, motivates people, ensures competitive advantages and creates sustainable mobility for our customers."

SBB CFF FFS

Skyguide

On behalf of the Federal government, the Swiss air navigation services provider Skyguide provides safe, efficient and economical management of air traffic in Swiss airspace and in delegated neighbouring areas. Its 1,400 employees work around the clock at 14 locations in Switzerland. Skyguide controls civil and military air traffic and cooperates closely with the Swiss Air Force and international industry associations.

Energy strategy implementation
Resource-efficient management of air traffic is an important aspect of Skyguide's mandate. Skyguide is committed to reducing emissions from air transport and its own energy consumption through operational improvements. To this end, Skyguide invests in efficiency measures on the ground and in improved traffic management in the air. And does so with consistently high and, where possible, enhanced safety standards.

www.skyguide.ch

Stefan Meyer, Head of Corporate Real Estate Management

"We want to increase our energy efficiency every year. In future, all new projects will be assessed from an air traffic safety, economic and ecological perspective."

skyguide

Swisscom

With around 6.5 million mobile phone customers, over 1.1 million television subscribers and nearly 2 million broadband connections, Swisscom is the leading telecommunications company in Switzerland. In 2014, 21,125 employees earned a turnover of approx. CHF 11.7 billion. Swisscom operates all over Switzerland with services and products for mobile, land-line and Internet Protocol (IP)-based voice and data communication. In addition, the company is one of Switzerland's largest providers of IT services.

Energy strategy implementation
Swisscom meets 100% of its electricity requirement from domestic renewable energy. Swisscom aims to increase its energy efficiency by 25% by 2015 compared with the reference year 2010 and then by an additional 35% by 2020. Together with its customers, Swisscom intends to save twice as much CO_2 by 2020 as it generates in its operations and supply chain.

www.swisscom.ch

Res Witschi, Head of Corporate Responsibility

"Efficient operation of the infrastructure is in our own interests. We go one step further and support our customers with efficient terminal devices and energy-saving services."

Federal Department of Defence, Civil Protection and Sport (DDPS)

The DDPS is divided into five sectors: Defence, Civil Protection, Sport, armasuisse and the Federal Intelligence Service. The department's core activities are security and physical exercise: security, protection and assistance from the Armed Forces and Civil Protection, physical exercise and health through sport. In 2014, the DDPS employed 11,631 people full-time, while the armed forces performed 5,841,341 days of service.

Energy strategy implementation
The DDPS adopted an energy concept for the department for the first time in 2004. This was renewed in 2013. The aim is to anchor modern and resource-efficient environmental and energy management in the DDPS and to achieve the specific targets based on the EnergieSchweiz programme by 2020.

www.vbs.admin.ch

Marcel Adam, Head of Environmental Management, Norms and Standards sector

"The DDPS is committed to protecting Switzerland, its population and its infrastructure – and that includes making efficient use of sustainable energies."

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Swiss Confederation

Federal Department of Defence, Civil Protection and Sport DDPS

Civil Federal Administration FBL/RUMBA programme

The Resources and Environmental Management programme of the Federal Administration RUMBA covers the consumption of heat, power, water and paper. It also takes account of generation of garbage and environmental pollution caused by business travel.

In this way the Departments can set realistic targets for their units. Thanks to the coordinated efforts and advice from specialized agencies, the units are efficiently assisted in making their contribution to reducing environmental pollution, and they can take advantage of the other actors' experiences.

Owing to this good starting position and the commitment of the participating units, RUMBA today is a success story. In 2013, the environmental pollution caused by the civil federal administration was over 8% lower in absolute terms than in 2006. The reduction per full-time position is even more than 23%.

www.rumba.admin.ch
www.bbl.admin.ch

Bernard Matthey-Doret, Deputy Director FBL and Head of Buildings Division

"With RUMBA the environmental pollution caused by the civil administration is continuously monitored and reduced."

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Confederaziun svizra

Swiss Confederation

Federal Department of Finance FDF
Federal Office for Buildings and Logistics FBL

Your contribution to the Energy Strategy 2050

Do you also want to work towards the energy target 2020? Implementation of the Energy Strategy 2050 will only be successful if everybody contributes to it. This applies to private individuals just as much as it does to companies and the public sector. The Confederation: exemplary in energy invites interested companies, organizations, cantons, cities and municipalities to further step up their contributions to energy efficiency. To this end, those who are interested can transpose the measures of The Confederation: exemplary in energy plan to their own areas of activity.

The Office for the Exemplary Role of the Confederation in Energy will be pleased to provide you with further information, tel. 058 462 56 39.

Further actors in the Federal government domain needed

At the same time further actors in the Federal government domain who wish to become active and participate in The Confederation: exemplary in energy are welcome.

The Office for the Exemplary Role of the Confederation in Energy will be pleased to provide you with further information, tel. 058 462 56 39.

On the road to energy efficiency

All actors of The Confederation: exemplary in energy are committed to pursuing ambitious goals, within the limits of their capabilities. Thus the targeted 25% increase in energy efficiency should be achieved not only on average, but by each actor individually.

The Federal Council has determined 2006 as the base year for calculating the increase in efficiency under The Confederation: exemplary in energy plan. In doing so, it is taking account of the fact that some actors have already been working for a long time on improving their energy performance – e.g. under RUMBA or the EnergieSchweiz programme of the Federal Office of Energy.

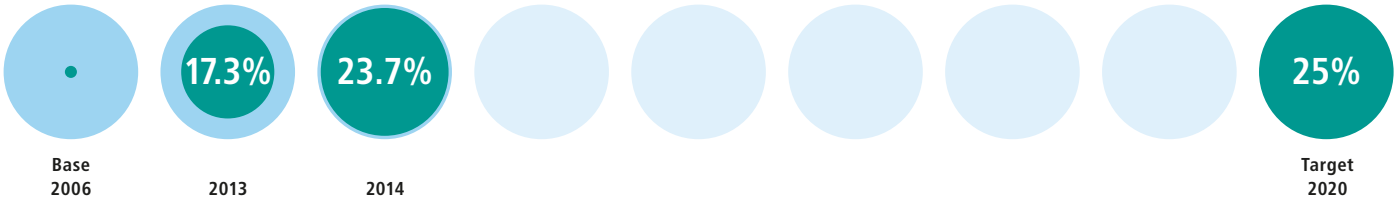
Since the Federal Council adopted its message on the first package of measures for the Energy Strategy 2050 in September 2013, the status at the end of 2013 serves as a first comparative value. By the end of 2014 the actors had increased their energy efficiency by an average of 23.7%. At first sight the target seems to be within reach. However, a certain level of efficiency in one year does not mean that this efficiency will automatically be attained in the following year as well. In order to maintain a level of efficiency, new efforts have to be made every year and measures be continued or even stepped up.

Individual reference variables and system limits

So as not to punish actors for their growth, efficiency is calculated not on the basis of absolute energy consumption but of specific consumption. In order to represent growth optimally, the actors have selected individual reference variables (see p. 17). The calculation methodology for energy efficiency was left open for the actors, so that they can select it according to their existing environmental reports (see www.confederation-exemplary-in-energy.ch). But they all remain ambitious. Final energy consumption and efficiency were calculated for the actors' own buildings, infrastructure and vehicles in Switzerland. But the precise system limits were defined differently for all actors (see p. 18).

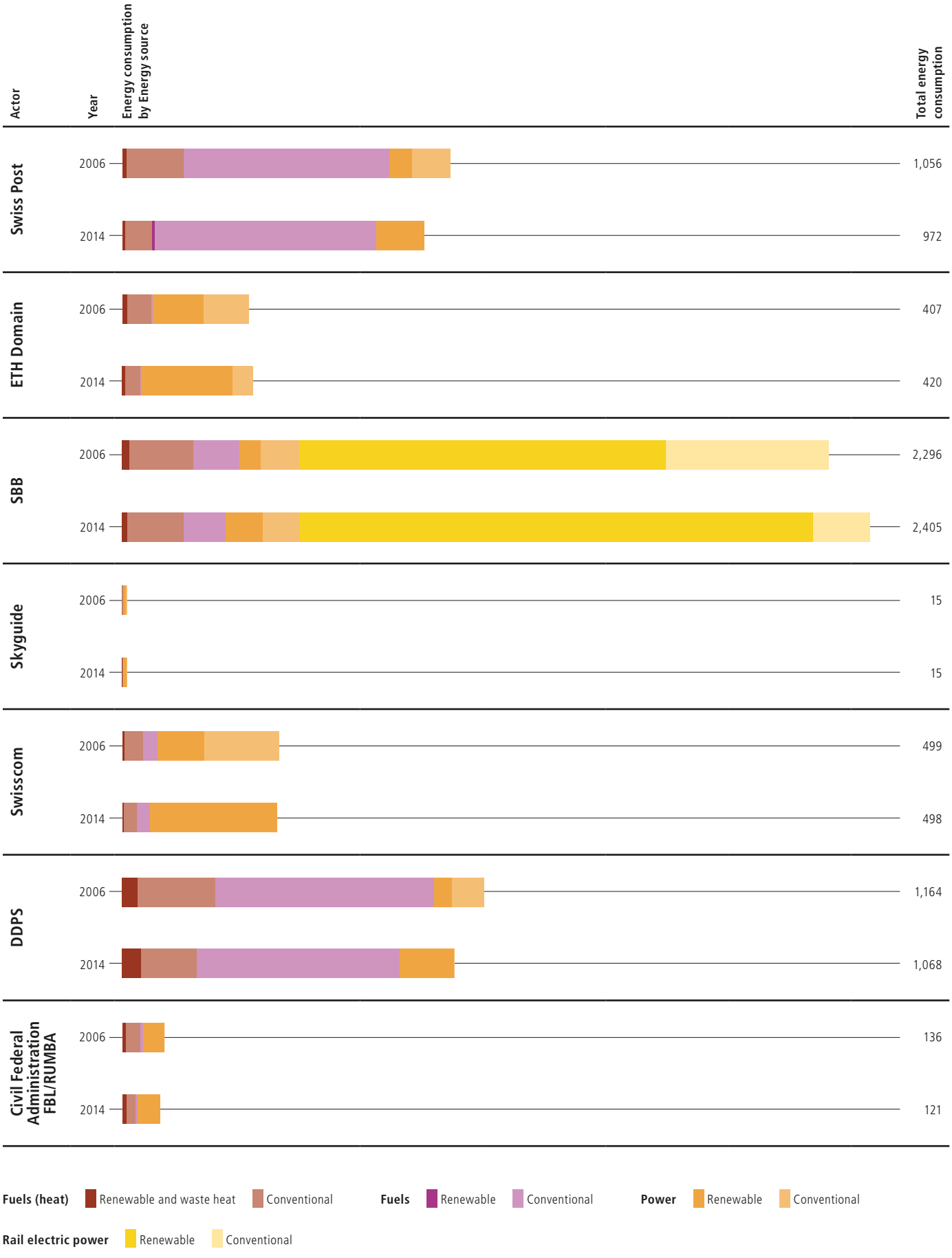
The greatest possible transparency should apply in The Confederation: exemplary in energy. By 2020, the trend in energy efficiency will be subject to annual monitoring.

Increase in the average energy efficiency of all actors



Actors' final energy consumption to produce their output*

in GWh/y



Reference variable(s) selected by the actor*	Increase in energy efficiency attained*		
	2006	2014	Target 2020
Depends on the corporate unit: Number of consignments, customer business, passenger kilometers, transactions, energy reference surface area, full-time equivalents (FTE)	Base	20.0%	25%
Efficiency key figure 1: based on full-time equivalents (FTE), energy reference surface area, no. of instrument days, patient treatments (PSI) Efficiency key figure 2: calculation as for 1, but including efficiency increase on mainframe computer	Base	24.8% Key figure 1 154.5% Key figure 2	25%
Efficiency key figure 1: based on operating output in passenger and net tonne kilometers and traction energy consumption (final energy) Efficiency key figure 2: calculation as for 1, but based on primary energy	Base	16.4% Key figure 1 60.8% Key figure 2	25%
Depends on the corporate unit: full-time equivalents (FTE), energy reference surface area, number of flights	Base	27.9%	25%
Efficiency calculation based on energy efficiency measures implemented (Energie-Agentur der Wirtschaft EnAW methodology)	Base	30.7%	25%
Staff level in full-time equivalents (FTE); work days are converted into FTE	Base	3.0%	25%
Full-time equivalents (FTE)	Base	43.4%	25%
		Average of all actors**	
	Base	**23.7%**	**25%**

* You will find the detailed description (including the calculation methodology of the individual actors) at www.confederation-exemplary-in-energy.ch

** Key figure 1 is taken into account for the ETH Domain and SBB when calculating the average.

Consumption and increase in efficiency per actor

Even if absolute consumption increases, an actor may have increased efficiency if its organization is growing. This is represented by individual reference variables.

System limits

The Confederation: exemplary in energy selected the scope for consumption data and the efficiency target as far as possible according to the existing system limits of the environmental reporting of the individual organizations.

With or without subsidiaries, with or without regional branches: the system limits vary greatly from one actor to another. Furthermore, in some cases the action plan's measures have an impact outside of these limits – on the employees' private energy consumption or on the consumption of the actors' customers.

Swiss Post
The data cover the Group, management and service units of Swiss Post and its fully-consolidated subsidiaries based in Switzerland. In addition, all the processes needed to provide Swiss Post's services were taken into account, in particular also those carried out by subcontractors.

ETH Domain
The data of the institutions in the ETH Domain include all the teaching and research activities and the entire infrastructure, including the particularly energy-intensive large-scale research facilities.

SBB
Energy consumption relates to the SBB group with its Passenger and Cargo, Real Estate and Infrastructure divisions. The key figure for energy efficiency also contains tractive energy (electric power and diesel) for SBB's passenger and cargo traffic in Switzerland.

Skyguide
The data comprise the air traffic control centers in Geneva and Wangen, the control towers in Geneva, Zurich and Bern and the radar stations on La Dôle and Lägern. Locations at regional airports are not covered as they account for only a small part of total consumption.

Swisscom
The system limits comprise Swisscom AG and all fully-consolidated subsidiaries in Switzerland. Concerning the networks, the consumptions of the basic network, the access network and the radio and TV network up to the house connection are included.

DDPS
The consumption data comprise the administration and troop service, but exclude foreign interventions. The data cover consumptions for both real estate and vehicles and aircraft. The energy consumption of aircraft is not included in the calculation of the key figure for energy efficiency.

Federal Administration
FBL / RUMBA programme
The energy data comprise the energy consumptions of the 54 organizational units of the Federal government that are part of the RUMBA programme. They do not include the foreign locations of the Federal Department of Foreign Affairs and the many small facilities of the Swiss Customs.

The Confederation: exemplary in energy

Action plan

The joint action plan of The Confederation: exemplary in energy can be shown in simplified terms by the following equation: Joint measures plus Specific measures equals an Increase in energy efficiency. However, it conceals a multi-faceted and individually defined set of many measures.

