E-CONTROL

Electricity Market Code

Chapter 6

Meter Readings, Data Formats and Standardised Load Profiles

Version 3.4

Contents

1. Metering points

The Austrian electricity supply system relies on the meter readings collected by system operators. It is crucial that these readings be transmitted to the authorised suppliers and that this transmission be free of faults and errors. One element in this process is identifying each metering point via a unique standardised metering point reference number. This is governed by the Technical and Organisational Rules for system operators and users (TOR), Part F, *Technische Regeln für Zählwerterfassung und Zählwertübertragung* (Technical rules for metering data acquisition and transmission), section 4.1.

Once a metering point reference number has been assigned, it does not change anymore (not even if the metering device is exchanged).

1.1 Virtual metering points

In some cases, several virtual metering points are assigned to a single metering point (which might consist of several physical metering devices, cf. TOR Part F, annex 4, *Übersicht zur Zählpunktbildung* (Overview of metering point formation)). This system makes it possible for an individual metering point to be assigned to more than one balance group.

For instance, a metering device that records both injection and withdrawal can have two virtual metering points. These can then be assigned to different balance groups (e.g. procurement from a commercial balance group, supply to the green energy balance group).

Virtual metering points are also used for certain types of generating facilities (e.g. jointly owned power plants and some mixed-fuel plants with a high biogenic share). The electric energy fed in from these plants is assigned to the virtual metering points according to fixed calculation models.

Distributing the energy fed in from such generation plants to virtual metering points is just one option. As a general rule, energy infeed is assigned to one metering point only. It is then for the point's balance group to pass the electricity on to the other relevant balance groups via schedules.

Virtual metering points may only be used for power stations and the special balance groups of system operators.

2. Principles

To determine how much balancing energy a balance group needs, we must have actual consumption values.

Load metering, which would provide this information, is not feasible for small customers due to the technical and organisational complexity and considerable costs involved.

Instead, suppliers use standard load profiles (SLPs) as schedules for these customers. Meters are only actually read once a year and then invoices are issued.

The system operators must send the readings to the balance responsible parties (BRPs) and to the imbalance settlement responsible (ISR), who then calculates any deviations from schedules and from the load profile of each balance group.

3. Standard load profiles

3.1 Standard VDEW load profiles

Section 17(2) *Elektrizitätswirtschafts- und -organisationsgesetz* (Electricity Act) 2010 provides that standard load profiles (SLPs) be drawn up for consumers with an annual consumption below 100,000 kWh or a connected capacity below 50 kW.

The connected capacity of consumers is calculated as follows:

- If actual maximum load readings are available (e.g. from quarter-hourly maximum meters) the highest maximum load registered during a billing period is the connected capacity.
- If readings are available from meters that calculate mean loads from several aggregations, the highest mean load determined in the billing period is the connected capacity.
- If no such readings are available, we consider that a consumer has a connected capacity of more than 50 kW if the facility's voltage protection has a rated voltage of over 63 A.

Since the electricity market was first fully opened on 1 October 2001, the standard load profiles defined by the VDEW in the VDEW publication *Repräsentative VDEW-Lastprofile* (Typical VDEW Load Profiles, M-28/99) have been used as a basis by the ISRs to provide the standard load profiles for Austria each year.

The system operators then assign a load profile to each consumer.

In the case of commercial undertakings, the VDEW industry codes are used to determine which SLP applies.

Grid users can ask their system operator which load profile their facility has been sorted into.

3.2 Assignment rules for mixed facilities

When deciding which SLP to assign to a customer facility with only one metering point and a mixed consumption pattern, it is the predominant type of consumption that counts.

Table 1 shows reference values for assigning the VDEW load profiles.

Mixed consumption pattern	Annual energy consumption	VDEW load profile
Household/commercial	< 8,000 kWh	Household H0
	≥ 8,000 kWh	Commercial (G0 – G6)
Agriculture/commercial	< 16,000 kWh	Agriculture (L0 – L2)
	≥ 16,000 kWh	Commercial (G0 – G6)
Household/agriculture	< 8,000 kWh	Household H0
	≥ 8,000 kWh	Agriculture (L0 – L2)
Household/commercial/agriculture (with one metering device)	< 8,000 kWh	Household H0
	≥ 8,000 kWh and < 16,000 kWh	Agriculture (L0 – L2)
	≥ 16,000 kWh	Commercial (G0 – G6)

Table 1: Reference values for assigning standardised VDEW load profiles to facilities with mixed consumption patterns

3.3 SLPs for small feeders

3.3.1 Basic versions of SLPs for small feeders

According to section 18(2) Electricity Act 1998/2000 and section 17(2) Electricity Act 2010, standard load profiles must be used for feeders injecting less than 100,000 kWh per year or having a connected capacity below 50 kW.

Because of the widely divergent generation patterns, production facilities are classified separately according to their energy sources, i.e. water, wind, photovoltaics, biogas and biomass.

As a first solution and in view of the small share in total generation, simple and easy-to-operate profiles were defined.

Primary energy source	**Standard load profile**
Water	The basic version used is load profile E 0 (see section 3.3.1.1).
Wind	The basic version used is load profile E 0 (see section 3.3.1.1).
Photovoltaics	The basic version used is load profile E 1 (see section 3.3.1.2).
Biogas	The basic version used is load profile E 0 (see section 3.3.1.1).
Biomass	As there are currently no biomass plants with less than 50 kW connected capacity or less than 100,000 kWh annual feed-in, there is no need for a load profile for biomass plants for the time being.

Table 2: Assignment of load profiles for small feeders according to primary energy sources

3.3.1.1 Load profile for feed-in from hydro, wind and biogas plants (E 0)

This load profile provides the basic version for feed-in from hydropower, wind power and biogas plants.

For simplicity's sake, it is assumed that feed-in is constant throughout the year.

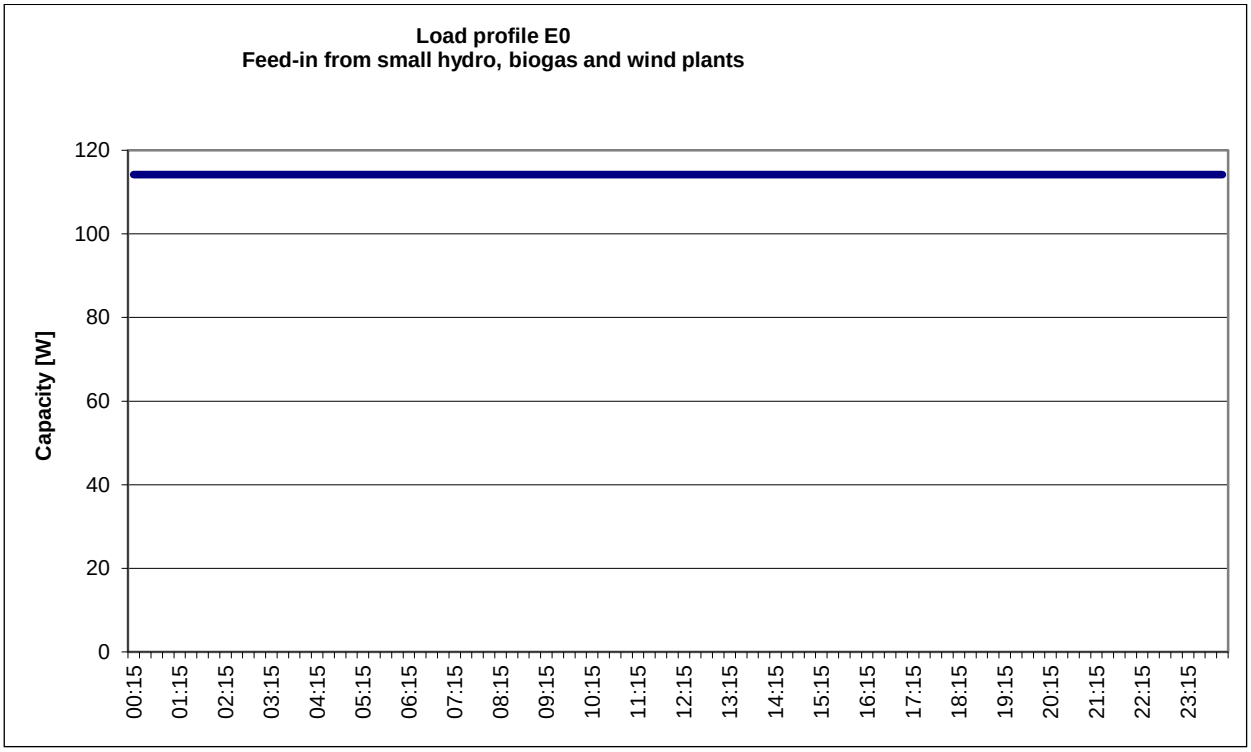

Figure 1: Load profile E 0 for feed-in from hydro, wind and biogas plants

The 15-minute mean loads of this load profile are detailed in the annex (section 7.1).

3.3.1.2 Load profile for feed-in from PV plants (E 1)

This load profile provides the basic version for feeders from photovoltaic systems.

For simplicity's sake, it is assumed that:

- Feed-in is constant throughout daylight hours.
- Daylight hours are from 7:00 to 19:00 hrs.
- There is no seasonal differentiation.

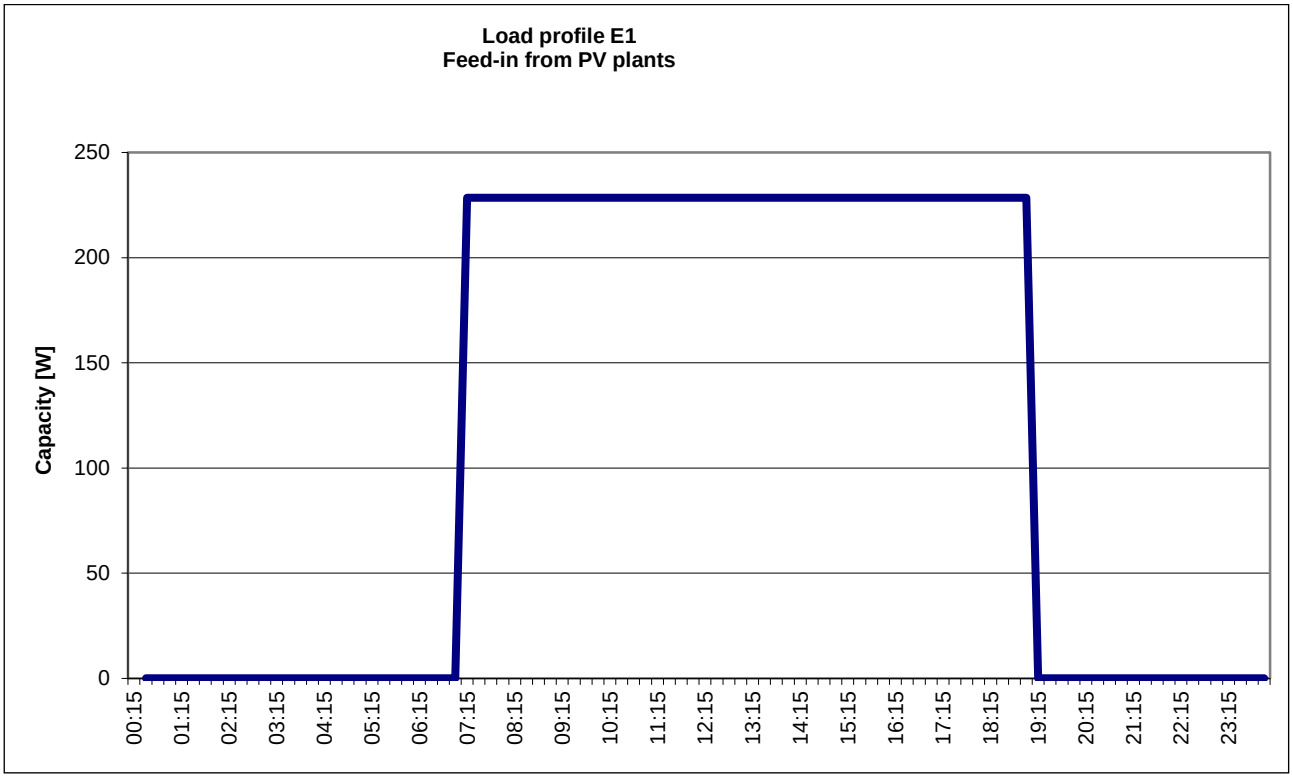

Figure 2: Load profile E 1 for feed-in from PV plants

The 15-minute mean loads of this load profile are detailed in the annex (section 8.1).

3.3.2 Individual solutions

System operators may draw up their own load profiles for small feeders.

In these load profiles for small feeders from hydropower, wind power and biogas plants, system operators may assume constant feed-in based on the readings for each tariff period (summer/winter, peak/off-peak).

When drawing up load profiles for photovoltaic systems, system operators may define rectangular profiles which differentiate between the seasons and reflect average peak load hours if necessary.

System operators that use their own load profiles for small feeders must notify E-Control thereof and send the profiles to E-Control.

3.4 Assignment rules for net-metered customers

Net-metered customers are those that both take energy from the grid and feed energy into it. Where net metered facilities have a connected capacity of less than 50 kW or an annual energy offtake and an annual feed-in of less than 100,000 kWh, they are assigned standard load profiles.

Whether the above threshold values are reached is determined at the handover point to the user's facility.

Systems that have separate metering points for feed-in and offtake may, if necessary, be handled differently for the two directions (e.g. one metering point is load metered, the other is assigned an SLP).

Net-metered customers that intend to enter all energy generated in accredited green power plants into the green power balance group in their control area need a separate metering point for the feed-in from their plant and a separate meter at the feed-in point.

To avoid having to install new meters at net-metered facilities that fall below the thresholds set in the Electricity Act, the following rules apply for assigning load profiles:

- For **small plants** (e.g. photovoltaic systems) **with a predominant consumption share** equipped with **only a consumption meter at the handover point** (withdrawal meter), system operators assign consumer SLPs.
- For **plants with a predominant feed-in share** equipped **with only a supply meter at the handover point** (injection meter), system operators assign SLPs for small feeders as described in section 3.3.
- For **plants that have both a withdrawal and a supply meter at the handover point**, system operators assign a standard VDEW load profile to the withdrawal meter, and to the injection meter a standard load profile for small feeders as described in section 7.1.

3.5 Interruptible supply

3.5.1 Basic SLPs for interruptible supply

SLPs for interruptible supply enable customers that have hot water tanks and/or night storage heaters powered by interruptible supplies to switch suppliers.

For simplicity's sake, the following assumptions are made:

- No distinction is made between working days, Saturdays, Sundays and public holidays.
- The SLPs distinguish between the seasons, according to the periods used in the typical VDEW SLPs:

	Duration	Number of days/year
Summer	15/5 – 14/9	123
Spring and autumn	21/3 – 14/5 and 15/9 – 31/10	102
Winter	1/11 – 20/3	140

- The SLPs are based on an annual energy consumption of 1000 kWh.
- The basic SLPs are drawn up for a uniform off-peak tariff period from 22:00 hrs to 6:00 hrs.
- For load profiles with daytime recharging, a uniform daytime recharging time period from 13:00 to 17:00 hrs is assumed. It is assumed that 25% of total energy consumption takes place during the daytime recharging period.

3.5.1.1 Load profile for hot water tanks without daytime recharging (ULA)

The energy consumption of hot water tanks is not subject to seasonal swings. It is determined only by the customer's consumption pattern.

