



Brochure for Municipalities

Austrian Energy Agency



Authors

Elisabeth Böck, Austrian Energy Agency (AEA) Bettina Reidlinger, Austrian Energy Agency (AEA) Günter Simader, Austrian Energy Agency (AEA)

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Table of Contents

| I Introduction | 1 |
|---|----|
| II General Legal Conditions | 2 |
| II.I Obligations of municipalities in the framework of the Energy | |
| Efficiency Act | 4 |
| II.IITransfer of energy efficiency measures to energy suppliers | 4 |
| III Energy efficiency measures | 6 |
| III.IEvaluation of energy efficiency measures | 7 |
| III.II Life span of energy efficiency measures | 10 |
| IV General methods with default values | 12 |
| IV.I Thermally improved building envelope | 13 |
| IV.I.I Construction of non-residential buildings | 13 |
| IV.I.II Refurbishment of non-residential buildings | 13 |
| IV.II Heating systems improvement | 14 |
| IV.II.I Central room heating in non-residential building | 14 |
| IV.II.II Insulation of heat distribution pipes in the existing building | 14 |
| IV.II.III Installation of efficient circulation pumps | 14 |
| IV.III Lighting | 15 |
| IV.III.I Efficient street lighting | 15 |
| IV.III.II Efficient lighting in office buildings | 15 |
| IV.III.III Efficient lighting in non-residential buildings | 15 |
| IV.IV Mobility | 15 |
| IV.IV.I Alternative car technologies for passenger cars | 15 |
| IV.IV.II Eco-driving training | 16 |

| IV.IV.III Car fleet renewal | 16 |
|--|----|
| IV.IV.IV Public transport | 16 |
| IV.IV.VElectric bicycles | 17 |
| IV.V Efficient power generation | 17 |
| IV.V.I Photovoltaic plants | 17 |
| IV.VI Annex 1 BGBI. II, No. 172 of the RL-Regulation | 18 |
| V Transfer of energy efficiency measures | 18 |
| VI Summary | 21 |
| VII Links | 22 |



I Introduction

Austrian municipalities provide a very valuable contribution to climate protection and energy resources. A conscious approach to energy consumption and an increase in energy efficiency are important tools in order to achieve the climate and energy goals by 2030 as set by the European Union.

Municipalities in Austria as such do not come under the obligation in the framework of the National Energy Efficiency Act. However, they should be given the opportunity to apply their implemented energy efficiency projects. This brochure uses the example of Austrian municipalities to demonstrate how non-obligated parties in energy efficiency policies can be motivated to participate and get involved.

This brochure was created as part of the multEE project for the promotion of multi-level governance in the field of energy efficiency. The aim of the multEE project is to increase quality in the planning and implementation of energy efficiency policies and energy efficiency measures. Two fundamental activities have been identified to achieve this goal:

- introduction of innovative bottom-up monitoring and verification systems
- improved co-operation between local authorities

European countries strive to reduce negative environmental effects resulting from energy production. Energy efficiency measures and policies are fundamental tools to achieve this goal. However, the effects of these measures and policies are difficult to assess as they are calculated, evaluated and verified differently across various countries. In the framework of the multEE project a monitoring and verification platform has been developed, which is used by the project partner countries to collect data regarding energy efficiency measures. Data can be uniformly collected, analysed and compared and thus provides the basis for energy policies and strategies.

The improvement of the vertical and horizontal co-ordination between the political levels should guarantee uniform energy policy planning and the implementation of effective energy efficiency measures.



II General Legal Conditions

The EU 2020 strategy for smart, sustainable and integrated growth has defined five core goals which include strategies for climate and energy-related issues. The major goals in this area include the reduction of greenhouse gas emissions by 20 % compared to their 1990 levels, the increase of the share of renewables up to 20 % and the improvement of energy efficiency by 20 %.

To achieve these goals, the European Commission has passed the energy efficiency directive (2012/27/EU), which was approved by the European Council and came into force on 4 December 2012.

With the 2012/27/EU directive, specific elements of the European Commission's energy efficiency plan were transformed into binding regulations. To implement the directive in Austria, the Federal Energy Efficiency Act ("Energieeffizienzgesetz – EEffG") was put into force with binding national goals.