Joint measures

plus

Specific measures

equals an

Increase in energy efficiency

The Confederation: exemplary in energy plan has defined 39 joint measures in three areas of action in which most actors have some leeway for action: Buildings and renewable energy, mobility, data centers and Green IT. Each player has to attain a target achievement rate of 80%, averaged over all measures, by 2020. The joint measures make possible synergies and the exchange of experience between actors.

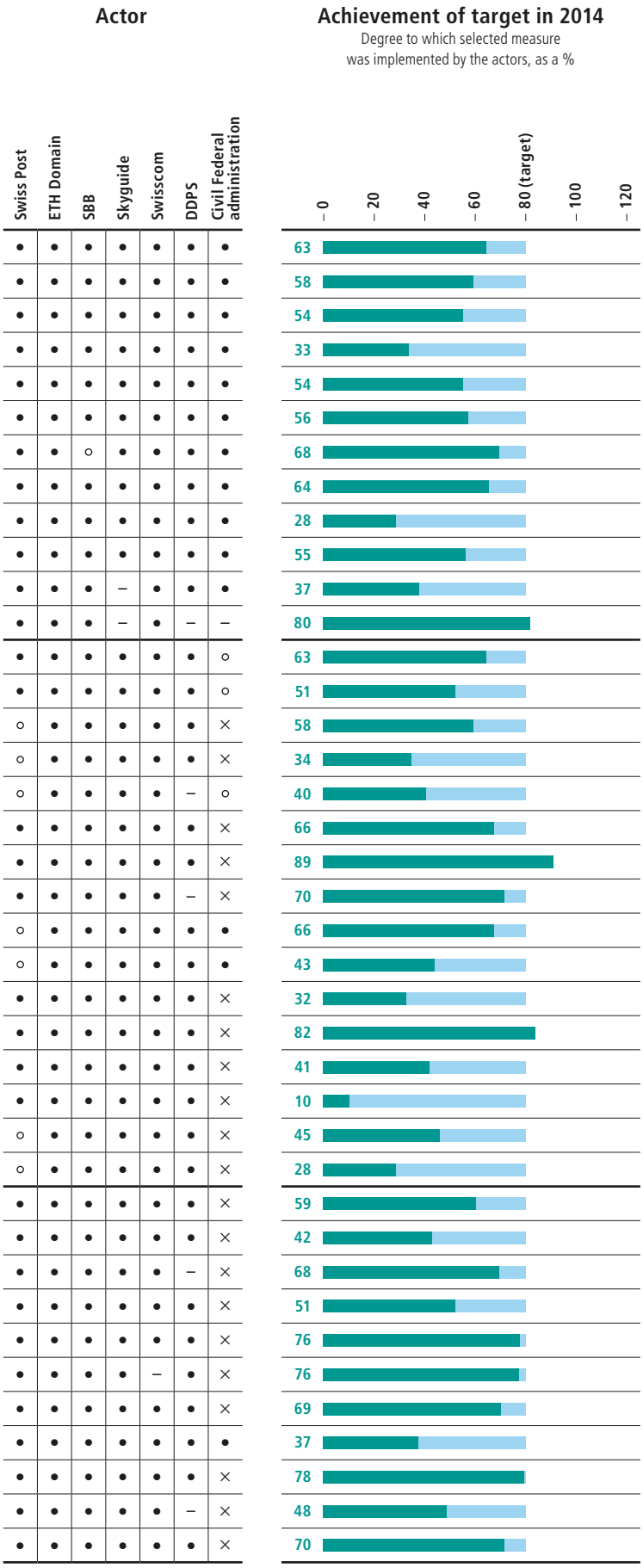
The leeway for action of most actors is not yet covered by the joint measures. That is why each actor has, in addition, defined several specific measures which allow it to tap into its individual potential for increasing energy efficiency. In some cases it is not just a matter of increasing one's own efficiency but also of increasing the energy efficiency of customers and partners.

The action plans of the individual organizations and companies are the key instrument of the Confederation: exemplary in energy plan. Progressive implementation of joint and specific measures leads to an increase in energy efficiency. The objective is a 25% improvement by the end of 2020 – individually and as a group of organizations and companies. By implementing the measures beyond their system limits as well, the actors achieve a positive effect and energy efficiency improvements in third parties.

Joint measures of all actors

Detailed descriptions of the measures on pages 22 to 26

Area of action	Number	Measure	Performance target
Buildings and renewable energy	01	Energy-efficient new and converted buildings	100% from 2016
	02	Analyses of potential of waste heat and renewable energies	Analyses of potential available
	03	No new fossil-fuel powered heating systems	100% from 2016
	04	Full cost accounting of energy efficiency	1–2 case studies available from 01.01.2017
	05	Energy-efficient lighting	100% from 01.01.2016
	06	Energy-efficient cooling machines	100% from 01.01.2016
	07	Energy-efficient sanitation facilities	100% from 01.01.2016
	08	Energy-efficient electromotors	100% from 01.01.2016
	09	Building technology with operating optimization regime	60% by 2020
	10	Procurement of green power and hydroelectricity	20% and 80% respectively by 2020
	11	Mobility concepts for buildings	100% from 01.01.2016
	12	Creation of ecofunds	100% by 2020
Mobility	13	Integration of mobility management	100% of the employees
	14	Central information and booking platform	80% of the employees
	15	Encouragement of mobile-flexible forms of work	30% of the employees with an appropriate job profile
	16	Promoting work hubs	100% of the sites
	17	Promotion of video and web conferencing	30% / 70% of the employees
	18	Incentives for using public transport	see detailed description on page 24
	19	Providing or co-financing PT season tickets	half-fare card or contribution to PT season ticket
	20	Criteria for choosing mode of transport	Air travel less than 20% for short distances
	21	Active parking space management	100% of parking spaces
	22	Provision of bicycle parking spaces	100% of the sites equipped to cope with demand
	23	Provision of bicycles and e-bikes	100% of the sites with over 100 employees
	24	Criteria for procuring energy-efficient vehicles	100% of newly-procured cars
	25	Eco-Drive training courses for frequent car users	100% of employees
	26	Promoting the use of car sharing agencies	80% of employees
	27	Joint use of a company carpool	see detailed description on page 25
	28	Provision of charging stations for electric vehicles	100% of sites with over 500 employees
Data centers and Green IT	29	Full cost accounting of energy efficiency in procurement	100% of the appliances in new calls for tender
	30	Specifications for new servers and new data center hardware	100% of new calls for tender
	31	Highly energy-efficient data centers	see detailed description on page 25
	32	Pushing passive cooling solutions in data centers	see detailed description on page 25
	33	Encouraging server virtualization in data centers	over 85% by 2020
	34	Bundling of data centers / Outsourcing of IT services	100% checked by end of 2015
	35	Monitoring and evaluation of new technologies	at least one evaluation per year
	36	Promotion of waste heat recovery	50% by 2030 (data centers > 250 sq. m.)
	37	Promotion of economy mode at computer workstations	over 90% by 2015
	38	Promotion of energy-efficient printing solutions	see detailed description on page 26
	39	Promoting re-use of appliances	100% by 2015



Joint measures of all actors

The Confederation: exemplary in energy plan has defined 39 joint measures to increase energy efficiency in the three action areas buildings and renewable energy, mobility and data centers and Green IT. From this catalogue, each actor has selected those measures in which it sees leeway for action. Each player aims to attain a target achievement rate of 80% on average by 2020. The green bar indicates the extent to which the actors have implemented a measure on average. Blue is the difference with the average target value of 80%. Over-achievement of individual measures is possible up to the value of 125%.

- ● selected measure
- ○ selected, no data yet
- – no leeway for action
- × responsibility for implementation open

green = implemented
blue = difference with the average target rate of 80%

The 39 joint measures of all actors in detail

The Confederation: exemplary in energy plan has defined 39 joint measures in the three action areas buildings and renewable energy, mobility, and data centers and Green IT. You can read here the detailed descriptions with indicator and target.

Action area buildings and renewable energy

01 Energy-efficient new and converted buildings
The actors' strategies for buildings and sites are guided by "best practice". For specific building standards they are based as much as possible on existing labels, such as MINERGIE-P-ECO®. For sites, strategies with an aggregate energy review are appropriate.
Indicator: standards existing, published and complied with.
Target: 100% compliance with the standards from January 1, 2016.

02 Analyses of potential of waste heat and renewable energies
The actors each draw up an analysis of potential. It is intended to show the extent to which waste heat could be utilized and renewable energy produced on their sites and in their buildings and what this would cost. The FOE is consolidating these analyses and drawing up a master plan "New renewable energies in the federal government and parastate enterprises".
Indicator: analysis of potential available.
Target: Analyses of potential available.

03 No new fossil-fuel powered heating systems
The actors no longer build any fossil-fuel operated heating systems in their buildings. This also applies explicitly when replacing existing systems. Justifiable exceptions are possible, for example for special sites or functions. In such cases renewable substitute energies such as biogas should be used or, as the second priority, emissions should be offset by CO_2 reduction measures.
Indicator: newly-installed heating systems operated without fossil fuels.
Target: 100% from January 1, 2016.

04 Full cost accounting of energy efficiency
In order to evaluate energy efficiency measures, the actors use "life cycle costs" (LCC) or "Total Cost of Ownership" (TCO) approaches. Investments in energy efficiency measures that pay for themselves over the life cycle of a measure are implemented. The application of the methodology is made public in a strategy paper.
Indicator: 1–2 case studies available.
Target: available from January 1, 2017.

05 Energy-efficient lighting
The actors now only procure lighting that is guided by the best practice principle, i.e. which is based on the latest and most energy-efficient technology. In the case of outdoor lighting, special attention is paid to nature-related issues, especially light pollution.
Indicator: Internal standards available and complied with.
Target: 100% from January 1, 2016.

06 Energy-efficient cooling machines
The actors plan, procure and operate cooling machines to best practice standards: first of all, generation of heat/cold has to be designed integrally and, if possible, without a cooling machine (taking account of the annual heat/cold curve, use of waste heat, free cooling). If a cooling machine is nevertheless required, it has to be implemented according to the latest SIA standard; in addition, a greenhouse gas effect evaluation should be carried out.
Indicator: proportion of cooling machines procured in compliance with the requirements.
Target: 100% from January 1, 2016.

07 Energy-efficient sanitation facilities
Cold water alone is the standard for hand-washing and similar activities in toilet blocks and comparable facilities in new and renovated buildings. In addition, the actors now only procure sanitary ware in energy class A, except for showers (energy class B).
Indicator: Internal standards available and complied with.
Target: 100% from January 1, 2016.

08 Energy-efficient electromotors
When installing (in new and replacement buildings) new electrical building apparatus (ventilation, air-conditioning, cooling, sanitary), electromotors and other electrical apparatus (e.g. lifts, conveying equipment, compressors), the actors use the most efficient electromotors in each case (best practice strategy).
Indicator: Internal standards available and complied with.
Target: 100% from January 1, 2016.

09 Building technology with operating optimization regime
The actors subject their building apparatus to continuous operating optimization (OO). Recognized measures for increasing energy efficiency are being implemented constantly. In addition, whenever a new apparatus is commissioned in a building, an acceptance procedure is consistently carried out; any defects are rectified.
Indicator: % of consumption of apparatus with a continuous OO regime out of total annual energy consumption.
Target: 60% (by 2020).

10 Procurement of green power and hydroelectricity
The actors will gradually increase their proportion of green power ("naturemade star" or equivalent) to 20% by 2020. The remaining power requirement should be met by no later than January 1, 2020 exclusively with hydroelectric power.
Indicator: 1. % of green electricity out of total consumption, 2. % of hydroelectric power out of total consumption.
Target (excl. rail power): 1. 20% (by 2020), 2. 80% (by 2020).

11 Mobility concepts for buildings
From now on, the players only construct new buildings with more than 50 permanent jobs when there is an overriding mobility concept and take the traffic volume into consideration already when choosing the location. The concept comprises minimum requirements for opening up areas with public transport (PT) and non-motorized traffic, as well as measures to reduce induced traffic and promote energy-efficient mobility.
Indicator: % of new buildings (> 50 permanent jobs) out of all new buildings (> 50 permanent jobs) with a mobility concept.
Target: 100% from January 1, 2016.

12 Creation of ecofunds
The actors each create an ecofund of their own. These ecofunds are financed out of the reimbursement of the CO_2 and VOC levies and out of further reimbursements of monies in connection with environmental incentive levies, provided that these are not to be used by law or under a performance agreement for other purposes, or from other financing sources. The ecofunds finance measures in the energy or environmental sector.
Indicator: % of reimbursed environmental incentive levies that flow into the ecofund
Target: 100% (by 2020).

Action area mobility

13 Integration of mobility management
The actors implement structures and processes for regular assessment and effective management of employee mobility in terms of their environmental impact.
Indicator: % of employees for whose business divisions such structures and processes are implemented.
Target: 100% (by 2020).

14 Central information and booking platform
The actors provide a central, web-based information and booking platform that allows easy access to planning and decision-making tools, guidelines and other information on service offers from the mobility sector.
Indicator: % of employees having access at their workplace to a mobility information platform.
Target: 80% (by 2020).

15 Encouragement of mobile-flexible forms of work
The actors enable forms of work that allow employees with suitable job profiles to choose, as freely as possible, their time and place of work (e.g. at home, when travelling, at other company sites). This includes equipping them with the necessary devices (e.g. mobile devices with remote access to the corporate network) and creating the cultural preconditions by picking a central theme in management and staff development.
Indicator: % of employees who regularly use mobile-flexible work forms, out of all workers with a suitable job profile.
Target: 30% (by 2020).

16 Promoting work hubs
The actors provide work hubs at which employees from other sites or other companies and organizations can work temporarily. In addition, they create the cultural preconditions for working at work hubs.
Indicator: % of office locations (> 50 employees) with workstations to which in-house or outside employees from other sites have access.
Target: 100% (by 2020). In addition, reviews are conducted on the extent to which premises can be opened reciprocally within the Confederation: exemplary in energy plan.

17 Promotion of video and web conferencing
The actors' employees have access to video and web conferencing or, as applicable, corporate collaboration solutions, which make personal exchanges possible over great distances.
Indicator: % of employees who regularly use video/web conferencing, out of all employees with a suitable job profile.
Target: 30% of the workforce, 70% of the employees making several international business trips per year (by 2020).

18 Incentives for using public transport (PT)
The actors ensure that employees can be reimbursed through expenses for business travel with PT even if they use season tickets they have paid for themselves, and that the expense regulations do not give them any incentive to use their own car. The use of private cars requires approval from one's superior in keeping with clearly-defined criteria, and is only reimbursed with a cost-covering per-kilometer rate.
Indicator: Expenses reimbursement for using PT, rules for use of private cars, kilometer rate.
Target: Expenses reimbursement of the PT ticket price based on the half-fare railcard, even if self-paid PT season tickets are used, clearly-defined criteria for using private vehicles, km rate for private cars, max. CHF 0.64 per km.

