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Introduction

The statistics appearing in this chapter have been provided as register records by the Ministry of Energy on two topics "water" and "electricity".

Water

This section includes information on "underground waters", "reservoir dams", and "length of networks and the number of water and sewage extensions". The related statistics have been added to the Statistical Yearbook of Iran since the year 1346.

Statistics on underground waters and reservoir dams have been provided by the Water Resources Management Company and statistics on the length of networks and the number of water and sewage extensions have been obtained from the Water and Sewage Engineering Company.

It is noteworthy that the Central and Internal Basin, Hamun Basin, and Sarakhs Basin were renamed by the Water Resources Management Organization as Central Plateau, Eastern Border and Qareh Qum, respectively, in the year 1383.

Electricity

Data related to the electric power industry was first collected in the year 1343 by the then Ministry of Water and Power. It was renamed the Ministry of Energy in the year 1353 based on the approval of the Parliament. Since the year 1346, the Ministry has regularly provided annual statistics on the power industry, including power generation, transmission, distribution, and consumption, in the form of statistical publications. Some of the statistics appear in the tables of this yearbook.

Moreover, through successive censuses of population and housing in the years 1365, 1375, 1385, 1390, and 1395, the Statistical Centre of Iran collected data on residential units and households benefiting from piped water and electricity, which are reflected in Chapter 10, "Construction and Housing," of the yearbook.

Definitions and concepts

Water basin: See Chapter 1, Land and climate, Definitions and concepts.

Aquatic year: See Chapter 1, Land and climate, Definitions and concepts.

Water produced: This refers to the amount of water gained from various water resources (permanent or temporary) in a particular time period.

Dam: See Definition and concepts Chapter five (Agriculture, Forestry, and Fisheries)

Reservoir dam: This is a dam constructed for water storage, managing, or controlling the flow of water to meet various needs, including irrigation (agriculture), drinking, industry, electricity generation, and flood control.

Large reservoir dam: This refers to all dams with a height of 15 meters or more, as well as those between 10 and 15 meters high, but with a reservoir volume of 1 million cubic meters or more and/or a Flood discharge capacity of 2,000 cubic meters per second or more.

Inflow: This refers to the volume of water entering the reservoir of a dam through the river during a given time period.

Outflow: This refers to the total volume of water discharged from the dam over a period of time due to various factors such as overflow, sediment discharge valves, water intake valves, power plant, and evaporation.

Water extension: It refers to that part of the water distribution pipe whose diameter is sized proportionally to the water meter and the user's water demand. This section connects a private water line or the public water supply (from the location where the extension valve is installed) to the delivery point (gate valve after the water meter). The service line includes all the pipes and related fittings up to the mentioned valve.

Public water distribution network: This refers to a collection of interconnected pipelines that distribute water to consumers from production or reserve points.

Nominal capacity (registered nominal power):

The nominal power of a turbine or generator refers to its maximum expected output of electricity under the specific design conditions set by the manufacturer. Nominal power is typically expressed in kilovolt-amperes (kVA) or kilowatts (kW), with kW being used for smaller generators.

Actual capacity or actual power (registered power): This refers to the maximum amount of electricity that could be generated by a generator while considering the environmental conditions (altitude, temperature, and relative moisture).

Maximum coincidental power generated: This refers to the total amount of electric power generated by the power plants within a system at the time of highest electricity demand on the network. This peak demand, also known as peak load, occurs during specific periods. It's important to note that the sum of the maximum power generated by all plants at this peak might be equal to or less than the total installed capacity of all the plants in the system.

Gross electricity generation of power plants: It refers to the total electrical energy produced by a power plant's generators, measured in kilowatt hours (kWh) or megawatt hours (MWh) at the generator output terminals over a specific period, typically a year. It's important to note that gross generation excludes any electricity used by the power plant itself for its internal operations before delivery to the power grid.

Net electricity generation of power plants: This refers to the amount of gross generation minus the internal energy consumed in a given time period by kilowatt-hour (kWh) or megawatt-hour (MWh).

Other institutions: They refer to the institutions that may generate electricity for their own use (captive generation). These institutions are independent of the Ministry of Energy and may even sell the surplus electricity they produce to other entities.

National grid: It refers to a network including all power generation points and electricity consumption regions in the nation, which are connected to each other by power transmission lines and stations, where energy exchange takes place.

Isolated grid (generation and power consumption): It refers to a set of generation and consumption sites that are interconnected but not connected to the national grid, and therefore cannot exchange energy with it.

Load-demand: This refers to the amount of electrical power required at a specific point in the network over a given period of time.

Maximum coincidental load consumed: It refers to the highest coincidental load per day, week,

month, or year out of the total load at the peak of consumption in regions in megawatts. If the interconnected system does not cover the total country, the highest coincidental load is calculated by adding up the highest load of the interconnected network and the load of separate regions in megawatts simultaneously.

Maximum non-coincidental load consumed: It refers to the sum of the peak of consumption in different areas of the intended region during a given period, which is not necessarily simultaneous.

Regional power company: It refers to the corporation engaged in the provision, transmission, and distribution of electricity in the field of its activities.

Power plant: It refers to the installation place of generators and related equipment.

Hydroelectric power plant: It refers to a power plant in which the potential energy of water accumulated at dams or flowing energy of rivers water is used for electricity generation.

Thermal power plant: It refers to a power plant in which the energy inherent in solid, liquid, gaseous fuels is used for steam or hot gas (smoke) production and then driving the steam turbine to generate electricity.

Steam power plant: It refers to a thermal power plant in which thermal energy from liquid, solid and gaseous fuels is used for steam production and generating electricity.

Gas power plant: This refers to a power plant in which the thermal energy from gas and liquid fossil fuels is used to produce hot gas (smoke) and in a gas turbine to generate electricity.

Combined-cycle power plant: This refers to a power plant in which, in addition to electric energy produced in gas turbines, the heat in gases coming off the gas turbine is used for the production of steam using a recycling steam kettle. The steam produced is transformed into electric energy in a steam turbo-generator set.

Diesel power plant: This refers to a power plant in which gas oil is used to operate a diesel engine, and mechanical energy produced by a coupled generator with it is turned into electric energy.

Internal consumption: This refers to the sum of electricity consumed internally by units and for non-technical cases, as well as consumption of the lights, etc. in a power plant in a given time period.

Losses: This refers to the energy lost in the transmission of energy from the producer to the consumer.

Sale or consumption of electricity: This refers to the amount of electricity sold to domestic consumers based on the determined tariffs by the Ministry of Power.

Energy produced by the fuel (thermal value): This refers to the amount of heat (kilocalorie or B.T.U.) produced through the burning of the mass unit of a certain fuel.

Thermal output: This refers to the ratio of thermal energy produced by 1 kWh to the thermal value of the consumed fuel.

Line of power: This refers to a set of circuits installed on bases to transmit the electric power produced from the generation site (power plant) or substation to consumption places in different voltages.

Power transmission line: This refers to a set of conductors, insulators and other peripheral equipment used to transmit high amounts of electricity with very high voltage (230 and 400 kV) in long routes between the source points (power plants or substations) and its receivers.

Sub-transmission line: This refers to a set of conductors, insulators, and other peripheral equipment used to transmit high amounts of electricity with very high voltage (63, 66 and 132 kV) in long routes between the source points (power plants or substations) and its receivers.

Electricity customers: They refer to legal or natural people whose request for enjoying power connection service(s) is met according to the by-laws of the electricity company and the connection number is assigned to them.

Household uses of power energy: This refers to the amount of electricity that is used to operate common electric appliances and for lighting in residential units.

Public uses of power energy: This refers to the amount of electricity that is used for public services.

Agricultural uses of power energy: This refers to the electricity that is used for pumping surface and underground water or repumping water for the production of crops or carrying out agricultural activities.

Industrial uses of power energy: This refers to the electricity that is used in establishments with manufacturing and mining activities.

Distribution grid of power: This refers to a set of distribution lines with different voltage lines (mainly 33 kV and lower) used for electricity distribution in an area or a locality.

Transmission and sub-transmission network: This refers to a series of substations, lines, cables, and other electrical equipment connected from power plants or high voltage substations to final consumers at a voltage of 63 kV and higher.

Electrical substation or power station: This refers to a site with a set of installations and electrical equipment including transformers, switches, sectionneur, measurement instruments, inflow and outflow lines, a reactor, a capacitor and different bays used for transmission and distribution of electricity.

Selected information

In the aquatic year 1400-1401, the amount of annual discharge of the underground water resources was about 55965 million cu m, which had a 0.6 percent increase in comparison with the aquatic year 1399-1400. It should be noted that out of 6 main basins, the central plateau with 45.1% had the maximum annual discharge.

In the year 1401, the inflow of the large reservoir dams amounted to 30814 million cu m which had a 62.0% decrease in comparison with the last year. In this year, 24603 million cu m of large reservoir dams has been consumed, 56.9 percent of which was for agricultural consumptions.

In the same year, about 8935 million cu m of water is produced in the water and sewage companies of the country (urban and rural) out of which about 6007 million cu/m was sold. The sale of water decreased by 3.1 percent compared to the preceding year. This is while the production of water grew by 1.4 percent compared to the previous year (the year 1400).

In the year 1401, there were over 24 million and 599 thousand urban and rural water extensions which had a 2.2 percent increase in comparison

with the preceding year. Out of this number, over 18 million and 300 thousand extensions were in urban areas which had a 1.9% increase compared to the previous year.

In the year 1401, the gross electricity generation of institutions affiliated with the Ministry of Energy was 132070 million kilowatt-hours, of which about 43.3 percent has been produced in the steam power plants. Furthermore, the gross electricity generation had a 4.0 percent increase compared to the preceding year.

In this year, 316584 million kilowatt-hours of domestic sold electricity was consumed by 39 million and 620 thousand customers. In this respect, the amount of electricity sold and the number of electricity customers increased by about

3.3 and 2.6 percent, respectively compared to the preceding year.

Among all electricity customers in the year 1401, the percentage of customers in the house, public, agricultural, and manufacturing sectors was 79.8, 4.8, 1.3, and 0.7 percent, respectively. Also in this year, the percentage of the sold electricity which was consumed in the house, manufacturing, agricultural, public sectors and for the streets lighting was 31.0, 36.5, 14.3, 9.0 and 7.6 percent respectively.