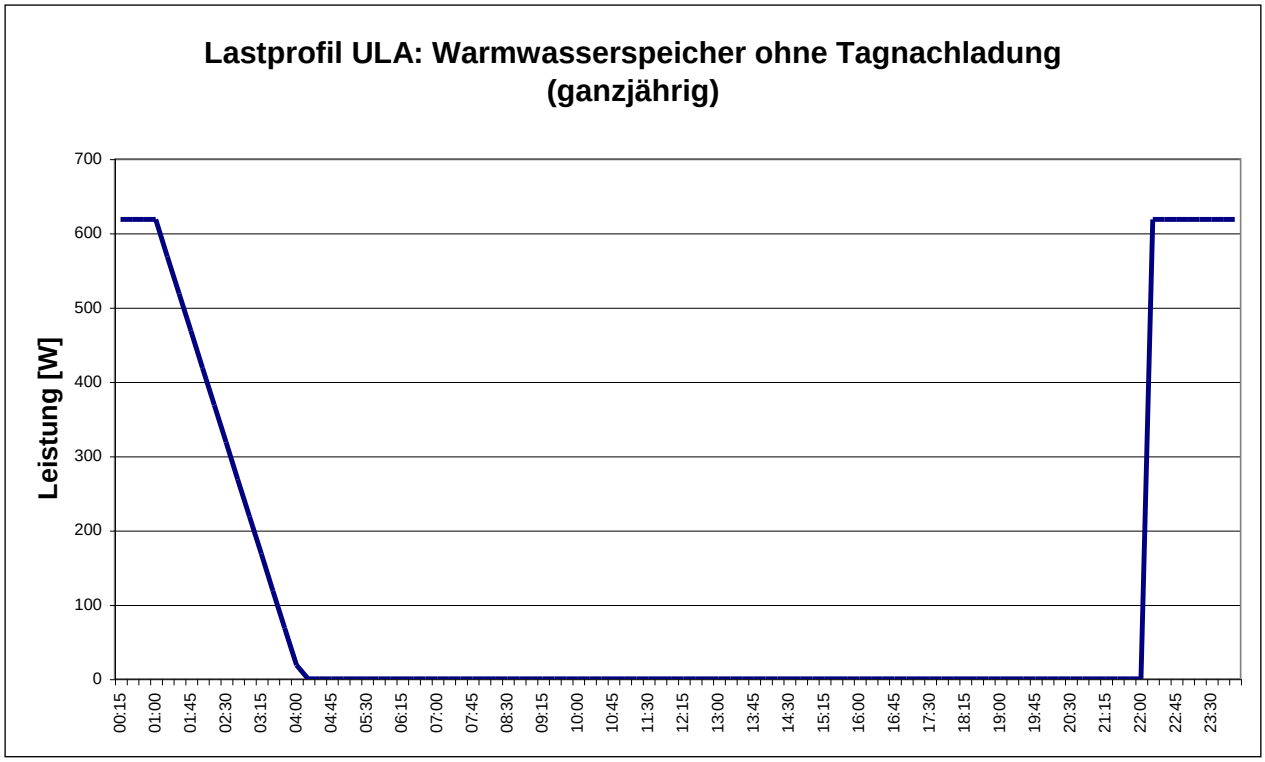

Figure 3: ULA load profile, for hot water tanks without daytime recharging

Note:

The 15-minute mean loads of the load profiles shown here are listed in the annex.

3.5.1.2 Load profile for hot water tanks with daytime recharging (ULB)

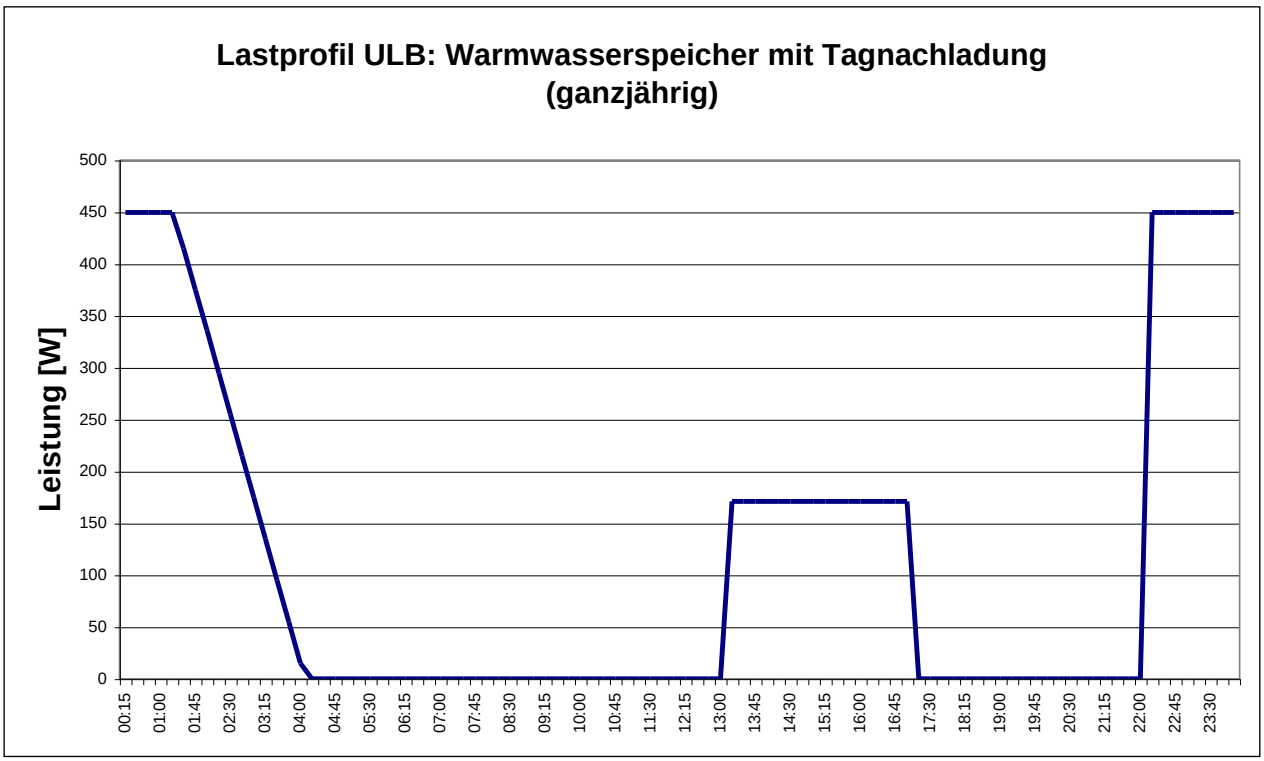

Figure 4: ULB load profile, for hot water tanks with daytime recharging (identical pattern for summer, winter and spring/autumn)

Note:

The 15-minute mean loads of the load profiles shown here are listed in the annex.

3.5.1.3 Load profile for night storage heaters without daytime recharging (ULC)

This load profile applies to night storage heaters without daytime recharging. Systems like this concentrate most consumption in winter and show moderate consumption in spring and autumn. For simplicity's sake, it is assumed that there is no consumption in summer.

The following distribution of annual energy consumption (standardised at 1000 kWh) is assumed:

	Percentage of annual energy consumption	Energy consumption, standardised at 1000 kWh
Summer	0%	0
Spring and autumn	20%	200 kWh
Winter	80%	800 kWh

Due to the zero consumption assumption for summer, the 15-minute mean loads in the summer load profile are 0 as a matter of course.

Only the load profiles for spring/autumn and winter are shown below.

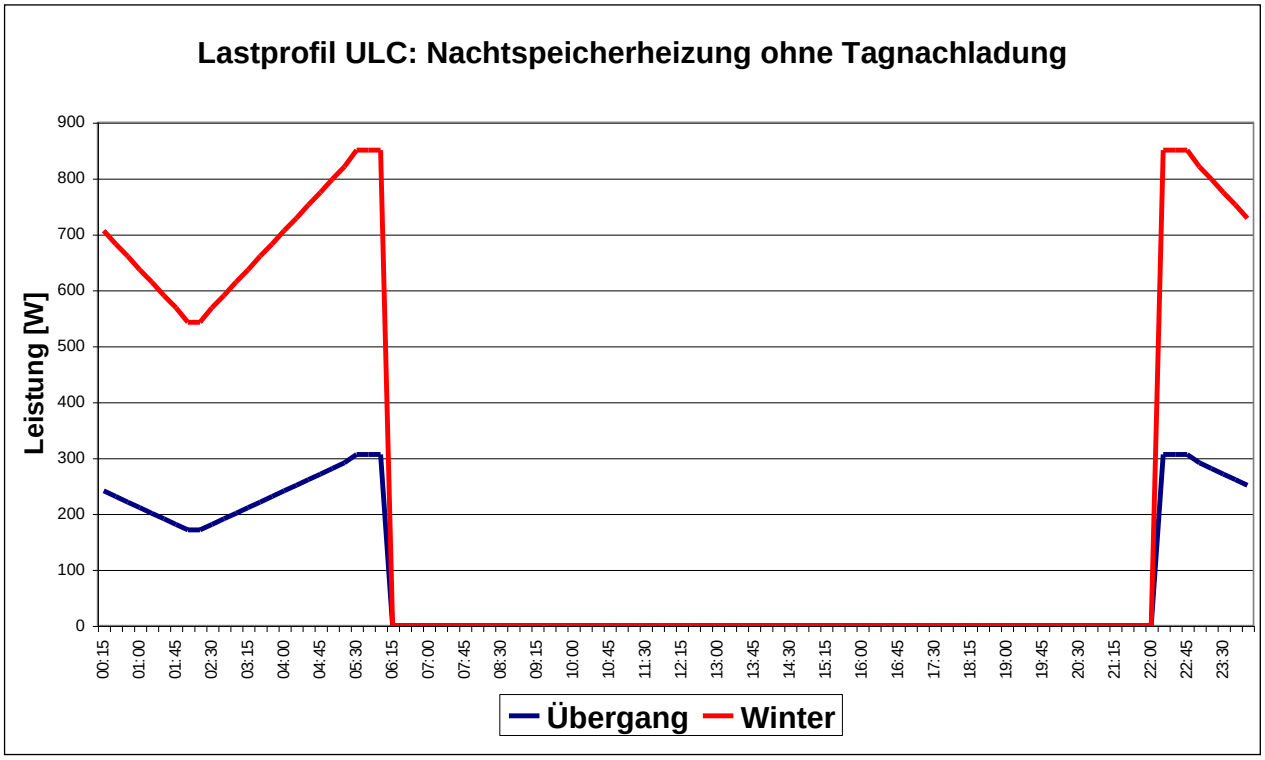

Figure 5: ULC load profile, for night storage heaters without daytime recharging

Note:

The 15-minute mean loads of the load profiles shown here are listed in the annex.

3.5.1.4 Load profile for night storage heaters with daytime recharging (ULD)

This load profile applies to night storage heaters with daytime recharging. Annual energy consumption is seasonally distributed as in section 0.

Again, we assume that night storage heaters have zero consumption in summer, i.e. the 15-minute mean loads in the summer load profile are zeroed out. Only the spring/autumn and winter load profiles are shown below.

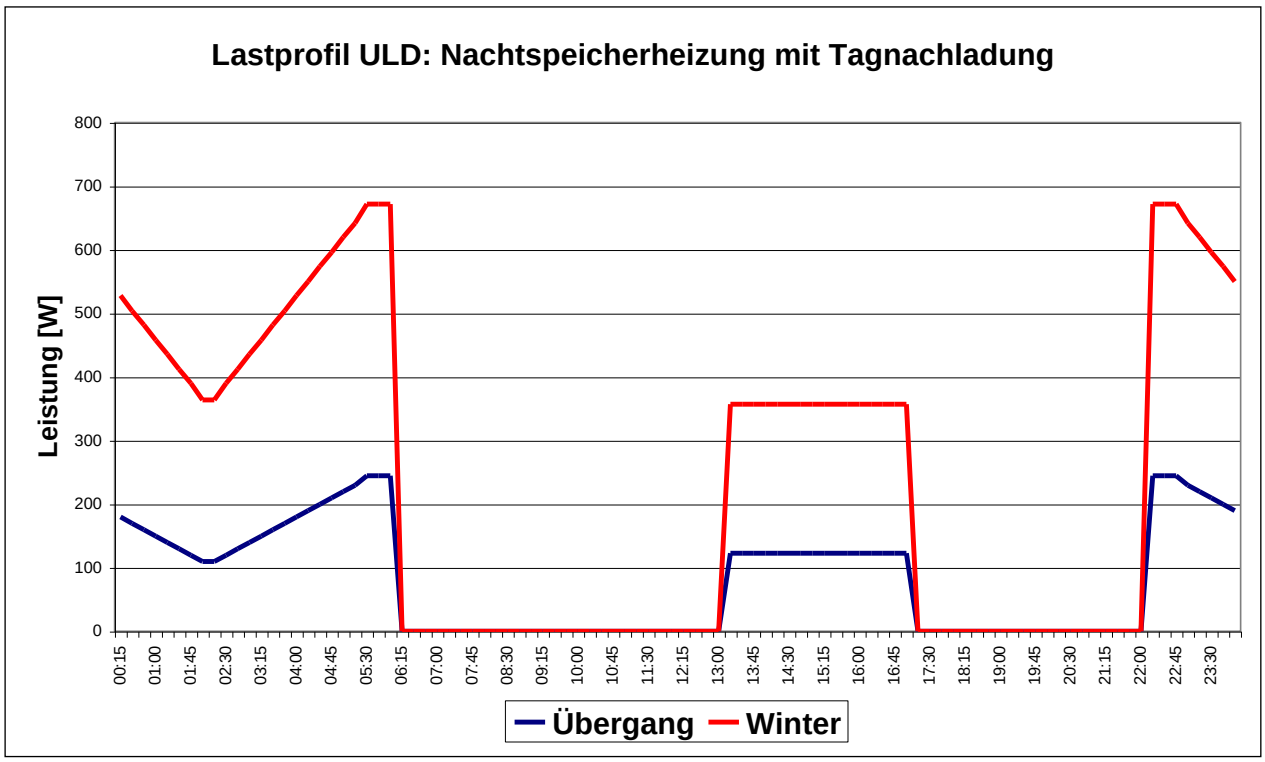

Figure 6: ULD load profile, for night storage heaters with daytime recharging

Note:

The 15-minute mean loads of the load profiles shown here are listed in the annex.

3.5.1.5 Load profile for mixed systems without daytime recharging (ULE)

This load profile applies to mixed systems consisting of night storage heaters and hot water tanks, without daytime recharging.

These systems' consumption is marked in winter, moderate in spring and autumn and low in summer. For simplicity's sake it is assumed that in summer only the hot water tank consumes energy. We also assume that the pattern of the load profiles in winter and spring/autumn corresponds to that for night storage heaters without daytime recharging, and in summer to that for hot water tanks without daytime recharging.

The following distribution of annual energy consumption (standardised at 1000 kWh) is assumed:

	Percentage of annual energy consumption	Energy consumption, standardised at 1000 kWh
Summer	10%	100 kWh
Spring and autumn	15%	150 kWh
Winter	75%	750 kWh

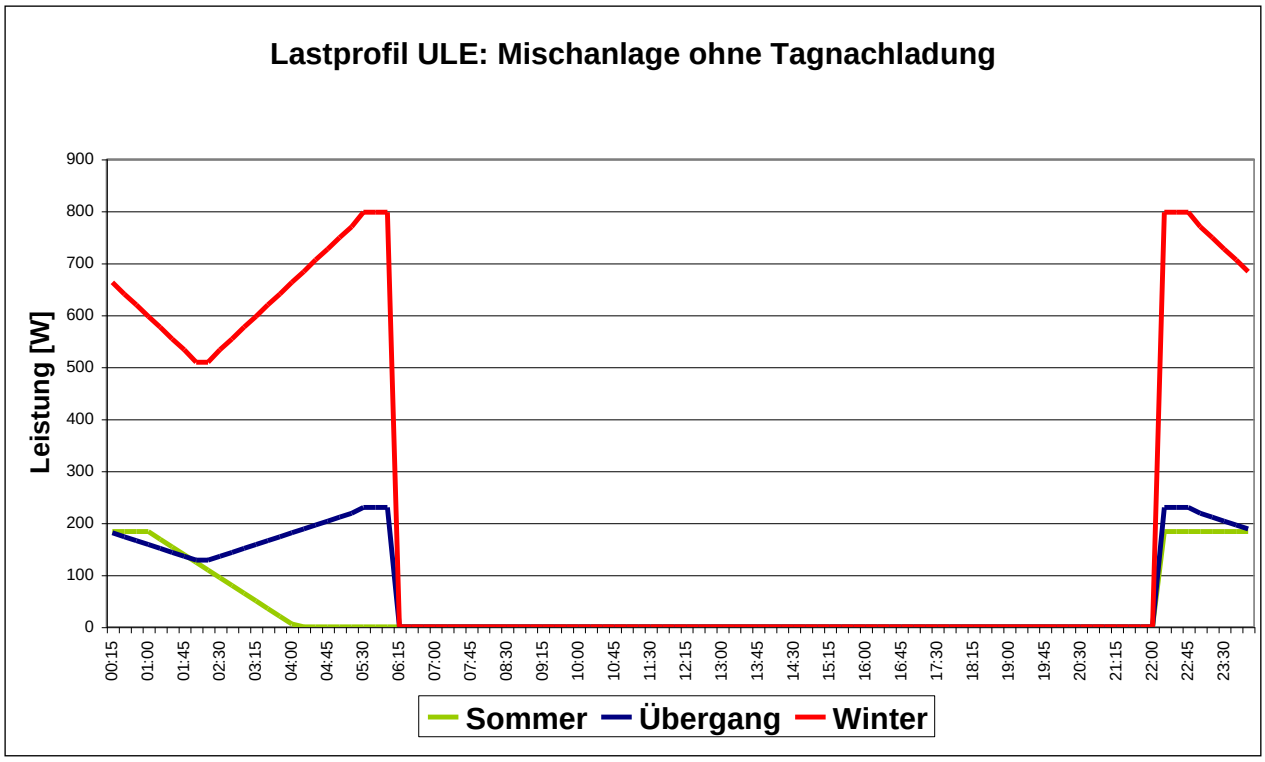

Figure 7: ULE load profile, for mixed systems without daytime recharging

Note:

The 15-minute mean loads of the load profiles shown here are listed in the annex.