19 Providing or co-financing PT season tickets
The actors encourage the use of PT for business and commuter journeys by providing a half-fare railcard and/or by making a financial contribution to other PT season tickets (zone, point-to-point or network-wide season tickets).
Indicator: minimum contribution to PT season tickets for employees.
Target: all employees are entitled to a half-fare railcard or a corresponding company contribution to a PT season ticket.

20 Criteria for choosing mode of transport
The actors introduce a guideline with clearly-defined travel distances for rail or air travel as well as criteria for using video and web conferencing and corporate collaboration solutions.
Indicator: proportion of air travel over distances that can be covered by train from Basel, Zurich or Geneva in a maximum of five hours.
Target: less than 20% (by 2020).

21 Active parking space management
The actors charge for employee parking spaces at usual market rates and allocate them using clear criteria such as level of service by PT at place of domicile, time difference between using a private car and PT to travel to work, working hours, participation in car sharing agencies and/or energy efficiency of the vehicle. New sites are planned with a minimum number of parking spaces.
Indicator: proportion of parking spaces with clear allocation criteria and usual market rates.
Target: 100% (by 2020).

22 Provision of bicycle parking spaces
The actors provide covered and secure parking spaces for two-wheelers and the associated infrastructure (changing rooms with showers). Minimum requirements are, for example, that the spaces should be covered, be near the entrance or have structures to which the bike frame can be padlocked.
Indicator: % of sites (> 100 employees) with a number of bike parking spaces to match demand, as per minimum requirements.
Target: 100% (by 2020).

23 Provision of bicycles and e-bikes
At larger sites, the actors provide self-rental bikes and e-bikes for mobility between nearby sites (e.g. PubliBike stations, company bicycles).
Indicator: % sites (> 100 employees needing this service) with access to self-rental bikes.
Target: 100% (by 2020).

24 Criteria for procuring energy-efficient vehicles
The actors apply clear energy-efficiency criteria such as the energy label when procuring vehicles. For all new vehicles (incl. delivery vans), the fuel consumption/CO_2 value is weighted as an evaluation criterion with at least 15% in the benefit analysis.
Indicator: % of newly-procured cars with up to a max. of 7 seats in energy efficiency class A, not counting all-wheel-drive vehicles and intervention vehicles such as ambulances.
Target: 100% (by 2020).

25 Eco-Drive training courses for frequent car users
Employees who drive more than 20,000 kilometers a year on business are trained every three years on an Eco-Drive course. In the case of employees who use the company fleet, the employer supports privately-attended Eco-Drive courses with a 30% contribution to costs.

Indicator: % of employees driving more than 20,000 kilometers a year who have attended an Eco-Drive course in the last three years.
Target: 100 % (by 2020).

26 Promoting the use of car sharing agencies
The actors provide information on and access to their own or an outside car sharing agency for arranging lifts and to carpools in commuter and business traffic.
Indicator: % of employees who depend on the car to travel to work and who have access at their workplace to a car sharing agency (prerequisite: a sufficiently large number of employees).
Target: 80 % (by 2020).

27 Joint use of a company carpool
The number of business vehicles is reduced by inter-departmental use of carpool vehicles. A vehicle management tool is introduced and used regionally.
Indicator: average length of time for which company vehicles are used (not counting intervention vehicles such as ambulances).
Target: Vehicles used for < 2 hrs. per day are incorporated into the vehicle pool.

28 Provision of charging stations for electric vehicles
Parking spaces at larger sites are equipped with charging facilities for ordinary electric vehicles, for example electric cars, electric scooters and e-bikes. In new buildings, plans must ensure the subsequent installation of charging stations for electric vehicles.
Indicator: % of sites (> 500 employees) with charging facilities for electric vehicles.
Target: 100 % (by 2020).

Action area data centers and Green IT

29 Full cost accounting of energy efficiency in procurement
The actors assess and select for a predetermined specification their IT infrastructure according to the Total Cost of Ownership (TCO) approach, including energy consumption. Energy consumption must be disproportionally overweighted here, unlike with the purely TCO approach.
Indicator: % of the IT appliances evaluated according to the description of measures in new calls for tender.
Target: 100 % from January 1, 2015.

30 Specifications for new servers and new data center hardware
The actors systematically call for joint state-of-the-art specifications when procuring new servers and further data center hardware. The state-of-the-art specifications are based on existing labels (for example, 80 PLUS® Gold-Label or ENERGY STAR® Programme Requirements for Computer Servers) or standards.
Indicator: % of compliant servers and further hardware in the data center in new calls for tender.
Target: 100 % from January 1, 2015.

31 Highly energy-efficient data centers
The actors implement the most energy-efficient concepts and technologies in the data centers' infrastructure systems (ventilation, cooling, uninterrupted power supply, lighting).
Indicator: average PUE value (Power Usage Effectiveness) over all of the data centers. The PUE value is defined as the ratio of the total electrical energy consumption of the data center to the energy consumption of the IT equipment.
Target: < 1.3 by 2030. (In new and larger data centers, smaller PUE values are expected, while best efforts are expected in smaller data centers).

32 Pushing passive cooling solutions in data centers
The actors push the use of energy-efficient passive cooling solutions without cooling machines by using the air conditioning range permissible for servers as per current standards. As first measure, in existing data centers with conventional cooling, the cold operating temperature is raised to at least 26 °C.
Indicator: 1st part: existing data center surface area with temperature > 26 °C; 2nd part: data center surface area with extended temperature range or with passive cooling.
Target: 1st part: 100 % from 2015; 2nd part: 33 % by 2025, 66 % by 2035.

33 Encouraging server virtualization in data centers
The actors aim for a high server capacity utilization. To this end, increasing reliance is placed on server virtualization and on memory technology (SAN) in the storage area.
Indicator: % proportion of virtual servers: number of virtual servers / (number of virtual + physical servers).
Target: > 85 % (by 2020).

34 Bundling of data centers / Outsourcing of IT services
The actors check potential for increasing energy efficiency as part of data center consolidations.
Indicator: Checked potential.
Target: 100 % by the end of 2015.

35 Monitoring and evaluation of new technologies
The actors monitor or evaluate new technologies with energy-efficiency potential and operate a Technology Board within The Confederation: exemplary in energy plan.
Indicator: number of technologies evaluated.
Target: at least 1 per year.

36 Promotion of waste heat recovery
The actors promote the feeding of their surplus heat from civil IT production into district heating grids, provided that suitable heat customers exist and a contractor is prepared to take on the project in full. Financing, planning, construction and operation from the heat production site are a matter for the contractor.
Indicator: % use of surplus waste heat.
Target: 50% by 2030 (data centers of > 250 sq. m.).

37 Promotion of economy mode at computer workstations
The actors ensure that, when not in use, computer workstations switch to the idle state after a predetermined time.
Indicator: % of workstations with active power management.
Target: 90% by 2015.

38 Promotion of energy-efficient printing solutions
The actors optimize the number of printers per employee and implement modern printing solutions in the office area, such as the Follow-me-printing function. As a result, printer operation is optimized and paper and power can be saved.
Indicator: no. of employees per printer; kg of paper per employee.
Target: 100 employees per printer or at smaller sites a maximum of 1 printer by 2020; 5 kg of paper per employee per year (= approx. 1,000 A4 sheets) by 2020.

39 Promoting re-use of appliances
The actors promote re-use of old, but still-serviceable, equipment by passing on old PCs to specialized companies, aid agencies or by giving them to employees. Equipment that has to be disposed of is processed only by certified recycling companies.
(In order to ensure energy efficiency, the actors can define additional criteria, such as for example, that only equipment less than 8 years old should continue to be used.)
Indicator: guidelines for recycling no-longer-used equipment are available.
Target: 100% by 2015.

You will find the detailed description of the measures at www.confederation-exemplary-in-energy.ch.

Swiss Post

Action plan

Swiss Post's energy requirement in 2014 was 972 gigawatt hours (GWh). The requirement has fallen by 7.8% compared with the base year 2006, despite strong growth of business in some areas. Swiss Post increased its energy efficiency by 20% over this period. Measures that contributed to this success were increased use of alternative-drive vehicles, optimization of delivery rounds and the use of heat pumps in service buildings.

Swiss Post's new headquarters in Bern-Wankdorf

Success story

Swiss Post's new headquarters bear the DGNB quality label

Swiss Post's new headquarters are located immediately next to the Wankdorf S-Bahn station in Bern and its staff moved in during spring 2015. They offer 1,650 workstations for approx. 1,800 employees on eight storeys and 30,000 sq. m. of multiple-use office space.

The building was designed to the standards of the German Sustainable Building Council (DGNB). All the actors involved in construction aim for the DGNB Gold Label, which signifies DGNB certification upon completion. It is awarded to buildings and urban districts which focus on user well-being and outstandingly fulfil sustainability criteria. Heat is extracted with 69 geothermal probes, driven up to 140 meters below ground to heat the building. If necessary, heat can also be dissipated to cool the ambient air.

Swiss Post

Selection from the joint measures of all actors

The Confederation: exemplary in energy plan has defined 39 joint measures to increase energy efficiency in the three action areas. Swiss Post intends to implement all these measures. As long as a measure is in the implementation phase, it is marked with a blue dot. Once it has been implemented, the dot changes to green.

No.		Measure
		Action area Buildings and renewable energy
01	●	Energy-efficient new and converted buildings
02	●	Analyses of potential of waste heat and renewable energies
03	●	No new fossil-fuel powered heating systems
04	●	Full cost accounting of energy efficiency
05	●	Energy-efficient lighting
06	●	Energy-efficient cooling machines
07	●	Energy-efficient sanitation facilities
08	●	Energy-efficient electromotors
09	●	Building technology with operating optimization regime
10	●	Procurement of green power and hydroelectricity
11	●	Mobility concepts for buildings
12	●	Creation of ecofunds
		Action area Mobility
13	●	Integration of mobility management
14	●	Central information and booking platform
15	○	Encouragement of mobile-flexible forms of work
16	○	Promoting work hubs
17	○	Promotion of video and web conferencing
18	●	Incentives for using public transport
19	●	Providing or co-financing PT season tickets
20	●	Criteria for choosing mode of transport
21	○	Active parking space management
22	○	Provision of bicycle parking spaces
23	●	Provision of bicycles and e-bikes
24	●	Criteria for procuring energy-efficient vehicles
25	●	Eco-Drive training courses for frequent car users
26	●	Promoting the use of car sharing agencies
27	○	Joint use of a company carpool
28	○	Provision of charging stations for electric vehicles
		Action area Data centers and Green IT
29	●	Full cost accounting of energy efficiency
30	●	Specifications for new servers and new data center hardware
31	●	Highly energy-efficient data centers
32	●	Pushing passive cooling solutions in data centers
33	●	Encouraging server virtualization in data centers
34	●	Bundling of data centers / Outsourcing of IT services
35	●	Monitoring and evaluation of new technologies
36	●	Promotion of waste heat recovery
37	●	Promotion of economy mode at computer workstations
38	●	Promotion of energy-efficient printing solutions
39	●	Promoting re-use of appliances

● adopted and at least 80% achieved
● adopted and in implementation phase
○ adopted, no data yet
– no leeway for action

A detailed description of the measures can be found on pages 22 to 26.

25

Eco-Drive training courses for frequent drivers

Drivers who have an anticipatory and steady driving style save up to 5% fuel, thus reducing CO_2 emissions – and they are more relaxed as they travel at the same speed. PostLogistics and Post Real Estate are therefore training their employees who regularly drive motorized vehicles in the environmentally-compatible Eco-Drive style. Postbus trains its own drivers to become Eco Coaches, who check on the effectiveness of the training courses among their colleagues. Refresher courses exist to ensure lasting success. In addition, Swiss Post is equipping its delivery vehicles with on-board units, which directly and automatically capture driving and consumption data. More than half of all vehicles used for delivery are equipped with them.

Picture: Swiss Post delivery van

Swiss Post

Selection from the actor's specific measures

In addition to the joint measures for all actors, Swiss Post has selected eight specific measures. Swiss Post has defined a reduction target and a target date for each of these measures. When a measure has been implemented, the depiction of the reduction target changes from blue to green. The measures documented here are only part of all the efforts Swiss Post is making to increase its energy efficiency.

No. Measure
(target — target year — status)

01 Replacement of all petrol-engine scooters used to deliver letters with electric scooters. The approx. 7,000 vehicles are operated with entirely "naturemade star"-certified power.
13.0 GWh/y — 2016 — in implementation phase

02 Energy-efficient logistics management at PostLogistics
2.1 GWh/y — 2014 — implemented.

03 Replacement of conventional Postbuses with fuel-cell and diesel-hybrid buses (saving per Postbus; status March 2015: 28 diesel-hybrid buses, 5 fuel-cell buses; fleet is constantly being expanded)
15.0 MWh/y — 2020 — in implementation phase*

04 Use of modern EcoLife transmissions and updates of the transmission software in Postbuses
6.0 GWh/y — 2014 — implemented

05 Targeted replacement of installations for ensuring an uninterrupted power supply (UPS) in the data centers of PostFinance Ltd with latest-generation installations
1.0 GWh/y — 2014 — implemented

06 Procurement of certified biogas
5.5 GWh/y — 2020 — in implementation phase

07 Management of subcontractors in logistics: Monitoring of average fuel consumption with the 16 largest transport logistics partners.
1.1 GWh/y — 2015 — implemented

08 Photovoltaic installations on post office buildings
5.0 GWh/y — 2020 — in implementation phase

* target figure was redefined in 2015

06

5.5 GWh/y

Procurement of certified biogas

Swiss Post is increasingly using energies from renewable sources: as early as 2011 vehicles powered entirely by 100% "naturemade star"-certified biogas were being used for letter and parcel delivery. What is new is that the gas heating systems of Swiss Post buildings are also being operated with 10% "naturemade star"-certified biogas. A total of 5.5 GWh of fossil energy is being replaced with renewable energy. As part of its ongoing commitment to the promotion of renewable energies, Swiss Post has, since 2013, been procuring power that is totally "naturemade basic"-certified and contains a 5% share of high-quality "naturemade star"-certified green power.

03

15.0 MWh/y

Replacement of conventional Postbuses with fuel-cell and diesel-hybrid buses

Postbus is the first bus company in Switzerland to use 5 fuel-cell buses on its routes. Their only emission is water vapour. In addition, PostBus in Brugg AG is operating Switzerland's first hydrogen filling station. And, finally, about 30 diesel-hybrid buses are running on Swiss roads.