The fundamental obligations include the following:



Starting with 2014, energy suppliers with a final energy sales of at least 25 GWh in one year are obliged to implement energy efficiency measures to the extent of 0.6% based on their previous year sales figures. Energy suppliers can choose to implement these energy efficiency measures in four different ways:

- within their company,
- with their end customers,
- settle for a compensation amount (20 cent/kWh),
- purchase the implemented measures from another company.

Energy efficiency measures financed and implemented by the municipalities can also be used to meet the obligations of energy suppliers.





Large companies (defined by: more than 249 employees or more than 50 Million € revenue or more than 43 Million € net profit) are required to carry out an external energy audit every four years or introduce an approved management system, including an internal energy audit. The fundamental components of an energy audit are the identification of main energy consumers in buildings, transport and processes. Based on this analysis, the derivation of measures to increase energy efficiency within the company can then be suggested. According to the Energy Efficiency Act, large companies are not obliged to implement the suggested energy efficiency measures although it would be in the own interest of the company to implement the proposed energy efficiency measures and of course in the interest of resource preservation.



External and internal energy audits may only be carried out by qualified energy auditors according to § 17 EEffG.

Public authorities (the federal government and federal states), on the one hand, initiate strategic measures such as the promotion of the so called "Environmental Support in Austria". On the other hand, 3% of the total heated and / or air-conditioned buildings owned and used by the state are to be renovated.

The obligation of energy suppliers and public authorities should result in cumulative savings of 310 Petajoules over the period 2015-2020.



II.I Obligations of municipalities in the framework of the Energy Efficiency Act

For Austrian municipalities, the Energy Efficiency Act does not create a direct legal obligation. However, municipalities can be bound by commitments for large companies and energy suppliers should the following apply:

- A municipality acts as a municipal energy supplier and exceeds the threshold of 25 GWh of energy sales to end users in a commitment year.
- A municipality operates a large company organised under private law.

Municipalities or their companies which are subject to the EEffG are affected by the same obligations as all other companies and energy suppliers under the EEffG.

Obligated municipal utility companies have the possibility to implement energy efficiency measures in their own companies or with their own end consumers. In addition, energy efficiency measures can also be carried out by third parties (for example, through energy contracting), or a compensation amount can be settled.

II.II Transfer of energy efficiency measures to energy suppliers

Numerous energy efficiency measures were implemented across many Austrian municipalities. Energy efficiency measures funded from the municipal budget can be used for the obligation of energy suppliers.

To the extent as the energy efficiency measure implemented is not required for the obligation of a municipal energy provider, the rights to the energy efficiency measure can be transferred to another energy supplier. It is also possible to sell the rights to energy efficiency measures across various trading platforms.

A "transfer agreement" is required for the transfer of the rights to energy efficiency measures. There are no formal requirements for this issued by the National Energy Efficiency Monitoring Agency. Generally, the involved parties, the extent of energy savings and any other monetary details are recorded in writing. The Energy Efficiency Act does not regulate the fee to be paid to an energy supplier for energy efficiency measures. The details of



such a transfer are therefore to be clarified with the respective energy supplier.

According to the status report of the National Energy Efficiency Monitoring Agency, the prices for the rights to the energy efficiency measures have fallen from a price level of 6 - 8 cents per kilowatt hour to 1 cent per kilowatt hour. The status report can be found on the monitoring centre's website:

<u>Status report of the National Energy Efficiency Monitoring Agency</u> (German version)

The development of prices for the rights to energy efficiency measures is subject to market dynamics and is matter of negotiation between seller and buyer.

Information on the calculation and allowance of energy efficiency measures can be found in chapters 3, 4 and 5.



III Energy efficiency measures

An energy efficiency measure is applicable if it provably leads to measurable or assessable energy efficiency improvements. The improvement of the input-output ratio of energy is essential.

The so-called energy efficiency directive decree regulates the assessment of implemented and valid energy efficiency measures. These include the measuring or estimation of energy savings and energy consumption values as well as the guidelines for the documentation of energy efficiency measures.

Energy efficiency measures must be carried out "in addition", in other words lead to energy efficiency savings beyond the baseline scenario.

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Illustration: Cover 394. Decree: energy efficiency directive decree.

The baseline scenario includes final energy consumption in Austria over the commitment period 2015 - 2020 without the Energy Efficiency Act. Energy efficiency measures which have to be carried out anyway (for example due to legal minimum standards) can therefore not be included as an energy efficiency measure according to the EEffG.



