Impact assessment concerning proposals for

- New regulations on the inspection of thermal energy meters, STAFS 202X:X
- New regulations on the inspection of water meters, STAFS 202X:Y
- Repeal of the Swedish Board for Accreditation and Conformity Assessment's regulations and general guidelines (STAFS 2007:2) on periodic inspection of water meters and heat meters

Contents

1. Introduction to and summary of the proposals

Swedac is authorised to issue regulations on requirements for water and thermal energy meters according to Section 4 of the Ordinance (1993:1066) on quantity units, measurements and measuring devices and by Section 7 of the Ordinance (1994:99) on water meters and heat meters. On this basis, and in accordance with the older provision in Section 9 of the Ordinance (2005:894) on technical inspection, Swedac has issued regulations and general guidelines (STAFS 2007:2) on periodic inspection of water meters and heat meters. This regulatory framework contains the requirements for, inter alia, inspection, sealing and documentation that apply for water meters and heat meters.

At Swedac, we are currently reviewing our regulations relating to legal metrology. As part of this review, we propose amendments to the provisions of STAFS 2007:2. We propose that the regulatory framework be divided into two separate sets of regulatory frameworks – one relating to water meters and one relating to thermal energy meters. In developing the proposed regulations, we have also taken into account the government assignment given to Swedac to simplify our own regulations with the aim of reducing the regulatory burden on businesses.[1]

In December 2024, we submitted a previous proposal for new regulations. In light of the responses received, the proposals have been partially revised. In summary, changes have been made to the following parts:

- Amended inspection intervals in Section 15. Previously, inspections were proposed to take place at least every seven years. Instead, it is now proposed that inspections be carried out no later than the ninth calendar year and thereafter every four years. The reasons for this are set out in Section 2.4.
- New error limits and special tables in Section 6 for statistical verification. Previously, a single error limit was proposed regardless of the form of inspection. Instead, a double error limit is now proposed for statistical verification of meters in service, which is a return to the requirements that apply today. The reasons for this are laid out in Section 2.4.
- Clarification in Section 12. Linguistic amendment to clarify the handling of meters in a single batch during statistical verification. More information about this provision is provided in Section 2.4.
- Adjustments to the provision on batch selection regarding water meters, STAFS 202X:Y, Section 16. The third point in the list has been split into a third and a fourth point, to improve readability. The change is purely editorial. A clarification is also made of the provision's time indication. The reasons for this are laid out in Section 2.4.
- Amended entry into force. Previously, the proposed date of entry into force was 1 April 2025, but now it is proposed to be 1 April 2026. Section 10 deals with our considerations regarding entry into force.

[1]Government Decision: *Mandate to simplify regulatory frameworks in order to reduce the regulatory burden on businesses*, CN2024/01546, 18 July 2024

The purpose of the amendments we propose is to harmonise the provisions with other regulations on the inspection of measuring instruments that we have adopted or plan to develop. We have also clarified several provisions and restructured the regulatory framework. In addition to the amendments we make as part of the review of the regulatory framework, other substantive amendments of different types are being proposed. Important changes include that it will no longer be necessary to inspect meters that will no longer be in use, as well as changes in how meters can be inspected through statistical verification (i.e. random checking). The reason why STAFS 2007:2 should be converted into two separate regulatory frameworks is that there are such differences between water and thermal energy meters, and the rules needed for them, that it is more natural to have a regulatory framework for each individual measuring instrument.[2] In addition, those who must comply with the regulations are divided into two separate collectives.

The changes should be introduced through two new basic statutes, whereby we repeal STAFS 2007:2. We estimate that the new statutes will come into force on 1 April 2026 at the earliest.