3.5.1.6 Load profile for mixed systems with daytime recharging (ULF)

This load profile applies to mixed systems with daytime recharging consisting of night storage heaters and hot water tanks.

It is assumed that the pattern of the load profiles in winter and spring/autumn corresponds to that for night storage heaters with daytime recharging, and in summer to that for hot water tanks with daytime recharging.

Annual energy consumption is distributed as in section 0.

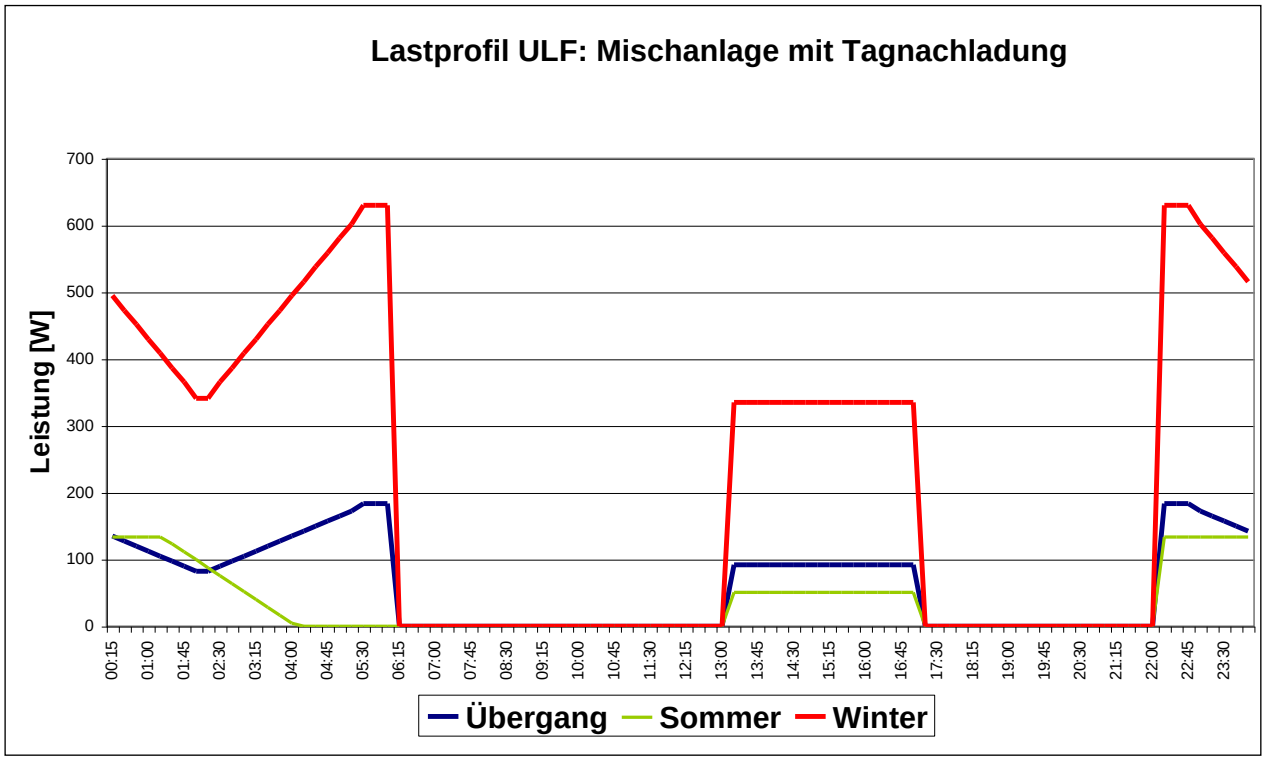

Figure 8: ULF load profile, for mixed systems with daytime recharging

Note:

The 15-minute mean loads of the load profiles shown here are listed in the annex.

3.5.2 Individual solutions

System operators which have meter readings at their disposal or know when controls switch on and off can draw up their own (exact) load profiles for interruptible supplies.

They must inform and send the profiles (15-minute mean loads) to E-Control.

3.5.3 Assigning load profiles to facilities with interruptible supplies

3.5.3.1 Off-peak applications (hot water storage, night storage heaters and mixed systems)

Systems with hot water tanks, night storage heaters and mixed systems are assigned standard load profiles according to section 3.5.1 or load profiles drawn up by the system operators themselves according to section 3.5.2, regardless of actual on/off times.

Also, when customers switch suppliers they (or their authorised supplier) can agree to change the on-off times with their system operator. In this case the system operator ensures that the adjustment does not involve additional costs or is less convenient for the customer.

3.5.3.2 Other applications on the basis of interruptible supplies

Facilities with applications based on interruptible supplies not covered by the rules in sections 3.5.1 and 3.5.2 (e.g. heat pumps, hay dryers, sauna stoves, gutter heaters etc.) are assigned the same SLPs as the respective principal systems.

If a principal system as described in section 4 is to be equipped with a quarter-hourly maximum meter, then the secondary system, which is powered on the basis of an interruptible supply, must be assigned the most appropriate typical VDEW load profile (see section 3.1) by the system operator.

3.6 Facilities with remote capacity restriction options at a single metering point

These standard load profiles apply to systems where a single metering point records both the consumption of a system under continuous supply (household, commercial, agriculture) and the load switched by the system operator using ripple control or time clocks (hot water storage systems and/or storage heaters).

Please note:

System operators whose systems have not been using these combinations so far are not obliged to introduce them just because these load profiles exist.

3.6.1 SLPs for a regular facility combined with a hot water storage system (HA load profile)

This load profile results from superimposing the H0 load profile (household) on the ULA load profile (interruptible supply for hot water storage without daytime recharging). It is assigned to all facilities where the consumption of equipment under continuous supply and a hot water storage switched by the system operator using ripple control or a time clock are recorded via one metering point. This

means this load profile also applies to comparable facilities in commercial undertakings or agriculture and facilities having a hot water storage with daytime recharging.

It is assumed that 70% of the facility's energy is consumed by the household (or commercial or agricultural undertaking) and 30% by the hot water tank.

The 15-minute mean loads of the HA load profile are as follows:

$$HA = 0{,}7 \cdot H0 + 0{,}3 \cdot ULA$$

The HA load profile is dynamised with the dynamisation function for H0.

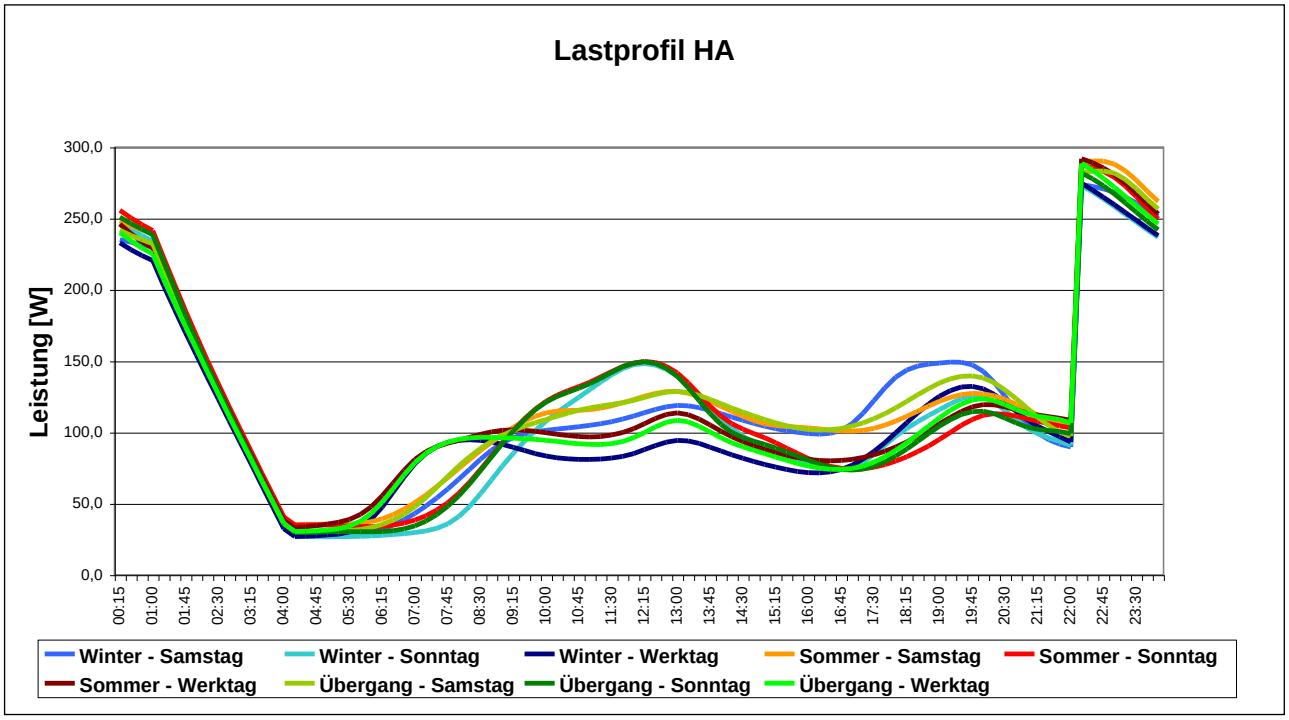

Figure 9: HA load profile

Note:

- Facilities using this load profile are normally equipped with a dual or multiple tariff meter.
- The 15-minute mean loads of the load profiles shown here are listed in the annex.

3.6.2 SLPs for a regular facility in combination with a storage heater (HF load profile)

This load profile results from superimposing the H0 load profile (household) on the ULF load profile (interruptible supply for mixed facilities with storage heater and hot water storage tank with daytime recharging). It is assigned to all facilities where the consumption of equipment under continuous supply and a storage heater with or without hot water storage switched by the system operator using ripple control or a time clock are recorded via one metering point.

This means this load profile also applies to comparable facilities in commercial undertakings or agriculture and facilities having a storage heater without daytime recharging with or without hot water storage.

It is assumed that 25% of the facility's energy is consumed by the household (or commercial or agricultural undertaking) and 75% by the storage heater in conjunction with, if applicable, the hot water storage system.

The 15-minute mean loads of the HF load profile are as follows:

$$HF = 0{,}25 \cdot H0 + 0{,}75 \cdot ULF$$

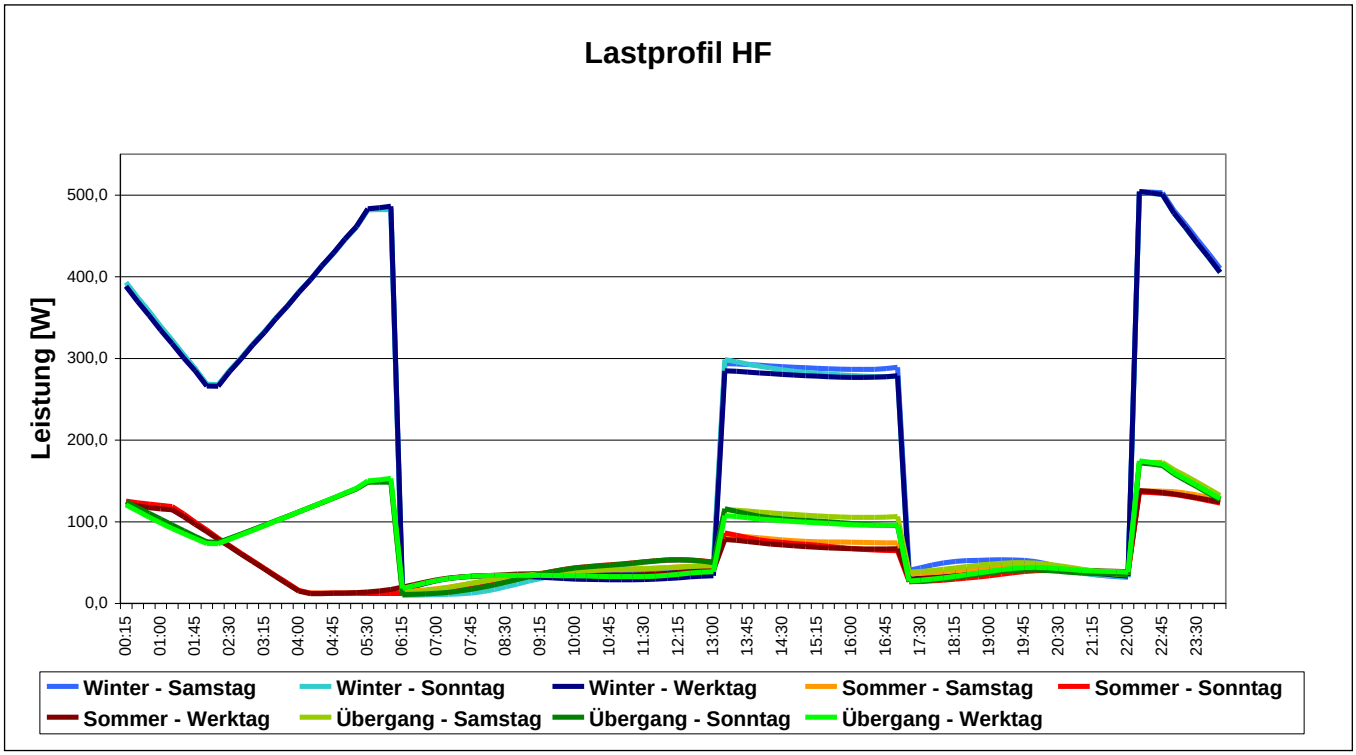

Figure 10: HF load profile

Note:

- Facilities using this load profile are normally equipped with a dual or multiple tariff meter.
- The 15-minute mean loads of the load profiles shown here are listed in the annex.

3.7 SLPs for mobile communications transmitters (G7)

For mobile communications transmitters a constant load profile must be used. The 15-minute mean loads are identical with the E0 load profile (see section 0 and/or section 7.1). However, in the interests of clarity the 15-minute mean loads are given separately in section 7.4.

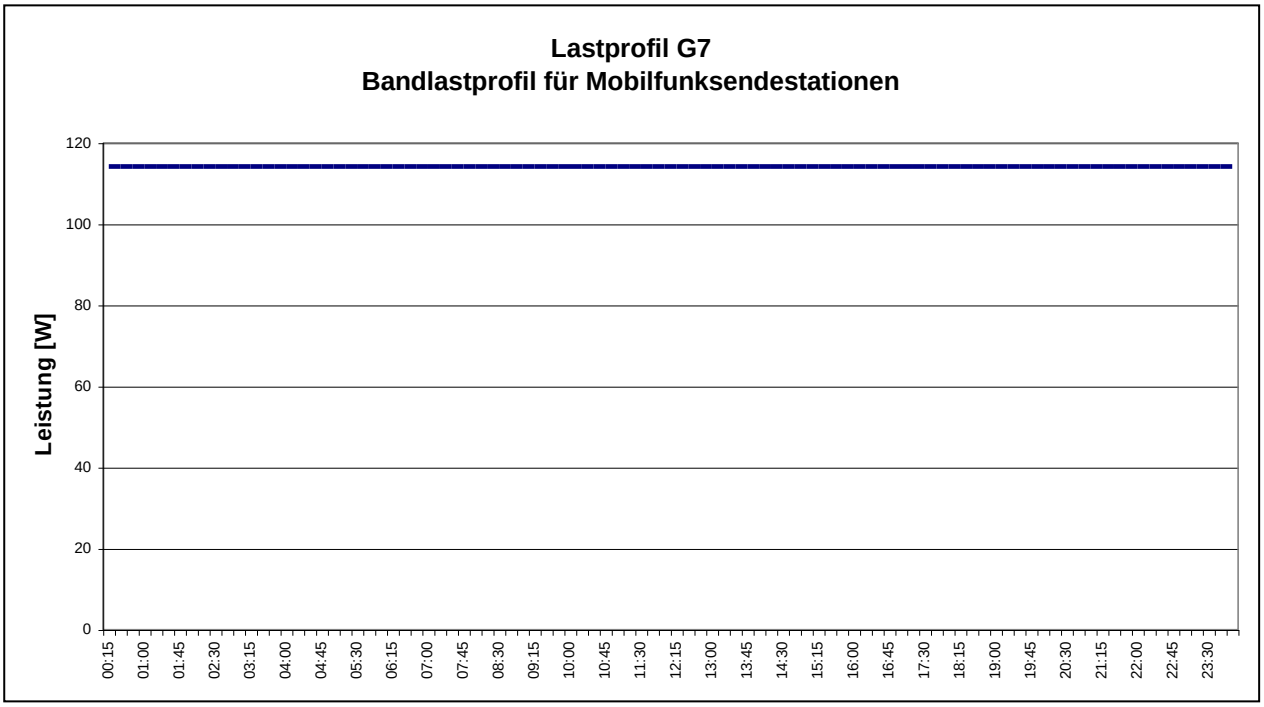

Figure 11: G7 load profile for mobile communications transmitters

Note:

The 15-minute mean loads of the load profiles shown here are listed in the annex.