III.I Evaluation of energy efficiency measures

Energy efficiency measures can be evaluated in four different ways. The National Energy Efficiency Monitoring Agency distinguishes generalized methods with default values, generalized methods with project-specific input and individual evaluation. In addition, there is the option of an operational energy efficiency method for use in small, medium or large companies where an energy audit has been performed.

The different assessments provide a user-friendly and application-related evaluation path for all relevant stakeholders and for all energy efficiency measures.

GENERALIZED METHODS - § 12 Directive decree

In order to facilitate the evaluation of energy efficiency measures, generalized methods with pre-defined default values were prepared by the National Energy Efficiency Monitoring Agency. Both the calculation formula and the average savings values (default values) were set. Generalized methods are available for numerous consumption categories, e.g. mobility, cooling and air conditioning, heating systems, thermally improved building envelopes and numerous other areas. This method is particularly user-friendly and can also be used by persons without extensive professional knowledge.



PROJECT-SPECIFIC GENERALIZED METHODS

In contrast to default values, generalized methods with project-specific input provide the possibility to enter own project-specific values corresponding to the measure. This can be, for example, a higher number of passenger kilometres compared with set default values. Such access is only possible if the method itself does not specify otherwise or the option of the project-specific input is not specifically excluded in the method. As in the case of a project-specific input, all values have to be documented in a project-specific manner, thus this method can only be used if detailed information regarding the measure is available.

INDIVIDUAL EVALUATION - § 13 Directive decree

Individual measures can be used to calculate measures for which there are no default measures. Any measure that leads to an increase in energy efficiency can be reported. The end-energy saving of the measure must be known and a brief description must be provided for reporting purposes. An individual evaluation is a case-by-case, comprehensible, scientific evaluation of the saving extent of a measure. This approach is only allowed if there are no generalized methods available or if there are justifiable reasons against the use of the existing method.

Individual evaluations can only be carried out by qualified persons according to § 9 RiLiVo.

Interested municipalities can find guidelines for the evaluation of building measures with energy certificates and individual energy efficiency measures on the website of the National Energy Efficiency Monitoring Agency:

Evaluation guidelines (German Version)



COMPANY-BASED ENERGY EFFICIENCY METHOD

Section 1a of the directive decree

This method can be used to evaluate measures resulting from analysis, consulting or energy audits in small, medium or large companies. The report can only be written by experts according to § 9 RiLiVo and registered internal or external energy auditors according to §17 EEffG. The measure must be an investment measure for the final energy consumption in the areas of "buildings" or "plants and processes"

All the relevant legal sources and documents for the evaluation of energy efficiency measures can be found on the website of the National Energy Efficiency Monitoring Agency:

Legal sources and documents (German Version)



III.II Life span of energy efficiency measures

For the full recognition of the energy saving effect in one year, the energy efficiency measure must unfold its annual energy saving effect over the entire (residual) commitment period (2015-2020). Implemented energy efficiency measures must ensure their energy-savings effect beyond 2020. Energy savings with a shorter life span are reduced accordingly.

The following examples illustrate this:

Calculation example: alternative car technology for passenger cars – Measure creditable in full

Implementation year 2017 – Life span: 10 years

A municipal car is replaced with a new car with alternative drive technology. The complete annual final energy savings after the exchange of the vehicle amount to 3,400 kWh. The life span of the measure is 10 years, according to section 1 BGBI. II, No. 172. The measure is valid beyond the year 2020 (at least until 01.01.2021) and is therefore creditable in full. "In full" here means: 3,400 kWh for the year 2017. That means that the annual savings are neither multiplied, nor can the measure be reported again in the following year.

Calculation example: Eco-driving trainings – Measure proportionally creditable

Implementation year 2017 – Life span: 3 years

In a municipality, an eco-driving training was completed by ten municipal employees in 2017. The annual energy savings are 23,760 kWh. The life span of the measure is 3 years according to Appendix 1 BGBI. II, No. 172. The energy savings effect of the measure therefore does not go beyond the year 2020. Due to the shorter life span, the calculated energy savings must be aliquoted at $\frac{3}{4}$.



- 4 2017 The numerator (3) results from the life span of the measure. The denominator (4) results from the remaining time until the end of 2020. This leads to a creditable energy saving sum of 17,820 kWh in 2017.
- 1 2020

If this measure was to be set in 2018, it would be credited with the full annual energy saving, i.e. the sum of 23,760 kWh for the year 2018, as in this case the measure would have a savings effect beyond the year 2020.