In summary, the draft contains the following:

- A review of the scope
- Changes regarding the requirement that entire batches of thermal energy or water meters be taken out of service for periodic inspection
- Changes in the options for use of random checks and a reduction in the number of meters to be inspected
- Changes to the requirements for inspection prior to meter modification and the provisions aimed at shortening the maximum service life depending on the results of that inspection
- The period during which a meter may remain in service before undergoing inspection is initially set at nine years, and thereafter four years, for all types of meters governed by the regulations
- Removal of certain documentation requirements
- Editorial changes to ensure that all regulations concerning periodic inspections follow a uniform structure and are easier to understand and apply

To improve readability and avoid unnecessary repetition, the proposals apply to both sets of regulatory frameworks, unless otherwise stated. Questions that concern only thermal energy meters or only water meters are marked to clarify this.

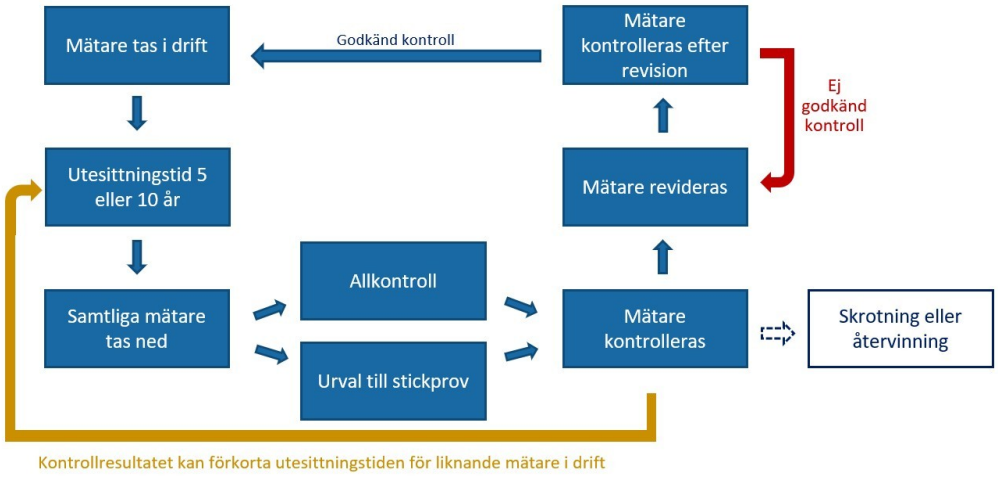
2. Description of the problem and what is to be achieved

The current regulations originate from the period before Swedac took over as the regulatory authority and supervisory authority for thermal energy meters and water meters. Many of the provisions therefore date back to before 2007, despite the fact that our current regulation was published that year. The industry has long had opinions on the design of the regulations and expressed that the regulatory framework is perceived as rigid. In our supervisory role, we have also noted that STAFS 2007:2 contains a number of provisions that are difficult to interpret. This risks causing uncertainty and inconsistency in application.

[2] A thermal energy meter measures energy consumption in kWh using flow sensors, temperature sensor pairs and integrating units. A water meter measures the quantity of water consumed in m^3 by means of a flow sensor.

In many respects, the current regulations are designed in such a way that they can be considered *backward-looking*. By this, we mean that the provisions are focused on assessing how meters and meter batches have historically performed during the time they have been in service. STAFS 2007:2 requires that a meter be taken down before the expiry of a determined maximum service life. This interval varies depending on the type of meter in question. Once the meter has been taken down, it shall undergo periodic inspection before it can be either modified or scrapped. The inspection may be carried out either as a random check or as a full inspection, i.e. all meters in a batch are inspected. If the inspection of a batch shows that the percentage of faulty meters exceeds 6.5%, the distributor shall reduce the maximum service life of similar meters in service by between one and five years, depending on the failure rate. In order to be approved for a further maximum service life, a meter must undergo a modification, be inspected once again (against a single error limit, with an approved result), be sealed and otherwise be assessed as having the potential to withstand another maximum service life.

The current regulation thus requires all meters to be taken down after a certain period of time. They shall also undergo inspection to assess how the batch and similar meters have fared during their maximum service life, regardless of whether the batch will continue to be in service or not. Based on the results of the inspection, measures are also expected to be taken to reduce the time that similar meters may be in service. The current regulation can be illustrated as follows.