At the end of the year 1401, a number of 58686 villages (over 5.8 million rural households) were electrified which increased by 28.7% in comparison with the previous year.

9.1. UNDERGROUND WATER RESOURCES AND THEIR ANNUAL DISCHARGE⁽¹⁾ BY MAIN BASINS (mln cu m)

Aquatic year and main basins	Total discharge	Deep well		Semi-deep well		Subterranean canals (Qanat)		Spring	
		Number	Annual discharge	Number	Annual discharge	Number	Annual discharge	Number	Annual discharge
1385-1386	79196	164714	35785	460124	13121	37197	7375	124443	22914
1390-1391	64523	195766	34872	567898	12311	41109	4752	173825	12588
1395-1396	60592	210689	32998	594968	12485	41011	4515	173452	10595
1397-1398	62945 ⁽²⁾	221067	32157	627269	11946	41457	4405	169048	14439
1398-1399	65115	206327	31902	651083	12162	44174	4534	230519	16517
1399-1400	55607	209300	29349	675997	12123	43608	3863	197147	10272
1400-1401	55965	215055	29376	707521	12210	42234	3537	190701	10842
Caspian Sea	6603	43625	2097	283103	1601	2251	259	71800	2646
Persian Gulf and Oman Sea	18409	47601	6894	134373	4640	5298	480	62660	6395
Lake Orumiyeh	2756	10740	910	133340	1280	2234	225	18507	341
Central Plateau	25248	105207	17570	143597	4241	27144	2158	33636	1279
Eastern Border	1155	1944	525	8714	337	3343	259	1543	34
Qareh Qum	1795	5938	1380	4394	112	1964	156	2555	147

1. Annual discharge for wells, subterranean canals and springs is updated annually based on selected sources.

2. Revised figures.

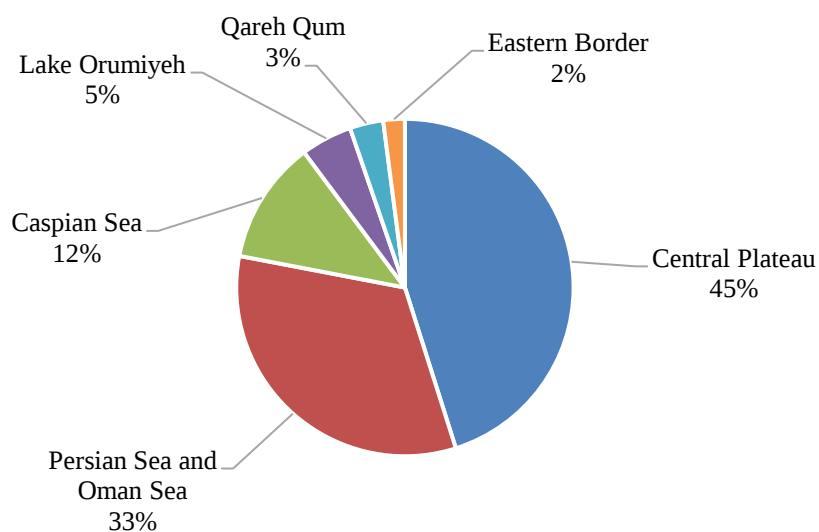
Source: Ministry of Energy

**9.2. UNDERGROUND WATER RESOURCES AND THEIR ANNUAL DISCHARGE⁽¹⁾ BY
REGIONAL WATER ORGANIZATIONS, AQUATIC YEAR 1400-1401 (mln cu m)**

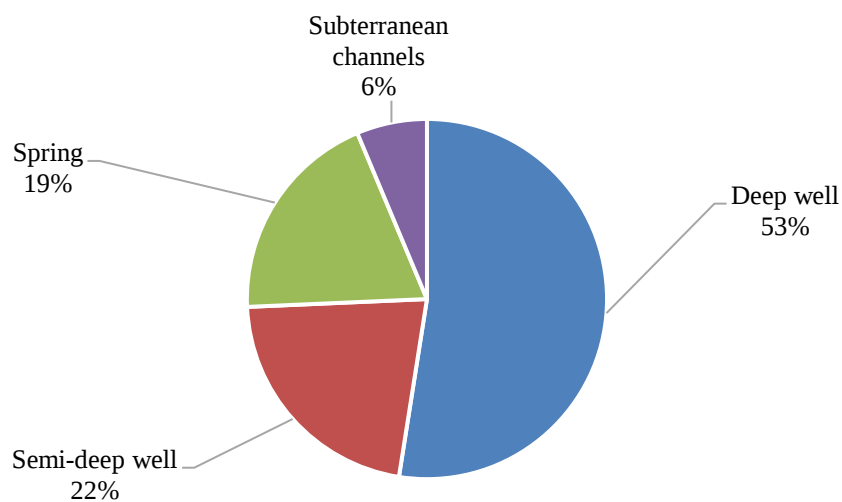
Ostan	Total discharge	Deep well		Semi-deep well		Subterranean		Spring	
		Number	Annual discharge	Number	Annual discharge	Number	Annual discharge	Number	Annual discharge
Total	55965	215055	29376	707521	12210	42234	3537	190701	10842
East Azarbayejan	1840	8568	707	66745	562	2184	331	5500	240
West Azarbayejan	2505	6145	812	85034	955	880	55	11003	684
Ardebil	411	1243	99	4619	123	244	19	4784	169
Esfahan	3157	23521	1714	37632	598	4167	222	10890	624
Alborz	575	2696	529	5608	34	138	5	656	7
Ilam	550	1546	267	748	10	7	1	1310	273
Bushehr	425	2412	136	12958	255	54	6	213	28
Tehran	2563	11644	2035	32617	179	567	162	3876	186
Chaharmahal&Bakhtiari	1579	2237	311	1767	127	1011	70	4760	1072
South Khorasan	910	2579	595	1235	69	6963	208	2864	38
Khorasan-e-Razavi	4337	13453	3454	7737	175	6589	462	6294	246
North Khorasan	841	2171	305	7322	86	731	83	3252	366
Khuzestan	2963	4340	1239	9051	515	7	0	1398	1208
Zanjan	770	3521	604	3505	122	291	11	886	34
Semnan	824	3140	557	1361	21	777	76	1566	170
Sistan&Baluchestan	1982	1446	375	17530	1189	1282	377	897	41
Fars	6405	31781	3079	60331	2351	2371	230	3445	745
Qazvin	1556	5035	1294	5721	59	347	42	15701	160
Qom	611	1379	456	5184	43	901	94	1686	18
Kordestan	1063	2778	358	16088	181	519	24	38728	499
Kerman	6220	16622	4488	14973	1221	2390	433	1593	78
Kermanshah	1765	7748	747	10153	359	511	20	10250	639
Kohgiluyeh&Boyerahmad	1487	1180	64	3428	44	87	7	6545	1372
Golestan	707	10076	342	29681	217	354	11	6161	137
Gilan	864	1171	192	54302	270	1	0	15782	403
Lorestan	991	3345	484	3910	148	1176	31	5692	329
Mazandaran	1652	24071	404	163903	563	28	0	14452	684
Markazi	1937	5430	1187	4167	396	2511	227	2830	127
Hormozgan	1652	3774	676	31476	924	176	18	700	34
Hamedan	1966	6844	1209	7926	362	2343	187	6592	208
Yazd	856	3159	657	809	51	2627	125	395	22

1. Annual discharge for wells, subterranean canals, and springs is updated annually based on selected sources.

Source: Ministry of Energy

9.1. ANNUAL DISCHARGE FROM MAIN BASINS, THE AQUATIC YEAR 1400-1401

For data see Table 9.1.

9.2. ANNUAL DISCHARGE FROM UNDERGROUND WATER RESOURCES, THE YEAR 1400-1401

For data see Table 9.1.

9.3. STATISTICS ON LARGE RESERVOIR DAMS⁽¹⁾ BY REGIONAL WATER ORGANIZATIONS

(mln cu m)

Year and reservoir dams	Inflow ⁽²⁾	Outflow ⁽²⁾			Water consumption ⁽³⁾				
		Total	From turbines ducts for electricity generation	Other ⁽⁴⁾	Total	Agriculture	Drinking	Manu-facturing	Other ⁽⁵⁾
1385	50873	54716	44913	9803	17157	13233	2276	589	1059
1390	33740	32822	17122	15700	25675	16175	2226	855	6419
1395	40695	39816	49268	-	30301	19694	3182	700	6724
1397	46382	37888	48051	17558	29347	14236	3086	676	11349
1398	80170	80527	89157	47385	56358	24632	3442	713	27571
1399	48366	51281	64320	21887	41254	24592	3624	729	12309
1400	81126	143025	106293	9703	25027	14593	3716	681	6048
1401	30814	30559	44690	10029	24603	14007	4171	735	5707
East Azarbayejan..	3518	3527	5918	228	1465	1248	55	10	152
Aras ^(6,9)	2802	2785	2620	165	971	971	0	0	0
Sattarkhan ahar ...	42	43	39	4	39	15	13	4	7
Sahand	134	139	123	16	92	16	4	0	72
Zonuz.....	5	4	3	1	//	//	0	0	//
Aydoghamush.....	65	61	56	6	56	47	0	0	9
Arasbaran	8	8	7	1	7	7	0	0	0
Khodaafari	2909	2940	2913	27	0	0	0	0	0
Alavian	73	71	69	2	69	41	16	6	6
Nahand	21	26	24	2	24	//	21	0	2
Tajyar-e-Sarab	6	2	2	//	2	2	0	//	0
Kord Kandi	6	6	5	1	5	5	0	0	0
Ghale chai.....	30	31	30	1	30	27	0	0	3
Kalghan.....	32	28	27	1	170	116	0	0	53
Gol Faraj	2	3	1	2	0	0	0	0	0
West Azarbayejan.	2916	2722	990	1732	1679	669	306	8	696
Barun	40	40	0	40	35	23	12	0	//
Shahid Ghanbari .	25	25	0	25	22	22	0	0	0
Aras2	9	6	0	6	5	5	0	0	0
Aghchai.....	72	100	0	100	94	86	0	0	8
Bukan ⁽⁶⁾	1174	1086	0	1086	1033	270	187	3	572
Shahrchay	139	149	0	149	142	50	64	0	28
Mahabad	204	192	132	60	183	100	19	1	63
Hasanlu	39	35	0	35	22	15	0	//	7
Deriq Salmas	9	9	0	9	8	8	0	0	//
Zola.....	43	50	0	50	48	28	12	0	7
Qiqaj	20	19	0	19	17	17	0	0	0
Saruq	20	13	0	13	12	3	7	0	2
Silveh	137	120	0	120	54	41	0	4	9
Sardasht	980	876	859	17	4	0	4	0	0
Karam Abad	6	3	0	3	//	//	0	0	0
Ardebil	181	163	0	163	145	69	47	0	27
Qurichay	5	5	0	5	4	4	0	0	//
Gilarlu.....	0	1	0	1	0	//	0	0	0
Moghadasardebili	9	7	0	7	3	2	0	0	1