IV General methods with default values

To enable the identification of potential measures implemented in municipalities, the following table provides possible measures in superscription format. Following to the table, you will find the explanations for several generalized methods.

IV.I Thermally improved building envelope

Construction of non-residential buildings

Refurbishment of non-residential buildings

IV.II Heating systems improvement

Central room heating in a non-residential building

Insulation of the heat distribution pipes in the existing building

Installation of efficient circulating pumps

IV.III Lighting

Efficient street lighting

Efficient lighting in office buildings

Efficient lighting in non-residential buildings

IV. IV Mobility

Alternative car technologies for passenger cars

Eco-driving training



Car fleet renewal

Public transport

Electric bicycles

IV.V Efficient power production

Photovoltaic plants

IV.I Thermally improved building envelope

IV.I.I Construction of non-residential buildings

The building envelope for new buildings in the non-residential building area is performed with higher energy quality than determined in the existing building regulations. Due to improved thermal insulation, an energy saving can be achieved.

Applications: office buildings, other non-residential buildings

Source: Annex 1 BGB1. II, No. 172 of the RL Regulation (as at 30.06. 2016)

IV.I.II Refurbishment of non-residential buildings

The refurbishment of the building envelope in the non-residential building area is performed with higher energy quality than determined in the existing building regulations. Due to improved thermal insulation, an energy saving can be achieved.

Applications: Old building office buildings, office buildings (1919 - 2000), other non-residential buildings

Source: Annex 1 BGB1. II, No. 172 of the RL Regulation (as at 30.06.2016)



IV.II Heating systems improvement

IV.II.I Central room heating in non-residential building

The existing heating system in a non-residential building is replaced by a more efficient one. Domestic hot water is produced by electrically operated, decentralised water heaters and is not changed in this measure.

Applications: office buildings, kindergartens and schools, colleges and universities, hotels and public houses

Source: Annex 1 BGB1. II, No. 172 of the RL Regulation (as at 30.06.2016)

IV.II.II Insulation of heat distribution pipes in the existing building

An existing building has a central heating system. The boiler room with the central heating system is located in the unheated area of the building. The distribution pipes for heating and hot water, which lead up to the standpipes in the unheated area, are not insulated. Those distribution pipes are fitted with thermal insulation. This evaluation method is limited for use in existing buildings. The final energy saving achieved by the insulation of the heat distribution pipes may only be allocated to this measure and cannot be included again in a boiler replacement, for example.

Applications: (single-family houses, multi-family houses, large-scale residential buildings), office buildings, kindergartens and schools, colleges and universities, hotels and public houses

Source: Annex 1 BGB1. II, No. 172 of the RL Regulation (as at 30.06.2016)

IV.II.III Installation of efficient circulation pumps

With this method the energy savings resulting from the installation of efficient circulation pumps can be calculated. Circulation pumps are considered "efficient" if they have an energy efficiency index (EEI) of less than 0.23 and therefore comply with the minimum requirements of the Ecodesign Directive 2009/125 / EC which stipulates an EEI \leq 0.23 for heating circulating pumps from 01.08.2015. The smaller the EEI, the less electrical energy the pump consumes.

Source: Annex 1 BGB1. II, No. 172 of the RL Regulation (as at 30.06.2016)



IV.III Lighting

IV.III.I Efficient street lighting

The street lighting is upgraded to efficient technology (lighting device and power supply unit), and a lower light intensity at night is provided.

The requirements for street lighting systems differ significantly depending on the type of roads to be lit. There is a wide range of technologies applied and difference in the density of the light spots.

Source: Annex 1 BGB1. II, No. 172 of the RL Regulation (as at 30.06.2016)

IV.III.II Efficient lighting in office buildings

The existing inefficient lighting systems (lamp: T8, ballast unit: KVG) in the building are replaced with new, efficient lighting systems (lamps: T5, ballast unit: EVG or LED lamps).

Source: Annex 1 BGB1. II, No. 172 of the RL Regulation (as at 30.06.2016)

IV.III.III Efficient lighting in non-residential buildings

In non-residential buildings, energy-saving lamps (ESL) or light-emitting diodes (LEDs) are used instead of existing lamps. With the entry into force of stage 4 of the Eco-design requirements, the Decree (EC) No 244/2009 of the Commission, the marketing of conventional incandescent bulbs was discontinued.