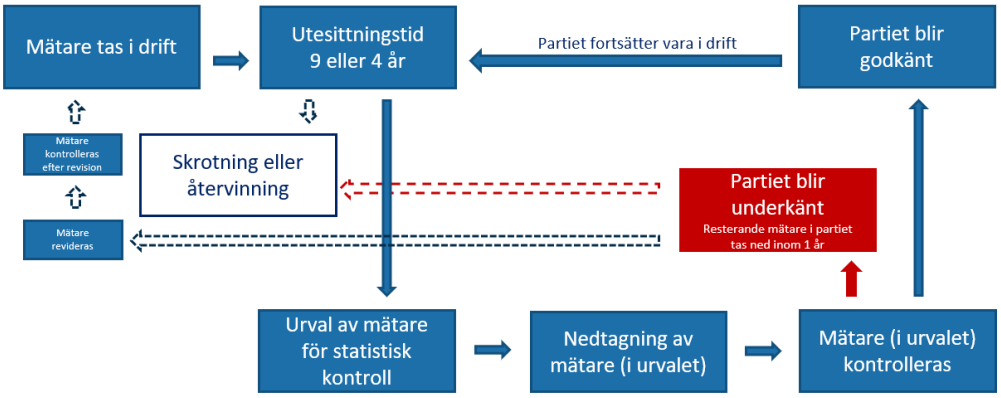
Mätare tas i drift	Meters are put into service
Utesittningstid 5 eller 10 år	Maximum service life of 5 or 10 years
Samtliga mätare tas ned	All meters are taken down
Allkontroll	Full inspection
Urval till stickprov	Selection to random check
Godkänd kontroll	Inspection approved
Mätare kontrolleras efter revision	Meters inspected after modification
Mätare revideras	Meters modified
Mätare kontrolleras	Meters inspected
Ej godkänd kontroll	Inspection not approved
Skrotning eller återvinning	Scrapping or recycling

Kontrollresultatet kan förkorta utesittningstiden för likande mätare i drift	The inspection result may shorten the maximum service life for similar meters in service

Figure: Illustration showing inspection of a thermal energy or water meter batch in accordance with STAFS 2007:2

The regulations we propose aim instead to be *forward-looking*. The results of the prescribed inspections shall be used to assess how a meter batch can be expected to perform forward in time. The measures required by the regulations have therefore been adapted according to the consequences for those meters that remain in service or are to be put back into service. Briefly, the proposed regulations can be described as follows. STAFS 202X:X and 202X:Y require that a meter currently in service is inspected before the end of an initial maximum service life of nine years, regardless of the type of meter. The inspection can be carried out per individual meter, or by means of statistical verification of a meter batch. Batch sample selection takes place while the meters are still in service, and only those meters included in the statistical sample need to be taken out of service for inspection. If the batch passes inspection, it may remain in service for a further four-year period. If the batch fails inspection, the remaining meters in that batch shall be taken down within a period of one year. No inspections are carried out on meters that are not to be put back into service. In this way, the proposed regulations have been drawn up with the aim of managing confidence in the measurement values today and in the future for meters that are, and will continue to be, in service.

Our proposed regulations can be illustrated as follows:



Mätare tas i drift	Meters are put into service
Mätare kontrolleras efter revisions	Meters inspected after modification
Mätare revideras	Meters modified
Utesittningstid 9 eller 4 år	Maximum service life of 9 or 4 years
Skrotning eller återvinning	Scrapping or recycling
Urval av mätare för statistisk kontroll	Selection of meters for statistical verification
Partiet fortsätter vara i drift	The batch continues to be in service

Partiet blir underkänt	The batch fails inspection
Resterande mätare i partiet tas ned inom 1 år	Remaining meters in the batch taken down within 1 year
Nedtagning av mätare (i urvalet)	Meters taken down (in the sample)
Partiet blir godkänt	The batch passes inspection
Mätare (i urvalet) kontrolleras	Meters (in the sample) are inspected

Figure: Illustration showing statistical verification of a thermal energy or water meter batch according to STAFS 202X:X and 202X:Y

The main reason for the changes we propose is, as mentioned above, that the current regulations are backward-looking. We do not consider this to be an appropriate way to regulate, based on the experience we now have after several years of supervision in this area.