07

1.1 GWh/y

Management of subcontractors in logistics

Swiss Post procures a significant proportion of the rounds done with trucks and delivery vans from third parties. Swiss Post operates a system to monitor average fuel consumption with the 16 largest transport logistics partners. Eleven of them succeeded in reducing fuel consumption in 2014. Swiss Post rewarded their commitment with an eco-bonus.

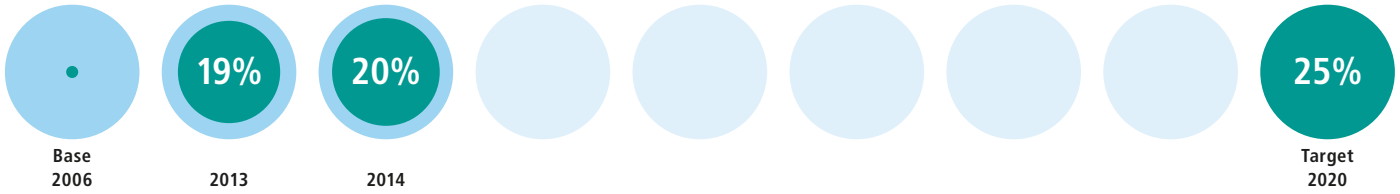
green = reduction target attained
blue = target

Swiss Post

Energy target 2020

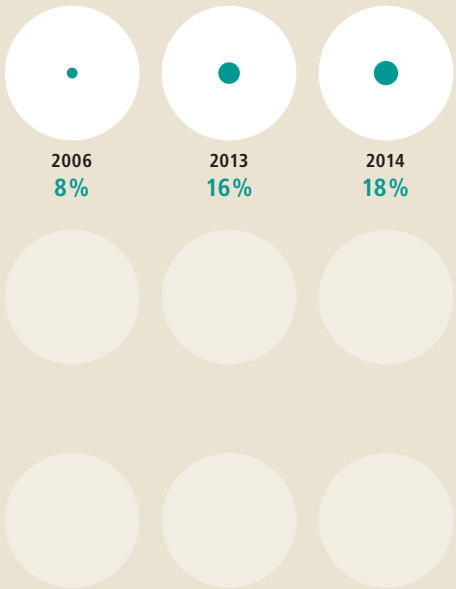
The energy efficiency of Swiss Post was 20% higher in the year under review 2014 than in the base year 2006.

Increase in energy efficiency



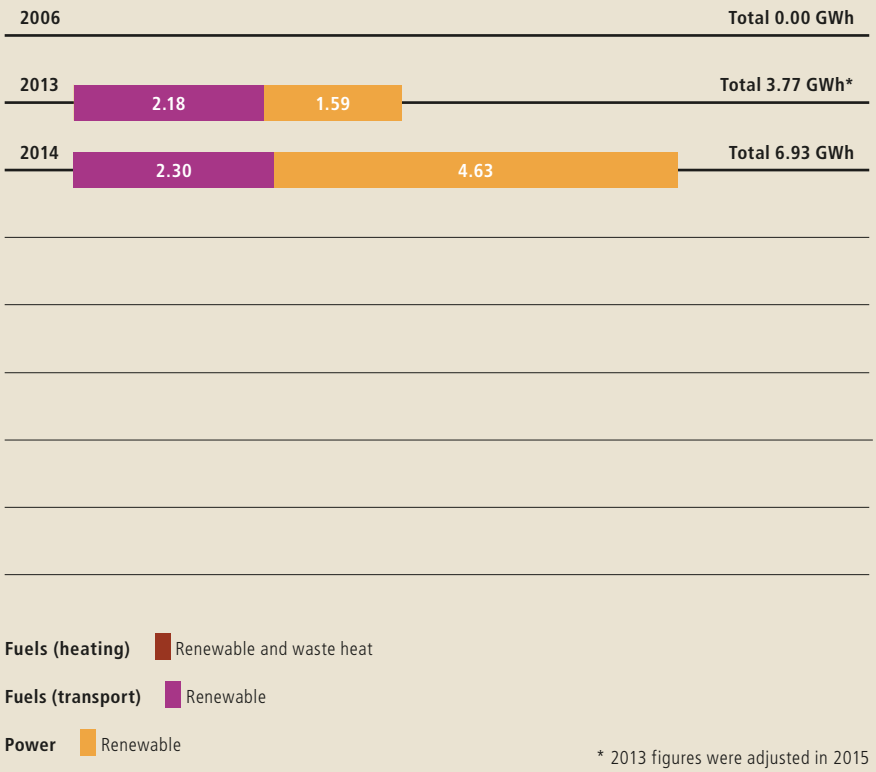
Renewable energy as a proportion of total consumption

Swiss Post increased renewable energy (heat, fuels and power) as a proportion of total energy consumption from 8% in the base year 2006 to 18% in the year under review 2014.



Production of energy from renewable sources

Swiss Post increased its production of renewable energy from 0 GWh in the base year 2006 to 6.93 GWh in the year under review 2014. Power and hydrogen were produced from renewable sources.

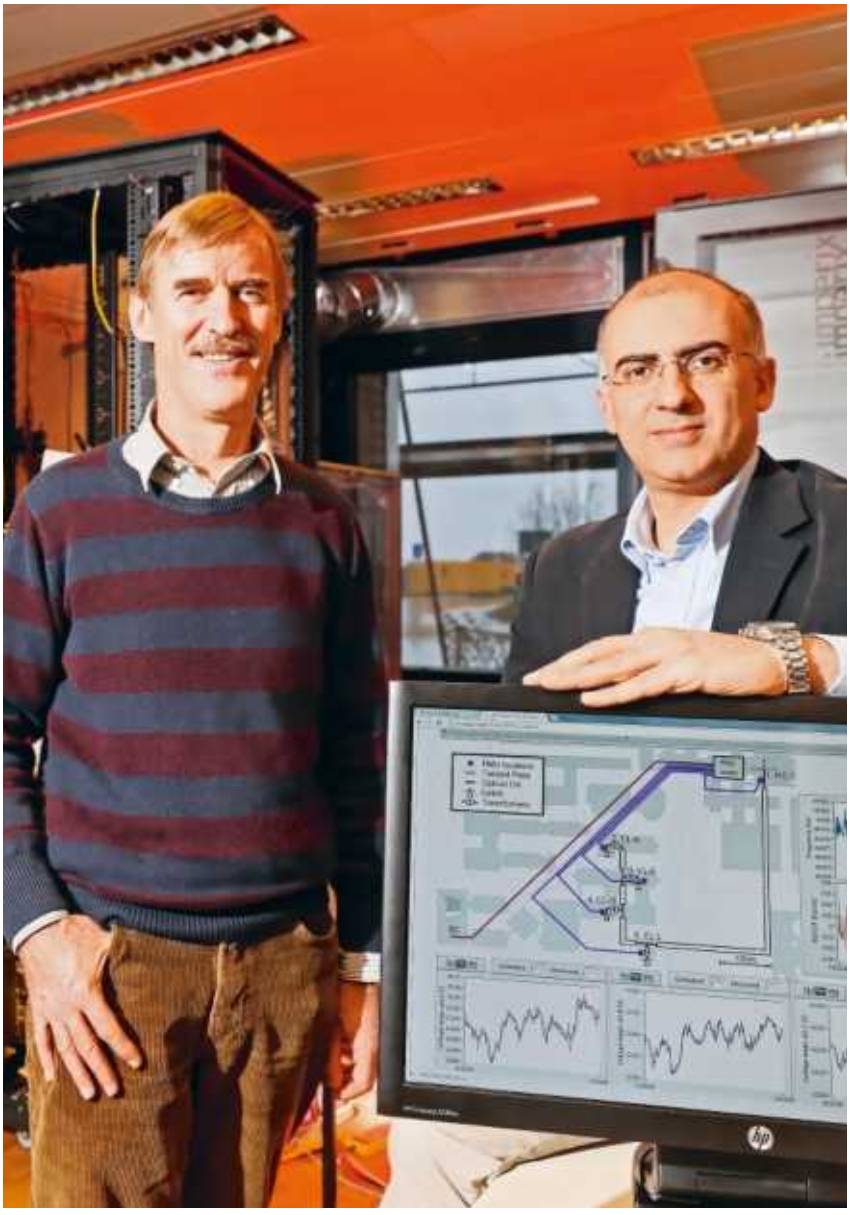


* 2013 figures were adjusted in 2015

ETH Domain

Action plan

The ETH Domain has been characterized since 2006 by a very rapid expansion of teaching and research, fast-growing student and teacher numbers and by novel large-scale research facilities. The extent to which technology is used in the buildings is constantly increasing as a result of the latest laboratory technology and other innovations. Thanks to modernization of building technology, increased recovery of waste heat and great endeavours to ensure that large-scale research facilities are as energy-efficient as possible, energy efficiency has been improved by 24.8% since 2006, although total energy consumption has risen by 3.2%.



Jean-Yves Le Boudec and Mario Paolone, the co-developers of the monitoring system

Success story

EPFL is relying on integration of renewable energies

EPFL is taking a large step towards a Smart Grid with a newly-developed, high-capacity monitoring system. Sensors have been installed in four buildings on the campus. In conjunction with an automatic computing system, they make it possible to calculate the energy supply to the power grid almost in real time. "In an intelligent grid, we can even out fluctuations that occur with renewable energies with either batteries or supercapacitors, or use a building as a virtual battery", said Mario Paolone, a co-developer of the system with Jean-Yves Le Boudec. "But to do so we have to know exactly what is happening in the grid. Our monitoring system thus is an important tool." In addition, thanks to the support of the canton of Vaud, EPFL has since recently had at its disposal a powerful battery manufactured by Leclanché, which can store up to 565 kWh. By means of the connection to the "Romande Energie – EPFL" solar park, it will be possible to store energy produced and to feed it into the grid quickly during consumption peaks.

ETH Domain

Selection from the joint measures of all actors

The Confederation: exemplary in energy plan has defined 39 joint measures to increase energy efficiency in the three action areas. The ETH Domain intends to implement all the measures. As long as a measure is in the implementation phase, it is marked with a blue dot. Once it has been implemented, the dot changes to green.

No. Measure

Action area Buildings and renewable energy

- **01** ● Energy-efficient new and converted buildings
- **02** ● Analyses of potential of waste heat and renewable energies
- **03** ● No new fossil-fuel powered heating systems
- **04** ● Full cost accounting of energy efficiency
- **05** ● Energy-efficient lighting
- **06** ● Energy-efficient cooling machines
- **07** ● Energy-efficient sanitation facilities
- **08** ● Energy-efficient electromotors
- **09** ● Building technology with operating optimization regime
- **10** ● Procurement of green power and hydroelectricity
- **11** ● Mobility concepts for buildings
- **12** ● Creation of ecofunds

Action area Mobility

- **13** ● Integration of mobility management
- **14** ● Central information and booking platform
- **15** ● Encouragement of mobile-flexible forms of work
- **16** ● Promoting work hubs
- **17** ● Promotion of video and web conferencing
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- **26** ● Promoting the use of car sharing agencies
- **27** ● Joint use of a company carpool
- **28** ● Provision of charging stations for electric vehicles

Action area Data centers and Green IT

- **29** ● Full cost accounting of energy efficiency
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- **39** ● Promoting re-use of appliances

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01

Energy-efficient new and converted buildings

The water research institute Eawag is expanding its experimental research. An experimentation hall dating from 1968 has been converted for this purpose and extended with a new building. In an energy consumption analysis with the canton of Zurich in March 2006, Eawag agreed to have the energy-inefficient building retrofitted. But in the meantime additional demand had arisen for premises for drinking water research and experiments on aquatic habitats. Since the research work could not be interrupted at all, the new building was built first and then the conversion was completed. In addition to energy, the other ecological aspects were also taken into account, as was appropriate for Eawag. MINERGIE-P® was supplemented with Eco – the construction work was done in a healthy and environmentally compatible manner. But because this combination was new for a laboratory building, it first had to be clarified with the certification agency what needed to be taken into consideration for it.

Picture: Eawag's Aquatikum in Dübendorf

ETH Domain

Selection from the actor's specific measures

In addition to the joint measures for all actors, the ETH Domain has selected six specific measures. The ETH Domain has defined a target and a target date for each of these measures. When a measure has been implemented, the depiction of the reduction target changes from blue to green. The measures documented here are only part of all the efforts the ETH Domain is making to increase its energy efficiency.

No. Measure
(target — target year — status)

01 Research in the field of Energy
New Research projects — 2020 — in implementation phase

Exemplary measures
– Implementation of the Swiss Competence Centers for Energy Research (SCCER): research on energy topics such as "Power supply", "Storage", "Grids and their components, energy systems", "Efficient concepts, processes and components in mobility" and "Biomass".
– NEST, a practical laboratory for intelligence in the building
– Smart Living Lab, a research and practical laboratory for integrating systems to generate energy from renewable energies in buildings.

02 Teaching in the field of energy
New study courses — 2020 — in implementation phase

Exemplary offers from the new study courses and further training courses
– Implementation of a master course in "Energy Science and Technology" at ETH Zurich.
– Master course in energy management and sustainability at EPFL

03 ETH Zurich: Construction of the Anergy grid on the Hönggerberg campus
14 GWh/y of geothermal heat — 2020 — in implementation phase

04 PSI: Improved waste heat recovery on the research site
75% waste heat — 2018 — in implementation phase

05 EPFL: 88% of the autonomous heat supply to EPFL's heating operates with heat pumps (lake water), and the remainder with natural gas; cooling is done 100% by lake water; production and consumption are considered systemically to take mutual advantage of synergies and to utilize energies. Goals: heat supply with 88% renewable energy by 2019, extension of renewable energies (to 100% in the year 2035), reduction of fossil-fuel heat energy to zero by 2035, minimization of CO_2 emissions, utilization of possible synergies with other projects on the campus.
88% Renewables — 2019 — in implementation phase

06 WSL: Conversion of all WSL's own sites to CO_2-neutral heating. Target: reduction of CO_2 emissions by 97% from 2006 to 2020, reduction of the heat requirement by 25% by 2018.
CO_2 reduction — 2020 — in implementation phase

green = reduction target attained
blue = target

01

New Research projects

PSI: Hydrothermal methanization of algae

Algae biomass has tremendous potential: algae grow quickly and can be processed into both energy sources and fine chemicals. But there is still a great need to research their sustainable utilization as an energy source and material. The hydrothermal methanization process developed at the PSI reached an important milestone in 2014: its technical feasibility could be proven thanks to the cooperation in the Federal government's new competence centre for bioenergy, BIOSWEET. The novel process promises to convert up to 70% of the energy in the algae into methane, while at the same time recovering the nutrients necessary for algae growth.

03

14 GWh/y of geothermal heat

ETH Hönggerberg: Progress with the Anergy grid

In 2014 the third field of geothermal probes with approx. 200 probes was built beneath the planned student accommodation building and connected to the Anergy grid. The centre for adapting the temperature – the third to date – and which is needed for the new building was also completed in 2014. A fourth centre to supply the HCI building is in the planning stage.