9.3. STATISTICS ON LARGE RESERVOIR DAMS⁽¹⁾ BY REGIONAL WATER

ORGANIZATIONS (continued)

(mln cu m)

Year and reservoir dams	Inflow ⁽²⁾	Outflow ⁽²⁾			Water consumption ⁽³⁾				
		Total	From turbines ducts for electricity generation	Other ⁽⁴⁾	Total	Agriculture	Drinking	Manu-facturing	Other ⁽⁵⁾
Saqizchi	//	12	0	12	4	3	0	0	//
Yamchi	59	57	0	57	56	10	45	0	1
Sabalan	42	38	0	38	35	34	0	0	1
Givi	39	34	0	34	34	15	0	0	19
Bafrajad	5	2	0	2	2	//	2	0	0
Tazeh Kand	4	2	0	2	1	1	//	0	0
Ahmad Behgloo	6	5	0	5	6	//	0	0	5
Esfahan	1165	1213	865	347	1021	492	396	50	83
Hana	10	10	0	10	8	8	0	0	0
Qareh Aqach	11	7	0	6	4	4	0	0	//
Zayandehrud ⁽⁶⁾	970	1022	865	157	992	469	396	50	77
Golpayegan ⁽⁶⁾	156	155	0	155	1	0	0	0	1
Khamiran	8	8	0	8	7	6	0	0	//
Aghcheh	2	3	0	3	2	2	0	0	0
Kamaneh	5	4	0	3	4	2	0	0	2
Baghkal-e-Khansar	4	4	0	4	3	1	0	//	2
Ilam	93	173	0	173	155	98	22	3	31
Ilam	14	32	0	32	32	0	22	0	10
Doborj	69	127	0	127	110	94	0	0	16
Kangir	6	10	0	10	9	5	0	0	4
Gelal	4	5	0	5	4	0	0	3	1
Bushehr	178	209	0	209	161	134	//	0	27
Reis Ali delvari	178	209	0	209	161	134	//	0	27
Tehran	1109	1194	905	0	1318	383	866	11	58
Lar	338	122	122	0	239	78	159	0	2
Taleghan ⁽⁶⁾	258	263	263	0	339	194	145	//	0
Karaj ⁽⁶⁾	311	338	338	0	376	62	293	0	22
Latiyan	188	181	181	0	181	0	146	1	35
Mamlo	124	0	0	0	183	49	124	10	//
Chaharmahal&Bakhtiari	29	23	0	0	21	16	0	2	3
Choghakhor	25	19	0	0	19	14	0	2	3
Naghan	2	2	0	0	1	1	0	0	0
Surak	2	2	0	0	1	1	0	0	0
South Khorasan	12	14	0	14	11	28	2	0	1
Kerit	1	1	0	1	//	//	0	0	0
Darreh Bid	//	1	0	1	1	1	0	0	0
Parsa	1	1	0	1	1	1	0	0	//
Farrokhi	2	2	0	2	1	1	0	0	//
Nahrain	5	5	0	5	5	3	2	0	0
Haji Abad	1	1	0	1	1	1	0	0	//
Asadyieh	1	3	0	3	1	1	0	0	//
Khorasan -e-Razavi	170	277	0	277	199	44	97	3	55
Tabarak Abad	11	15	0	15	11	5	3	0	3
Shahid Yaghoobi	2	6	0	6	4	3	0	0	//
Sangerd	4	2	0	2	2	2	0	0	0

9.3. STATISTICS ON LARGE RESERVOIR DAMS⁽¹⁾ BY REGIONAL WATER ORGANIZATIONS (continued)

(mln cu m)

Year and reservoir dams	Inflow ⁽²⁾	Outflow ⁽²⁾			Water consumption ⁽³⁾				
		Total	From turbines ducts for electricity generation	Other ⁽⁴⁾	Total	Agriculture	Drinking	Manu-facturing	Other ⁽⁵⁾
Komayestan	4	3	0	3	//	//	0	0	0
Yam	5	5	0	5	2	2	0	0	0
Dusti ⁽⁷⁾	73	178	0	178	131	0	82	0	49
Toroq	2	7	0	7	7	//	6	0	//
Kardeh	7	7	0	7	7	4	2	0	2
Dehqan-e-Taybad	2	2	0	2	1	1	0	0	//
Fariman	5	5	0	5	4	4	0	0	0
Zavin Kalat	//	1	0	1	1	1	//	0	//
Chali Darreh	1	1	0	1	1	1	0	0	0
Dolatabad	7	6	0	6	2	2	0	0	0
Daroungar	5	3	0	3	3	3	0	0	0
Sad-e- Khaf	10	5	0	5	5	5	0	0	0
Ardak Chenaran	11	10	0	10	10	5	5	1	0
Qareh Tikan	10	7	0	7	2	2	0	0	//
Chahchahe	7	7	0	7	4	4	0	0	//
Bar	4	7	0	7	3	//	//	2	0
Abivard	-	-	-	-	-	-	-	-	-
Dahan Qaleh	-	-	-	-	-	-	-	-	-
North Khorasan	61	76	0	76	67	36	19	//	12
Bidvaz	11	11	0	11	11	3	2	0	6
Barzu	8	14	0	14	12	7	1	//	4
Shirin Darreh	38	44	0	44	40	22	15	0	2
Chary	1	1	0	1	1	1	0	0	0
Gelul	//	//	0	//	//	//	0	0	0
Sumbar	1	3	0	3	2	2	0	0	0
Gezel Dash	1	2	0	2	1	1	0	0	0
Khuzestan	14763	14330	32991	3171	13714	8706	1402	584	3022
Karkheh ⁽⁶⁾	1613	2225	100	2125	2225	1158	664	44	360
Dez	3917	3439	3439	0	3438	2360	342	34	703
Shahid Abbaspour ⁽¹⁰⁾	7052	6366	6366	0	0	-	-	-	-
Karun 3 ⁽¹⁰⁾	5748	5344	5344	0	0	-	-	-	-
Marun	1134	939	827	112	940	749	24	24	143
Masjed-Soleyman	7404	6789	6789	0	0	-	-	-	-
Gotvand-e-Olia ⁽¹⁰⁾	7842	7131	7017	0	7017	4356	372	482	1806
Jareh	100	93	0	93	94	84	0	0	10
Seymareh ⁽⁹⁾	645	788	0	788	0	0	0	0	0
Karun 4 ^(10,11)	3237	3162	3109	53	0	0	0	0	0
Zanjan	34	74	0	74	52	17	28	0	7
Tahem	5	24	0	24	22	//	21	0	//
Golabar	6	20	0	20	15	15	0	0	//
Kineh Vers	8	9	0	9	9	2	7	0	//
Talevar	16	20	0	20	6	//	0	0	6

9.3. STATISTICS ON LARGE RESERVOIR DAMS⁽¹⁾ BY REGIONAL WATER**ORGANIZATIONS (continued)****(mln cu m)**

Year and reservoir dams	Inflow ⁽²⁾	Outflow ⁽²⁾			Water consumption ⁽³⁾				
		Total	From turbines ducts for electricity generation	Other ⁽⁴⁾	Total	Agriculture	Drinking	Manu-facturing	Other ⁽⁵⁾
Semnan	23	24	0	0	19	14	4	0	1
Kalpush	1	2	0	0	0	0	0	0	0
Damghan	15	18	0	0	14	10	4	0	1
Mojen	7	5	0	0	5	4	0	0	1
Sistan&Baluchestan	231	454	0	454	151	47	91	0	14
Mashkid-e-Olia	29	18	0	18	3	0	3	0	0
Chahehnimeh 4	26	272	0	272	66	0	66	0	0
Pishin	95	84	0	84	64	47	8	0	9
Shai Kelk	22	1	0	1	0	0	0	0	0
Zirdan	78	72	0	72	15	0	10	0	5
Kheirabad	8	7	0	7	4	0	4	0	0
Chahehnimeh 3	-	-	-	-	-	-	-	-	-
Chahehnimeh 1, 2	-	-	-	-	-	-	-	-	-
Fars.....	571	527	208	587	302	111	98	14	79
Salman Farsi	155	226	-	226	145	74	27	0	45
Tangab	18	19	-	19	5	0	//	0	5
Rudbal Darab	44	72	-	72	21	3	16	0	3
Dorudzan	305	125	0	125	72	0	56	14	2
Izadkhast	1	3	-	3	2	2	0	0	0
Mollasadra	105	341	208	133	54	30	0	0	24
Sivand	//	0	-	0	0	0	0	0	0
Cheshmeh Ashegh	3	8	-	8	2	2	0	0	0
Qom	154	197	0	197	172	48	121	0	3
Panzdah Khordad	14	44	0	44	32	16	16	0	0
Kucheri ⁽⁸⁾	140	153	0	153	140	32	105	0	3
Kordestan	570	486	63	197	415	35	114	1	264
Sural.....	3	5	0	0	6	4	0	0	1
Sang siyah	1	5	0	0	3	1	0	0	1
Qeshleq	66	88	0	0	78	9	56	1	11
Zarivar.....	43	0	0	0	0	0	0	0	0
Baneh	7	5	0	1	5	0	4	0	1
Azad	147	118	63	55	109	18	28	0	64
Garan	62	61	0	36	17	0	2	0	15
Zivieh	6	5	0	0	4	3	0	0	1
Siazakh	82	63	0	0	63	0	6	0	57
Cheragh Veis	138	129	0	104	124	0	13	0	111
Abbas Abad Kela	12	7	0	0	7	0	5	0	2
Qoocham	3	//	0	0	0	0	0	0	0
Kerman	240	229	45	184	196	117	14	1	64
Jiroft	105	100	45	54	85	58	-	-	27
Tanguiyeh	6	13	-	13	11	2	8	-	-
Nesa.	121	102	-	102	90	55	-	-	35
Shahid Soleymani	7	14	-	14	11	2	6	1	2