Source: Annex 1 BGB1. II, No. 172 of the RL Regulation (as at 30.06.2016)

IV.IV Mobility

IV.IV.I Alternative car technologies for passenger cars

When purchasing a new vehicle a car with an alternative drive technology is selected.

The purchase of the car can be a new car or a replacement for an end-oflife vehicle. If a new car is purchased without replacing an existing car, this results in an additional consumption of energy. However, this additional consumption is lower in the case of the purchase of a car with an alternative drive technology than in the case of the purchase of a car with a conventional internal combustion engine. If it can be demonstrated that an



existing car is replaced by the purchased car, a stock rejuvenation takes place. With proof of replacement of an existing car the stock average can be applied, which leads to higher savings.

Application: vehicles operating on natural gas (CNG) or liquid gas **Source:** Annex 1 BGB1. II, No. 172 of the RL Regulation (as at 30.06.2016)

IV.IV.II Eco-driving training

Driving licence holders complete an eco-driving training. In doing so, the core tips for a fuel-saving driving style are provided in a practical and theoretical way and then implemented by the persons participating in the training. A petrol saving training can be completed by professional drivers and by private individuals.

Application: one-day group training (8 lessons), individual coaching (one hour petrol saving)

Source: Annex 1 BGB1. II, No. 172 of the RL Regulation (as at 30.06.2016)

IV.IV.III Car fleet renewal

A stock vehicle of the vehicle category M1 (passenger car) is replaced by a new, efficient vehicle with conventional drive technology. If it can be demonstrated that an existing vehicle is replaced by the purchase of an efficient new vehicle, a stock rejuvenation is carried out. With the proof of replacement of an existing vehicle, the average stock consumption can therefore be used as reference consumption.

Source: Annex 1 BGB1. II, No. 172 of the RL Regulation (as at 30 June 2016)

IV.IV.IV Public transport

Investments in the public transport network increase its attractiveness, and there is a shift from motorised private transport to public transport. The method is applicable in urban and large urban regions (\geq 40,000 inhabitants).

Applications: New construction of railway and tram routes, new bus routes, extension of existing rail vehicle and bus lines, interval compaction, temporary congestion

Source: Annex 1 BGB1. II, No. 172 of the RL Regulation (as at 30.06.2016)



IV.IV.V Electric bicycles

An electric bicycle is selected when purchasing a new vehicle. Part of the driving performance of the electric bicycle was carried out before the purchase of the electric bicycle via motorised vehicle. As it is not possible to replace all the driving distances from the motorised vehicle with the electric bicycle, the shift is independent from whether the purchase of the electric bicycle was a new acquisition or meant as a replacement for the motorised vehicle. The percentage of the mileage which has not been transferred form the motorised vehicle to the electric bicycle leads to an additional energy consumption through the purchase of the electric bicycle.

The difference between energy savings by shifting the mileage to the electric bicycle and the additional consumption results in the final energy saving.

Source: Annex 1 BGB1. II, No. 172 of the RL Regulation (as at 30.06.2016)

IV.V Efficient power generation

IV.V.I Photovoltaic plants

A photovoltaic system is installed at the premises of an end consumer for at least partial self-sufficiency. The calculation of final energy savings by photovoltaic installations is determined by multiplying the power by the corresponding solar hours. It must, however, be taken into account that, according to the Federal Energy Efficiency Act, only the proportion of electricity which leads to the reduction of the end energy, and is therefore not fed into the grid, can be credited as energy efficiency measure. Therefore, the proportion of the energy fed into the grid is also taken into account in the calculation.

Applications: (single family houses), companies, self-sufficient installations

Source: Annex 1 BGB1. II, No. 172 of the RL Regulation (as at 30.06.2016)



IV.VI Annex 1 BGBI. II, No. 172 of the RL-Regulation

The complete method descriptions of the energy efficiency methods indicated in Chapter 4 can be found in Annex 1 BGBI. II, No. 172 on the <u>Website</u> of the National Energy Efficiency Monitoring Agency (German version).

Annex 1 of the RL-Regulation is constantly updated with energy efficiency measures and adapted to current scientific knowledge. It is therefore possible that energy efficiency measures described in this brochure have been changed in the meantime.

V Transfer of energy efficiency measures

Municipalities can transfer the ownership of implemented energy efficiency measures to an energy supplier. The ownership can either be directly transferred to the energy supplier or traded on a platform.