06

CO_2 reduction

WSL: New, energy-efficient safety laboratory

The Swiss Federal Institute for Forest, Snow and Landscape Research (WSL) has taken an important step towards CO_2-neutral heating with the mode of construction of its new safety laboratory. Built to the MINERGIE-ECO® standard, it is connected to the existing woodchip heating system and utilizes all the waste heat.

ETH Domain

Energy target 2020

The ETH Domain distinguishes between two kinds of energy efficiency: key figure 1 is based on full-time equivalents (FTE), the energy reference surface area, the number of instrument days and the patient treatments at the PSI. Key figure 2 is calculated as for key figure 1, but in addition takes into account the increase in efficiency on the mainframe computer.

Increase in energy efficiency

Key figure 1

Base 2006 | 2013 * | 2014 | Target 2020

Key figure 2 As stated above, the ETH Domain indicates a second key figure, which takes into account the mainframe computer. This efficiency was **154.2%** higher in 2014 than in the base year 2006.

* The key figure had to be corrected subsequently in order to represent a heat pump correctly, inter alia.

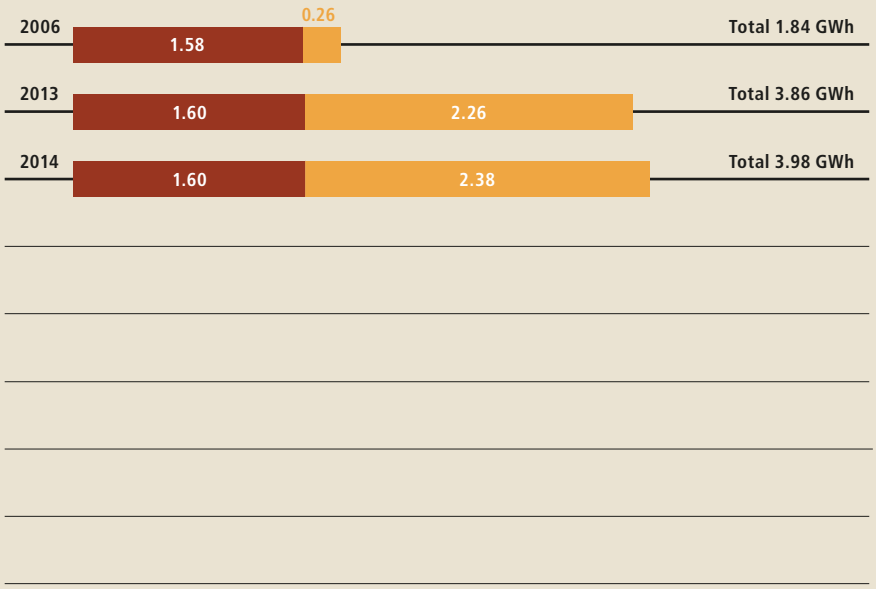
Renewable energy as a proportion of total consumption

The ETH Domain increased renewable energy (heat, fuels and power) as a proportion of total energy consumption from 44% in the base year 2006 to 71% in the year under review 2014.

2006 44% | 2013 65% | 2014 71%

Production of energy from renewable sources

The ETH Domain increased its production of renewable energy from 1.84 GWh in the base year 2006 to 3.98 GWh in the year under review 2014. Heat and power were produced from renewable sources.



Fuels (heating) Renewable and waste heat

Fuels (transport) Renewable

Power Renewable

Swiss Federal Railways (SBB)

Action plan

With its sustainable and energy-efficient mobility offering, SBB contributes significantly to the implementation of the Confederation's Energy Strategy 2050 and to sustainable development in Switzerland. SBB is planning to save about 20% of the annual consumption forecast for 2025, or a total of 600 gigawatt hours (GWh) per year, with an extensive package of measures. Moreover, from 2025 onwards, the SBB's trains are to run on power from 100% renewable energies. Despite a 16.4% increase in efficiency, energy consumption rose by 4.7% from 2006 to 2014, due to a strong increase in passenger traffic output of about 34%, among other reasons.

A double-decker railcar unit of the Zurich S-Bahn.

Success story

Software upgrade saves 10 gigawatt hours per year

SBB is equipping the second generation of Zurich S-Bahn trains (double-decker railcar units) with a new software program. Via the pneumatic suspension of the individual coaches, the software measures how many people are on the train; the innovation is that the air conditioning units adapt the ventilation accordingly. As a result of this demand-oriented flow of fresh air, less energy is used for heating or cooling than if the air supply were geared to the maximum possible passenger capacity. In addition, the train's hibernation mode is controlled via its use profile. If the train is parked on a siding, the heating and air-conditioning systems are automatically switched off and are only switched on again just before the passengers board.

In future, the train driver will be able to decide on the basis of the situation whether he brakes the train electrically and pneumatically or only electrically. When braking electrically, the vehicle feeds the braking energy back into the power grid. When the upgrade has been installed on all 61 trains, SBB will save more than 10 gigawatt hours (GWh) of energy a year.

Swiss Federal Railways (SBB)

Selection from the joint measures of all actors

The Confederation: exemplary in energy plan has defined 39 joint measures to increase energy efficiency in the three action areas. SBB intends to implement all these measures. As long as a measure is in the implementation phase, it is marked with a blue dot. Once it has been implemented, the dot changes to green.

No.		Measure
		Action area Buildings and renewable energy
01	●	Energy-efficient new and converted buildings
02	●	Analyses of potential of waste heat and renewable energies
03	●	No new fossil-fuel powered heating systems
04	●	Full cost accounting of energy efficiency
05	●	Energy-efficient lighting
06	●	Energy-efficient cooling machines
07	○	Energy-efficient sanitation facilities
08	●	Energy-efficient electromotors
09	●	Building technology with operating optimization regime
10	●	Procurement of green power and hydroelectricity
11	●	Mobility concepts for buildings
12	●	Creation of ecofunds
		Action area Mobility
13	●	Integration of mobility management
14	●	Central information and booking platform
15	●	Encouragement of mobile-flexible forms of work
16	●	Promoting work hubs
17	●	Promotion of video and web conferencing
18	●	Incentives for using public transport
19	●	Providing or co-financing PT season tickets
20	●	Criteria for choosing mode of transport
21	●	Active parking space management
22	●	Provision of bicycle parking spaces
23	●	Provision of bicycles and e-bikes
24	●	Criteria for procuring energy-efficient vehicles
25	●	Eco-Drive training courses for frequent car users
26	●	Promoting the use of car sharing agencies
27	●	Joint use of a company carpool
28	●	Provision of charging stations for electric vehicles
		Action area Data centers and Green IT
29	●	Full cost accounting of energy efficiency
30	●	Specifications for new servers and new data center hardware
31	●	Highly energy-efficient data centers
32	●	Pushing passive cooling solutions in data centers
33	●	Encouraging server virtualization in data centers
34	●	Bundling of data centers / Outsourcing of IT services
35	●	Monitoring and evaluation of new technologies
36	●	Promotion of waste heat recovery
37	●	Promotion of economy mode at computer workstations
38	●	Promotion of energy-efficient printing solutions
39	●	Promoting re-use of appliances

● adopted and at least 80% achieved
● adopted and in implementation phase
○ adopted, no data yet
– no leeway for action

A detailed description of the measures can be found on pages 22 to 26.

10

Procurement of green power and hydroelectricity

In addition to 16.7 Hz rail power (1,836 GWh), SBB also consumes large quantities of 50 Hz power from the Swiss grid (239 GWh) to operate its stations, office buildings and installations. In 2014, SBB decided to obtain 50% of its power from renewable sources and to switch completely to 50 Hz power from renewable energies by 2019. In doing so, it will reduce its CO_2 emissions by over 34,000 metric tons, even though power consumption is increasing, partly on account of the operation of the new Gotthard base tunnel as from 2016. This decision is in line with the SBB's existing energy strategy, which is to switch rail power completely to renewable energy by no later than 2025.

Picture: Station building in Zug

Swiss Federal Railways (SBB)

Selection from the actor's specific measures

In addition to the joint measures for all actors, SBB has selected 16 specific measures. SBB has defined a reduction target and a target date for each of these measures. When a measure has been implemented, the depiction of the reduction target changes from blue to green. The measures documented here are only part of all the efforts SBB is making to increase its energy efficiency.

No. Measure
(target — target year — status)

Optimization of rolling stock and driving behaviour

01 Adaptive control (ADL): a green wave for rail traffic
72 GWh/y — 2016 — in implementation phase

02 Energy modernization of the Re460 locomotive, including replacement of the power converters
28.7 GWh/y — 2022 — in implementation phase

03 Energy-optimized shutdown of passenger trains (intelligent hibernation mode)
27.3 GWh/y — 2017 — in implementation phase

04 Refit of double-decker commuter train: optimization of heating, ventilation, air-conditioning
16.0 GWh/y — 2017 — in implementation phase

05 Double-decker railcar unit: optimization of drive software and control, heating, ventilation, air-conditioning
10.4 GWh/y — 2014 — in implementation phase

06 Demand-dependent outside air control with CO_2 sensors on passenger coaches (EW IV, IC2000, ICN, IC Bt)
20.0 GWh /y — 2022 — in study phase

07 Refit of the Euro City passenger coaches
6.7 GWh/y — 2014 — implemented

08 Energy optimizations of the passenger train fleet type NPZ-Domino
5.6 GWh/y — 2013 — implemented

Optimizations of rail power supply

09 Optimization of load distribution and nozzle control for Pelton turbines in the Amsteg hydroelectric power station
3.5 GWh /y — 2015 — in implementation phase

10 Voltage increase and levelling in 132 kV rail power supply grid
2.0 GWh/y — 2015 — in study phase

11 Load flow optimization through energy management and traction power control system EMS/FSL
16.0 GWh/y — 2016 — in implementation phase

12 Replacement of rotary converters with static inverters having a higher efficiency
12.6 GWh/y — 2025 — in planning phase

13 Increasing the efficiency of the Göschenen hydroelectric power station with new impellers and transformers
4.1 GWh/y — 2020 — in implementation phase

Optimizations of infrastructure and buildings

14 Optimizing the control of rail points heaters by using climate data
8.5 GWh/y — 2025 — in implementation phase

15 LED lights in and around the station; platform and track area lighting
8.6 GWh/y — 2025 — in planning/pilot phase

16 Optimizing the control of air conditioning, cooling and heating in the building area
3.5 GWh/y — 2019 — in planning/pilot phase

01

72.0 GWh/y

Adaptive control (ADL): a green wave for rail traffic

With adaptive driving (AD), SBB has developed a unique driving assistance system. This IT application calculates in real time every second the total traffic flow on the Swiss rail network, identifies conflicts and proposes solutions to avoid them. AD transmits recommended speeds directly to train drivers in the cab. This facilitates a forward-looking driving style and reduces unnecessary halts at red signals and excessive braking. The procedure saves energy and improves punctuality. Technically, the application is sufficiently developed for all SBB trains to be driven with it. In future, up to 2,000 trains will be driven daily with ADL, thus saving energy.

green = reduction target attained
blue = target

09

3.5 GWh/y

Optimization of load distribution and nozzle control for Pelton turbines

The Amsteg power station is equipped with three six-nozzle Pelton turbines that convert water into electrical energy (16.7 Hz). The efficiency of the installations can be increased by optimizing the load distribution and nozzle control. In this way more energy can be produced with the same quantity of water.

14

8.5 GWh/y

Optimizing the control of rail point heaters by using weather data

Weather stations near the track measure the outside temperature and the precipitation. By means of this information, the control logic for switching on the rail point heaters can be further optimized. The point heaters are thus in operation for 120 hours less on average per year. The safety and availability of the points continues to be guaranteed.

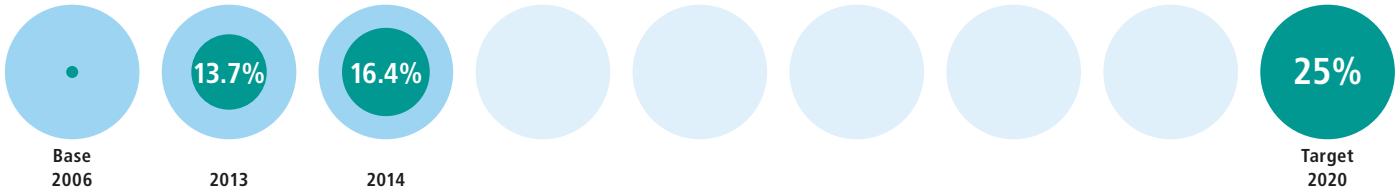
Swiss Federal Railways (SBB)

Energy target 2020

SBB distinguishes between two kinds of energy efficiency. Key figure 1 is based on operating output in passenger and net metric ton kilometers and on final energy consumption (electricity and diesel) for traction. Key figure 2 is based on consumption of primary energy, since SBB controls the whole production chain of traction power and intends to operate entirely with renewable power by 2025.

Increase in energy efficiency

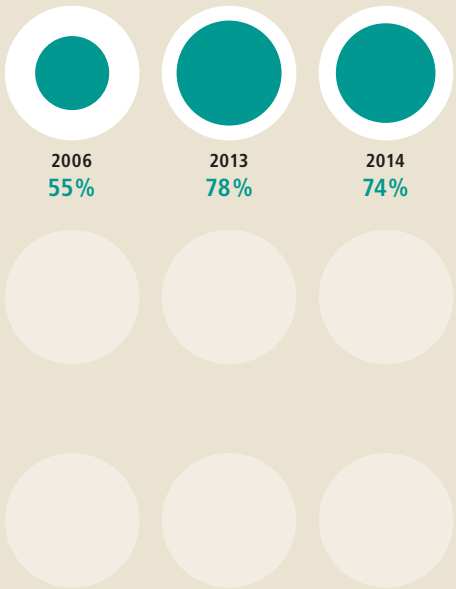
Key figure 1



Key figure 2 As stated above, SBB has a second key figure, which is based on primary energy consumption. This efficiency was **60.8%** higher in 2014 than in the base year 2006.