The regulations are intended to safeguard the collective interests of consumers by ensuring accurate measurements. This purpose is served through moving to a more clear focus on provisions that protect the collective, rather than any one individual meter holder. Some parts of the regulations are also perceived as unclear and difficult to apply. An example of this is the requirement to take down all meters after the maximum service life. This has proven to be difficult, not least during our supervision, when users do not always, for various reasons, have access to the meter location.

In addition, the provisions regarding batch sample selection, shortened maximum service life and household consumption have been difficult to interpret. Another reason for the change is that the regulation covers two different types of meters – thermal energy and water. These meters are technically different. Thermal energy meters measure total energy consumption in kWh with three sub-components, while water meters measure total water consumption in cubic meters with a flow sensor. The regulations also apply to two separate collectives. The regulation is divided up in order to address these differences.

With the proposed amendments, we aim to ensure that the regulations are clear and applicable. We want to design the regulations in such a way that they do not constrain either the industry or the supervisory authority with unnecessary detailed provisions or contribute to opportunity costs by reducing the scope for action. As mentioned above, the purpose of several of the amendments is also to make the provisions uniform in relation to other regulations on the inspection of measuring instruments already adopted or planned by Swedac.

2.1 Scope and definitions – Sections 1 and 2 of STAFS (202X:X) and STAFS (202X:Y) (proposals relating to Sections 1 and 2 of STAFS 2007:2)

Section 1 Scope

2.1.1 Proposal for a new regulation on thermal energy meters, STAFS 202X:X

Since we propose to convert the regulatory framework into two separate regulatory frameworks, we will change the scope to only relate to thermal energy meters. Furthermore, the term 'heat meter' is consistently amended to 'thermal energy meter' to ensure consistency with the term used in the Measuring Instruments Directive[3], which, for thermal energy meters, was implemented in STAFS 2022:5 on thermal energy meters. Since 'sub-assemblies' are covered by the definition of thermal energy meters in STAFS 2022:5 on thermal energy meters, to which there is a reference in Section 2, we propose not to specify sub-assemblies specifically.

The current regulation covers thermal energy meters used to measure household consumption of thermal energy. However, it does not include meters used for sub-metering, i.e. measurement at the level of individual apartments. We consider that the inspection requirements should continue to exclude meters for sub-metering, as it is considered sufficient for the meter that measures use in the entire building, i.e. the main meter, to be covered by the requirements. We nevertheless propose that the scope be reworded and that reference be made to the District Heating Act (2008:263), which requires district heating companies to measure the amount of thermal energy supplied. This does not entail any change in practice, but makes it clearer which actors and measurement points are covered by the regulations.

2.1.2 Proposal for a new regulation on water meters, STAFS 202X:Y

Since we propose to convert the regulatory framework into two separate regulatory frameworks, we will change the scope to only relate to water meters.

The current regulation covers water meters used for the measurement of household water consumption. However, it does not include meters used for sub-metering, i.e. measurement at the level of individual apartments. We propose that this restriction in scope should remain, as we consider it sufficient for the meter that measures use in the entire building, i.e. the main meter, to be covered by the requirements.

By using the term of *mandator* according to the definition contained in the Public Water Services Act (2006:412), it is made clear in the regulations which operator the provisions affect. This simplifies the wording of the regulations and brings their structure into line with regulations on periodic inspections in other areas, such as the proposal on thermal energy meters and the current regulations on electricity meters[4].

[3] Directive 2014/32/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of measuring instruments (recast)

The concept of mandator under the Public Water Services Act (2006:412) applies only to those who own a public water and sewerage facility. Therefore, only municipal actors are covered by the regulations, and private actors fall outside the scope.