3.8 Public lighting systems

3.8.1 Procedure for dealing with public lighting systems

For public lighting systems that already have metering equipment before switching suppliers, no changes in meter reading need to be made in the course of a switch. Agreements on the metering of existing systems are not amended by section 3.8.1.

3.8.1.1 Public lighting systems with load profiles

Section 18(2) Electricity Act 1998/2000 and section 17(2) Electricity Act 2010 provide that SLPs be drawn up for public lighting systems with a connected capacity of less than 50 kW or an annual consumption of less than 100,000 kWh. The connected capacity of these systems is the total ca-

pacity of all connected lamps of a customer (e.g. of a district), regardless of the number of actual connection points to the distribution system. Annual consumption is determined on the basis of an estimated flat rate or by using any metering equipment available.

A distinction is made between the following cases:

- For public lighting systems with no metering equipment, annual consumption must be determined on a flat-rate basis, as in the past. If a facility switches suppliers, it is always assigned the B1 standard load profile for public lighting.
- For public lighting systems that have metering equipment, an annual consumption figure has to be determined, as in the past. If a facility switches suppliers, it is always assigned the B1 standard load profile for public lighting.

In individual cases, instead of assigning the standard load profile the system operator may

- draw up a plausible load profile based on the known on/off times of the facility.
- install one load meter to record typical consumption. The load recorded by the load meter is extrapolated to the whole facility. For system users neither the installation nor the operation of the load meter may incur additional costs compared to their situation before switching suppliers.

The system operator shall ensure that, whatever type of load profile assignment or determination is used, the necessary data are sent to the supplier within the periods specified in chapter 10 of the Electricity Market Code.

3.8.1.2 Public lighting systems without standard load profiles

For public lighting systems whose consumption was determined on a flat-rate basis in the past and that have a total connected capacity of more than 50 kW and an annual consumption of more than 100,000 kWh, the system operator may, in the course of supplier switching, install one load meter to record typical consumption in due time before the actual switch takes place. The loads recorded by the load meter are then scaled up for the whole facility and submitted monthly to the supplier in accordance with chapter 10 of the Electricity Market Code.
The system operator may, by agreement with the new supplier, also use one of the procedures in section 3.8.1.1 for these types of facility.

3.8.2 Standard load profile for public lighting (B1)

For simplicity's sake, this load profile assumes that the load of the lighting system is constant throughout the time it is switched on. Possible partial switching off during night-time hours has not been taken into account.

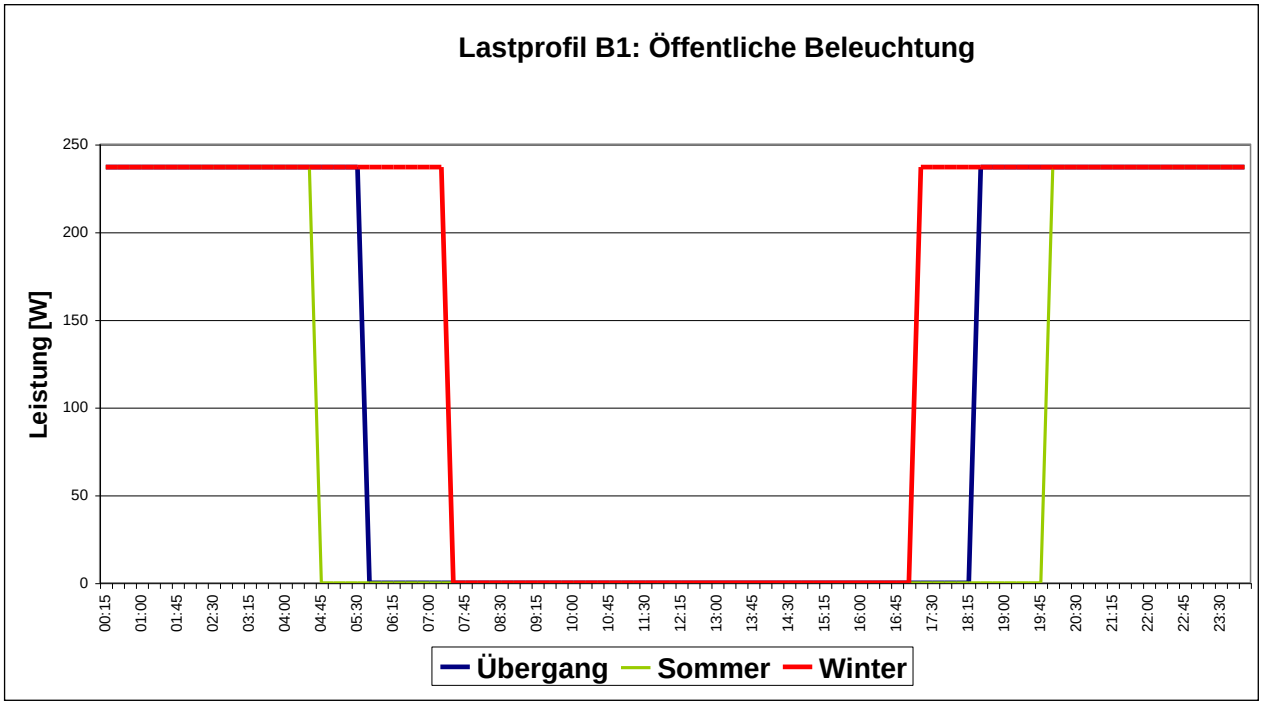

Figure 10: B1 load profile

Note:

The 15-minute mean loads of the load profiles shown here are listed in the annex.

4. Load meters

At each metering point of a system user with an annual withdrawal/injection of over 100,000 kWh and a connected capacity of over 50 kW, the system operator must install a load meter (i.e. a quarter-hourly maximum meter).

If these thresholds are not reached during three years in a row, system users may request that load metering be stopped and they again be assigned standard load profiles.

5. Transmission of meter readings

Data exchange must comply with the state of the art, must be encrypted and secured, and the data must lend itself to automated processing. All data exchange systems[1] must be fully compatible with those already in place, i.e. they must enable easy exchange of data between the market participants.

6. Format

For the transmission of system users' meter readings by system operators to balance responsible parties and suppliers, and the transmission of aggregated readings to the respective imbalance settlement responsible, generally the MSCONS file format is used (UN/EDIFACT D.99A) in the version of VDEW specification 1.5a, as described in the VDEW publication *Nachrichtentyp zur Übermittlung von Zählwerten MSCONS* (File types for MSCONS metering data transmission, VDEW M-08/2001).

6.1 Basic principles of EDIFACT/MSCONS

In principle, all segments specified in the VDEW document must be accepted by a receiving EDIFACT/MSCONS converter without creating error messages. However, only the segments defined in the segment descriptions below must be interpreted; the content of other segments specified by MSCONS/EDIFACT can be disregarded.

All segments described in the following are mandatory fields, i.e. they must be included in a message in every case, unless it is explicitly stated that they can be omitted.

The market players in the MSCONS messages described below are assigned a unique identifier issued and published by the ISR (SO, supplier or BRP number), hereafter called EC number.

[1] For instance, the following data exchange systems may be used (as of 30 June 2015): EDA (standardised data exchange in the Austrian energy sector), ENERGYlink / Self Storage. There are service providers that offer full and compatible interfaces and links with these platforms.

6.1.1 Admissible extensions

Conventions for file names and extensions:

To make sure files are handled correctly in the EDI gateway, only the following filename extensions may be used:

*.edi EDIFACT files (including MSCONS)

*.txt EDIFACT files (including MSCONS)

Any files with other extensions are deleted.

Feedback from ISR:

Upon receiving a dataset, the ISR responds with a message to the e-mail address for data exchange that is saved in the system.

6.1.2 Control messages

At the moment, MSCONS messages are sent when triggered by the sender, no control messages are used (REQDOC, APERAK, CONTROL). Acknowledgements (DATA_QUIT) are not coded in EDIFACT.

6.1.3 Segment separation

It is recommended to extend the segment separator " ' " with <CRLF>, to enhance the readability of MSCONS files. These <CRLF> are to be skipped by the receiving converter.

According to the EDIFACT standard, the separators can be redefined by sending an optional UNA segment for individual files. Use of this segment with non-standard separators is not permissible in Austria.

6.1.4 Segment repetitions

The EDIFACT standard defines a maximum number of repetitions for each segment. For example, segment 5 (which defines the feed-in or off-take location) can be repeated 99,999 times. The number of permissible repetitions is restricted as follows:

- Segment 5 (feed-in/off-take location): 10 when transmitting monthly aggregates, which means the file size is limited to approximately 2.5 MB. For individual values, the number of repetitions is limited to 10,000.
- Segment 10 (quantity data with time stamp): 3,000, which allows for transmission of the 15-minute values of one month.

6.1.5 Treatment of summer time

Summer time is characterised by the condition that for the period from 2:00 hrs on the last Sunday in March to 2:00 hrs on the last Sunday in October local time is advanced by one hour from normal time; this means that on clock change day in spring one hour is lost and on clock change day in autumn one extra hour is added. For the time stamp in MSCONS, the EDIFACT date format 303 is used, which shows the date and time and also allows an offset to be indicated. The basis taken for the time change, however, is not CET (Central European Time), as normally used in Austria, but UTC (Universal Time Coordinated). This produces an offset from CET to UTC in winter of +1 and in summer of +2.
In principle, therefore, time series can be transmitted in MSCONS in any time zone. The following three options are accepted in Austria:

1. Transmission in UTC
   Example of clock change winter -> summer (one hour lost):

Local time	UTC	Shown in date format 303
31/03/2002	01:30	31/03/2002 00:30 200203310030+00
31/03/2002	01:45	31/03/2002 00:45 200203310045+00
31/03/2002	03:00	31/03/2002 01:00 200203310100+00
31/03/2002	03:15	31/03/2002 01:15 200203310115+00
31/03/2002	03:30	31/03/2002 01:30 200203310130+00

   Example of clock change summer -> winter (one hour gained):

Local time	UTC	Shown in date format 303
27/10/2002	01:30	26/10/2002 23:30 200210260030+00
27/10/2002	01:45	26/10/2002 23:45 200210260045+00
27/10/2002	2A:00	27/10/2002 00:00 200210270000+00
27/10/2002	2A:15	27/10/2002 00:15 200210270015+00
27/10/2002	2A:30	27/10/2002 00:30 200210270030+00
27/10/2002	2A:45	27/10/2002 00:45 200210270045+00
27/10/2002	2B:00	27/10/2002 01:00 200210270100+00
27/10/2002	2B:15	27/10/2002 01:15 200210270115+00
27/10/2002	2B:30	27/10/2002 01:30 200210270130+00
27/10/2002	2B:45	27/10/2002 01:45 200210270145+00

27/10/2002	03:00	27/10/2002	02:00	200210270200+00
27/10/2002	03:15	27/10/2002	02:15	200210270215+00
27/10/2002	03:30	27/10/2002	02:30	200210270230+00

2. Transmission in normal time (winter time)

   Example of clock change winter -> summer (one hour lost):

Local time	UTC	Shown in date format 303		
31/03/2002	01:30	31/03/2002	00:30	200203310130+01
31/03/2002	01:45	31/03/2002	00:45	200203310145+01
31/03/2002	03:00	31/03/2002	01:00	200203310200+01
31/03/2002	03:15	31/03/2002	01:15	200203310215+01
31/03/2002	03:30	31/03/2002	01:30	200203310230+01

   Example of clock change summer -> winter (one hour gained):

Local time	UTC	Shown in date format 303		
27/10/2002	01:30	26/10/2002	23:30	200210270030+01
27/10/2002	01:45	26/10/2002	23:45	200210270045+01
27/10/2002	2A:00	27/10/2002	00:00	200210270100+01
27/10/2002	2A:15	27/10/2002	00:15	200210270115+01
27/10/2002	2A:30	27/10/2002	00:30	200210270130+01
27/10/2002	2A:45	27/10/2002	00:45	200210270145+01
27/10/2002	2B:00	27/10/2002	01:00	200210270200+01
27/10/2002	2B:15	27/10/2002	01:15	200210270215+01
27/10/2002	2B:30	27/10/2002	01:30	200210270230+01
27/10/2002	2B:45	27/10/2002	01:45	200210270245+01
27/10/2002	03:00	27/10/2002	02:00	200210270300+01
27/10/2002	03:15	27/10/2002	02:15	200210270315+01
27/10/2002	03:30	27/10/2002	02:30	200210270330+01

3. Transmission in local time

   Example of clock change winter -> summer (one hour lost):

Local time	UTC	Shown in date format 303
31/03/2002	01:30	31/03/2002 00:30 200203310130+01
31/03/2002	01:45	31/03/2002 00:45 200203310145+01
31/03/2002	03:00	31/03/2002 01:00 200203310300+02
31/03/2002	03:15	31/03/2002 01:15 200203310315+02
31/03/2002	03:30	31/03/2002 01:30 200203310330+02

   Example of clock change summer -> winter (one hour gained):

Local time	UTC	Shown in date format 303
27/10/2002	01:30	26/10/2002 23:30 200210270130+02
27/10/2002	01:45	26/10/2002 23:45 200210270145+02
27/10/2002	2A:00	27/10/2002 00:00 200210270200+02
27/10/2002	2A:15	27/10/2002 00:15 200210270215+02
27/10/2002	2A:30	27/10/2002 00:30 200210270230+02
27/10/2002	2A:45	27/10/2002 00:45 200210270245+02
27/10/2002	2B:00	27/10/2002 01:00 200210270200+01
27/10/2002	2B:15	27/10/2002 01:15 200210270215+01
27/10/2002	2B:30	27/10/2002 01:30 200210270230+01
27/10/2002	2B:45	27/10/2002 01:45 200210270245+01
27/10/2002	03:00	27/10/2002 02:00 200210270300+01
27/10/2002	03:15	27/10/2002 02:15 200210270315+01
27/10/2002	03:30	27/10/2002 02:30 200210270330+01

Please note: as the "+" sign is used in the date format and is also used as an EDIFACT separator, in the MSCONS file the plus sign must always be preceded by a "?" (escape character).

6.1.6 Digits after decimal point

In a QTY segment the number of digits after the decimal point must not exceed 5 in any message.

6.1.7 Convention for segment documentation

SEGMENT	**Description of segment**		
Data element group: Data element	Type[2]	Description of data element	*Text in italics contains a more detailed description of the content of the data element.*
Data element group: Data element	Type	Description of data element	Text that is not in italics means the data element always has the given value.
Data element	Type	Description of data element	
Example of segment			

6.1.8 Identification of meter data types

Individual meter data types, such as active energy withdrawal, active energy supply etc., are identified in the PIA segment of MSCONS messages by the OBIS identifiers.
The OBIS (Object Identification System) identifiers are an international standard and are published in IEC 62056-61. The OBIS code replaces the previous EDIS (Energy Data Identification System) code and is identical in structure to EDIS.
An OBIS identifier has the following structure:

Medium M	**-**	**Channel KK**	**:**	**Direction GG**	**.**	**Type of value AA**	**.**	**Tariff T**	*****	**Sign VV**

The identifiers are defined as follows:

M: 1 (electric energy)

KK: 1 for transmission of aggregate data to ISR, BRP and/or suppliers, as well as transmission of individual data of system users

GG: 1 (active supply to customer, negative balancing energy)
2 (active supply by customer, positive balancing energy)

AA: 9 (energy value)

[2] e.g. an..35 means alphanumerical with a maximum of 35 characters, n3 means numerical with exactly 3 digits (including decimal point)

T: 0 (total over all tariffs)
1 (off-peak tariff summer)
2 (peak tariff summer)
3 (off-peak tariff winter)
4 (peak tariff winter)
5 (summer)
6 (winter)
7 (off-peak tariff year-round)
8 (peak tariff year-round)

VV: 1 (annual consumption value, omitted in the case of actual values)

For loads, "P.01" has to be added after the actual OBIS identifier.
For balancing energy, the actual OBIS identifier must be followed by

R.01 for primary control
R.02 for secondary control
R.03 for tertiary control

When submitting data in connection with the procurement and organisational handling of energy to cover system losses, distinction must be made between actual values, long-term forecasts and the short-term forecasts which are sent daily. For submission of the long-term forecasts of grid losses by the system operator in MSCONS format, "P.02" must be added after the actual OBIS identifier. For short-term forecasts of grid losses, "P.03" must be added after the actual OBIS identifier.

This results in the following permissible OBIS identifiers:

1. Time series of a load meter
   1-1:1.9.0 P.01 Loads for 15-minute active energy values, supply to end customer
   1-1:2.9.0 P.01 Loads for 15-minute active energy values, supply by end customer
2. Individual values over all tariffs
   1-1:1.9.0 Energy value for reading period, supply to end customer
   1-1:2.9.0 Energy value for reading period, supply by end customer; always combined with
   1-1:1.9.0*1 Annual consumption figure for aggregated clearing values, supply to end customer

1-1:2.9.0*1 Annual consumption figure for aggregated clearing values, supply by end customer

NOTE: The tariff indicated here is '0' because the annual consumption value must be non tariff-related.