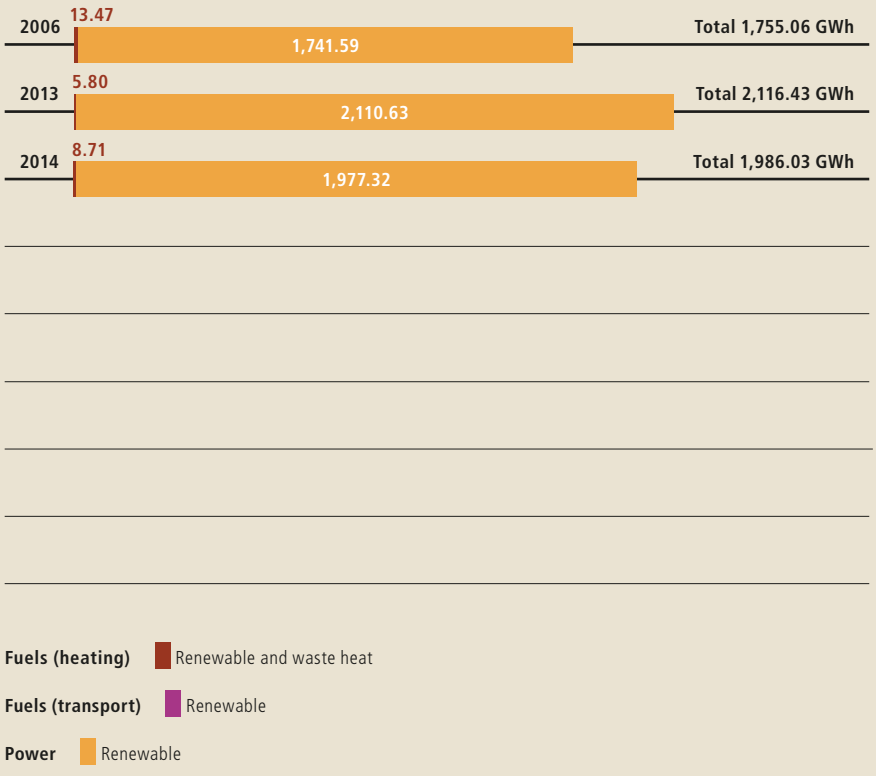
Renewable energy as a proportion of total consumption

SBB increased renewable energy (heat, fuels and power) as a proportion of total energy consumption from 55% in the base year 2006 to 74% in the year under review 2014.



Production of energy from renewable sources

SBB increased its production of renewable energy from 1,755.06 GWh in the base year 2006 to 1,986.03 GWh in the year under review 2014. Power and heat were produced from renewable sources.



Skyguide

Action plan

Sustainability is enshrined in the air navigation services' basic mandate. In order to ensure efficient air traffic management, Skyguide is committed to guiding aircraft to their destination as directly as its capacities allow, so as to reduce kerosene consumption and greenhouse gas emissions. Skyguide also strives to attain maximum efficiency in the energy consumption of its own infrastructure. It would like to continually improve its environmental management and has increased its energy efficiency by 27.9% from 2006 to 2014, while keeping total consumption virtually constant.

Technician at a new radio station

Success story

Smart Radio improves energy efficiency

For communication between air traffic controllers and pilots, Skyguide operates a radio system consisting of 700 radio communication devices and 46 transmitting and receiving stations all over Switzerland. In 2012, the Swiss air navigation services launched a project called "Smart Radio" to renew their entire main radio system. The new radio equipment is harmonized nationwide, increases flexibility and improves energy efficiency. In addition, it forms the technical basis with which frequency regulation is implemented by Eurocontrol. Apart from technical suitability, energy consumption was also a criterion when evaluating the new equipment. By using a central, external power supply unit, the solution adopted consumes up to 30% less energy. Thus Skyguide saves nearly 200,000 kWh of power per year compared with equipment having individual power supply units. In addition, the new system can be maintained remotely. Most of the maintenance journeys to the external sites are no longer necessary, so that over 13,000 travel kilometers are saved.
By 2020 all main radio stations in Switzerland will be equipped with the new apparatus.

Skyguide

Selection from the joint measures of all actors

The Confederation: exemplary in energy plan has defined 39 joint measures to increase energy efficiency in the three action areas. From this catalogue, Skyguide has selected 37 measures that the organization wants to implement. As long as a measure is in the implementation phase, it is marked with a blue dot. Once it has been implemented, the dot changes to green.

No. Measure

Action area Buildings and renewable energy

01 ● Energy-efficient new and converted buildings
02 ● Analyses of potential of waste heat and renewable energies
03 ● No new fossil-fuel powered heating systems
04 ● Full cost accounting of energy efficiency
05 ● Energy-efficient lighting
06 ● Energy-efficient cooling machines
07 ● Energy-efficient sanitation facilities
08 ● Energy-efficient electromotors
09 ● Building technology with operating optimization regime
10 ● Procurement of green power and hydroelectricity
11 – Mobility concepts for buildings
12 – Creation of ecofunds

Action area Mobility

13 ● Integration of mobility management
14 ● Central information and booking platform
15 ● Encouragement of mobile-flexible forms of work
16 ● Promoting work hubs
17 ● Promotion of video and web conferencing
18 ● Incentives for using public transport
19 ● Providing or co-financing PT season tickets
20 ● Criteria for choosing mode of transport
21 ● Active parking space management
22 ● Provision of bicycle parking spaces
23 ● Provision of bicycles and e-bikes
24 ● Criteria for procuring energy-efficient vehicles
25 ● Eco-Drive training courses for frequent car users
26 ● Promoting the use of car sharing agencies
27 ● Joint use of a company carpool
28 ● Provision of charging stations for electric vehicles

Action area Data centers and Green IT

29 ● Full cost accounting of energy efficiency
30 ● Specifications for new servers and new data center hardware
31 ● Highly energy-efficient data centers
32 ● Pushing passive cooling solutions in data centers
33 ● Encouraging server virtualization in data centers
34 ● Bundling of data centers / Outsourcing of IT services
35 ● Monitoring and evaluation of new technologies
36 ● Promotion of waste heat recovery
37 ● Promotion of economy mode at computer workstations
38 ● Promotion of energy-efficient printing solutions
39 ● Promoting re-use of appliances

● adopted and at least 80% achieved
● adopted and in implementation phase
○ adopted, no data yet
– no leeway for action

A detailed description of the measures can be found on pages 22 to 26.

08

Energy-efficient electromotors

The motors of the fans for the cooling equipment account for a significant proportion of Skyguide's power consumption, as they operate all year round. Skyguide has replaced these motors in the Geneva control center as part of its continuing efforts to improve energy efficiency. Commissioning of the new fans, which are driven by DC-motors with electronic commutation (EC), was completed in January 2014. This replacement has increased the electrical efficiency of cooling compared with the previous, asynchronous two-speed motors. The installation's cooling towers can now be used simultaneously, which reduces power consumption and improves cooling output.

Picture: Cooling installations in the Geneva control center

Skyguide

Selection from the actor's specific measures

In addition to the joint measures for all actors, Skyguide has selected eight specific measures. Skyguide has defined a reduction target and a target date for each of these measures. When a measure has been implemented, the depiction of the reduction target changes from blue to green. The measures documented here are only part of all the efforts Skyguide is making to increase its energy efficiency.

No. Measure
(target — target year — status)

En-route air traffic control services

01 Shortening an important air route between northern and southern Europe
143 GWh/y — 2016 — planned

02 Introduction of expanded approach management for the Zurich region (XMAN)
228 GWh/y — 2024 — planned

03 Free route airspace (FRA – DCT 2013/2014)
132 GWh/y — 2014 — implemented

Approach and take-off navigation service

04 Green Wave for morning approaches of long-haul aircraft of the airline Swiss at Zurich Airport
7 GWh/y — 2012 — implemented

05 Continuous descent approach for the airports of Geneva and Zurich
133 GWh/y — 2014 — implemented

06 Shorter taxiing times when departing from Geneva (A-CDM)
9 GWh/y — 2014 — implemented

Optimizations of Technical Infrastructure and Buildings

07 Optimizations of heating, ventilation and air-conditioning systems and replacement of cooling machines in the Geneva control tower
1.7 GWh/y — 2023 — in implementation phase

08 Optimizations of heating, ventilation and air-conditioning systems and change of lighting to LED in the Dübendorf air navigation services centre
0.4 GWh/y — 2023 — in implementation phase

03

132 GWh/y

Free route airspace (FRA – DCT 2013/2014)

The air traffic controllers often propose direct routes to the pilots when they are in radio contact with them. These direct routes are now published so as to make for improved flight planning. The measure leads, first, to shorter flight routings and, second, it reduces aircraft takeoff weight, because they have to carry less fuel on board. The bottom-line result is a considerable saving on kerosene consumption.

06

9 GWh/y

Shorter taxiing times when departing from Geneva (A-CDM)

Airport-Collaborative Decision Making is a decision-making process into which all actors at Geneva airport are integrated. It increases efficiency when sequencing departures and shortens the time that an aircraft spends on the taxiway and at the runway access points.

01

143 GWh/y

Shortening an important air route between northern and southern Europe

Changing the airways at the north and south of an air route that crosses Europe makes over 500 flights a day shorter, saving a total of over 3 million flight kilometers a year. Skyguide is in charge of the overall European project management.

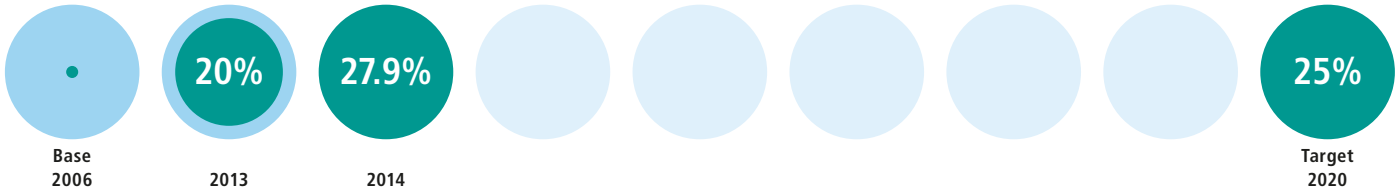
green = reduction target attained
blue = target

Skyguide

Energy target 2020

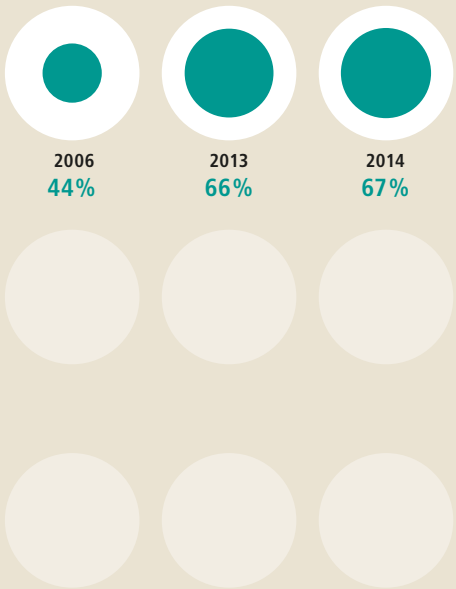
Skyguide's energy efficiency was 27.9% higher in the year under review 2014 than in the base year 2006. This sharp increase is due to energy optimization measures, the mild weather and the trend in the reference variables.

Increase in energy efficiency



Renewable energy as a proportion of total consumption

Skyguide increased renewable energy (heat, fuels and power) as a proportion of total energy consumption from 44% in the base year 2006 to 67% in the year under review 2014.



Production of energy from renewable sources

Skyguide produces no energy from renewable sources.

2006	Total 0 GWh
2013	Total 0 GWh
2014	Total 0 GWh

Fuels (heating) Renewable and waste heat

Fuels (transport) Renewable

Power Renewable

Swisscom

Action plan

Swisscom was able to keep its total energy consumption (power, fuel [transport] and fuel [heating]) stable in 2014 at 498 gigawatt hours (GWh). Thanks to the efficiency measures implemented and to the additional consumption saved as a result, energy efficiency could be increased by 30.7% in 2014 compared to 2006. Power consumption in 2014 was 408 GWh (previous year: 399 GWh), and thus increased only slightly despite further expansions of the network. Swisscom used 100% renewable power in 2014 – as it had already before.

The Swisscom business park at Ittigen (canton of Bern)

Success story

Business park sets new standards for office buildings

In 2014 Swisscom inaugurated a new business park at Ittigen (canton of Bern) with a unique energy and ventilation concept. The atrium functions as a lung for the 1,700 workplaces: it takes in air from outside which is conditioned locally and fed into the open-space offices. From there it flows back into the atrium and is expelled through the roof to the environment. The circuit is controlled via an intelligent sensor system that measures the level of CO_2. The air is only replaced if this is necessary. The system uses natural air circulation and operates without central air-conditioning apparatus. The good-quality air leads to fewer absences caused by illness. Probes in the ground next to the business park function as a store of heat and cold and ensure a balanced ambient atmosphere. A high proportion of the energy for the heat pumps is supplied by the photovoltaic installations on the roof. The business park consumes three and a half times less energy than comparable office buildings constructed 10 years ago. The building is more than 20% below the most stringent Minergie value – the MINERGIE-P-ECO® label for office buildings.

Swisscom

Selection from the joint measures of all actors

The Confederation: exemplary in energy plan has defined 39 joint measures to increase energy efficiency in the three action areas. Swisscom intends to implement all the measures, with one exception over which the company has no leeway for action. As long as a measure is in the implementation phase, it is marked with a blue dot. Once it has been implemented, the dot changes to green.

No. Measure

Action area Buildings and renewable energy

01 ● Energy-efficient new and converted buildings
02 ● Analyses of potential of waste heat and renewable energies
03 ● No new fossil-fuel powered heating systems
04 ● Full cost accounting of energy efficiency
05 ● Energy-efficient lighting
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08 ● Energy-efficient electromotors
09 ● Building technology with operating optimization regime
10 ● Procurement of green power and hydroelectricity
11 ● Mobility concepts for buildings
12 ● Creation of ecofunds

Action area Mobility

13 ● Integration of mobility management
14 ● Central information and booking platform
15 ● Encouragement of mobile-flexible forms of work
16 ● Promoting work hubs
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18 ● Incentives for using public transport
19 ● Providing or co-financing PT season tickets
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25 ● Eco-Drive training courses for frequent car users
26 ● Promoting the use of car sharing agencies
27 ● Joint use of a company carpool
28 ● Provision of charging stations for electric vehicles

Action area Data centers and Green IT

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38 ● Promotion of energy-efficient printing solutions
39 ● Promoting re-use of appliances

● adopted and at least 80% achieved
● adopted and in implementation phase
○ adopted, no data yet
– no leeway for action

A detailed description of the measures can be found on pages 22 to 26.

24

Criteria for procuring energy-efficient vehicles

A prerequisite for first-class customer service and the extension of the network infrastructure is total mobility for the employees. In 2014 they drove 62.7 million kilometers (not counting private usage), which corresponds to an energy consumption of 41.4 GWh. Average CO_2 emissions per vehicle should decrease from 150 grams of CO_2/km (in 2010) to 110 grams of CO_2 per kilometer driven by 2015. By the end of 2014 the passenger cars in the Swisscom fleet had attained an average emission of 117 grams of CO_2. New vehicles must be in efficiency class A or B. 96.6% of the vehicle fleet are currently in these categories. Swisscom operates a fleet of 392 (+50%) hybrid vehicles, 69 (+8%) natural gas-powered vehicles, 17 (+55%) electric vehicles and 34 (–13%) e-bikes.