According to a report from the Swedish Food Agency in 2022, about 88 per cent of the Swedish population receives their drinking water from a municipal water source that is managed by a municipal water and sewerage mandator or a water and sewerage company. The remaining portion of the population, i.e. over one million people, rely on a private or shared water source for their drinking water. These water sources often include drilled wells, but can also be dug wells, surface water sources, natural springs or small desalination plants. A small drinking water facility may supply an individual household, but there are also many forms of joint ownership and operation of such facilities. [5]

It is not assumed that all variants of private drinking water facilities actually measure water consumption for the purpose of charging for it. Instead, these facilities can use alternative solutions, such as fixed fees or similar models. In addition, these facilities are often jointly-owned to a greater extent, which means that those that consume the water do not necessarily have the same consumer perspective as those customers connected to public water and sewerage facilities. Since the conditions and requirements for private drinking water facilities may differ significantly from municipal drinking water facilities, we do not consider it reasonable that the same requirements should be used for the inspection of water meters in private as in public facilities.

The scope also does not cover the supply of hot water, known as domestic hot water. According to information in the government proposal regarding implementation of amendments to the Energy Efficiency Directive on domestic heating, cooling and hot water, there is no transfer and delivery of domestic hot water from a central source to end customers.[6] There is therefore no reason to regulate this area by means of the current regulations.

The provision has been reworded slightly compared to previous referrals, in order to increase readability. The amendment does not entail any substantive changes compared with the previously submitted version.

Section 2 Definitions

In the provision on definitions, we propose that the references be updated to refer to the current regulatory frameworks STAFS 2022:5 on thermal energy meters and 2022:4 on water meters instead of the older regulatory frameworks for heat meters and water meters.

We further propose that the definitions for *periodic inspection* and *maximum service life* be removed. These definitions are not necessary because Section 15 of the respective regulations

[4] The Swedish Board for Accreditation and Conformity Assessment's Regulations (STAFS 2022:9) on measuring systems for measuring transferred electricity
[5] Schulte-Herbrüggen, H. M. A., Christensen, J., Olofsson, B., Morey Strömberg, A. 2022. *Drinking water from small drinking water facilities for private use*. The Swedish Food Agency's external report series. Swedish Food Agency, Uppsala. E 2022 No. 01, p. 14
[6] Government Bill 2021/22:124, p. 23

specifies when meters must be inspected.

It is proposed that the definition of *meter modification* is given a new and similar wording to that in other regulations on the inspection of measuring instruments that we have recently adopted or are planning to adopt. This does not entail any substantive change.

Four new definitions are proposed for *entry into service*, *in service*, *sealing* and *repair*.

Entry into service means the first use of a meter for the purposes set out in Section 1. STAFS 2016:1[7] contains a general definition of *entry into service* for all measuring instruments. The proposed new definition corresponds to a way of expressing the same thing in an instrument-specific manner.

The definition of a meter *in service* is a meter that is installed at a metering point. The definition has been added because it is helpful to the application of the regulations to clarify this concept. It was previously unclear how a meter installed at a metering point, but not used for billing, would be covered by the regulations. This has resulted in district heating companies and mandators sometimes believing that meters have been taken out of service through administrative measures in billing systems or similar, despite the meter remaining in place at the metering point. Many of the requirements in the regulations relate to a meter being in service, how long it has been in service, or measures to be taken after it has been taken out of service. It is therefore important to have a clear definition of the concept.

Sealing means physical or software-based protection against unauthorised alteration of the meter's metrological features. 'Seal' needs to be explained in order to clarify that the seal referred to in the regulations is to safeguard the metrological features of the meter.

The term *repair* appears in the definition for modifying that we propose. The fact that a meter has undergone a modification is a situation requiring that the meter undergo inspection. One reason for introducing the definition of 'repair' is to specify the point at which a meter or sub-assembly has been altered to the extent that it is considered a new product. A meter or sub-assembly that is considered to constitute a new product shall not be subject to inspection in accordance with the regulations. Instead, a new conformity assessment shall be carried out in accordance with the requirements applicable to newly manufactured meters.