9.3. STATISTICS ON LARGE RESERVOIR DAMS⁽¹⁾ BY REGIONAL WATER**ORGANIZATIONS (continued)****(mln cu m)**

Year and reservoir dams	Inflow ⁽²⁾	Outflow ⁽³⁾			Water consumption ⁽⁴⁾				
		Total	From turbines ducts for electricity generation	Other ⁽⁴⁾	Total	Agriculture	Drinking	Manu-facturing	Other ⁽⁵⁾
Kermanshah	1331	1085	1075	10	599	147	0	26	426
Gavshan ⁽⁶⁾	38	0	0	0	149	47	0	4	98
Soleymanshah	13	0	0	0	20	1	0	4	16
Gilangharb	1	0	0	0	2	0	0	0	2
Shiyan	3	0	0	0	2	0	0	0	2
Azadi	13	0	0	0	18	0	0	5	13
Zagros	31	0	0	0	38	0	0	//	38
Tang-e-Hammam	33	0	0	0	3	0	0	0	3
Darian	812	768	758	10	0	0	0	0	0
Sarab- e- Gilangharb	9	0	0	0	8	0	0	0	8
Zimakan	9	0	0	0	13	0	0	5	8
Jamishan	10	0	0	0	4	0	0	1	3
Sharafshah.....	43	0	0	0	62	0	0	8	54
Ezgeleh	316	317	317	0	280	98	0	0	181
Kohgiluyeh&Boyerahmad	331	347	0	342	321	61	167	3	89
Kosar ⁽⁶⁾	326	342	0	342	316	60	167	3	86
Shah Qasem	6	5	0	0	5	2	0	0	3
Golestan	116	0	0	0	121	77	0	0	44
Voshmgir	27	0	0	0	27	25	0	0	2
Golestan	48	0	0	0	48	23	0	0	25
Alagol	2	0	0	0	2	0	0	0	2
Bustan	23	0	0	0	23	12	0	0	11
Nomel (Kosar)	5	0	0	0	5	5	0	0	//
Daneshmand	2	0	0	0	2	1	0	0	1
Negarestan	15	0	0	0	15	12	0	0	3
Gilan	1017	1515	1185	330	1515	959	136	9	411
Sefidrud	859	1361	1041	320	1361	945	18	9	389
Shahr-e-Bijar	158	154	144	10	154	14	118	0	22
Lorestan	399	356	293	64	51	42	0	0	9
Maruk	10	9	0	9	9	8	0	0	1
Tanghaleh	//	1	0	1	1	1	0	0	0
Kaznar	//	//	0	//	//	//	0	0	//
Khanabad	8	8	0	8	8	8	0	0	1
Eyvashan	25	14	0	14	14	13	0	0	//
Hozian	3	19	0	19	19	12	0	0	7
Rudbar	352	305	293	13	0	0	0	0	0
Mazandaran	413	377	152	225	428	255	62	0	112
Shahid Rajaei	156	199	152	47	197	146	32	0	19
Shiyadeh	5	3	0	3	3	3	0	0	0
Berenjestanak	10	9	0	9	9	2	0	0	6
Meijeran	25	25	0	25	22	5	12	0	5

9.3. STATISTICS ON LARGE RESERVOIR DAMS⁽¹⁾ BY REGIONAL WATER**ORGANIZATIONS (continued)****(mln cu m)**

Year and reservoir dams	Inflow ⁽²⁾	Outflow ⁽³⁾			Water consumption ⁽⁴⁾				
		Total	From turbines ducts for electricity generation	Other ⁽⁴⁾	Total	Agriculture	Drinking	Manu-facturing	Other ⁽⁵⁾
Salaheddinkola	1	1	0	1	1	//	0	0	//
Farimsahra	1	1	0	1	1	1	0	0	//
Sonbolrud	3	3	0	3	3	1	0	0	2
Alimalat	4	4	0	4	2	1	0	0	//
Alborz	138	132	0	132	117	74	18	0	26
Gelevar Neka	70	//	0	//	74	21	0	0	53
Markazi	70	11	0	11	134	60	47	10	17
Kamal Saleh.....	39	6	0	6	45	0	34	10	//
Saveh	31	5	0	5	90	60	13	0	17
Hormozgan	1083	911	0	911	124	88	36	0	0
Esteqlal	544	453	0	453	51	45	6	0	0
Jegin	219	183	0	183	37	29	8	0	0
Shamil & Nian	284	252	0	252	19	14	5	0	0
Sarney	36	22	0	22	17	0	17	0	0
Hamedan	36	45	0	53	47	6	41	0	0
Ekbatan	23	32	0	32	29	2	26	0	0
Abshineh	2	6	0	6	4	0	4	0	0
Shirinsu	1	2	0	2	0	0	0	0	0
Kalan-e-Malayer	12	4	0	4	8	1	7	0	0
Sarabi	5	8	0	8	7	3	4	0	0
Shanjur	//	//	0	//	//	//	0	0	0

1. The information refers to the 198 large reservoir dams (based on the ICOLD definition) with a capacity of 49.6 bln.cu.m, almost equaling over 95% of the total volume of the dams under use.

2. Total inflow and outflow are calculated through omission of the influence of being a chain of (Latiyan and Mamlo dams in Tehran Ostan), (Shahid Abbaspur, Karun3, Karun 4, Masjed-Soleyman and Gotvand-e-Olia dams in Khuzestan Ostan), (Dorudzan and Mollasadra in Fars Ostan), (Seymareh in Ilam Ostan and Karkheh in Khuzestan Ostan), (Golestan1, Golestan2, and Voshmgir in Golestan Ostan), (Chahehnimeh 1,2,3 and 4 in Sistan&Baluchestan Ostan), (Ekbatan and Abshineh in Hamedan Ostan), (Soleymanshah and Gavshan in Kermanshah Ostan) and (Aras and Khoda Afarin in East-Azarbayegan Ostan). Moreover, inflow volume is calculated through a balance of volume changes in the reservoir and the amount of outflow.

3. The amount of water included for different consumption is the volume of water released for different consumption. With respect to the location of dams and the distance between them and consumption place, specially in agricultural sector, the water released for the agriculture is different from the volume of the water delivered to this sector. The difference is due to different reasons including middle basin, midway offtake, penetration, evaporation, etc.. Moreover, drinking water is the volume of water discharged from the dam.

4. Other outflows include evaporation, weir, dam take-out gates, slit ejection, direct pumping from reservoir, drainage and leaking. Moreover, difference between total and sum of parts is due to existence of some chain dams.

5. Other consumption includes the water at the time of stability of flow of the river.

6. Aras, Bukan, Zayanderud, Taleghan, Karaj, Karkheh, Golpayegan, Gavshan and Kusar dams supply water both for mentioned Ostans in above table and other Ostans.

7. The outflow of the Aras dam and Dusti dam equals the total outflow of the dam, and consumption only includes I.R. Iran consumption.

8. Kucheri dam is located in Esfahan Ostan and Tehran Regional Company is responsible for this dam; however, due to supplying drinking water for Qom city accounting for the major consumption of the dam, the related statistics are included in Qom Ostan.

9. Seymareh Dam is located in Ilam Province, and the Company for the Development of Water Resources and Energy of Iran is responsible for this dam. However, due to its aquatic connection with the Karkheh Dam, it is classified under Khuzestan Province.

10. The consumptions from the chain dams of Shahid Abbaspour, Karun 3, Karun 4, and Gotvand-e-Olya are included in the consumption of Gotvand- e-Olya dam.

11. Karun 4 reservoir dam is located in Chaharmahal & Bakhtiari Ostan. However, since it is located on the Karun river, it is included in Khuzestan Ostan.

Source: Ministry of Energy.

9.4. DATA FOR CAPACITY OF RESERVOIRS, URBAN WATER DISTRIBUTION AND TRANSMISSION NETWORK (cu m / km)

Year and Ostan	Capacity of reservoirs in the network	Length of the network for water distribution	Length of pipelines for water transmission
1385	10914721	119059	18500
1390.....	13101344	133163	25475
1395.....	14760389	151108	28984
1397.....	15239714	157120	29399
1398.....	15448925	162919	29725
1399	15527998	166050	30698
1400	15736468	167402	31309
1401	15917277	168263	31579
East Azarbayejan	925240	9717	1174
West Azarbayejan	404830	5141	774
Ardebil	361985	2554	505
Esfahan	1014850	14552	2999
Alborz	453822	4432	610
Ilam	137000	1354	519
Bushehr	307050	3860	890
Tehran	3260000	16336	2633
Chaharmahal&Bakhtiari	173805	2108	417
South Khorasan	147700	2462	553
Khorasan-e-Razavi	1233355	12464	2642
North Khorasan.....	190400	1651	403
Khuzestan	894246	10196	1816
Zanjan	168670	1699	303
Semnan	216878	2534	625
Sistan&Baluchestan	287640	5093	1457
Fars	997685	11335	2883
Qazvin	255862	2536	410
Qom.....	351800	2317	169
Kordestan	258530	2890	448
Kerman.....	725820	11118	2455
Kermanshah	311500	3143	593
Kohgiluyeh&Boyerahmad	122400	1530	322
Golestan	268070	2881	546
Gilan.....	396368	6207	793
Lorestan.....	281181	2737	608
Mazandaran.....	445292	8033	1140
Markazi	299670	3541	701
Hormozgan.....	378016	5015	993
Hamedan	299705	2744	499
Yazd	347907	6084	697

Source: Water and Sewage Engineering Company.