Picture: Electric car from the Swisscom fleet

Swisscom

Selection from the actor's specific measures

In addition to the joint measures for all actors, Swisscom has selected six specific measures. Swisscom has defined a reduction target and a target date for each of these measures. When a measure has been implemented, the depiction of the reduction target changes from blue to green. The measures documented here are only part of all the efforts Swisscom is making to increase its energy efficiency.

No. Measure
(target — target year — status)

01 Fresh air cooling in telephone exchanges
45 GWh/y — 2016 — in implementation phase

02 Green IT offers for customers
57 GWh/y — 2014 — implemented

03 Dynamic consumption control in Switzerland
70,000 households — 2018 — in implementation phase

04 Energy-efficient terminal devices for private customers
25 GWh/y — 2019 — in implementation phase

05 Dematerialization thanks to online invoicing
2.1 GWh/y — 2015 — in implementation phase

06 Intelligent parking with CorpPark
20% better capacity utilization — 2015 — in implementation phase

green = reduction target attained
blue = target

06

20% better capacity utilization

Intelligent parking with CorpPark

CorpPark is an innovative car park management solution using latest ICT. It makes simple processing possible, from the reservation through access to payment. As a result, the car park as a resource can be utilized more efficiently. With lower costs, capacity utilization increases by 20%. This objective is being aimed at on other sites in 2015. CorpPark was successfully tested in Swisscom's Liebefeld building. The system is now being widely used in-house and is also being offered to outside customers.

05

2.1 GWh/y

Dematerialization thanks to online invoicing

On-line invoicing is the environmentally-compatible alternative to paper-based invoicing. Already today, it enables Swisscom to save about 10 million sheets of paper and 1.4 GWh of energy a year. Together with WWF, Swisscom is conducting campaigns to convince customers of the advantages of paper-free invoicing. The target is 30% by the end of 2015, which corresponds to an annual saving of 2.1 GWh.

04

25.0 GWh/y

Energy-efficient terminal devices for private customers

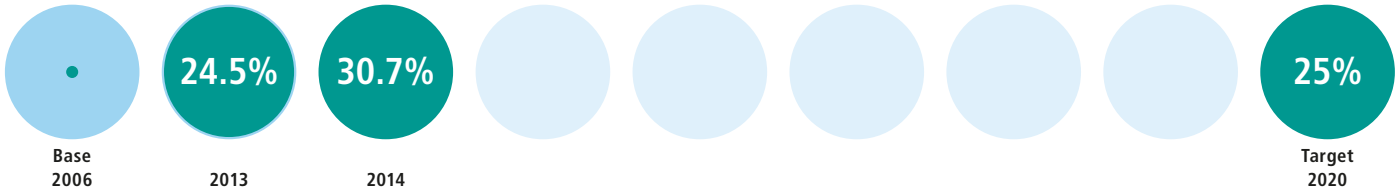
Swisscom TV 2.0, which was launched in 2014, no longer stores images of programmes on the settop box but in the Cloud. The new box can therefore operate without a hard disk and consumes about 36 kWh a year, 40% less than its predecessor. Furthermore Swisscom has informed its customers comprehensively as to how the new settop box can be configured to save as much energy as possible in everyday use and during vacation periods. 306,000 Swisscom customers had the new product at the end of 2014. Taking into account the trend in customers, this means that about 10 million kWh a year can be saved nationwide.

Swisscom

Energy target 2020

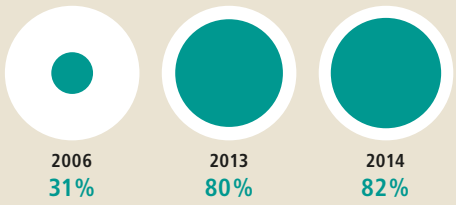
Swisscom's energy efficiency was 30.7% higher in the year under review 2014 than in the base year 2006.

Increase in energy efficiency



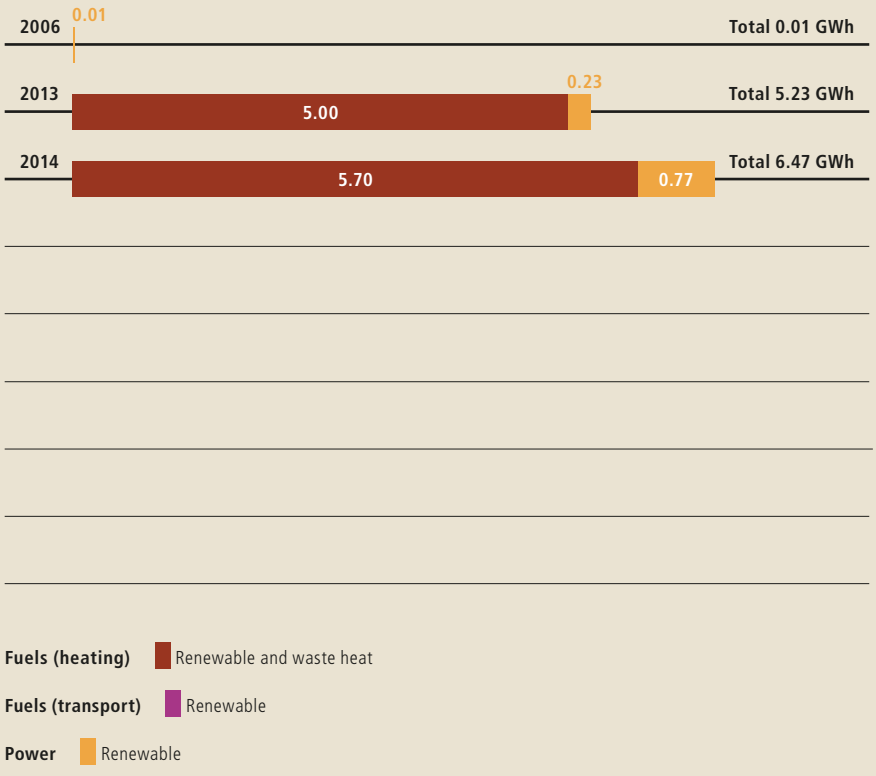
Renewable energy as a proportion of total consumption

Swisscom increased renewable energy (heat, fuels and power) as a proportion of total energy consumption from 31% in the base year 2006 to 82% in the year under review 2014.



Production of energy from renewable sources

Swisscom increased its production of renewable energy from 0.01 GWh in the base year 2006 to 6.47 GWh in the year under review 2014. Power and heat were produced from renewable sources.



DDPS

Action plan

Owing to its special and diverse challenges and structures, DDPS is implementing its own energy concept, based on the EnergieSchweiz programme. The primary goals are a 20% reduction of CO_2, a 50% increase in the use of renewable energies and a limitation of conventional electricity consumption to the 2001 level. Total energy consumption was reduced by 96 gigawatt hours (GWh) or 8.3% compared with 2006. Energy efficiency was improved by 3%.

Pilatus PC-21 training aircraft

Success story

Energy-efficient jet pilot training on Pilatus PC-21

Since 2008, trainee jet pilots have been performing their training on the PC-21 propeller aircraft specially developed and procured for this purpose at the Pilatus Flugzeugwerken AG in Stans. The aircraft is designed to be as similar as possible to a jet fighter. The cockpit and the training units to be completed are structured in such a way as to allow the trainee jet pilots to continue their training directly on the F/A-18 jet fighter after about one year. The PC-21 training aircraft thus replaces the previous training done on the F-5 Tiger jet fighter. This training configuration, which is being used for the first time in the world by the Swiss Air Force, reduces fuel consumption and CO_2 emissions by a factor of 9 per hour of flying. Apart from the actual aircraft, the training system also comprises ultra-modern simulators, which allow the number of flights to be reduced to the absolute minimum necessary. By using the PC-21, training costs have, in addition, been cut by 50%. The innovative training system with the PC-21 has in the meantime been adopted by various air forces.

DDPS

Selection from the joint measures of all actors

The Confederation: exemplary in energy plan has defined 39 joint measures to increase energy efficiency in the three action areas. DDPS intends to implement 34 of them. The Department sees no leeway for action in respect of five measures. As long as a measure is in the implementation phase, it is marked with a blue dot. Once it has been implemented, the dot changes to green.

No. Measure

Action area Buildings and renewable energy

01 ● Energy-efficient new and converted buildings
02 ● Analyses of potential of waste heat and renewable energies
03 ● No new fossil-fuel powered heating systems
04 ● Full cost accounting of energy efficiency
05 ● Energy-efficient lighting
06 ● Energy-efficient cooling machines
07 ● Energy-efficient sanitation facilities
08 ● Energy-efficient electromotors
09 ● Building technology with operating optimization regime
10 ● Procurement of green power and hydroelectricity
11 ● Mobility concepts for buildings
12 – Creation of ecofunds

Action area Mobility

13 ● Integration of mobility management
14 ● Central information and booking platform
15 ● Encouragement of mobile-flexible forms of work
16 ● Promoting work hubs
17 – Promotion of video and web conferencing
18 ● Incentives for using public transport
19 ● Providing or co-financing PT season tickets
20 – Criteria for choosing mode of transport
21 ● Active parking space management
22 ● Provision of bicycle parking spaces
23 ● Provision of bicycles and e-bikes
24 ● Criteria for procuring energy-efficient vehicles
25 ● Eco-Drive training courses for frequent car users
26 ● Promoting the use of car sharing agencies
27 ● Joint use of a company carpool
28 ● Provision of charging stations for electric vehicles

Action area Data centers and Green IT

29 ● Full cost accounting of energy efficiency
30 ● Specifications for new servers and new data center hardware
31 – Highly energy-efficient data centers
32 ● Pushing passive cooling solutions in data centers
33 ● Encouraging server virtualization in data centers
34 ● Bundling of data centers / Outsourcing of IT services
35 ● Monitoring and evaluation of new technologies
36 ● Promotion of waste heat recovery
37 ● Promotion of economy mode at computer workstations
38 – Promotion of energy-efficient printing solutions
39 ● Promoting re-use of appliances

● adopted and at least 80% achieved
● adopted and in implementation phase
○ adopted, no data yet
– no leeway for action

A detailed description of the measures can be found on pages 22 to 26.

10

Procurement of green power and hydroelectricity

Until only a few years ago, DDPS sourced the electrical energy it required from over 600 different suppliers. In the wake of deregulation of the electricity market, DDPS gradually reviewed and streamlined this supplier structure. This simplifies not only the procurement of power but also energy accounting. A number of things have been simplified thanks to the better overview DDPS has today of the quantities and qualities sourced. Large quantities can be procured jointly at a more reasonable price, which eases the burden on the taxpayer. And by centrally purchasing certificates for Swiss hydroelectric power, it is possible to ensure that 100% renewable power is used at DDPS.

Picture: Dam on Montsalvens Lake near Charmey in the Canton of Freiburg.

DDPS

Selection from the actor's specific measures

In addition to the joint measures for all actors, DDPS has selected seven specific measures. A target and a target date have been defined for each of these measures. When a measure has been implemented, the depiction of the reduction target changes from blue to green. The measures documented here are only part of all the efforts DDPS is making to increase its energy efficiency.

No. Measure
(target — target year — status)

01 Introduction of a DDPS building energy certificate in buildings and on sites (GEAVBS)
60% GEAVBS — 2020 — in implementation phase

02 Own production of renewable energy
4 GWh/y — 2020 — in implementation phase

03 Systematic introduction of central transport agencies in all military formations
100% structures — 2020 — in implementation phase

04 Use of low-viscosity engine oils where operationally and technically possible
100% use — 2020 — in implementation phase

05 Low-rolling-resistance tyres, where operationally and technically possible
5.6 GWh/y — 2020 — in implementation phase

06 Optimization of the Air Force's equipment in terms of fulfilment of its constitutional mandate and energy consumption. The indicator is the average ratio of actual to target flying hours (minimum)
Indicator < 1.1 — 2020 — in implementation phase

07 Corps training and information indicator: All relevant corps have a trained environment representative at their disposal
100% — 2020 — in implementation phase

green = reduction target attained
blue = target

04

100% use

Use of low-viscosity engine oils where operationally and technically possible

Engine oils have a significant impact on fuel consumption. If a fully-synthetic oil of viscosity class 0W or 5W is used in vehicles where this is technically possible instead of the 10W-40 oil usually used in DDPS, fuel consumption can be reduced by 2% to 6%. The additional costs for the oil are more than offset by the savings.

02

4 GWh/y

Own production of renewable energy

At suitable locations it is cheaper to generate power with photovoltaic installations than to purchase it from outside. DDPS now has about 10,000 sq. m. of photovoltaic installations at eight different sites. A further 5,000 sq. m. are planned on other DDPS roofs.

03

100% structures

Systematic introduction of centralized transport pools in all military formations

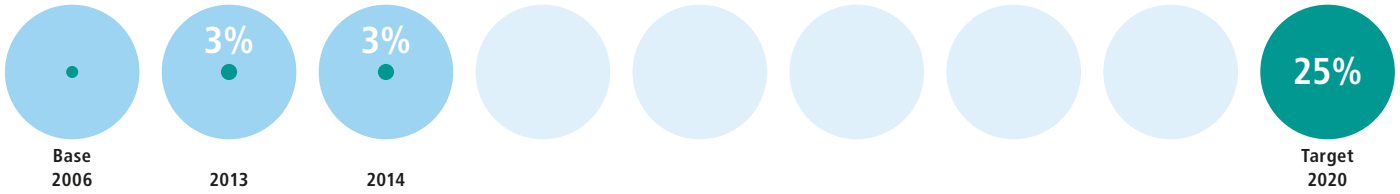
By systematically combining and coordinating transport requirements and by making optimal use of all available means of transport, vehicle movements can be reduced by up to 40%. Moreover, vehicle load factors of up to 80% can be attained through the coordinated use of centralized transport pools by Armed Forces. This enables a considerable economic and ecological potential to be exploited.

DDPS

Energy target 2020

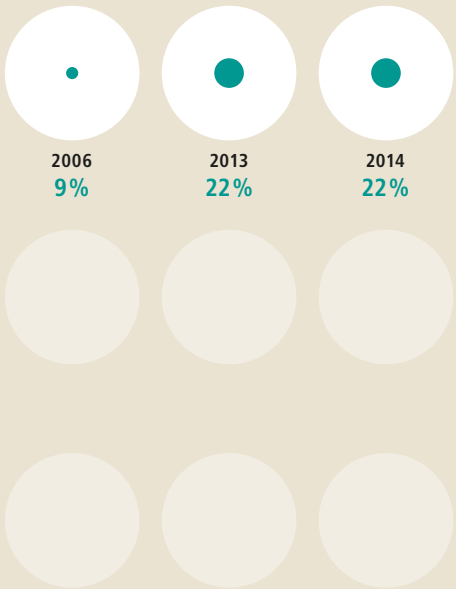
DDPS's energy efficiency was 3% higher in the year under review 2014 than in the base year 2006.

