Switzerland

Like Norway, Switzerland has not developed an Integrated National Energy and Climate Plan (NECP) making it harder to find information. However, unlike Norway, Switzerland has developed comprehensive plans for how to manage the energy transition, even if the targets are somewhat unclear. The main energy plans are the Energy Perspectives 2050 (EP2050) and Energy Perspectives 2050+ (EP2050+), as well as information from the IEA.

Targets

The Swiss targets for renewable electricity production (excluding hydro power) for 2035 is 35 TWh and for 2050 it should be 45 TWh.[1] Switzerland has also excluded building new nuclear power, however, the government will keep existing power plants running to they have to be decommissioned. The EP2050+ (ZERO basis) expects nuclear power to go from 25.3 TWh in 2019, to 16.6 TWh in 2025, then 8.8 in 2030, before being decommissioned before 2035.[2]

Energy demand projections

Table 1: Final electricity consumption according to ZERO Basis (PJ)[3]

	2019	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
Industry	62 PJ	58 PJ	56 PJ	56 PJ	55 PJ	53 PJ	49 PJ
Transportation	11 PJ	15 PJ	21 PJ	30 PJ	42 PJ	52 PJ	61 PJ
Services	61 PJ	61 PJ	59 PJ	56 PJ	52 PJ	49 PJ	46 PJ
Households	69 PJ	68 PJ	69 PJ	70 PJ	70 PJ	70 PJ	69 PJ
Agriculture	3 PJ	3 PJ	3 PJ	3 PJ	2 PJ	2 PJ	2 PJ
Total	206 PJ	206 PJ	208 PJ	215 PJ	221 PJ	226 PJ	228 PJ

According to the EP2050+, final electricity consumption in Switzerland will continuously increase between now and 2050, mainly driven by an increase in electricity used for transport, and somewhat offset by a decrease in industry consumption.[4] Numbers and a

[1] Bundesamt für Energie, *Energiestrategie 2050 Monitoring-Bericht 2024*, 16; IEA, *Switzerland 2023 - Energy Policy Review*, 23.
[2] Eidgenössisches Departement für Umwelt, Verkehr, Energie und Kommunikation, 'Energieperspektiven 2050+ Kurzbericht', 54.
[3] Eidgenössisches Departement für Umwelt, Verkehr, Energie und Kommunikation, 'Energieperspektiven 2050+ Kurzbericht', 41.
[4] Eidgenössisches Departement für Umwelt, Verkehr, Energie und Kommunikation, 'Energieperspektiven 2050+ Kurzbericht', 41.

breakdown for sectors can be found in Table 1. These numbers are based on the ZERO Basis projection which continues today's trends into the future. It bases its assumptions on high and early energy efficiency and carbon-capture technologies.[5]

The EP2050+ also includes a different breakdown of electricity use, that takes into account various losses and other uses. This information is presented in Table 2. The WEM-scenario stands for 'With Existing Measures.'

Table 2: Country electricity consumption (TWh)[6]

Scenario	**TWh**	**2019**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
ZERO Basis	*Final energy consumption (of electricity)*	57.2	57.2	57.9	59.6	61.5	62.9	63.2
	- *EVs*	0.2	0.8	2.4	5.0	8.1	11.0	13.1
	- *Heat pumps*	2.4	4.2	5.8	6.9	7.8	8.5	9.0
	Electrolysis	0.0	0.9	1.8	3.1	5.0	6.5	7.4
	Losses	4.3	4.4	4.5	4.7	5.0	5.2	5.3
	Total	61.5	62.5	64.1	67.4	71.5	74.6	76.0
WEM	*Total*	61.5	63.5	64.7	66.3	67.7	68.9	70.5

Transportation

Switzerland includes all types of transportation in the transport sector; however, international flights might be excluded if this is explicitly stated.[7] The ZERO Basis scenario incorporates the electrification of road vehicles when projecting the development of electricity demand. This is shown in Table 2, row 3. The EP2050+ also forecasts that by 2050, there will be around 3.6 million private electric vehicles in Switzerland.[8]

[5] Eidgenössisches Departement für Umwelt, Verkehr, Energie und Kommunikation, 'Energieperspektiven 2050+ Kurzbericht', 8.
[6] Eidgenössisches Departement für Umwelt, Verkehr, Energie und Kommunikation, 'Energieperspektiven 2050+ Kurzbericht', 41.
[7] Eidgenössisches Departement für Umwelt, Verkehr, Energie und Kommunikation, 'Energieperspektiven 2050+ Kurzbericht', 14.
[8] Eidgenössisches Departement für Umwelt, Verkehr, Energie und Kommunikation, 'Energieperspektiven 2050+ Kurzbericht', 3.

Heat pumps

The ZERO Basis scenario estimates electricity demand from heat pumps. This is displayed in Table 2, row 4. The EP2050+ expects the number of heat pumps to be about 1.5 million in 2050.[9]

Hydrogen and batteries

Switzerland will need more hydrogen for the energy transition, and this will necessitate increased production of hydrogen. The EP2050+, by using the ZERO Basis scenario, estimates that by 2050, Switzerland will need about 16 PJ worth of hydrogen.[10] The development projection can be seen in Table 3. Batteries are expected to play a crucial role in the energy transition, however there are no concrete targets. As in the case of Norway, this might come down to the fact that Switzerland has a large amount of energy storage capacity in hydro.

Table 3: Hydrogen consumption (PJ)[11]

	2019	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
Hydrogen (domestic)	0 PJ	1 PJ	2 PJ	3 PJ	5 PJ	7 PJ	7 PJ
Hydrogen	0 PJ	0 PJ	0 PJ	1 PJ	2 PJ	5 PJ	9 PJ
Total	0 PJ	1 PJ	2 PJ	4 PJ	7 PJ	12 PJ	16 PJ

[9] Eidgenössisches Departement für Umwelt, Verkehr, Energie und Kommunikation, 'Energieperspektiven 2050+ Kurzbericht', 39.
[10] Eidgenössisches Departement für Umwelt, Verkehr, Energie und Kommunikation, 'Energieperspektiven 2050+ Kurzbericht', 42–44.
[11] Eidgenössisches Departement für Umwelt, Verkehr, Energie und Kommunikation, 'Energieperspektiven 2050+ Kurzbericht', 44.