The following points should be considered for the recognition of energy efficiency measures:

- Any energy efficiency measure implemented in one year must be reported to the Austrian MVP (Austrian Monitoring and Verification Platform) by February 14th of the following year. The reporting can be done by energy suppliers or companies can "bank" energy efficiency measures (set aside for later transfer to an energy supplier).
- As the Austrian MVP is hosted by the "Unternehmensserviceportal" (USP), municipalities wishing to use the Austrian MVP first need access to the USP and therefore have to register at the website of the National Energy Efficiency Monitoring Agency.
- The legal basis for the evaluation and allowance of energy efficiency measures within the scope of the Act is the <u>Energy efficiency-Directive</u> <u>decree</u> – see information in Chapter III



- <u>Annex 1 of the Directive decree</u> (German) regulates the calculation method and the documentation requirements for all the generalized methods with default values and general methods with project-specific values.
- A measure must be carried out "additionally": measures which are implemented anyway (those that have no positive effects on the baseline scenario of final energy consumption) are not creditable. These can be measures which have to be implemented by law (for example, minimum standards for new housing), or technical or economic circumstances.
- According to the EEffG, the incentive required for setting the efficiency measure is also to be specified in the documentation of energy efficiency measures. An incentive does not necessarily have to be monetary. It is crucial that the energy efficiency measure has been implemented due to the incentive.
- Energy efficiency measures promoted by several funding agencies can be calculated pro rata. Double counts are not possible. In accordance with the EEffG, housing subsidies by the federal states or the so called "Environmental Support in Austria" (Umweltförderung Inland) and the programme for the thermal refurbishment "Refurbishment Checks" (Sanierungsschecks) are entirely credited to the federal government's obligation and cannot be shared even in the case of co-funding.
- Measures which merely improve the use of primary energy do not constitute a creditable measure within the scope of the EEffG. Energy efficiency measures must lead to an increase in energy efficiency in final energy consumption (for example, in the case of private households).
- Energy efficiency measures can be divided. Division of measures is useful, if e.g. a municipality has the right to a measure with very high saving effects and wants to transfer it to several energy suppliers. Dividing a measure is only allowed during the first transfer (implementer of the measure to a third party). For further transfer, from the third party to a committed energy supplier, no division is possible.



The energy efficiency measures must have been implemented in Austria. The above points ensure a uniform evaluation and implementation of energy efficiency measures in Austria, high quality of reported data and the prevention of double counting.





VI Summary

The aim of the Energy Efficiency Act in Austria is to limit final energy consumption to 1,050 PJ by the year 2020 Municipalities are not directly legally bound by the Energy Efficiency Act. However, municipalities may be required to operate within the framework of an urban energy supplier if they have final energy sales of at least 25 GWh or if they act as owners of large companies according to the Energy Efficiency Act. In such cases, the same obligations shall apply as with all other obligated parties.

Municipalities have the possibility to use energy efficiency measures implemented for their own potential obligation.

Energy efficiency measures implemented in municipalities can however be transferred directly or through intermediaries (for example, trading platforms) to energy suppliers, if no obligation exists.

Four approaches are available for the evaluation of energy efficiency measures:

- Generalized methods with default values
- Generalized methods with project-specific values
- Company-based energy efficiency method (for municipalities with companies)
- Individual evaluation

The nature of the evaluation depends on the energy efficiency measure implemented. Generally, any energy efficiency measure that leads to verifiable, measurable or justifiable final energy savings is creditable.

Municipalities are making an important contribution to the achievement of climate and energy targets as set by the European Union. By implementing energy efficiency measures, they are directly contributing to the preservation of an unspoilt environment and higher living standards.



VII Links

Energy Efficiency Act

https://www.monitoringstelle.at/fileadmin/i_m_at/pdf/Energieeffizienzpaket_des_Bundes.pdf

Energy efficiency Directive decree (394. Decree ERLV)

https://www.ris.bka.gv.at/Dokumente/BgblAuth/BGBLA_2015_II_394/BGBLA_2015_II_394.pd

Method document of the National Energy Efficiency Monitoring Agency

https://www.ris.bka.gv.at/Dokumente/BgblAuth/BGBLA_2016_II_172/COO_2026_100_2_124 1958.pdf

National Energy Efficiency Monitoring Agency

www.monitoringstelle.at

Registration with the National Energy Efficiency Monitoring Agency

https://www.monitoringstelle.at/index.php?id=679

Company service portal (USP)

www.usp.gv.at

Website multEE

http://multee.eu/