3. Individual values for different tariff periods (PT = peak tariff, OT = off-peak tariff)

1-1:1.9.1 Energy value for reading period OT summer, supply to end customer
1-1:2.9.1 Energy value for reading period OT summer, supply by end customer
1-1:1.9.2 Energy value for reading period PT summer, supply to end customer
1-1:2.9.2 Energy value for reading period PT summer, supply by end customer
1-1:1.9.3 Energy value for reading period OT winter, supply to end customer
1-1:2.9.3 Energy value for reading period OT winter, supply by end customer
1-1:1.9.4 Energy value for reading period PT winter, supply to end customer
1-1:2.9.4 Energy value for reading period PT winter, supply by end customer
1-1:1.9.5 Energy value for reading period summer, supply to end customer
1-1:2.9.5 Energy value for reading period summer, supply by end customer
1-1:1.9.6 Energy value for reading period winter, supply to end customer
1-1:2.9.6 Energy value for reading period winter, supply by end customer
1-1:1.9.7 Energy value for reading period OT all-year, supply to end customer
1-1:2.9.7 Energy value for reading period OT all-year, supply by end customer
1-1:1.9.8 Energy value for reading period PT all-year, supply to end customer
1-1:2.9.8 Energy value for reading period PT all-year, supply by end customer; always combined with
1-1:1.9.0*1 Annual consumption figure for aggregated clearing values, supply to end customer
1-1:2.9.0*1 Annual consumption figure for aggregated clearing values, supply by end customer

NOTE: The tariff indicated here is '0' because the annual consumption value must be non tariff-related.

Other tariff numbers, e.g. more complex times of use, may be agreed bilaterally between the grid operator and supplier.

4. Time series for grid loss forecasts

1-1:1.9.0 P.02 15-minute long-term forecast of grid losses, supply to losses BG
1-1:2.9.0 P.02 15-minute long-term forecast of grid losses, supply by losses BG
1-1:1.9.0 P.03 15-minute short-term forecast of grid losses, supply to losses BG
1-1:2.9.0 P.03 15-minute short-term forecast of grid losses, supply by losses BG

5. Time series for balancing energy

CAO to balancing service provider

1-1:1.9.0 R.02 Aggregated negative secondary balancing energy

1-1:1.9.0 R.03 Aggregated negative tertiary balancing energy

1-1:2.9.0 R.02 Aggregated positive secondary balancing energy

1-1:2.9.0 R.03 Aggregated positive tertiary balancing energy

Balancing service provider to DSO

1-1:1.9.0 R.02 Aggregated values per metering point for negative secondary balancing energy that qualifies for compensation in accordance with the *System-nutzungsentgelte-Verordnung* (Electricity System Charges Ordinance)

1-1:1.9.0 R.03 Aggregated values per metering point for negative tertiary balancing energy that qualifies for compensation in accordance with the Electricity System Charges Ordinance

DSO to CAO

1-1:1.9.0 R.02 Aggregated values for negative secondary balancing energy that qualifies for compensation in accordance with the Electricity System Charges Ordinance

1-1:1.9.0 R.03 Aggregated values for negative tertiary balancing energy that qualifies for compensation in accordance with the Electricity System Charges Ordinance

Balancing service provider to control area operator

1-1:1.9.0 R.02 Aggregated values for negative secondary balancing energy that does not qualify for compensation in accordance with the Electricity System Charges Ordinance

1-1:1.9.0 R.03 Aggregated values for negative tertiary balancing energy that does not qualify for compensation in accordance with the Electricity System Charges Ordinance

Please note: As the OBIS identifier contains the EDIFACT separator ":", it must be escaped in the MSCONS message with "?".

6.1.9 ZZZ values in the QTY segment

The "ZZZ value" is defined in the VDEW specification 1.5a as "Value not available". This qualifier may only be used if the actual or aggregated value (46 or 79) or a dummy value (99) is not available and the value **is not present**.
If a "ZZZ value" is used, either the actual value or a dummy value must be submitted within 10 working days.

6.2 Aggregated loads

These messages must be received by the ISR, the suppliers and the balance responsible parties at the latest in the month after the end of the billing period (currently monthly) for the first clearing, and 14 months after the end of the billing period for the second clearing within the period set in the Market Rules. The data content corresponds to the aggregates per balance group, aggregates per supplier and time series of grid interconnection points specified in chapter 10 *Informationsübermittlung von Netzbetreibern an andere Marktteilnehmer – Grundsätze des 1. und 2. Clearings* (Information exchange between system operators and other market players; 1st and 2nd clearing).
Generally, parts of the time series can also be transmitted immediately when they become available; where there are time overlaps, the newer data overwrites the older data.
Aggregated load data are always transmitted in MSCONS.

The structure of the data files for the first and second clearing is identical, so it is only described once below. The content is determined by the processes for the first and second clearings according to the applicable Market Rules and the general terms and conditions of the imbalance settlement responsible (GCA ISR).

6.2.1 MSCONS segment description

UNB	**Opens and identifies the transmitted file**		
S001:0001	a4	Identification of syntax	UNOC
S001:0002	n1	Syntax version number	3
S002:0004	an..35	Sender ID	*EC number, including country code*
S002:0007	an..4	Qualifier	ZZ
S003:0010	an..35	Recipient ID	*EC number, including country code*
S003:0007	an..4	Qualifier	ZZ
S004:0017	n6	Issuing date	*Issuing date, written as YYMMDD*
S004:0019	n4	Issuing time	*Issuing time, written as HHMM*
0020	an..14	File ref	*Unique reference to file, issued by the sender*
UNB+UNOC:3+AT008000:ZZ+AT009999:ZZ+000328:1800+00000010’			

UNH	**Message header**		
0062	an..14	Message ref	*Unique reference to message, issued by the sender*
S009:0065	an..6	Message type identifier	MSCONS
S009:0052	an..3	Message type version number	D
S009:0054	an..3	Message type clearance number	99A
S009:0051	an..2	Administrating body	UN
S009:0057	an..6	Competent authority application code	AT0201 *(Version of the Austrian MSCONS application description; if the field is left empty, version AT0101 is assumed)*
UNH+00000001+MSCONS:D:99A:UN:AT0201’			

BGM	**Start of message**		
C002:1001	an..3	Name of document/message, coded	7 *(= process data report)*
C002:1131	an..3	Code list, qualifier	*empty*
C002:3055	an..3	Body responsible for code administration	5
C106:1004	an..35	Number of document/message	*EDI message ID, issued by the sender; this is a unique identifier for a sender's messages*
1225	an..3	Purpose of message, coded	9 *(= original)*
BGM+7::5+STE4711+9'			

DTM	**Date/time/period**		
C507:2005	an..3	Date/time/period, qualifier	137 *(= document/message/date/time)*
C507:2380	an..35	Date/time/period	*Document date, written as YYYYMMDDHHmm. This serves to determine which message is most recent. More recent messages overwrite older messages that refer to the same data point and time stamp.*
C507:2379	an..3	Date/time/period, format qualifier	203
DTM+137:200003280000:203'			

NAD	**Name and address** ("from whom?")		
3035	an..3	Participant, qualifier	MS *(= sender of message)*
C082:3039	an..35	Participant ID	*Sender's EC number, including country code*
C082:1131	an..3	Code list, qualifier	*empty*
C082:3055	an..3	Body responsible for code administration, coded	60 *(= national organisation)*
NAD+MS+AT008000::60'			

NAD	**Name and address** ("whom to?")		
3035	an..3	Participant, qualifier	MR *(= recipient of message)*
C082:3039	an..35	Participant ID	*Recipient's EC number, including country code*
C082:1131	an..3	Code list, qualifier	*empty*
C082:3055	an..3	Body responsible for code administration, coded	60 *(= national organisation)*
NAD+MR+AT009999::60'			

UNS	**Section control**		
0081	a1	Section ID, coded	D *(= header / position separator)*
UNS+D'			

NAD	**Name and address** ("for whom?")		
3035	an..3	Participant, qualifier	DP *(= delivery address)*
C082:3029		Participant ID	*EC number of the BRP or supplier whose aggregate it is; if the message contains an interconnection point's time series, the segment indicates the EC number of the receiving grid's operator.*
C082:1131	an..3	Code list, qualifier	*empty*
C082:3055	an..3	Body responsible for code administration, coded	60 *(= national organisation)*
NAD+DP+AT008001::60'			

LOC	**Location**		
3227	an..3	Location, qualifier	172 *(= withdrawal point)*
C517:3225	an..25	Location ID	*empty*
C517:1131	an..3	Code list, qualifier	*empty*
C517:3055	an..3	Body responsible for code administration, coded	87 *(= assigned by the system operator, ISR)*
C517:3224	an..3	Location	*Data point ID assigned and communicated by the ISR. The format is the same as for metering point reference numbers in accordance with TOR Part F "Zählwerterfassung und Zählwertübertragung" (Metering data acquisition and transmission), section 4.1*
LOC+172+::87:AT009999000000000000000000000069'			

DTM	**Date/time/period** (entire period covered by message)		
C507:2005	an..3	Date/time/period, qualifier	163 *(= date and time of process start)*
C507:2380	an..35	Date/time/period	*Time stamp for start of first quantity, written as YYYYMMDDHHmmZZZZ (incl. UTC offset)*
C507:2379	an..3	Date/time/period, format qualifier	303
DTM+163:200003271200?+01:303’			

DTM	**Date/time/period** (entire period covered by message)		
C507:2005	an..3	Date/time/period, qualifier	164 *(= date and time of process end)*
C507:2380	an..35	Date/time/period	*Time stamp for end of last quantity, written as YYYYMMDDHHmmZZZZ (incl. UTC offset)*
C507:2379	an..3	Date/time/period, format qualifier	303
DTM+164:200003271215?+01:303’			

LIN	**Position data**		
1082	n..6	Position number	1 *(no positions within LOC)*
LIN+1’			

PIA	**Additional product information** *(not needed for aggregates in APG control area)*		
4347		Product ID, qualifier	5 *(= product ID)*
C212:7140	an..35	Product / service number	*The OBIS code used here is defined and communicated by the ISR:* *APG control area: Flow direction defined by component:* 1-1:1.9.0 P.01 1-1:2.9.0 P.01 *VKW and TIWAG control areas: Supply and withdrawal differentiated from system operator's point of view (supplier edifact):* 1-1:1.9.0 P.01 *Active supply to customer* 1-1:2.9.0 P.01 *Active supply by customer* where the customer is the supplier/BRP or neighbouring system
C212:7143	an..3	Product / service ID, type, coded	MP (= product ID)
C212:1131	an..3	Code list, qualifier	*empty*
C212:3055	an..3	Body responsible for code administration, coded	174 *(= DIN)*
PIA+5+1-1?:1.9.0 P.01:MP::174'			

QTY	**Quantity**		
C186:6063	an..3	Quantity, qualifier	46 *(= quantity supplied) or* 79 (= aggregate value; interpreted as valid value like 46) *or* 99 *(= estimated dummy load value; interpreted as valid value like 46) or* ZZZ[3] (= value not available) *Generally, the quantities are primary values, i.e. any conversion constants and other factors are already taken into account even if transmitted in a CCI segment.*
C186:6060	n..15	Quantity	*Quantity*
C186:6411	an..3	Unit, qualifier	KWH *(= energy in kilowatt hours) or* KWT *(= average load in kilowatt)*[4]
QTY+46:12345.00000:KWH'			

DTM	**Date/time/period** (quantity reference period)		
C507:2005	an..3	Date/time/period, qualifier	163 *(= date and time of process start)*
C507:2380	an..35	Date/time/period	*Time stamp for start of first quantity, written as YYYYMMDDHHmmZZZZ (incl. UTC offset)*
C507:2379	an..3	Date/time/period, format qualifier	303
DTM+163:200003271200?+01:303’			

[3] Cf. section

[4] Giving average load conflicts with OBIS in any PIA segment and should be avoided. Specifying quantities in kW is not completely excluded for reasons of compatibility.

DTM	**Date/time/period** (quantity reference period)		
C507:2005	an..3	Date/time/period, qualifier	164 *(= date and time of process end)*
C507:2380	an..35	Date/time/period	*Time stamp for end of last quantity, written as YYYYMMDDHHmmZZZZ (incl. UTC offset)*
C507:2379	an..3	Date/time/period, format qualifier	303
DTM+164:200003271215?+01:303’			

UNT	**Message trailer**		
0074	n..6	Number of segments in a message	
0062	an..14	Message reference	*Repetition of message reference given in UNH segment*
UNT+46+00000001’			

UNZ	**Interchange trailer**		
0036	n..6	Interchange counter	*Number of messages in the file*
0020	an..14	File ref	*Repetition of message reference given in UNB segment*
UNZ+1+00000010’			

6.2.2 Example

Clearing aggregate to CSA

```
UNB+UNOC:3+AT008000:ZZ+AT009999:ZZ+010312:0927+0000000080'
UNH+0000000001+MSCONS:D:99A:UN:AT0201'
BGM+7::5+STE0000000080+9'
DTM+137:200103120000:203'
NAD+MS+AT008000::60'
NAD+MR+AT009999::60'
UNS+D'
NAD+DP+AT003001::60'
LOC+172+::87:AT00999900000000000000000000000250'
DTM+163:200102010000?+01:303'
DTM+164:200102010100?+01:303'
```

```
LIN+1'
PIA+5+1-1?:1.9.0 P.01
QTY+46:00000001234.000:KWT'
DTM+163:200102010000?+01:303'
DTM+164:200102010015?+01:303'
QTY+46:00000001256.000:KWT'
DTM+163:200102010015?+01:303'
DTM+164:200102010030?+01:303'
QTY+46:00000001359.000:KWT'
DTM+163:200102010030?+01:303'
DTM+164:200102010045?+01:303'
QTY+46:00000001578.000:KWT'
DTM+163:200102010045?+01:303'
DTM+164:200102010100?+01:303'
UNT+00000025+0000000001'
UNZ+1+0000000080'
```

6.3 Individual readings

The grid operator sends these messages to the balance responsible party and supplier to submit their customers' consumption as recorded (consumption data, annual consumption data and loads). In connection with the procurement of energy for grid losses, the system operator also submits forecasts to the BRP of the special grid loss balance group.

These messages are coded in MSCONS. Section 6.3.1 describes the individual segments, section 6.3.2 gives a number of examples.

The OBIS identifier is used to distinguish between individual data types (consumption data, previous year's consumption, loads, forecasts in connection with grid losses). Section 6.1.8 gives the OBIS identifiers accepted in Austria. When submitting individual readings, the annual consumption value must always (i.e. including with any interim readings) be included, together with the date when the grid operator started using it to create the supplier and balance group aggregates.

For customer facilities in which a dual or multiple-tariff meter is installed and for which the customer pays a metering charge corresponding to such meter configuration, the system operator must also send the supplier the readings recorded for the individual tariff periods.

These values are only used for the supplier's billing to the end customer. Loads must in any case be transmitted without specifying the time of use; separation into peak and off-peak loads is not permitted. To calculate the annual consumption for the clearing aggregate, only the total energy

quantity may be used, because scaling synthetic load profiles makes sense only for a single annual value.

Transmission of maximum values and meter readings for reactive energy is currently not performed, therefore no OBIS identifiers are provided for this type of meter readings.