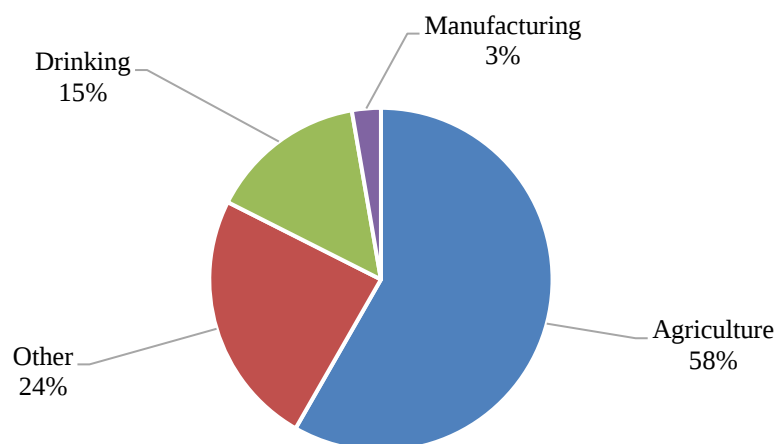
9.5. DATA FOR WATER SUPPLY, PRODUCTION AND SALE CAPACITIES AND NUMBER OF EXTENTIONS OF URBAN WATER

Year and Ostan	Max. capacity of water supply (litre/second)	Production (1000 cu m)	Sale ⁽¹⁾ (1000 cu m)	Extensions (number)
1385.....	214154	5094428	3464452	10115430
1390	247392	5323362	3900727	12891481
1395	261971	6045392	4502617	15827243
1397	251613	6186201	4586475	16684340
1398	254836	6262386	4737186	17073629
1399	269019	6647224	4882146	17506614
1400	271887	6872979	4999297	17955538
1401	256812	6869735	4851410	18299894
East Azarbayejan	9564	271719	212523	1290729
West Azarbayejan	10429	271857	170300	713581
Ardebil	3376	89031	65742	379032
Esfahan.....	20298	422446	353095	1365914
Alborz	10324	287914	226014	450874
Ilam.	1554	46298	34359	166461
Bushehr	3262	102021	66489	343311
Tehran	53931	1433387	1114855	1915930
Chaharmahal&Bakhtiari	208	57434	41677	266630
South Khorasan	1065	53396	33394	216157
Khorasan-e-Razavi	17139	441669	314935	1834475
North Khorasan	1748	53084	33107	222968
Khuzestan.....	27822	759966	372332	1145727
Zanjan	2571	71249	53162	258891
Semnan.....	2909	64937	47137	263395
Sistan&Baluchestan	6868	159934	113372	396974
Fars	12487	374247	249596	1215103
Qazvin	3377	92639	73400	339706
Qom	6133	124786	102012	349549
Kordestan	5433	131967	89320	426561
Kerman	8112	198427	141108	677409
Kermanshah	6116	150580	105764	426017
Kohgiluyeh&Boyerahmad	2703	69760	29688	196612
Golestan	3805	100043	67310	310522
Gilan	6141	191761	121654	533411
Lorestan.....	4382	127933	92357	453630
Mazandaran.....	9748	251341	174330	670647
Markazi	4659	122974	92470	336479
Hormozgan.....	4075	126137	91275	249788
Hamedan	3671	103757	79366	414476
Yazd	2903	117041	89267	468935

1. Water sale refers to water consumption.

Source: Water and Sewage Engineering Company.

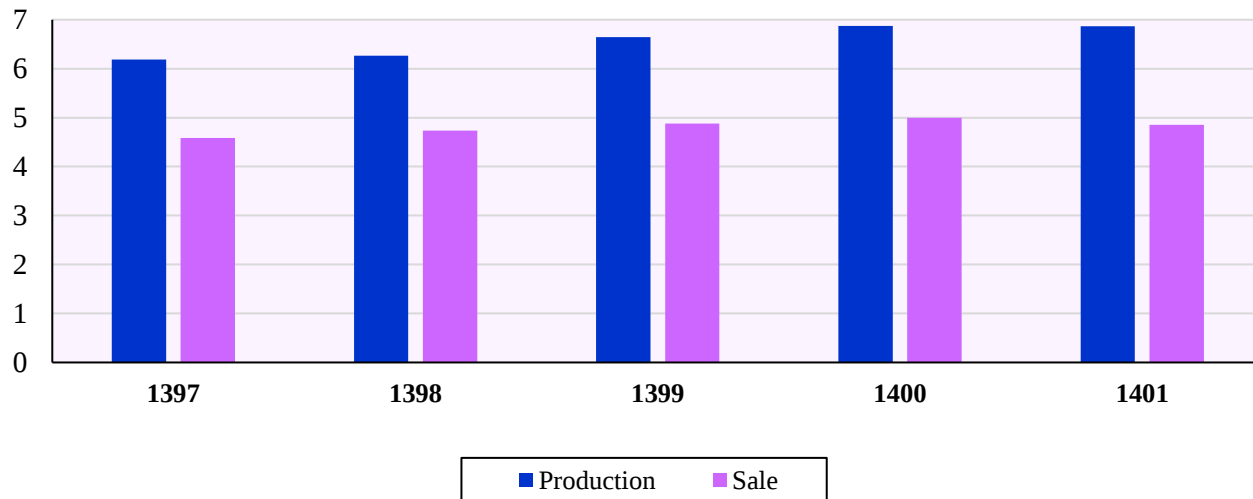
9.3. WATER CONSUMPTION OF LARGE RESERVOIR DAMS BY TYPE OF USE, THE YEAR 1401



For data see Table 9.3.

9.4. PRODUCTION AND SALE OF WATER IN URBAN AREAS BY URBAN WATER AND SEWAGE COMPANIES

Billion Cu/m



For data see Table 9.5.

9.6. DATA FOR WATER SUPPLY, PRODUCTION AND SALE CAPACITIES AND NUMBER OF EXTENTIONS OF RURAL WATER

Year and Ostan	Max. capacity of water supply (litre/second)	Production (1000 cu m)	Sale ⁽¹⁾ (1000 cu m)	Extensions (number)
1385	51242	1019180	652929	3200860
1390	77038	1160295	794211	4415236
1395	81054	1382449	947807	5392903
1397.....	101178	1489105	992694	5739206
1398	108058	1601729	1055400	5873870
1399	170230	1744762	1077794	6005284
1400	172317	1942642	1197737	6120862
1401	175904	2065013	1156059	6298743
East Azarbayejan	17914	88317	57158	353605
West Azarbayej an	3934	112883	68850	315698
Ardebil	6036	38494	22006	131298
Esfahan	3570	62931	43960	269239
Alborz	4878	25180	13792	66404
Ilam	634	15388	11225	65453
Bushehr	1345	40041	26815	109935
Tehran	7929	55516	38068	164480
Chaharmahal & Bakhtiyari	5938	33216	15365	102554
South Khorasan.....	1253	35139	18587	148038
Khorasan-e-Razavi	8151	162081	102348	639161
North Khorasan.....	1263	33438	20860	127048
Khuzestan	8674	222301	63470	210763
Zanjan	2150	38379	21277	116764
Semnan	3147	18052	10109	73226
Sistan & Baluchestan	12431	76524	46341	194712
Fars	7629	196267	92351	460282
Qazvin.....	1628	35969	22346	124833
Qom.....	2770	15504	8054	39160
Kordestan	5957	37142	22883	133536
Kerman	7026	120253	55580	295071
Kermanshah	5747	49570	26255	146494
Kohgiluyeh & Boyerahmad	9123	31839	12796	71972
Golestan	5790	69945	45298	254877
Gilan.....	6009	79850	50825	350002
Lorestan.....	8766	48812	32877	146273
Mazandaran.....	6073	121946	81297	493904
Markazi	4917	40070	28518	167937
Hormozgan	4111	87257	46652	219294
Hamedan	8644	50393	33610	180448
Yazd	2468	22316	16486	126282

1. Water sale refers to water consumption.

Source: Water and Sewage Engineering Company.

9.7. DATA FOR CAPACITY OF RESERVOIRS, RURAL WATER DISTRIBUTION AND TRANSMISSION NETWORK (cu m / km)

Year and Ostan	Capacity of reservoirs in the network	Length of the network for water distribution	Length of pipelines for water transmission
1385	2914866	116474	64500
1390	3292684	155248	87848
1395	3628788	172980	103705
1397.....	3865387	181638	107583
1398.....	3971542	194229	109708
1399	3974936	186833	110830
1400	4070698	185494	114867
1401	3976239	184842	114991
East Azarbayejan	232250	8590	7705
West Azarbayejan	148600	7164	5342
Ardebil	108849	3862	2590
Esfahan	147318	5585	3158
Alborz	46575	1279	699
Ilam	75111	1554	1811
Bushehr	76480	3802	2320
Tehran	125266	2368	1144
Chaharmahal & Bakhtiyari	64078	2545	1327
South Khorasan	167412	4225	5007
Khorasan-e-Razavi	336953	12583	9087
North Khorasan	96860	2975	2209
Khuzestan	153935	12903	8917
Zanjan	96387	3390	2529
Semnan	45164	1246	892
Sistan & Baluchestan	193701	10219	7054
Fars	274451	14051	7981
Qazvin.....	72346	2647	1972
Qom.....	56507	672	562
Kordestan	97531	2860	3438
Kerman	228931	13793	6484
Kermanshah	77796	3701	3713
Kohgiluyeh & Boyerahmad	112362	3930	2943
Golestan	94670	5239	3130
Gilan	140175	18592	4281
Lorestan.....	80689	4736	3056
Mazandaran.....	181217	12733	2665
Markazi	100457	3769	2438
Hormozgan.....	129950	5250	5780
Hamedan	123208	3980	2801
Yazd	91010	4598	1954

Source: Water and Sewage Engineering Company.