2.1.3 Proposal for a new regulation on thermal energy meters, STAFS 202X:X

We define the concept of *district heating companies* in order to make clear which operators are referred to in the regulations. The concept is found in the District Heating Act (2008:263) and we consider it appropriate to refer to that Act.

2.1.4 Proposal for a new regulation on water meters, STAFS 202X:Y

We define the concept of *mandator* in order to make clear which actors are referred to in the regulations. The concept is found in the Public Water Services Act (2006:412) and we consider

[7] The Swedish Board for Accreditation and Conformity Assessment's regulations on measuring instruments, STAFS 2016:1

it appropriate to refer to that Act.

2.2 Responsibility for compliance with the requirements – Section 3 STAFS (202X:X) and STAFS (202X:Y)

(proposals relating to, inter alia, Sections 4, 7 and 9 of STAFS 2007:2)

We propose a special provision to the effect that the district heating company and the mandator respectively shall ensure that thermal energy meters and water meters comply with the requirements and undergo such inspections as required by the regulations. The change means that we are clarifying who is responsible for ensuring that the requirements are met. We consider this construction to be suitable for the avoidance of repetitions, but it does not entail any substantive change. The equivalent to this provision is found in particular in Sections 4, 7 and 9 of STAFS 2007:2.

In the current regulations, the term distributor is used in certain provisions to refer to the party responsible for ensuring compliance with the requirements. Since the term 'distributor' may bring to mind an economic operator (manufacturer, manufacturer's representative, importer and distributor) and since the areas of application are being changed to refer to the District Heating Act (2008:263) and the Public Water Services Act (2006:412), it is more appropriate for the district heating company and the mandator to be specified as responsible.

2.3 Requirements for meters – Sections 4, 5, 6, 7 and 8 of STAFS (202X:X) and STAFS (202X:Y)

(proposals relating to, inter alia, Sections 1, 3, 4 and 8 of STAFS 2007:2)

Section 4 Requirements for entry into service

This provision states that requirements for entry into service of meters are contained in STAFS 2022:5 on thermal energy meters and 2022:4 on water meters, respectively. Corresponding information is found in Section 1(3) of STAFS 2007:2. The provision has been updated to refer to the currently applicable instrument-specific regulation.

In Section 4(2) of the two proposed regulations, we have inserted a provision stating that a meter taken out of service may only be put back into service if it has been inspected and has been found to meet the requirements of the regulations. The purpose is to make it clear that a meter that is taken out of service cannot be put back into service without having been inspected, with an approved result. The provisions governing when a meter must be inspected are otherwise set out in Section 15, see below. We have assessed that the current paragraph is more appropriate in connection with the provisions dealing with general requirements for meters, as these also concern the conditions necessary for the meter to be in service in a manner that is permitted.

This is a clearer regulation that entails a higher requirement than previously. STAFS 2007:2 contains a general obligation to take down meters for inspection after a certain maximum service life, but there are no explicit requirements for inspection when putting meters into service again after, for example, temporary decommissioning. The new provision now clarifies

that each introduction into service of a previously used meter requires an assessment of whether the meter meets the requirements of the regulations.

During the previous consultation process, several water and sewerage mandators submitted questions regarding the management of so-called ‘summer meters’. This refers to meters that are regularly taken down during the winter to avoid the risk of the meter freezing and breaking. They are then reinstalled in the same location when they are to be used again. We consider that it is not possible or appropriate to introduce special rules for these instances in the regulations. The regulations specify general requirements that apply to all meters, but leave room for mandators to find practical solutions themselves within the framework of the regulatory framework. It is therefore up to each mandator to manage the use of such meters in a way that meets the requirements of the regulations and at the same time functions in the local context.

Section 5 Installation

The provision in Section 5 corresponds in part to Section 3 of STAFS 2007:2 and the general advice on that provision. The amendments proposed in this part remove the reference to standards and manufacturer’s or supplier’s instructions. Instead, the provision states that the meter shall be installed in such a way that it reliably measures the thermal energy respective water volume that is likely to occur at the measuring point. This means that the manufacturer’s instructions must be followed. In addition to the manufacturer’s instructions, we do not consider that there is any particular need for standards to be followed during installation. The manufacturer shall take into account the relevant standards at the instruction design stage.