6.3.1 MSCONS segment description

UNB	**Opens and identifies the transmitted file**		
S001:0001	a4	Identification of syntax	UNOC
S001:0002	n1	Syntax version number	3
S002:0004	an..35	Sender ID	*EC number, including country code*
S002:0007	an..4	Qualifier	ZZ
S003:0010	an..35	Recipient ID	*EC number, including country code*
S003:0007	an..4	Qualifier	ZZ
S004:0017	n6	Issuing date	*Issuing date, written as YYMMDD*
S004:0019	n4	Issuing time	*Issuing time, written as HHMM*
0020	an..14	File ref	*Unique reference to file, issued by the sender*
UNB+UNOC:3+AT008000:ZZ+AT771100:ZZ+000328:1800+00000010’			

UNH	**Message header**		
0062	an..14	Message reference	*Unique reference to message, issued by the sender*
S009:0065	an..6	Message type identifier	MSCONS
S009:0052	an..3	Message type version number	D
S009:0054	an..3	Message type clearance number	99A
S009:0057	an..6	Competent authority application code	AT0201 *(Version of the Austrian MSCONS application description; if the field is left empty, version AT0101 is assumed)*
S009:0051	an..2	Administrating body	UN
UNH+00000001+MSCONS:D:99A:UN:AT0201’			

BGM	**Start of message**		
C002:1001	an..3	Name of document/message, coded	7 *(= process data report)*
C002:1131	an..3	Code list, qualifier	*empty*
C002:3055	an..3	Body responsible for code administration	5
C106:1004	an..35	Number of document/message	*EDI message number, assigned by sender*
1225	an..3	Purpose of message, coded	9 *(= original)*
BGM+7::5+ZDA4711+9'			

DTM	**Date/time/period**		
C507:2005	an..3	Date/time/period, qualifier	137 *(= document/message/date/time)*
C507:2380	an..35	Date/time/period	*Document date, written as YYYYMMDDHHmm*
C507:2379	an..3	Date/time/period, format qualifier	203
DTM+137:200103120000:203'			

NAD	**Name and address**		
3035	an..3	Participant, qualifier	MS *(= sender of message)*
C082:3029	an..35	Participant ID	*Sender's EC number, including country code*
C082:1131	an..3	Code list, qualifier	*empty*
C082:3055	an..3	Body responsible for code administration, coded	60 *(= national organisation)*
NAD+MS+AT008000::60'			

NAD	**Name and address**		
3035	an..3	Participant, qualifier	MR *(= recipient of message)*
C082:3039	an..35	Participant ID	*Recipient's EC number, including country code*
C082:1131	an..3	Code list, qualifier	*empty*
C082:3055	an..3	Body responsible for code administration, coded	60 *(= national organisation)*
NAD+MR+AT771100::60'			

UNS	**Section control**		
0081	a1	Section ID, coded	D *(= header / position separator)*
UNS+D'			

NAD	**Name and address**		
3035	an..3	Participant, qualifier	DP *(= delivery address)*
C082:3039	an..35	Participant ID	*EC number of supplier that is assigned the metering point in LOC*
C082:1131	an..3	Code list, qualifier	*empty*
C082:3055	an..3	Body responsible for code administration, coded	60 *(= national organisation)*
NAD+DP+AT008000::60'			

LOC	**Location**		
3227	an..3	Location, qualifier	172 *(= withdrawal point)*
C517:3225	an..25	Location ID	*empty*
C517:1131	an..3	Code list, qualifier	*empty*
C517:3055	an..3	Body responsible for code administration, coded	87 *(= assigned by the system operator, ISR)*
C517:3224	an..70	Location	*Metering point reference number in accordance with TOR Part F "Zählwerterfassung und Zählwertübertragung" (Metering data acquisition and transmission), section 2.2*
LOC+172+::87:AT00800000000000000000000019AX22'			

DTM	**Date/time/period** (entire period covered by message)		
C507:2005	an..3	Date/time/period, qualifier	163 *(= date and time of process start)*
C507:2380	an..35	Date/time/period	*Time stamp for start of first quantity, written as YYYYMMDDHHmmZZZZ (incl. UTC offset)*
C507:2379	an..3	Date/time/period, format qualifier	303
DTM+163:200003020000?+01:303'			

DTM	**Date/time/period** (entire period covered by message)		
C507:2005	an..3	Date/time/period, qualifier	164 *(= date and time of process end)*
C507:2380	an..35	Date/time/period	*Time stamp for end of last quantity, written as YYYYMMDDHHmmZZZZ (incl. UTC offset)*
C507:2379	an..3	Date/time/period, format qualifier	303
DTM+164:200103050000?+01:303’			

LIN	**Position data**		
1082	n..6	Position number	*Between 1 and number of values for one metering point such as the annual consumption figure, tariff quantities etc.*
LIN+1’			

PIA	**Additional production information**		
4347		Product ID, qualifier	5 *(= product ID)*
C212:7140	an..35	Product / service number	*OBIS identifier, s. descriptions in chapter 5.1.8*
C212:7143	an..3	Product / service ID, type, coded	MP *(= product ID)*
C212:1131	an..3	Code list, qualifier	*empty*
C212:3055	an..3	Body responsible for code administration, coded	174 *(= DIN)*
PIA+5+1-1?:1.9.0:MP::174’			*active supply to consumer*
PIA+5+1-1?:1.9.0*1:MP::174’			*annual active supply (s. DTM below)*
PIA+5+1-1?:2.9.0:MP::174’			*active supply from consumer*
PIA+5+1-1?:2.9.0*1:MP::174’			*annual active supply (s. DTM below)*
PIA+5+1-1?:1.9.0 P.01:MP::174’			*load profile for active supply to consumer*

QTY	**Quantity**		
C186:6063	an..3	Quantity, qualifier	46 *(= quantity supplied) or* 79 (= aggregate value; interpreted as valid value like 46) *or* 99 *(= estimated dummy value) or* ZZZ[5] (= value not available) *Generally, the quantities are primary values, i.e. any conversion constants and other factors are already taken into account even if transmitted in a CCI segment.*
C186:6060	n..15	Quantity	*Quantity*
C186:6411	an..3	Unit, qualifier	KWH *(= energy in kilowatt hours)*
QTY+46:12345.00000:KWH'			

DTM	**Date/time/period** (time from which the annual consumption figure applies. Only to be used if the PIA segment defines an annual consumption figure (*1))		
C507:2005	an..3	Date/time/period, qualifier	9 *(= date and time of process)*
C507:2380	an..35	Date/time/period	*Time stamp for start of quantity, written as YYYYMMDDHHmmZZZZ (incl. UTC offset)*
C507:2379	an..3	Date/time/period, format qualifier	303
DTM+163:200103050000?+02:303’			

UNT	**Message trailer**		
0074	n..6	Number of segments in a message	
0062	an..14	Message reference	*Repetition of message reference given in UNH segment*
UNT+46+00000001’			

UNZ	**Interchange trailer**		
0036	n..6	Interchange counter	*Number of messages in the file*

[5] Cf. section 6.1.9.

0020	a..14	File ref	*Repetition of message reference given in UNB segment*
UNZ+1+00000010’			

6.3.2 Examples

Annual reading, total over all tariffs, 1 metering point per MSCONS file

```
UNB+UNOC:3+AT008000:ZZ+AT007711:ZZ+010112:0927+0000000123'
UNH+0000000001+MSCONS:D:99A:UN:AT0201'
BGM+7::5+ZDA0000000123+9'
DTM+137:20010312:102'
NAD+MS+AT008000::60'
NAD+MR+AT007711::60'
UNS+D'
NAD+DP+AT007711::60’
LOC+172+::87:AT00800000000000000000000019AX22'
DTM+163:200003020000?+01:303'
DTM+164:200103050000?+01:303'
LIN+1'
PIA+5+1-1?:1.9.0:MP::174’
QTY+46:085552375:KWH'
LIN+2'
PIA+5+1-1?:1.9.0*1:MP::174’
QTY+46:085552375:KWH'
DTM+9:200104010000?+01:303'
LIN+3'
PIA+5+1-1?:2.9.0:MP::174’
QTY+46:105552375:KWH'
LIN+4'
PIA+5+1-1?:2.9.0*1:MP::174’
QTY+46:105552375:KWH'
DTM+9:200104010000?+01:303'
UNT+00000025+0000000001'
UNZ+1+0000000123'
```

Annual reading, total over all tariffs, 2 metering points per MSCONS file

```
UNB+UNOC:3+AT008000:ZZ+AT007711:ZZ+010112:0927+0000000123'
UNH+0000000001+MSCONS:D:99A:UN:AT0201'
BGM+7::5+ZDA0000000123+9'
DTM+137:20010312:102'
NAD+MS+AT008000::60'
NAD+MR+AT007711::60'
UNS+D'
NAD+DP+AT007711::60’
LOC+172+::87:AT00800000000000000000000019AX22'
DTM+163:200003020000?+01:303'
DTM+164:200103050000?+01:303'
LIN+1'
PIA+5+1-1?:1.9.0:MP::174’
QTY+46:085552375:KWH'
LIN+2'
PIA+5+1-1?:1.9.0*1:MP::174’
QTY+46:085552375:KWH'
DTM+9:200104010000?+01:303'
LIN+3'
PIA+5+1-1?:2.9.0:MP::174’
QTY+46:105552375:KWH'
LIN+4'
PIA+5+1-1?:2.9.0*1:MP::174’
QTY+46:105552375:KWH'
DTM+9:200104010000?+01:303'
NAD+DP+AT007711::60’
LOC+172+::87:AT00800000000000000000000019AX21'
DTM+163:200003020000?+01:303'
DTM+164:200103050000?+01:303'
LIN+1'
PIA+5+1-1?:1.9.0:MP::174’
QTY+46:08555237:KWH'
LIN+2'
PIA+5+1-1?:1.9.0*1:MP::174’
QTY+46:08555237:KWH'
DTM+9:200104010000?+01:303'
```

```
LIN+3'
PIA+5+1-1?:2.9.0:MP::174’
QTY+46:10555237:KWH'
LIN+4'
PIA+5+1-1?:2.9.0*1:MP::174’
QTY+46:10555237:KWH'
DTM+9:200104010000?+01:303'
UNT+00000041+0000000001'
UNZ+1+0000000123'
```

These examples demonstrate the submission of data for offtake and infeed. If no infeed data are available, the segments LIN+3,PIA,QTY LIN+4,PIA,QTY,DTM are omitted.

For the annual consumption value the date from which the new value applies must be included as a DTM segment.

Annual reading, 4-tariff meters

```
UNB+UNOC:3+AT008000:ZZ+AT007711:ZZ+010112:0927+0000000123'
UNH+0000000001+MSCONS:D:99A:UN:AT0201'
BGM+7::5+ZDA0000000123+9'
DTM+137:20010312:102'
NAD+MS+AT008000::60'
NAD+MR+AT007711::60'
UNS+D'
NAD+DP+AT007711::60’
LOC+172+::87:AT008000000000000000000000019AY01'
DTM+163:200003020000?+01:303'
DTM+164:200103050000?+01:303'
LIN+1'
PIA+5+1-1?:1.9.1:MP::174’
QTY+46:021388093:KWH'
LIN+2'
PIA+5+1-1?:1.9.2:MP::174’
QTY+46:021388093:KWH'
LIN+3'
PIA+5+1-1?:1.9.3:MP::174’
QTY+46:021388093:KWH'
```

```
LIN+4'
PIA+5+1-1?:1.9.4:MP::174’
QTY+46:021388093:KWH'
LIN+5'
PIA+5+1-1?:1.9.0*1:MP::174’
QTY+46:085552375:KWH'
DTM+9:200104010000?+01:303'
UNT+00000027+0000000001'
UNZ+1+0000000123'
```

For the annual consumption value the date from which the new value applies must be included as a DTM segment.

Example of a load profile

```
UNB+UNOC:3+AT008000:ZZ+AT007711:ZZ+010312:0927+0000000080'
UNH+0000000001+MSCONS:D:99A:UN:AT0201'
BGM+7::5+ZDA0000000080+9'
DTM+137:20010312:102'
NAD+MS+AT008000::60'
NAD+MR+AT007711::60'
UNS+D'
NAD+DP+AT007711::60’
LOC+172+::87:AT00800000000000000000000019AX20'
DTM+163:200102010000?+01:303'
DTM+164:200102010100?+01:303'
LIN+1'
PIA+5+1-1?:1.9.0 P.01:MP::174’
QTY+46:00000001234.000:KWT'
DTM+163:200102010000?+01:303'
DTM+164:200102010015?+01:303'
QTY+46:00000001256.000:KWT'
DTM+163:200102010015?+01:303'
DTM+164:200102010030?+01:303'
QTY+46:00000001359.000:KWT'
DTM+163:200102010030?+01:303'
DTM+164:200102010045?+01:303'
QTY+46:00000001578.000:KWT'
```

```
DTM+163:200102010045?+01:303'
DTM+164:200102010100?+01:303'
UNT+00000025+0000000001'
UNZ+1+0000000080'
```

7. Annex: 15-minute mean loads of standard load profiles

7.1 Load profiles for small feeders

	E 0	**E 1**
	year-round	year-round
	capacity	capacity
	[W]	[W]
00:15	114.2	0
00:30	114.2	0
00:45	114.2	0
01:00	114.2	0
01:15	114.2	0
01:30	114.2	0
01:45	114.2	0
02:00	114.2	0
02:15	114.2	0
02:30	114.2	0
02:45	114.2	0
03:00	114.2	0
03:15	114.2	0
03:30	114.2	0
03:45	114.2	0
04:00	114.2	0
04:15	114.2	0
04:30	114.2	0
04:45	114.2	0
05:00	114.2	0
05:15	114.2	0
05:30	114.2	0
05:45	114.2	0
06:00	114.2	0
06:15	114.2	0
06:30	114.2	0
06:45	114.2	0
07:00	114.2	0
07:15	114.2	228.4
07:30	114.2	228.4
07:45	114.2	228.4
08:00	114.2	228.4
08:15	114.2	228.4

08:30	114.2	228.4
08:45	114.2	228.4
09:00	114.2	228.4
09:15	114.2	228.4
09:30	114.2	228.4
09:45	114.2	228.4
10:00	114.2	228.4
10:15	114.2	228.4
10:30	114.2	228.4
10:45	114.2	228.4
11:00	114.2	228.4
11:15	114.2	228.4
11:30	114.2	228.4
11:45	114.2	228.4
12:00	114.2	228.4
12:15	114.2	228.4
12:30	114.2	228.4
12:45	114.2	228.4
13:00	114.2	228.4
13:15	114.2	228.4
13:30	114.2	228.4
13:45	114.2	228.4
14:00	114.2	228.4
14:15	114.2	228.4
14:30	114.2	228.4
14:45	114.2	228.4
15:00	114.2	228.4
15:15	114.2	228.4
15:30	114.2	228.4
15:45	114.2	228.4
16:00	114.2	228.4
16:15	114.2	228.4
16:30	114.2	228.4
16:45	114.2	228.4
17:00	114.2	228.4
17:15	114.2	228.4
17:30	114.2	228.4
17:45	114.2	228.4
18:00	114.2	228.4
18:15	114.2	228.4
18:30	114.2	228.4
18:45	114.2	228.4
19:00	114.2	228.4
19:15	114.2	0
19:30	114.2	0
19:45	114.2	0
20:00	114.2	0
20:15	114.2	0
20:30	114.2	0
20:45	114.2	0
21:00	114.2	0
21:15	114.2	0
21:30	114.2	0
21:45	114.2	0

22:00	114.2	0
22:15	114.2	0
22:30	114.2	0
22:45	114.2	0
23:00	114.2	0
23:15	114.2	0
23:30	114.2	0
23:45	114.2	0
00:00	114.2	0

7.2 Load profiles for interruptible supplies

7.2.1 Load profiles for hot water storage systems (ULA, ULB)

	ULA	**ULB**
	Hot water storage without daytime re-charging	**Hot water storage with daytime recharg-ing**
	year-round	year-round
	capacity	capacity
	[W]	[W]
00:15	618.5	449.5
00:30	618.5	449.5
00:45	618.5	449.5
01:00	618.5	449.5
01:15	568.5	449.5
01:30	518.5	415
01:45	468.5	375
02:00	418.5	336
02:15	368.5	295
02:30	318.5	255
02:45	268.5	215
03:00	218.5	175
03:15	168.5	135
03:30	118.5	95
03:45	68.5	55
04:00	18.5	15
04:15	0	0
04:30	0	0
04:45	0	0
05:00	0	0
05:15	0	0
05:30	0	0
05:45	0	0
06:00	0	0

06:15	0	0
06:30	0	0
06:45	0	0
07:00	0	0
07:15	0	0
07:30	0	0
07:45	0	0
08:00	0	0
08:15	0	0
08:30	0	0
08:45	0	0
09:00	0	0
09:15	0	0
09:30	0	0
09:45	0	0
10:00	0	0
10:15	0	0
10:30	0	0
10:45	0	0
11:00	0	0
11:15	0	0
11:30	0	0
11:45	0	0
12:00	0	0
12:15	0	0
12:30	0	0
12:45	0	0
13:00	0	0
13:15	0	171
13:30	0	171
13:45	0	171
14:00	0	171
14:15	0	171
14:30	0	171
14:45	0	171
15:00	0	171
15:15	0	171
15:30	0	171
15:45	0	171
16:00	0	171
16:15	0	171
16:30	0	171
16:45	0	171
17:00	0	171
17:15	0	0
17:30	0	0
17:45	0	0
18:00	0	0
18:15	0	0
18:30	0	0

18:45	0	0
19:00	0	0
19:15	0	0
19:30	0	0
19:45	0	0
20:00	0	0
20:15	0	0
20:30	0	0
20:45	0	0
21:00	0	0
21:15	0	0
21:30	0	0
21:45	0	0
22:00	0	0
22:15	618.5	449.5
22:30	618.5	449.5
22:45	618.5	449.5
23:00	618.5	449.5
23:15	618.5	449.5
23:30	618.5	449.5
23:45	618.5	449.5
00:00	618.5	449.5

7.2.2 Load profiles for night storage heaters (ULC, ULD)

	ULC			**ULD**		
	Night storage heater without day-time recharging			**Night storage heater with daytime recharging**		
	Summer capacity [W]	Spring and autumn capacity [W]	Winter capacity [W]	Summer capacity [W]	Spring and autumn capacity [W]	Winter capacity [W]
00:15	0	241	706.5	0	179.7	527.9
00:30	0	231	682.5	0	169.7	503.9
00:45	0	221	660.5	0	159.7	481.9
01:00	0	211	636.5	0	149.7	457.9
01:15	0	201	614.5	0	139.7	435.9
01:30	0	191	590.5	0	129.7	411.9
01:45	0	181	568.5	0	119.7	389.9
02:00	0	171	542.5	0	109.7	363.9
02:15	0	171	542.5	0	109.7	363.9
02:30	0	181	568.5	0	119.7	389.9
02:45	0	191	590.5	0	129.7	411.9
03:00	0	201	614.5	0	139.7	435.9
03:15	0	211	636.5	0	149.7	457.9
03:30	0	221	660.5	0	159.7	481.9
03:45	0	231	682.5	0	169.7	503.9