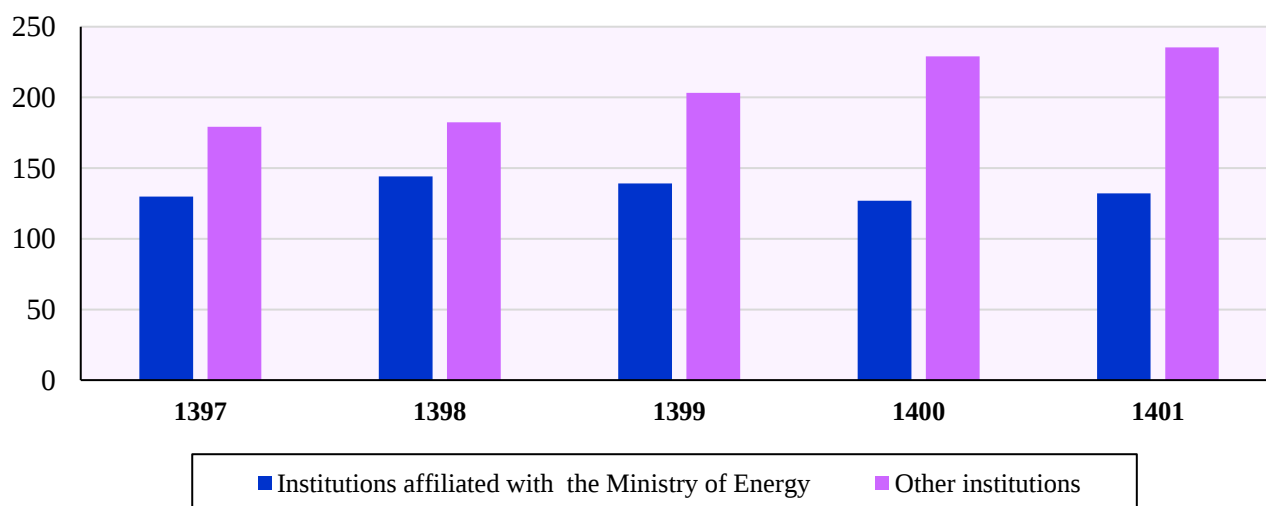
9.8. NOMINAL CAPACITY AND GROSS ELECTRICITY GENERATION OF INSTALLED GENERATORS

Year	Nominal capacity (1000 kW)			Gross electricity generation (mln kW h)		
	Total	Institutions affiliated with the Ministry of Energy	Other institutions	Total	Institutions affiliated with the Ministry of Energy	Other institutions
1385	45151	40909	4242	192534	181538	10996
1390.....	65212	52252	12960	240063	208413	31650
1395	76428	35764	40664	289196	128291	160905
1397	80467	36625	43842	309182	129920	179262
1398	83506	37276	46230	326431	144069	182362
1399	85432	37474	47958	342365	139068	203297
1400	86787	36746	50041	355948	126936	229012
1401	90805	37422	53383	367433	132070	235363

Source: Ministry of Energy.

9.5. GROSS ELECTRICITY GENERATION IN THE COUNTRY

Billion KW h



For data see Table 9.8.

9.9. CAPACITY OF INSTALLED GENERATORS AND MAXIMUM POWER GENERATED AT THE POINT OF PEAK CONSUMPTION IN THE POWER PLANTS (1000 kW)

Year and type of generator	Nominal capacity (nominal power)	Actual capacity (actual capacity)	Power generated at the point of peak consumption
1385.....	45288	40985	32997
1390	65212	57522	42245
1395.....	76428	66598	51579
1397	80467	69864	48831
1398	83506	72532	57017
1399	85432	74273	58076
1400	86787	75148	54731
1401	90805	78720	59596
Ministry of Energy	37422	33979	26567
Hydroelectric	12190	12190	8220
Steam	11241	10614	8597
Gas	6801	5338	4331
Combined cycle	5755	4542	4002
Diesel	408	267	501
Atomic	1020	1020	915
Renewable.....	8	8	0
Large scale industries	7183	5881	1211
Steam.....	589	490	318
Gas	5320	4332	712
Combined cycle	1274	1059	181
Private sector	46200	38860	31818
Steam.....	4000	3772	3566
Gas	12741	10685	7871
Combined cycle	28531	23475	20382
Renewable	928	928	0

Source: Ministry of Energy.

9.10. CAPACITY OF INSTALLED GENERATORS AND GROSS ELECTRICITY GENERATION OF POWER PLANTS, THE YEAR 1401

Ostan	Nominal capacity (1000 kW)	Actual capacity (1000 kW)	Gross generation (mln kW h)
Total	90811	78723	367435
East Azarbayejan	2341	2098	10030
West Azarbayejan	2159	1849	8686
Ardebil	1314	1112	5315
Esfahan.....	5380	4809	29158
Alborz	1815	1537	9428
Ilam	678	646	106
Bushehr	6688	5711	16950
Tehran	7011	5626	31344
Chaharmahal & Bakhtiari	1058	1057	1694
South Khorasan.....	798	598	2478
Khorasan-e-Razavi.....	4181	3601	19004
North Khorasan.....	1504	1199	7034
Khuzestan	16189	14960	41103
Zanjan	1120	926	3467
Semnan.....	950	794	3016
Sistan & Baluchestan	1908	1521	6422
Fars.....	5445	4228	28422
Qazvin	2246	2002	12836
Qom.....	780	653	4835
Kordestan	1025	918	6498
Kerman.....	4599	3645	21665
Kermanshah	2342	2002	10320
Kohgiluyeh & Boyerahmad	46	46	127
Golestan	1031	932	4107
Gilan	2867	2635	14574
Lorestan	1080	931	2321
Mazandaran	4131	3954	14044
Markazi	1386	1286	8767
Hormozgan.....	4792	4037	22064
Hamedan	1075	1075	6989
Yazd	2872	2335	14631

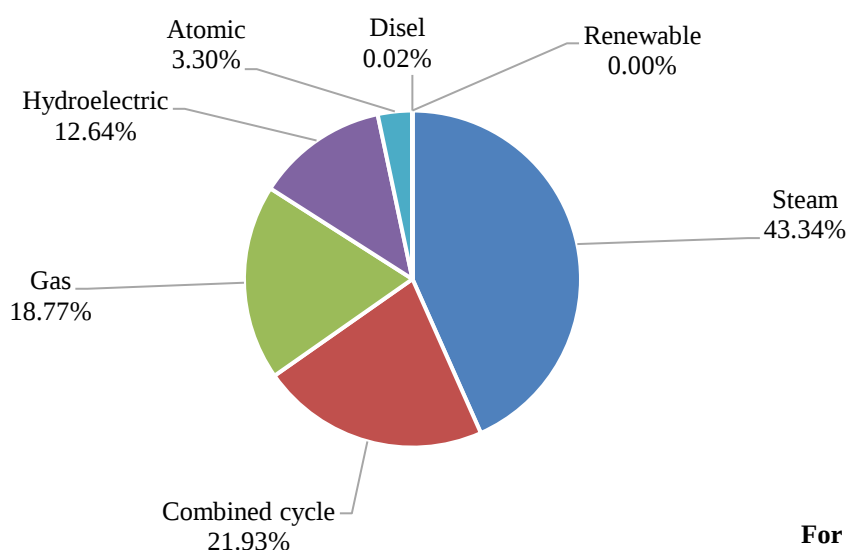
Source: Ministry of Energy.

9.11. ELECTRICITY GENERATION AND INTERNAL CONSUMPTION OF THE POWER PLANTS (mln kWh)

Year and type of generator	Gross generation	Internal consumption of plants	Net generation
1385	192535	7773	184762
1390	240063	8442	231621
1395	289196	8285	280911
1397	309182	8703	300479
1398	326431	8871	317559
1399.....	342365	10850	331515
1400	355948	10078	345871
1401.....	367433	9973	357460
Ministry of Energy	132070	4881	127190
Hydroelectric	16700	79	16621
Steam	57244	4033	53211
Combined cycle	28961	632	28330
Gas	24784	134	24650
Diesel	23	3	20
Atomic	4358	0	4358
Renewable	0	0	0
Large scale industries	6740	219	6521
Steam	2007	201	1806
Gas	3906	14	3892
Combined cycle	827	4	823
Private sector	228623	4874	223749
Steam.....	25142	1855	23287
Gas	49056	258	48798
Combined cycle	152634	2754	149880
Renewable	1791	7	1785

Source: Ministry of Energy.

9.6. SHARE OF ELECTRICITY GENERATORS TYPES OF THE POWER PLANTS AFFILIATED TO THE MINISTRY OF ENERGY FROM GROSS GENERATION OF POWER , THE YEAR 1401



For data see Table 9.11.

9.12. GROSS ELECTRICITY GENERATION OF HYDROELECTRIC POWER PLANTS BY REGIONAL WATER ORGANIZATION AND TYPE OF DAM (1000 kWh)

Year and regional water organization	Total		Concrete arch		Earth		Other	
	Number	Generation	Number	Generation	Number	Generation	Number	Generation
1385.....	43	18367189	13	12634896	18	5550129	12	182164
1390	46	13287425	26	8489912	9	4707067	11	90446
1395	52	16419181	28	9412166	13	6945188	11	61827
1397	59	15765098	28	8120216	15	7530619	16	114263
1398.....	66	31081847	28	15517630	16	15412177	22	152040
1399.....	67	22182496	28	10909560	16	11060169	23	212767
1400	68	12266831	28	4963166	16	7114176	24	189489
1401	60	16699885	24	8889335	16	7659235	20	151316
East Azarbayejan	0	0	0	0	0	0	0	0
West Azarbayejan	3	373400	0	0	3	373400	0	0
Ardebil	1	31505	0	0	0	0	1	31505
Esfahan.....	2	87113	2	87113	0	0	0	0
Alborz	2	90549	1	64936	1	25613	0	0
Ilam	1	0	1	0	0	0	0	0
Tehran	3	164312	2	85602	1	78710	0	0
Chaharmahal & Bakhtiyari	3	1675466	2	1675466	0	0	1	0
Khorasan-e-Razavi	1	0	0	0	0	0	1	0
Khuzestan	8	12369262	3	6792254	4	5576289	1	719
Semnan.....	1	17327	0	0	0	0	1	17327
Fars.....	3	89498	1	3967	2	85531	0	0
Qom	2	20400	0	0	0	0	2	20400
Kordestan	1	12803	0	0	1	12803	0	0
Kerman	1	12177	1	12177	0	0	0	0
Kermanshah	2	216145	1	0	1	216145	0	0
Kohgiluyeh & Boyer-Ahmad	5	32126	3	23640	0	0	2	8486
Gilan.....	5	146271	2	126217	1	17247	2	2808
Lorestan.....	5	181306	2	0	1	180082	2	1224
Mazandaran	6	1137479	2	17963	1	1093415	3	26101
Markazi	4	42747	1	0	0	0	3	42747
Hamedan	1	0	0	0	0	0	1	0

1. The figures in the total row for the year 1385 have been revised.

Source: Ministry of Energy.