Section 6 Error indication

The provision in Section 6 of STAFS 202X:X and STAFS 202X:Y corresponds to Section 3(2) of STAFS 2007:2.

Current regulations require that a meter be inspected on two occasions: before modifying or scrapping, and after modifying. The inspection prior to modifying or scrapping is usually referred to as an ‘intake test’. The results of this inspection are used to determine whether the maximum service life of similar meters in service should be reduced in accordance with the provisions of Section 5 of STAFS 2007:2. For this inspection, a double error limit shall be applied, compared with a new meter.

A single error limit shall be applied when carrying out inspection after a modification. The aim is for the meter to have a measurement accuracy equivalent to that of a new meter.

We propose that the intake test be abolished, which will mean that all inspections on individual meters will be of the type currently applied after modifying. This means that the meters’ error indication must meet the same requirements as a new meter, as they will remain in service for a further period or be put back into service.

Tables showing measurement accuracy can be found in Annex 1 to the current regulation. As

part of the general review of our regulations, we propose that the tables be included in the running text of the regulation instead. This is more in line with other regulations concerning metrology.

According to our proposal, the tables will be redesigned, removing the column concerning periodic inspection (intake test). The reason for this is that the proposed regulations will no longer impose the same requirements for periodic inspections.

Unlike the previously submitted proposal, the current proposal contains two new tables (*table 1b* and *2b*) to be used for statistical verification. These values correspond to the double error limit normally applied for inspection of individual meters. The previously referred proposal suggested that the same error limit should be applied to all inspections, including statistical verification. This represents a stricter application compared to the current STAFS 2007:2, where double error limits have been accepted. Several referral bodies criticised the proposed amendment, pointing out that it would reduce possibilities for statistical verification and lead to increased costs and extra work for meter owners. In light of this, Swedac has decided to adjust the proposal.

The regulations now distinguish between error limits for individual inspection and for statistical verification. When inspecting individual meters, the standard error limits in *table 1a* and *2a* apply. For statistical verification, double error limits are applied instead according to *Tables 1b* and *2b*. The purpose of this division is to adapt the error limits according to the inspection type. Individual inspection involves a decision as to whether a specific meter meets the requirements for being put back into service, and should therefore be based on the error limit which expresses the maximum permissible error indication for a new meter. The error limit is the same as that applied to new meters that are to be put into service.

Statistical verification, on the other hand, is used to assess the condition of an entire meter batch. The result is used to assess whether the batch may remain in service. The information received from referral bodies and the statistics on completed inspections from Swedac show that a double error limit for statistical verification provides a reasonable balance between measurement accuracy and practical applicability. If a single error limit would also be applied in statistical verification, a large proportion of batches would be rejected, even though they,in practice, demonstrate acceptable measurement performance. It would also reduce the possibility for district heating companies and mandators to exploit the efficiency gains that statistical verification provides. To avoid entire batches being rejected due to occasional deviations, a higher tolerance level, compared to the previously submitted proposal, in the form of double error limits, is proposed. In the current proposal, the error limits and sampling points in Section 6 have therefore been returned to the same level as in STAFS 2007:2.

The current proposal combines unchanged error limits in Section 6 with new inspection intervals in accordance with Section 15, compared with what was previously submitted. These changes should be viewed together. The longer first inspection interval is made possible by, among other things, the error limit for statistical verification being adapted to the conditions for the type of inspection in question. Since the error limits in Section 6 are proposed to remain unchanged, the proposal now submitted has been able to take more fully into account supporting documents in the form of available data on the meters. This provides a more realistic model for monitoring the performance of meters in service, without complicating the

use of statistical verification as a method.