04:00	0	241	706.5	0	179.7	527.9
04:15	0	251	728.5	0	189.7	549.9
04:30	0	261	752.5	0	199.7	573.9
04:45	0	271	774.5	0	209.7	595.9
05:00	0	281	798.5	0	219.7	619.9
05:15	0	291	820.5	0	229.7	641.9
05:30	0	306	850.5	0	244.7	671.9
05:45	0	306	850.5	0	244.7	671.9
06:00	0	306	850.5	0	244.7	671.9
06:15	0	0	0	0	0	0
06:30	0	0	0	0	0	0
06:45	0	0	0	0	0	0
07:00	0	0	0	0	0	0
07:15	0	0	0	0	0	0
07:30	0	0	0	0	0	0
07:45	0	0	0	0	0	0
08:00	0	0	0	0	0	0
08:15	0	0	0	0	0	0
08:30	0	0	0	0	0	0
08:45	0	0	0	0	0	0
09:00	0	0	0	0	0	0
09:15	0	0	0	0	0	0
09:30	0	0	0	0	0	0
09:45	0	0	0	0	0	0
10:00	0	0	0	0	0	0
10:15	0	0	0	0	0	0
10:30	0	0	0	0	0	0
10:45	0	0	0	0	0	0
11:00	0	0	0	0	0	0
11:15	0	0	0	0	0	0
11:30	0	0	0	0	0	0
11:45	0	0	0	0	0	0
12:00	0	0	0	0	0	0
12:15	0	0	0	0	0	0
12:30	0	0	0	0	0	0
12:45	0	0	0	0	0	0
13:00	0	0	0	0	0	0
13:15	0	0	0	0	122.6	357.2
13:30	0	0	0	0	122.6	357.2
13:45	0	0	0	0	122.6	357.2
14:00	0	0	0	0	122.6	357.2
14:15	0	0	0	0	122.6	357.2
14:30	0	0	0	0	122.6	357.2
14:45	0	0	0	0	122.6	357.2
15:00	0	0	0	0	122.6	357.2
15:15	0	0	0	0	122.6	357.2
15:30	0	0	0	0	122.6	357.2
15:45	0	0	0	0	122.6	357.2
16:00	0	0	0	0	122.6	357.2
16:15	0	0	0	0	122.6	357.2

16:30	0	0	0	0	122.6	357.2
16:45	0	0	0	0	122.6	357.2
17:00	0	0	0	0	122.6	357.2
17:15	0	0	0	0	0	0
17:30	0	0	0	0	0	0
17:45	0	0	0	0	0	0
18:00	0	0	0	0	0	0
18:15	0	0	0	0	0	0
18:30	0	0	0	0	0	0
18:45	0	0	0	0	0	0
19:00	0	0	0	0	0	0
19:15	0	0	0	0	0	0
19:30	0	0	0	0	0	0
19:45	0	0	0	0	0	0
20:00	0	0	0	0	0	0
20:15	0	0	0	0	0	0
20:30	0	0	0	0	0	0
20:45	0	0	0	0	0	0
21:00	0	0	0	0	0	0
21:15	0	0	0	0	0	0
21:30	0	0	0	0	0	0
21:45	0	0	0	0	0	0
22:00	0	0	0	0	0	0
22:15	0	306	850.5	0	244.7	671.9
22:30	0	306	850.5	0	244.7	671.9
22:45	0	306	850.5	0	244.7	671.9
23:00	0	291	820.5	0	229.7	641.9
23:15	0	281	798.5	0	219.7	619.9
23:30	0	271	774.5	0	209.7	595.9
23:45	0	261	752.5	0	199.7	573.9
00:00	0	251	728.5	0	189.7	549.9

7.2.3 Load profiles for mixed facilities (ULE, ULF)

	ULE			**ULF**		
	Mixed system without daytime re-charging			**Mixed system with daytime recharg-ing**		
	Summer capacity [W]	Spring and autumn capacity [W]	Winter capacity [W]	Summer capacity [W]	Spring and autumn capacity [W]	Winter capacity [W]
00:15	183.5	180.9	662.8	133.4	134.9	494.9
00:30	183.5	173.4	640.3	133.4	127.4	472.4
00:45	183.5	165.9	619.7	133.4	119.9	451.8
01:00	183.5	158.4	597.2	133.4	112.4	429.3
01:15	168.7	150.9	576.5	133.4	104.8	408.7
01:30	153.8	143.3	554	123.1	97.3	386.2

01:45	139	135.8	533.4	111.3	89.8	365.5
02:00	124.2	128.3	509	99.7	82.3	341.2
02:15	109.3	128.3	509	87.5	82.3	341.2
02:30	94.5	135.8	533.4	75.7	89.8	365.5
02:45	79.7	143.3	554	63.8	97.3	386.2
03:00	64.8	150.9	576.5	51.9	104.8	408.7
03:15	50	158.4	597.2	40.1	112.4	429.3
03:30	35.2	165.9	619.7	28.2	119.9	451.8
03:45	20.3	173.4	640.3	16.3	127.4	472.4
04:00	5.5	180.9	662.8	4.5	134.9	494.9
04:15	0	188.4	683.5	0	142.4	515.5
04:30	0	195.9	706	0	149.9	538
04:45	0	203.4	726.6	0	157.4	558.7
05:00	0	210.9	749.1	0	164.9	581.2
05:15	0	218.4	769.8	0	172.4	601.8
05:30	0	229.7	797.9	0	183.6	629.9
05:45	0	229.7	797.9	0	183.6	629.9
06:00	0	229.7	797.9	0	183.6	629.9
06:15	0	0	0	0	0	0
06:30	0	0	0	0	0	0
06:45	0	0	0	0	0	0
07:00	0	0	0	0	0	0
07:15	0	0	0	0	0	0
07:30	0	0	0	0	0	0
07:45	0	0	0	0	0	0
08:00	0	0	0	0	0	0
08:15	0	0	0	0	0	0
08:30	0	0	0	0	0	0
08:45	0	0	0	0	0	0
09:00	0	0	0	0	0	0
09:15	0	0	0	0	0	0
09:30	0	0	0	0	0	0
09:45	0	0	0	0	0	0
10:00	0	0	0	0	0	0
10:15	0	0	0	0	0	0
10:30	0	0	0	0	0	0
10:45	0	0	0	0	0	0
11:00	0	0	0	0	0	0
11:15	0	0	0	0	0	0
11:30	0	0	0	0	0	0
11:45	0	0	0	0	0	0
12:00	0	0	0	0	0	0
12:15	0	0	0	0	0	0
12:30	0	0	0	0	0	0
12:45	0	0	0	0	0	0
13:00	0	0	0	0	0	0
13:15	0	0	0	50.7	92	334.9
13:30	0	0	0	50.7	92	334.9
13:45	0	0	0	50.7	92	334.9
14:00	0	0	0	50.7	92	334.9

14:15	0	0	0	50.7	92	334.9
14:30	0	0	0	50.7	92	334.9
14:45	0	0	0	50.7	92	334.9
15:00	0	0	0	50.7	92	334.9
15:15	0	0	0	50.7	92	334.9
15:30	0	0	0	50.7	92	334.9
15:45	0	0	0	50.7	92	334.9
16:00	0	0	0	50.7	92	334.9
16:15	0	0	0	50.7	92	334.9
16:30	0	0	0	50.7	92	334.9
16:45	0	0	0	50.7	92	334.9
17:00	0	0	0	50.7	92	334.9
17:15	0	0	0	0	0	0
17:30	0	0	0	0	0	0
17:45	0	0	0	0	0	0
18:00	0	0	0	0	0	0
18:15	0	0	0	0	0	0
18:30	0	0	0	0	0	0
18:45	0	0	0	0	0	0
19:00	0	0	0	0	0	0
19:15	0	0	0	0	0	0
19:30	0	0	0	0	0	0
19:45	0	0	0	0	0	0
20:00	0	0	0	0	0	0
20:15	0	0	0	0	0	0
20:30	0	0	0	0	0	0
20:45	0	0	0	0	0	0
21:00	0	0	0	0	0	0
21:15	0	0	0	0	0	0
21:30	0	0	0	0	0	0
21:45	0	0	0	0	0	0
22:00	0	0	0	0	0	0
22:15	183.5	229.7	797.9	133.4	183.6	629.9
22:30	183.5	229.7	797.9	133.4	183.6	629.9
22:45	183.5	229.7	797.9	133.4	183.6	629.9
23:00	183.5	218.4	769.8	133.4	172.4	601.8
23:15	183.5	210.9	749.1	133.4	164.9	581.2
23:30	183.5	203.4	726.6	133.4	157.4	558.7
23:45	183.5	195.9	706	133.4	149.9	538
00:00	183.5	188.4	683.5	133.4	142.4	515.5

7.3 SLPs for facilities with remote capacity reduction options at a single metering point (HA, HF)

7.3.1 HA load profile

HA									
	Winter			Summer			Spring/autumn		
	Saturday	Sunday	working day	Saturday	Sunday	working day	Saturday	Sunday	working day
	capacity [W]	capacity [W]	capacity [W]	capacity [W]	capacity [W]	capacity [W]	capacity [W]	capacity [W]	capacity [W]
00:15	235.1	246.8	232.9	248.4	255.6	246.0	241.7	250.9	240.0
00:30	233.3	242.3	228.1	245.0	250.3	239.4	238.1	246.3	234.3
00:45	231.7	238.1	224.0	242.0	245.7	233.7	235.0	242.4	229.2
01:00	229.9	233.9	220.5	239.2	241.5	229.2	232.2	238.5	225.2
01:15	212.2	214.9	202.9	220.7	222.4	211.2	214.2	219.6	207.3
01:30	194.1	196.3	186.1	202.2	203.6	194.3	196.2	200.7	190.3
01:45	175.9	178.1	169.9	183.7	185.3	178.1	178.4	182.1	174.1
02:00	158.2	160.5	154.1	165.7	167.5	162.2	161.1	164.0	158.2
02:15	141.3	143.7	138.6	148.7	150.5	146.5	144.4	146.7	142.4
02:30	125.2	127.4	123.3	132.4	134.1	130.8	128.3	130.1	126.7
02:45	109.5	111.5	108.1	116.5	118.0	115.0	112.5	114.0	111.2
03:00	94.1	95.9	92.9	101.1	102.2	99.4	97.0	98.2	95.9
03:15	78.8	80.2	77.7	85.8	86.6	83.8	81.6	82.4	80.7
03:30	63.5	64.6	62.6	70.6	71.1	68.4	66.3	66.7	65.7
03:45	48.2	49.0	47.4	55.5	55.7	53.1	51.0	51.2	50.7
04:00	32.9	33.6	32.4	40.5	40.5	38.2	35.9	35.9	35.9
04:15	27.2	27.5	26.9	35.1	34.9	33.0	30.2	30.2	30.4
04:30	27.0	27.2	27.2	35.3	35.0	33.6	30.2	30.2	30.6
04:45	26.8	27.0	27.5	35.5	35.1	34.5	30.2	30.2	30.9
05:00	26.8	26.8	28.0	35.6	34.9	35.6	30.3	30.3	31.4
05:15	27.0	26.8	28.6	35.6	34.7	36.9	30.5	30.3	32.4
05:30	27.4	26.9	30.2	35.6	34.2	38.9	30.9	30.3	34.2
05:45	28.2	27.1	33.4	36.1	33.9	42.4	31.8	30.2	37.6
06:00	29.7	27.4	39.1	37.3	33.8	47.7	33.2	30.3	43.1
06:15	31.9	27.8	47.6	39.3	34.1	55.4	35.4	30.5	51.0
06:30	34.9	28.3	58.0	42.3	34.9	64.4	38.4	31.0	60.4
06:45	38.7	28.9	68.6	46.1	36.3	73.3	42.5	32.2	70.1
07:00	43.1	29.7	78.1	50.7	38.4	81.0	47.7	34.4	78.7
07:15	48.2	30.8	85.1	56.0	41.4	86.5	54.3	37.7	85.3
07:30	54.0	32.6	90.0	62.0	45.4	90.0	61.5	42.3	90.0
07:45	60.3	35.8	92.9	68.2	50.6	92.4	69.0	48.2	93.0
08:00	67.0	40.8	94.4	74.6	57.1	94.4	76.3	55.4	95.0
08:15	74.1	48.0	94.8	80.9	65.0	96.5	82.9	63.8	96.0
08:30	81.1	56.9	94.4	87.1	73.9	98.5	88.7	73.0	96.4
08:45	87.4	66.6	93.2	93.0	83.3	100.2	93.7	82.6	96.4
09:00	92.6	76.3	91.5	98.5	92.6	101.4	97.9	92.1	96.1
09:15	96.3	85.3	89.4	103.5	101.4	101.7	101.3	100.9	95.8
09:30	98.8	93.6	87.2	107.8	109.3	101.4	104.2	108.9	95.5

09:45	100.3	101.1	85.1	111.2	116.2	100.7	106.7	115.7	95.0
10:00	101.4	107.8	83.3	113.6	121.8	99.6	108.9	121.2	94.4
10:15	102.2	113.8	82.1	114.9	126.0	98.6	111.2	125.2	93.6
10:30	103.0	119.4	81.3	115.3	129.2	97.7	113.4	128.2	92.7
10:45	103.9	124.6	81.0	115.5	132.1	97.0	115.4	130.9	92.0
11:00	104.9	129.9	81.0	115.9	135.2	96.7	117.1	134.0	91.5
11:15	106.1	135.3	81.3	117.0	138.8	97.0	118.4	137.9	91.4
11:30	107.5	140.4	81.9	118.6	142.6	98.1	119.6	142.1	92.1
11:45	109.2	144.6	83.1	120.7	146.1	99.8	120.8	146.0	93.5
12:00	111.3	147.4	85.1	122.9	148.5	102.6	122.4	148.5	96.1
12:15	113.7	148.3	87.8	125.3	149.6	106.1	124.4	149.5	99.8
12:30	116.1	147.1	90.7	127.3	149.0	109.7	126.6	148.3	103.7
12:45	117.9	144.1	93.1	128.6	146.3	112.5	128.2	144.9	107.0
13:00	118.9	139.2	94.4	128.7	141.6	113.6	128.7	139.2	108.4
13:15	118.6	132.7	93.9	127.5	134.7	112.4	127.9	131.3	107.2
13:30	117.3	125.1	92.2	125.1	126.6	109.3	125.9	122.2	104.2
13:45	115.4	117.1	89.6	121.9	118.4	105.1	123.1	113.2	100.2
14:00	113.1	109.6	86.8	118.3	111.3	100.8	120.1	105.4	96.1
14:15	110.7	102.9	84.1	114.6	106.0	96.9	117.0	100.0	92.7
14:30	108.4	97.2	81.8	111.2	102.2	93.5	114.2	96.3	89.9
14:45	106.3	92.5	79.6	108.2	99.1	90.6	111.4	93.7	87.4
15:00	104.3	88.6	77.5	106.1	96.1	88.0	108.9	91.5	85.1
15:15	102.6	85.4	75.5	104.7	92.7	85.7	106.6	89.0	82.7
15:30	101.1	82.7	73.9	104.0	88.9	83.7	104.7	86.2	80.4
15:45	99.9	80.4	72.5	103.6	85.1	82.2	103.0	83.3	78.2
16:00	99.1	78.1	71.7	103.1	81.6	81.0	102.0	80.4	76.3
16:15	98.6	75.8	71.5	102.3	78.5	80.2	101.5	77.7	74.8
16:30	99.2	74.1	72.2	101.5	76.2	79.9	101.8	75.4	74.0
16:45	101.4	73.6	73.9	100.9	74.7	80.2	102.7	73.9	73.9
17:00	106.1	75.2	76.9	100.8	74.0	81.0	104.3	73.4	74.6
17:15	113.3	79.0	81.2	101.4	74.3	82.3	106.6	74.2	76.4
17:30	122.2	84.6	86.6	102.8	75.4	84.2	109.5	76.2	79.2
17:45	131.2	91.0	92.8	105.0	77.3	86.7	113.1	79.2	82.8
18:00	138.7	97.3	99.6	107.8	79.8	89.7	117.1	83.3	87.4
18:15	143.6	102.8	106.7	111.2	82.8	93.2	121.6	88.2	92.7
18:30	146.4	107.5	113.5	114.8	86.4	97.2	126.3	93.6	98.4
18:45	147.8	111.8	119.8	118.4	90.4	101.6	130.7	99.1	104.4
19:00	148.5	115.9	125.2	121.8	95.0	106.1	134.6	104.3	110.1
19:15	149.2	120.1	129.3	124.5	100.0	110.5	137.6	108.9	115.4
19:30	149.1	123.5	131.7	126.4	104.9	114.7	139.3	112.4	119.8
19:45	147.3	125.4	132.2	127.3	109.0	117.8	139.6	114.5	122.6
20:00	142.7	124.7	130.5	127.0	111.9	119.4	138.1	114.8	123.6
20:15	135.0	121.0	126.5	125.5	113.0	119.3	134.7	113.1	122.2
20:30	125.3	115.3	120.9	123.0	112.6	117.8	129.6	110.0	119.4
20:45	115.1	108.9	114.7	119.7	111.3	115.7	123.6	106.5	116.0
21:00	106.1	103.1	108.9	115.9	109.6	113.6	117.1	103.7	113.1
21:15	99.3	99.0	104.2	112.1	107.7	112.1	110.5	102.1	111.2
21:30	94.7	96.0	100.4	108.6	106.1	110.9	104.7	101.3	110.0
21:45	91.7	93.6	96.9	105.8	104.5	109.8	100.0	100.5	108.8
22:00	89.7	90.9	93.2	104.3	103.1	108.4	97.3	99.1	106.6
22:15	273.8	272.9	274.6	289.8	287.3	291.9	282.4	281.8	288.6