9.13. GROSS ELECTRICITY GENERATION, FUEL CONSUMPTION, ENERGY GENERATION AND OUTPUT OF THERMAL POWER PLANTS AFFILIATED WITH THE MINISTRY OF ENERGY, LARGE SCALE INDUSTRIES AND PRIVATE SECTOR

Year and type of ownership of the power plant	Gross electricity generation (mln kWh)	Fuel consumed			Energy generated from fuel consumption (bln kcal)	Thermal energy consumed to generate one kWh of electricity (kcal)	Output (percent)
		Gas oil (mln lit)	Fuel oil (mln lit)	Natural gas (mln cu m)			
1385	174280	4362	7587	32168	393246	2403	35.8
1390	227428	9406	12019	38901	530623	2333	36.9
1395	265774	5867	4483	61782	604856	2276	37.8
1397	285256	5970	3451	67356	644067	2258	38.1
1398	287521	10253	5398	60243	641325	2231	38.6
1399	313483	10188	5891	67318	690647	2203	39.0
1400	337904	9979	6771	73278	744911	2205	39.0
1401.....	344583	10569	7422	72410	757954	2200	39.1
Power plants affiliated with the Ministry of Energy	111012	2297	5942	22735	262177	2362	36.4
Large scale industries	6740	40	0	1867	18156	2694	31.9
Private sector	226831	8232	1480	47809	477621	2106	40.8

Source: Ministry of Energy.

9.14. GENERATION, INTERNAL CONSUMPTION OF POWER PLANTS, PURCHASE, LOSSES AND SALES OF ELECTRIC POWER IN THE COUNTRY (mln kWh)

Description	Year							
	1385	1390	1395	1397	1398	1399	1400	1401
Gross generation ⁽¹⁾	181538	208414	128292	129920	144069	139068	126936	132070
Less: Internal consumption of plants ⁽¹⁾	7064	7985	4520	4777	4848	5222	4904	4881
Net generation ⁽¹⁾	174474	200429	123772	125143	139219	133846	122031	127190
Plus: Electricity purchased from large-scale industries ⁽²⁾	10997	23637	149743	171406	174776	197669	223839	230270
Less: Distribution and transmission networks losses	35566	34102	33513	32853	32550	33358	35736	37057
Net sales	144831	188917	239903	263696	281959	297643	309317	317480
Net exports (Exchange of electric power with other countries)	233	5012	2467	3708	6865	6796	2705	896
Domestic sales	144598	183905	237436	259723	275094	290847	306612	316584

1. Including institutes affiliated with the Ministry of Energy.

2. Other institutions include large-scale industries and private plants.

Source: Ministry of Energy.

9.15. MAXIMUM COINCIDENTAL AND NON-COINCIDENTAL LOADS OF REGIONAL POWER COMPANIES (1000 kWh)

Description	Maximum coincidental load
1385	33453
1390	41481
1395	50926
1397	48999
1398	55839
1399	57023
1400	55182
1401	59304
Azarbayejan Regional Power Company	3447
Esfahan Regional Power Company	4056
Bakhtar Regional Power Company	2676
Tehran Regional Power Company	10475
Khorasan Regional Power Company	3512
Khuzestan Regional Power Company	8358
Zanjan Regional Power Company	1698
Semnan Regional Power Company	443
Sistan&Baluchestan Regional Power Company	1446
Gharb Regional Power Company	1855
Fars Regional Power Company	5261
Kerman Regional Power Company	2095
Gilan Regional Power Company	2053
Mazandaran Regional Power Company	4681
Hormozgan Regional Power Company	2779
Yazd Regional Power Company	1102
Kish Water and Power Company	174
Large scale industries	3193

Source: Ministry of Energy.

9.16. ELECTRIC POWER TRANSMISSION LINES (km circuits)

Year	Transmission lines		Sub-transmission lines	
	400 kV	230 kV	132 kV	63 and 66 kV
1385.....	12404	25634	18582	37974
1390	18625	29158	22092	44956
1395	20477	31324	23413	48063
1397.....	20893	32411	23821	49524
1398.....	21329	32571	23939	50205
1399	21880	32861	24589	50710
1400	22102	33073	24746	51082
1401	22402	33324	25069	51414

Source: Ministry of Energy.

9.17. CAPACITY OF POWER TRANSMISSION SUB-STATIONS OF THE COUNTRY (MVA)

Year and Ostan	Transmission sub-stations		Sub-transmission sub-stations	
	400 kV	230 kV	132 kV	63 and 66 kV
1385	29633	53816	18489	43987
1390	46708	67412	25352	59759
1395	62183	80470	30865	69456
1397	67523	84876	33321	75619
1398	75008	88535	36227	78306
1399	79058	92595	37137	80208
1400	80203	94318	38360	82761
1401	83738	98327	39961	84965
East-Azarbayejan	1715	4220	3543	1158
West-Azarbayejan	945	1915	2626	15
Ardebil	815	1370	0	1057
Esfahan	6860	6225	0	8241
Alborz	1000	2236	0	3130
Ilam	0	1255	559	823
Bushehr	6675	2866	1992	2195
Tehran	10900	11890	0	14670
Chaharmahal&Bakhtiari	1810	0	0	1325
South Khorasan	1275	0	880	0
Khorasan-e-Razavi	4758	160	7080	1006
North Khorasan	1200	0	1008	0
Khuzestan	9995	8527	12869	0
Zanjan	2030	1615	0	2232
Semnan	2200	1970	0	2013
Sistan&Baluchestan	945	3739	30	3240
Fars	6220	4975	1015	7477
Qazvin	800	1675	0	2400
Qom	70	1530	0	2025
Kordestan	0	1885	80	1240
Kerman	5690	6390	5427	360
Kermanshah	1230	2895	0	2381
Kohgiluyeh&Boyerahmad	400	640	719	0
Golestan	700	2070	0	2303
Gilan	1000	3405	170	3493
Lorestan	1000	2060	0	2097
Mazandaran	3530	5015	0	5052
Markazi	2000	2925	0	3473
Hormozgan	3690	8436	1378	6228
Hamedan	600	1815	0	2347
Yazd	3685	4623	585	2987

Source: Ministry of Energy.

9.18. NUMBER OF CUSTOMERS OF THE NATION'S OSTANS BY TYPE OF CONSUMPTION (consumer)

Year and Ostan	Total	Household	Public	Agricultural	Industrial	Other
1385.....	20559946	16989284	748964	138137	152202	2531359
1390	27164768	22224100	1082528	284781	174255	3399104
1395	33824208	27354153	1543440	400257	225296	4301062
1397	35688115	28749257	1665987	444212	245939	4582720
1398	36643985	29426885	1732289	463718	254807	4766286
1399	37617583	30170016	1788087	481682	259943	4917855
1400.....	38618904	30884917	1844137	502008	265951	5121891
1401	39620165	31630759	1911043	523062	268102	5287199
East Azarbayejan	2050259	1570538	92513	24074	16719	346415
West Azarbayejan	1405816	1135659	38913	23311	6756	201177
Ardebil	621183	507528	29373	5261	3899	75122
Esfahan.....	2862358	2228419	116647	51124	33838	432330
Alborz	1473206	1181623	96738	5524	7046	182275
Ilam	256664	211707	9905	3384	1125	30543
Bushehr	529031	425421	20744	6235	2777	73854
Tehran	7281980	5550702	577390	13413	46484	1093991
Chaharmahal & Bakhtiari	408344	338327	14324	7668	3476	44549
South Khorasan.....	407109	338844	17000	6011	2881	42373
Khorasan-e-Razavi.....	3144440	2583628	124445	24570	21085	390712
North Khorasan.....	400629	335519	15143	4209	2126	43632
Khuzestan	1759165	1444013	61595	11683	4956	236918
Zanjan	501502	400113	19563	9530	4086	68210
Semnan.....	407693	310465	24883	7413	6147	58785
Sistan & Baluchestan	936515	786314	32043	14402	3317	100439
Fars	2249034	1831880	82526	48541	15137	270950
Qazvin	655880	519222	44708	7135	5368	79447
Qom.....	614398	492094	25597	4246	7356	85105
Kordestan	731058	602643	26266	12746	3319	86084
Kerman	1328633	1123137	38606	18017	6727	142146
Kermanshah	814200	676316	31545	8557	3624	94158
Kohgiluyeh & Boyerahmad	285510	238709	10024	3330	1357	32090
Golestan	808698	660310	32902	13668	3406	98412
Gilan	1588107	1234115	81009	28298	6640	238045
Lorestan	700395	593146	19694	9479	2777	75299
Mazandaran	2239687	1752397	104101	104118	15425	263646
Markazi	790931	645085	33700	11335	7382	93429
Hormozgan	800092	650719	38981	10370	3349	96673
Hamedan	806808	648559	32674	13637	6741	105197
Yazd	760840	613607	17491	11773	12776	105193

Source: Ministry of Energy.

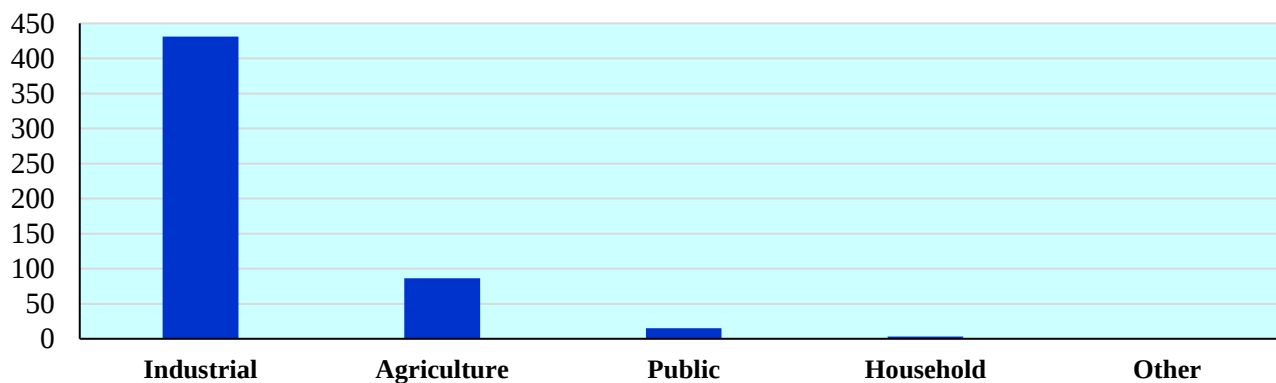
9.19. DOMESTIC SALE OF ELECTRICITY OF THE NATION'S OSTANS BY TYPE OF CONSUMPTION (mln KWh)