Increase in energy efficiency



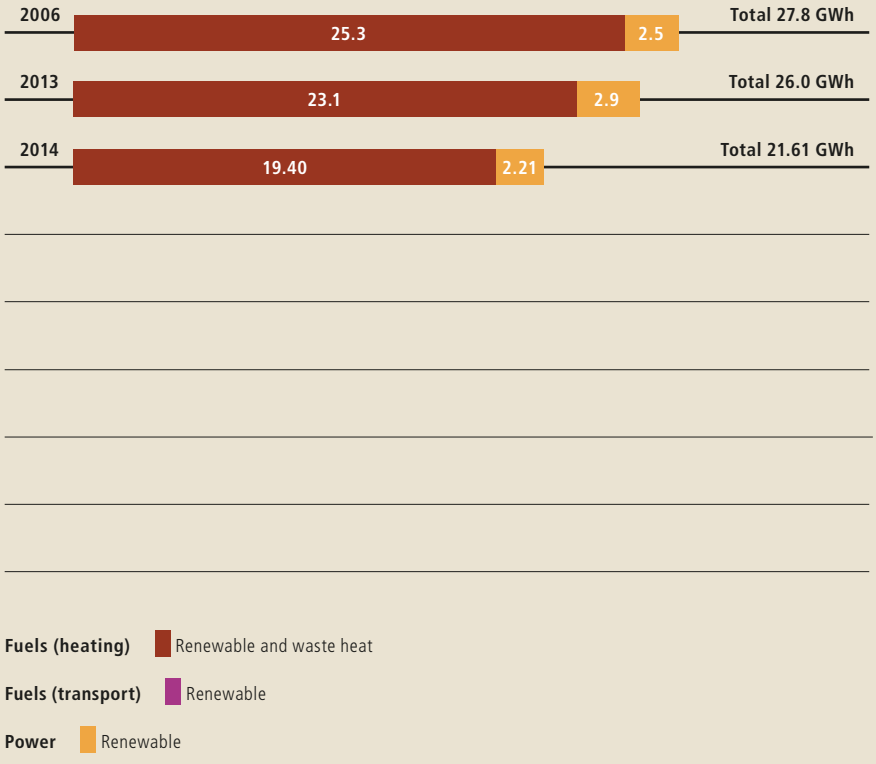
Renewable energy as a proportion of total consumption

DDPS increased renewable energy (heat, fuels and power) as a proportion of total energy consumption from 9% in the base year 2006 to 22% in the year under review 2014.



Production of energy from renewable sources

DDPS lowered its production of renewable energy from 27.8 GWh in the base year 2006 to 21.61 GWh in the year under review 2014. Power and heat were produced from renewable sources.



Civil Federal Administration FBL/RUMBA programme

Action plan

In The Confederation: exemplary in energy plan, the civil Federal Administration is represented by the the Resources and Environmental Management programme of the Federal Administration RUMBA and the Federal Office for Buildings and Logistics (FBL). Final energy consumption decreased by 11.0% to 121 gigawatt hours (GWh) from 2006 to 2014. Energy efficiency was improved by 43.4%. This high value was attained because RUMBA now includes four new units that have a disproportionately low energy consumption. RUMBA sets out to reduce the environmental impact caused by heat, power, water, garbage, paper and business travel by at least 20% from 2006 to 2020.

New customs building at the Koblenz-Waldshut border crossing point

Success story

The new Koblenz customs building could not be more sustainable

Every day about 13,000 cars and 500 trucks drive over the Koblenz-Waldshut border crossing point. In the past this dense traffic often caused traffic jams. The narrower new building gives the traffic more surface area and allows for more efficient traffic management. The slim new building stands between the bank of the river Rhine and the cantonal road. Whereas the lower floor is made of concrete, the ground floor and upper floor were built in a timber element mode of construction. The facades are clad with large-sized gleaming orange-bronze fiberglass plates. A roof with a wide overhang spans the whole structure of the building. It protects the facades from the weather and creates covered outdoor space for the border guards. A well-insulated building shell reduces the heat requirement. The heat pump uses environmental heat for heating. A thermal solar collector produces heat and the photovoltaic installation power. When considered over a whole year, more power and heat are produced than the building requires for heating, hot water, ventilation and generator units. Thus the building meets the requirements for a zero-operating energy house (MINERGIE-A®).

Civil Federal administration

Selection from the joint measures of all actors

The Confederation: exemplary in energy plan has defined 39 joint measures to increase energy efficiency in the three action areas. Of this catalogue, at this time 17 measures are within the FBL's or RUMBA's area of responsibility. As long as a measure is in the implementation phase, it is marked with a blue dot. Once it has been implemented, the dot changes to green.

No.		Measure
		Action area Buildings and renewable energy
01	●	Energy-efficient new and converted buildings
02	●	Analyses of potential of waste heat and renewable energies
03	●	No new fossil-fuel powered heating systems
04	●	Full cost accounting of energy efficiency
05	●	Energy-efficient lighting
06	●	Energy-efficient cooling machines
07	●	Energy-efficient sanitation facilities
08	●	Energy-efficient electromotors
09	●	Building technology with operating optimization regime
10	●	Procurement of green power and hydroelectricity
11	●	Mobility concepts for buildings
12	–	Creation of ecofunds
		Action area Mobility
13	○	Integration of mobility management
14	○	Central information and booking platform
15	×	Encouragement of mobile-flexible forms of work
16	×	Promoting work hubs
17	○	Promotion of video and web conferencing
18	×	Incentives for using public transport
19	×	Providing or co-financing PT season tickets
20	×	Criteria for choosing mode of transport
21	●	Active parking space management
22	●	Provision of bicycle parking spaces
23	×	Provision of bicycles and e-bikes
24	×	Criteria for procuring energy-efficient vehicles
25	×	Eco-Drive training courses for frequent car users
26	×	Promoting the use of car sharing agencies
27	×	Joint use of a company carpool
28	×	Provision of charging stations for electric vehicles
		Action area Data centers and Green IT
29	×	Full cost accounting of energy efficiency
30	×	Specifications for new servers and new data center hardware
31	×	Highly energy-efficient data centers
32	×	Pushing passive cooling solutions in data centers
33	×	Encouraging server virtualization in data centers
34	×	Bundling of data centers / Outsourcing of IT services
35	×	Monitoring and evaluation of new technologies
36	●	Promotion of waste heat recovery
37	×	Promotion of economy mode at computer workstations
38	×	Promotion of energy-efficient printing solutions
39	×	Promoting re-use of appliances

● adopted and at least 80% achieved
● adopted and in implementation phase
○ adopted, no data yet
– no leeway for action
× responsibility for implementation open

A detailed description of the measures can be found on pages 22 to 26.

10

Procurement of green power and hydroelectricity

The Federal Council's energy strategy provides for Switzerland to phase out nuclear power. The FBL is playing an exemplary role, as its power supply has been exclusively from renewable energy sources since 2012. 100% of its power requirement is met with hydroelectric power, and an increasing proportion of it is green power. The proportion of certified green power with the "naturemade star" quality label was already 7.5% in 2014. It is planned to rise to 20% by the year 2020. FBL is investing heavily in the construction of its own photovoltaic installations as well. In 2014 the photovoltaic installations on the roofs of the civil federal administration buildings produced 620 MWh of electrical energy, which corresponds to the annual power consumption of approx. 140 households.

Picture: Photovoltaic installation on the roof of the customs building in Koblenz

Civil Federal administration

Selection from the actor's specific measures

In addition to the joint measures for all actors, the Federal Administration has selected eight specific measures. A target and a target date have been defined for each of these measures. When a measure has been implemented, the depiction of the reduction target changes from blue to green. The measures documented here are only part of all the efforts the Federal Administration is making to increase energy efficiency.

No. Measure
(target — target year — status)

01 Resources and Environmental Management programme of the Federal Administration RUMBA (incl. business travel)
2.3 GWh/y — 2020 — in implementation phase

02 Reduction of energy consumption from business travel
0.5 GWh/y — 2020 — in implementation phase

03 Energy-efficient enveloping system
75% saving — 2013 — implemented

04 Construction of new photovoltaic installations; replacement of fossil energy with renewable energy
0.6 GWh/y — 2020 — in implementation phase

05 Application of Swiss Standard for Sustainable Construction to CH buildings abroad
introduction — 2015 — planned

06 Update of "Ecological assessment data for the construction sector" to promote energy-efficient construction (KBOB)
every 2 years — 2020 — in implementation phase

07 Sensitizing employees to energy-efficient and environmentally compatible behaviour at the workplace
2 measures per year — 2020 — in implementation phase

08 Voluntary target agreement with the Energieagentur der Wirtschaft (EnAW)
2200 t CO_2/y — 2022 — in implementation phase

08

2200 t CO_2/y

Voluntary target agreement with the Energieagentur der Wirtschaft (EnAW)

In November 2014 the new target agreement was signed between the FBL and FOEN/FOE, with the assistance of the Energieagentur der Wirtschaft EnAW. It sets out the values agreed for energy efficiency and CO_2 intensity for the period from 2013 to 2022. The set of buildings defined in the new target agreement comprises 67 heating stations for 192 buildings and a total of 928,268 sq. m. of energy collection area and CO_2 emissions of 6,700 t. Measures are planned in the building and building technology area that will bring about a pollution reduction of 2,200 t of CO_2 a year by 2022. If the forecast increase in surface area is taken into account, CO_2 emissions in 2022 will still amount to 5,500 t.

Picture: the Federal government's interrogation center in Chiasso after completion of a renovation

01

2.3 GWh/y

Resources and Environmental Management programme of the Federal Administration RUMBA

The FBL is testing the Federal government's future office workstation standard within a pilot project. The standard provides for an adjustable-height desk produced with as little impact on the environment as possible. The selection criteria are pollutant-free manufacture and processing, short transport distances and low energy expenditure during manufacture, transportation and operation.

07

2 measures per year

Sensitizing employees to energy-efficient and environmentally compatible behaviour

In 2014, RUMBA sensitized all Federal administration employees to the topic of energy efficiency. The core message was "stand-by causes power losses, so switch off". About 36,000 people were reached with a video on how to optimally use a computer, a mailing, a competition with many prizes and RUMBA chocolates as a thank you.

green = reduction target attained
blue = target

Civil Federal administration

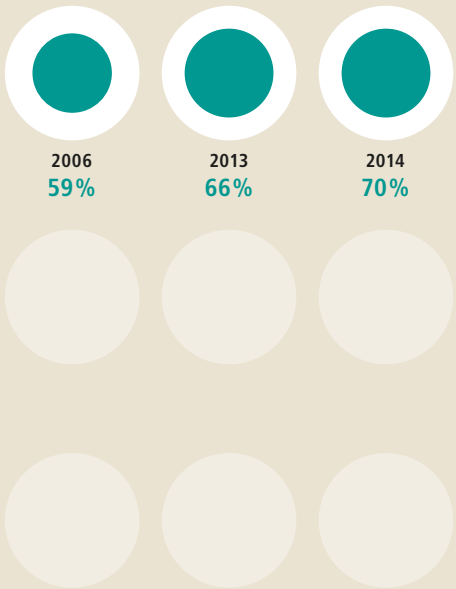
Energy target 2020

The Federal administration's energy efficiency was 43.4% higher in the year under review 2014 than in the base year 2006. This high value was attained because RUMBA now includes four new units that have a disproportionately low energy consumption.

Increase in energy efficiency

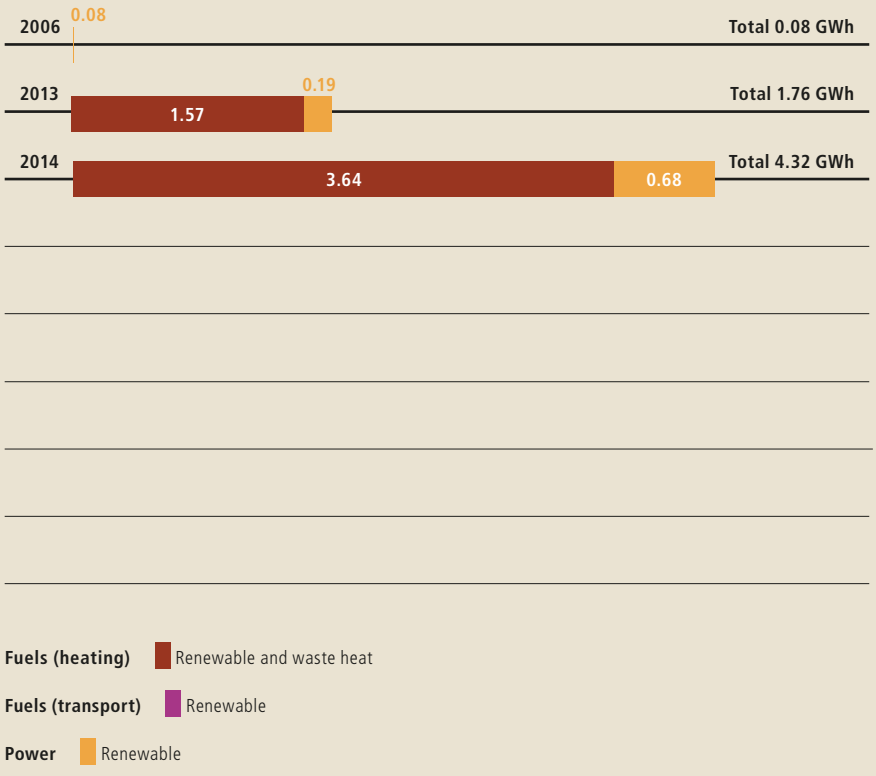
Renewable energy as a proportion of total consumption

The Federal Administration increased renewable energy (heat, fuels and power) as a proportion of total energy consumption from 59% in the base year 2006 to 70% in the year under review 2014.



Production of energy from renewable sources

The Federal Administration increased its production of renewable energy from 0.08 GWh in the base year 2006 to 4.32 GWh in the year under review 2014. Power and heat were produced from renewable sources.



Glossary

DDPS	Federal Department of Defence, Civil Protection and Sport
Eawag	Swiss Federal Institute of Aquatic Science and Technology
Empa	Swiss Federal Laboratories for Materials Science and Technology
EPFL	Swiss Federal Institute of Technology, Lausanne
ETH	Swiss Federal Institute of Technology, Zurich
FBL	Federal Office for Buildings and Logistics
FOE	Federal Office of Energy
KBOB	Coordination Conference of Building and Real Estate services of public building owners
PSI	Paul Scherrer Institute
PT	Public Transport
RUMBA	Resources and Environmental Management programme of the Federal Administration
SBB	Swiss Federal Railways
WSL	Swiss Federal Institute for Forest, Snow and Landscape Research

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page 32, Eawag Aquatikum: Eawag, Aldo Todaro
page 33, Methanization of algae: Paul Scherrer Institute
Page 33, Anergy grid: ETH Zurich, Christine Bratrich
page 33, Safety laboratory with waste heat recovery: WSL
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