22:30	272.4	268.6	269.9	290.3	285.7	289.1	283.0	277.8	283.8
22:45	270.7	263.7	264.9	290.1	283.0	285.3	283.2	272.8	278.0
23:00	268.3	258.4	259.5	288.1	278.8	280.5	281.7	267.1	271.8
23:15	264.9	252.9	254.2	283.4	272.6	274.6	277.3	260.9	265.4
23:30	260.7	247.4	248.7	276.8	265.2	267.8	270.9	254.4	258.9
23:45	256.1	242.0	243.3	269.2	257.3	260.5	263.6	248.0	252.5
00:00	251.4	236.8	238.0	261.9	249.7	253.1	256.6	242.0	246.2

7.3.2 HF load profile

HF									
	Winter			Summer			Spring/autumn		
	Saturday	Sunday	working day	Saturday	Sunday	working day	Saturday	Sunday	working day
	capacity [W]	capacity [W]	capacity [W]	capacity [W]	capacity [W]	capacity [W]	capacity [W]	capacity [W]	capacity [W]
00:15	388.9	393.1	388.1	122.5	125.1	121.6	121.2	124.5	120.6
00:30	371.4	374.6	369.5	121.3	123.2	119.3	114.3	117.3	113.0
00:45	355.3	357.6	352.6	120.2	121.5	117.3	107.6	110.2	105.5
01:00	337.8	339.3	334.5	119.2	120.0	115.7	101.0	103.2	98.5
01:15	321.4	322.4	318.1	118.0	118.6	114.6	94.2	96.1	91.7
01:30	303.4	304.2	300.6	109.0	109.5	106.2	87.5	89.1	85.4
01:45	286.8	287.5	284.6	98.9	99.5	96.9	80.9	82.2	79.3
02:00	267.6	268.4	266.1	89.1	89.8	87.9	74.4	75.5	73.4
02:15	266.9	267.7	265.9	79.3	79.9	78.5	73.8	74.7	73.1
02:30	284.7	285.5	284.0	69.9	70.5	69.4	79.1	79.7	78.5
02:45	300.0	300.7	299.5	60.7	61.2	60.2	84.4	84.9	83.9
03:00	316.7	317.4	316.3	51.6	52.0	51.0	89.8	90.3	89.4
03:15	332.1	332.6	331.7	42.7	43.0	42.0	95.4	95.7	95.1
03:30	348.8	349.2	348.5	33.7	33.9	32.9	100.9	101.1	100.7
03:45	364.2	364.5	363.9	24.7	24.8	23.9	106.4	106.5	106.3
04:00	381.0	381.2	380.8	15.9	15.9	15.0	112.0	112.0	112.0
04:15	396.3	396.5	396.2	12.5	12.5	11.8	117.6	117.6	117.7
04:30	413.1	413.2	413.2	12.6	12.5	12.0	123.2	123.2	123.4
04:45	428.6	428.7	428.9	12.7	12.5	12.3	128.8	128.9	129.1
05:00	445.5	445.5	445.9	12.7	12.5	12.7	134.5	134.5	134.9
05:15	461.0	460.9	461.6	12.7	12.4	13.2	140.2	140.1	140.9
05:30	482.2	482.0	483.2	12.7	12.2	13.9	148.8	148.5	149.9
05:45	482.5	482.1	484.4	12.9	12.1	15.1	149.1	148.5	151.1
06:00	483.0	482.2	486.4	13.3	12.1	17.1	149.6	148.5	153.1
06:15	11.4	9.9	17.0	14.1	12.2	19.8	12.6	10.9	18.2
06:30	12.5	10.1	20.7	15.1	12.5	23.0	13.7	11.1	21.6
06:45	13.8	10.3	24.5	16.5	13.0	26.2	15.2	11.5	25.0
07:00	15.4	10.6	27.9	18.1	13.7	28.9	17.1	12.3	28.1
07:15	17.2	11.0	30.4	20.0	14.8	30.9	19.4	13.5	30.5
07:30	19.3	11.7	32.1	22.1	16.2	32.2	22.0	15.1	32.1
07:45	21.5	12.8	33.2	24.4	18.1	33.0	24.7	17.2	33.2
08:00	23.9	14.6	33.7	26.6	20.4	33.7	27.3	19.8	33.9

08:15	26.5	17.2	33.9	28.9	23.2	34.5	29.6	22.8	34.3
08:30	29.0	20.3	33.7	31.1	26.4	35.2	31.7	26.1	34.4
08:45	31.2	23.8	33.3	33.2	29.8	35.8	33.5	29.5	34.4
09:00	33.1	27.3	32.7	35.2	33.1	36.2	35.0	32.9	34.3
09:15	34.4	30.5	31.9	37.0	36.2	36.3	36.2	36.1	34.2
09:30	35.3	33.4	31.2	38.5	39.1	36.2	37.2	38.9	34.1
09:45	35.8	36.1	30.4	39.7	41.5	36.0	38.1	41.3	33.9
10:00	36.2	38.5	29.8	40.6	43.5	35.6	38.9	43.3	33.7
10:15	36.5	40.7	29.3	41.0	45.0	35.2	39.7	44.7	33.4
10:30	36.8	42.6	29.1	41.2	46.2	34.9	40.5	45.8	33.1
10:45	37.1	44.5	28.9	41.3	47.2	34.6	41.2	46.8	32.9
11:00	37.5	46.4	28.9	41.4	48.3	34.6	41.8	47.9	32.7
11:15	37.9	48.3	29.0	41.8	49.6	34.7	42.3	49.3	32.7
11:30	38.4	50.2	29.3	42.4	50.9	35.0	42.7	50.8	32.9
11:45	39.0	51.7	29.7	43.1	52.2	35.7	43.1	52.1	33.4
12:00	39.8	52.7	30.4	43.9	53.1	36.6	43.7	53.1	34.3
12:15	40.6	53.0	31.4	44.8	53.4	37.9	44.4	53.4	35.7
12:30	41.5	52.6	32.4	45.5	53.2	39.2	45.2	53.0	37.1
12:45	42.1	51.5	33.3	45.9	52.3	40.2	45.8	51.8	38.2
13:00	42.5	49.7	33.7	46.0	50.6	40.6	46.0	49.7	38.7
13:15	293.5	298.6	284.7	83.6	86.1	78.2	114.7	115.9	107.3
13:30	293.1	295.9	284.1	82.7	83.3	77.1	114.0	112.7	106.2
13:45	292.4	293.0	283.2	81.6	80.3	75.6	113.0	109.4	104.8
14:00	291.6	290.3	282.2	80.3	77.8	74.0	111.9	106.7	103.3
14:15	290.7	287.9	281.2	79.0	75.9	72.6	110.8	104.7	102.1
14:30	289.9	285.9	280.4	77.8	74.5	71.4	109.8	103.4	101.1
14:45	289.1	284.2	279.6	76.7	73.4	70.4	108.8	102.5	100.2
15:00	288.4	282.8	278.9	75.9	72.4	69.5	107.9	101.7	99.4
15:15	287.8	281.7	278.2	75.4	71.1	68.6	107.1	100.8	98.5
15:30	287.3	280.7	277.6	75.2	69.8	67.9	106.4	99.8	97.7
15:45	286.9	279.9	277.1	75.0	68.4	67.4	105.8	98.8	96.9
16:00	286.6	279.1	276.8	74.9	67.2	67.0	105.4	97.7	96.3
16:15	286.4	278.3	276.7	74.6	66.1	66.7	105.3	96.8	95.7
16:30	286.6	277.7	277.0	74.3	65.3	66.6	105.4	95.9	95.4
16:45	287.4	277.5	277.6	74.1	64.7	66.7	105.7	95.4	95.4
17:00	289.1	278.0	278.7	74.0	64.5	67.0	106.3	95.2	95.6
17:15	40.5	28.2	29.0	36.2	26.5	29.4	38.1	26.5	27.3
17:30	43.7	30.2	30.9	36.7	26.9	30.1	39.1	27.2	28.3
17:45	46.9	32.5	33.2	37.5	27.6	31.0	40.4	28.3	29.6
18:00	49.5	34.8	35.6	38.5	28.5	32.1	41.8	29.8	31.2
18:15	51.3	36.7	38.1	39.7	29.6	33.3	43.4	31.5	33.1
18:30	52.3	38.4	40.6	41.0	30.9	34.7	45.1	33.4	35.2
18:45	52.8	39.9	42.8	42.3	32.3	36.3	46.7	35.4	37.3
19:00	53.1	41.4	44.7	43.5	33.9	37.9	48.1	37.3	39.3
19:15	53.3	42.9	46.2	44.5	35.7	39.5	49.1	38.9	41.2
19:30	53.3	44.1	47.1	45.1	37.5	41.0	49.8	40.2	42.8
19:45	52.6	44.8	47.2	45.5	38.9	42.1	49.9	40.9	43.8
20:00	51.0	44.5	46.6	45.4	40.0	42.7	49.3	41.0	44.1
20:15	48.2	43.2	45.2	44.8	40.4	42.6	48.1	40.4	43.6
20:30	44.8	41.2	43.2	43.9	40.2	42.1	46.3	39.3	42.6
20:45	41.1	38.9	41.0	42.8	39.8	41.3	44.2	38.1	41.4

21:00	37.9	36.8	38.9	41.4	39.1	40.6	41.8	37.1	40.4
21:15	35.5	35.4	37.2	40.0	38.5	40.0	39.5	36.5	39.7
21:30	33.8	34.3	35.9	38.8	37.9	39.6	37.4	36.2	39.3
21:45	32.8	33.4	34.6	37.8	37.3	39.2	35.7	35.9	38.9
22:00	32.1	32.5	33.3	37.3	36.8	38.7	34.8	35.4	38.1
22:15	504.0	503.6	504.2	137.3	136.4	138.0	172.3	172.1	174.5
22:30	503.5	502.1	502.6	137.5	135.8	137.0	172.5	170.7	172.8
22:45	502.8	500.3	500.8	137.4	134.9	135.7	172.6	168.9	170.7
23:00	480.9	477.4	477.8	136.7	133.4	134.0	163.6	158.4	160.1
23:15	464.3	460.0	460.4	135.0	131.2	131.9	156.5	150.6	152.2
23:30	445.9	441.1	441.6	132.6	128.5	129.4	148.5	142.7	144.3
23:45	428.7	423.7	424.1	129.9	125.7	126.8	140.3	134.7	136.3
00:00	410.2	404.9	405.4	127.3	123.0	124.2	132.2	127.0	128.5

7.4 Standard load profile for mobile communications transmitters (G7)

	G7
	year-round
	capacity
	[W]
00:15	114.2
00:30	114.2
00:45	114.2
01:00	114.2
01:15	114.2
01:30	114.2
01:45	114.2
02:00	114.2
02:15	114.2
02:30	114.2
02:45	114.2
03:00	114.2
03:15	114.2
03:30	114.2
03:45	114.2
04:00	114.2
04:15	114.2
04:30	114.2
04:45	114.2
05:00	114.2
05:15	114.2
05:30	114.2
05:45	114.2
06:00	114.2
06:15	114.2
06:30	114.2
06:45	114.2

07:00	114.2
07:15	114.2
07:30	114.2
07:45	114.2
08:00	114.2
08:15	114.2
08:30	114.2
08:45	114.2
09:00	114.2
09:15	114.2
09:30	114.2
09:45	114.2
10:00	114.2
10:15	114.2
10:30	114.2
10:45	114.2
11:00	114.2
11:15	114.2
11:30	114.2
11:45	114.2
12:00	114.2
12:15	114.2
12:30	114.2
12:45	114.2
13:00	114.2
13:15	114.2
13:30	114.2
13:45	114.2
14:00	114.2
14:15	114.2
14:30	114.2
14:45	114.2
15:00	114.2
15:15	114.2
15:30	114.2
15:45	114.2
16:00	114.2
16:15	114.2
16:30	114.2
16:45	114.2
17:00	114.2
17:15	114.2
17:30	114.2
17:45	114.2
18:00	114.2
18:15	114.2
18:30	114.2
18:45	114.2
19:00	114.2
19:15	114.2
19:30	114.2

19:45	114.2
20:00	114.2
20:15	114.2
20:30	114.2
20:45	114.2
21:00	114.2
21:15	114.2
21:30	114.2
21:45	114.2
22:00	114.2
22:15	114.2
22:30	114.2
22:45	114.2
23:00	114.2
23:15	114.2
23:30	114.2
23:45	114.2
00:00	114.2

7.5 Standard load profile for public lighting (B1)

	B1		
	Summer	Spring and autumn	Winter
	capacity [W]	capacity [W]	capacity [W]
00:15	237.04	237.04	237.04
00:30	237.04	237.04	237.04
00:45	237.04	237.04	237.04
01:00	237.04	237.04	237.04
01:15	237.04	237.04	237.04
01:30	237.04	237.04	237.04
01:45	237.04	237.04	237.04
02:00	237.04	237.04	237.04
02:15	237.04	237.04	237.04
02:30	237.04	237.04	237.04
02:45	237.04	237.04	237.04
03:00	237.04	237.04	237.04
03:15	237.04	237.04	237.04
03:30	237.04	237.04	237.04
03:45	237.04	237.04	237.04
04:00	237.04	237.04	237.04
04:15	237.04	237.04	237.04
04:30	237.04	237.04	237.04
04:45	0	237.04	237.04
05:00	0	237.04	237.04
05:15	0	237.04	237.04
05:30	0	237.04	237.04
05:45	0	0	237.04
06:00	0	0	237.04

06:15	0	0	237.04
06:30	0	0	237.04
06:45	0	0	237.04
07:00	0	0	237.04
07:15	0	0	237.04
07:30	0	0	0
07:45	0	0	0
08:00	0	0	0
08:15	0	0	0
08:30	0	0	0
08:45	0	0	0
09:00	0	0	0
09:15	0	0	0
09:30	0	0	0
09:45	0	0	0
10:00	0	0	0
10:15	0	0	0
10:30	0	0	0
10:45	0	0	0
11:00	0	0	0
11:15	0	0	0
11:30	0	0	0
11:45	0	0	0
12:00	0	0	0
12:15	0	0	0
12:30	0	0	0
12:45	0	0	0
13:00	0	0	0
13:15	0	0	0
13:30	0	0	0
13:45	0	0	0
14:00	0	0	0
14:15	0	0	0
14:30	0	0	0
14:45	0	0	0
15:00	0	0	0
15:15	0	0	0
15:30	0	0	0
15:45	0	0	0
16:00	0	0	0
16:15	0	0	0
16:30	0	0	0
16:45	0	0	0
17:00	0	0	0
17:15	0	0	237.04
17:30	0	0	237.04
17:45	0	0	237.04
18:00	0	0	237.04
18:15	0	0	237.04
18:30	0	237.04	237.04
18:45	0	237.04	237.04

19:00	0	237.04	237.04
19:15	0	237.04	237.04
19:30	0	237.04	237.04
19:45	0	237.04	237.04
20:00	237.04	237.04	237.04
20:15	237.04	237.04	237.04
20:30	237.04	237.04	237.04
20:45	237.04	237.04	237.04
21:00	237.04	237.04	237.04
21:15	237.04	237.04	237.04
21:30	237.04	237.04	237.04
21:45	237.04	237.04	237.04
22:00	237.04	237.04	237.04
22:15	237.04	237.04	237.04
22:30	237.04	237.04	237.04
22:45	237.04	237.04	237.04
23:00	237.04	237.04	237.04
23:15	237.04	237.04	237.04
23:30	237.04	237.04	237.04
23:45	237.04	237.04	237.04
00:00	237.04	237.04	237.04