Year and Ostan	Total	Household	Public	Agricultural	Industrial	Streets lighting	Other
1385	144598	48085	18329	17666	46590	4608	9320
1390	183905	56771	16808	29965	63945	3752	12664
1395	237436	78378	22914	36222	77603	4699	17620
1397	259723	85098	24073	38033	88540	4987	18990
1398	275094	88500	25589	38764	97081	5017	20143
1399	290847	92283	24586	41288	108074	4876	19741
1400	306612	98464	26515	43990	110212	22382	5049
1401.....	316584	98255	28525	45206	115567	24089	4942
East Azarbayejan	11175	2732	717	1360	5256	899	211
West Azarbayejan	6627	2288	471	1419	1748	561	141
Ardebil	2322	791	268	305	702	184	72
Esfahan	28941	4746	1280	3199	17805	1545	366
Alborz	8050	2647	782	859	2691	972	99
Ilam	1877	840	140	441	300	124	30
Bushehr	8357	4994	1110	532	1050	536	134
Tehran	39804	12919	7101	3300	8769	7242	475
Chaharmahal&Bakhtiari	2668	585	126	788	965	125	80
South Khorasan.....	1980	527	169	508	581	124	72
Khorasan-e-Razavi	19021	5197	1276	4592	6052	1527	376
North Khorasan.....	2325	531	122	405	1118	117	32
Khuzestan	34893	16672	3084	3395	9437	1685	621
Zanjan	5115	671	181	741	3291	184	46
Semnan	3830	585	230	619	2167	173	57
Sistan&Baluchestan	7920	4038	1590	1133	533	476	149
Fars	23074	5933	1472	5698	8333	1305	333
Qazvin.....	5267	955	268	1139	2581	259	64
Qom.....	4886	1463	439	499	1981	423	81
Kordestan	3077	1128	205	785	696	205	58
Kerman	18041	4126	797	4247	8061	600	210
Kermanshah	4228	1415	642	691	1108	262	110
Kohgiluyeh&Boyerahmad	1999	969	329	199	301	136	65
Golestan	4280	2013	327	807	718	334	82
Gilan	6909	2870	572	645	1750	902	171
Lorestan	4130	1205	329	1020	1289	216	71
Mazandaran	10308	4599	853	1181	2367	1088	220
Markazi	9284	1178	268	1370	6061	278	128
Hormozgan	19416	7159	2769	1072	7272	980	164
Hamedan	5359	1238	284	1489	1990	282	76
Yazd	11420	1243	321	767	8596	346	148

Source: Ministry of Energy.

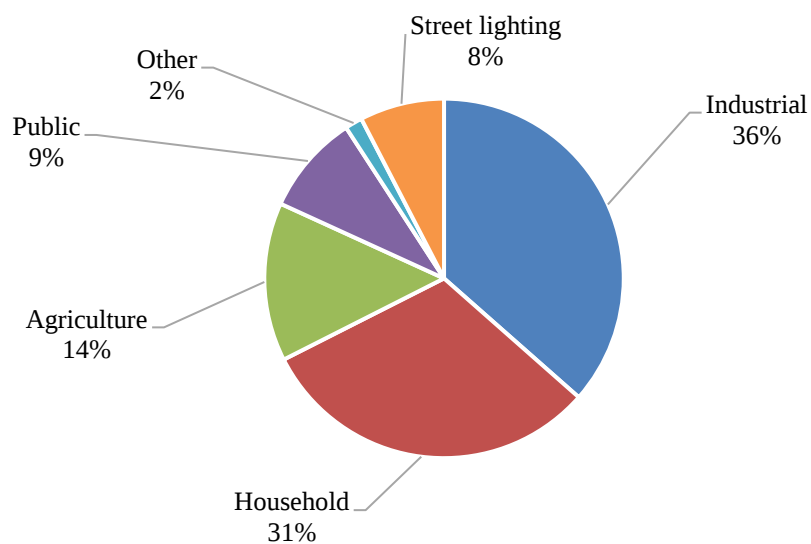
9.7. AVERAGE ELECTRICITY CONSUMPTION BY TYPE OF CUSTOMERS, THE YEAR 1401

1000 KWh



For data see Tables 9.18 and 9.19.

9.8. DOMESTIC SALE OF ELECTRICITY BY TYPE OF USE, THE YEAR 1401



For data see Table 9.19.

9.20. NUMBER OF VILLAGES, RURAL HOUSEHOLDS ENJOYING ELECTRICITY AND CHARACTERISTICS OF ELECTRICITY TRANSMITTING INSTALLATIONS TO VILLAGES

Year and Ostan	Village	Household enjoying electricity	Length of power distribution lines with medium pressure (km)	Length of power distribution lines with low pressure (km)	Number of distribution transformers	Capacity of distribution transformers (MVA)
1385	50985	4427849	138330	93464	64718	6812
1390	54116	4452795	139429	98390	72186	7283
1395	56793	4492752	145049	99958	76735	7687
1397.....	57280	4500250	145895	100224	77316	7713
1398.....	57420	4502045	146172	100305	77503	7717
1399.....	57755	4506485	146744	100468	77911	7734
1400	58005	4510206	147251	100604	78231	7747
1401	58686	5804548	300580	137177	317759	36966
East Azarbayejan	2731	308149	8566	5204	3133	364
West Azarbayejan	2828	389693	13197	6352	20233	1864
Ardebil	1759	70782	6736	3335	5785	335
Esfahan	1705	296167	17387	8886	9832	1164
Alborz	245	62914	2386	1249	2328	407
Ilam	602	73590	4442	1242	4360	518
Bushehr	600	115726	6937	2675	11000	2566
Tehran	737	171040	4128	2662	7722	1276
Chaharmahal&Bakhtiari	754	94140	3754	2658	4998	427
South Khorasan	1645	146638	11597	2854	2169	171
Khorasan-e-Razavi.....	3224	595414	27252	8370	24862	2631
North Khorasan	974	94597	6564	2633	5970	464
Khuzestan.....	3932	239887	17513	6087	25508	4305
Zanjan	905	104111	7692	2392	1226	151
Semnan	455	35977	5489	1357	5432	577
Sistan&Baluchestan	5718	249637	20140	7237	11068	1356
Fars	3309	313278	8440	4698	5173	541
Qazvin	841	73056	6371	2476	8437	1042
Qom.....	362	18252	3222	898	5255	852
Kordestan	1706	181914	10039	2995	12389	964
Kerman.....	5037	395013	29232	12823	34580	3206
Kermanshah	2557	161996	10567	3226	9496	658
Kohgiluyeh&Boyerahmad	1798	55272	5085	2469	7183	1043
Golestan	1037	106393	8181	3995	15807	1762
Gilan	2573	352515	7360	12641	17205	1786
Lorestan.....	2779	103507	8756	3422	11865	1169
Mazandaran	2883	359633	6777	9376	12847	1419
Markazi	1182	117119	10541	2582	13608	1310
Hormozgan.....	1744	267608	9058	5030	14879	2357
Hamedan	1073	194698	7351	3367	2077	195
Yazd	991	55832	5820	1987	1332	86

Source: Ministry of Energy.

9.21. EXCHANGE OF ELECTRICITY WITH NEIGHBORING COUNTRIES (mln kWh)

Year	Exports				
	Total	Nakhjavan	Türkiye	Armenia	Azerbaijan
1385	2774	561	576	316	11
1390	8668	56	1118	57	0
1395.....	6688	48	297	105	1
1397.....	6295	28	0	58	1
1398.....	8206	000	000	000	000
1399.....	9470	000	000	000	000
1400	5719	000	000	000	000
1401	4937	000	000	000	000

Year	Exports			
	Turkministan	Pakistan	Afghanistan	Iraq
1385	2	172	134	1002
1390	8	271	557	6601
1395	0	482	731	5024
1397	0	511	756	4942
1398	000	000	000	000
1399	000	000	000	000
1400	000	000	000	000
1401	000	000	000	000

Year	Energy exchange	Imports			
		Total	Nakhjavan	Türkiye	Armenia
1385	233	2541	0	0	428
1390	5012	3656	57	0	1508
1395	2467	4221	51	0	1133
1397	3708	2587	27	0	1241
1398	6865	1341	000	000	000
1399	6796	2674	000	000	000
1400	2704	3014	000	000	000
1401	896	4041	000	000	000

Year	Imports				
	Azerbaijan	Turkministan	Pakistan	Afghanistan	Iraq
1385	536	1576	0	0	0
1390	2	2089	0	0	0
1395	4	3033	0	0	0
1397	49	1270	0	0	0
1398	000	000	000	000	000
1399	000	000	000	000	000
1400	000	000	000	000	000
1401	000	000	000	000	000

Source: Ministry of Energy.

9.22. SPECIFICATIONS OF THE ELECTRICITY DISTRIBUTION NETWORK OF THE COUNTRY BY OSTAN AT THE END OF THE YEAR 1401

Ostan	Length of power distribution network lines with medium voltage (km)	Length of power distribution network lines with low voltage (km)	Number of distribution network transformers	Capacity of distribution network transformers (MVA)
Total	457313	383922	826977	139932
East Azarbayejan	19191	17128	30155	4527
West Azarbayejan	15802	13024	22503	2857
Ardebil	7654	6540	7713	1048
Esfahan.....	27713	29387	50895	9428
Alborz	5446	7379	19549	4835
Ilam	5183	2738	6943	1087
Bushehr	9006	7377	19482	4546
Tehran	21582	35720	80826	23219
Chaharmahal&Bakhtiari	6888	5403	9580	1202
South Khorasan	13277	6040	10590	1133
Khorasan-e-Razavi	36374	26001	50037	8140
North Khorasan.....	7173	4786	8254	854
Khuzestan	24053	21150	62142	14965
Zanjan	8741	6136	11247	1662
Semnan	7827	4767	8991	1522
Sistan&Baluchestan	26783	15555	27850	3327
Fars	39205	26850	81109	10387
Qazvin.....	8510	4810	12536	2330
Qom.....	4291	4003	8795	2163
Kordestan	11045	6134	15130	1586
Kerman.....	33479	21835	47913	5659
Kermanshah	12305	7307	19536	2294
Kohgiluyeh&Boyerahmad	5716	3891	9737	1738
Golestan	8487	8507	22385	2891
Gilan.....	9907	20663	24704	3940
Lorestan.....	11026	6372	18233	2386
Mazandaran.....	18932	27019	55108	6890
Markazi	12250	8800	18787	2666
Hormozgan.....	16945	10560	29501	5875
Hamedan	10883	8661	18516	2451
Yazd	11639	9379	18230	2324

Source: Ministry of Energy.