Regarding *Tables 2a* and *2b*, the following should be mentioned in particular. The tables indicate test points for 'other meters', i.e. all meters other than those specified in *Tables 1a* and *1b*. This differs from STAFS 2007:2, which relates to meters approved in accordance with the Swedish National Board of Housing, Building and Planning's previous regulations, BFS 1994:26 or approved in accordance with BFS 1994:26 on a basis other than SS-EN 1434. The difference entails a certain expansion in substance, as *Tables 2a* and *2b* now formally cover all meters that do not fall under *Tables 1a* and *1b*, regardless of whether they were previously regulated or not. It is, however, unlikely that such meters are still in use in practice. In cases where such meters still remain in use, the new regulation means that they are now also covered by test points and error limits during inspections, which clarifies the legal situation and enables them to meet the inspection requirements in practical terms.

Specifically regarding the Tables in Section 6 of the proposal for a new regulation on thermal energy meters, STAFS 202X:X

In the current regulations there is no way to inspect the complete meters available on the market. We consider it necessary to introduce a method for inspecting these complete meters. This is because the absence of a regulation to test such meters against would mean that they cannot be inspected in order to be put into service for a new period. If the meters cannot be inspected or modified for a new period in service, there is a high probability that they will not be chosen at the time of purchase. The absence of a provision governing their inspection could thus constitute a technical barrier to trade.

Section 7 Sealing

In Section 7 of STAFS 202X:X and 202X:Y, we propose a new provision according to which an in-service meter shall be sealed. It is currently assumed that an in-use meter is sealed and there is a requirement in the current rules that the meter shall be sealed after inspection if it is to be used again, see Section 8, first paragraph, STAFS 2007:2. We consider it appropriate that a sealing requirement is expressed in the regulations, thereby bringing them into line with other Swedac regulations on the inspection of measuring instruments.

Section 8 Securing metrological features

According to Section 8 of the proposed regulations, a meter, when taken down for inspection, shall be stored under conditions that do not alter its metrological features. The general guidelines for Section 4 of STAFS 2007:2 state, among other things, that a meter should be plugged when taken down and that the inspection should be carried out shortly after the meter has been taken down. A problem with the general advice is that if a meter is plugged and the water in it freezes, the meter may break. Thus, it is not always appropriate to plug a meter. In order for the values obtained during the inspection to be as accurate as possible, it is important that the meter is stored after removal in such a way that its metrological features are not altered. In this context, we propose that the general guidelines for Section 4 of STAFS 2007:2 be converted into a provision with broader and more appropriate content.

2.4 Provisions on inspection – Sections 9–18 of STAFS 202X:X and 202X:Y

(proposals relating to Sections 4 and 6 of STAFS 2007:2)

Section 9 Inspection requirements

The content of the proposed provision in Section 9 partly corresponds to Sections 4 and 6 of STAFS 2007:2. An important difference from the current regulation is that Swedac will no longer require a meter to undergo periodic inspection if it is to be scrapped or if it, for other reasons, no longer is going to be used. This is also the basic principle that applies to other measuring instruments regulated by Swedac.[8]

Furthermore, we propose that it should be possible to inspect meters by means of statistical verification, without the meters having been taken down first (taken out of service). An advantage of the option of statistical verification without the compulsory removal of all meters in a batch is that it could promote the use of meters of better quality and reduce the number of meters scrapped after the first period of maximum service life. During consultation with the industry, inspection bodies in the field have pointed out that the proposed changes could provide an incentive to purchase what they refer to as 'inferior' meters, as there is nothing to prevent the meter from being scrapped without inspection once the maximum service life has passed. In this context, we would like to point out that regardless of the brand or type of meter purchased, the meter must meet the requirements set out in the Measuring Instruments Directive. The current requirement for all meters to be taken down and inspected entails a great workload for district heating companies and mandators, as well as high transport and inspection costs. The proposal to remove these requirements therefore offers environmental benefits and reduced costs. The cost of purchasing new meters after each maximum service life must also be compared with the potential savings that can be achieved by allowing meters that have passed inspection to remain in place. Our overall assessment is that, by means of statistical verification, where only a small section of the meter batch is taken down and inspected, there is instead an economic incentive to purchase meters of good quality that can withstand several periods of maximum service life. See section 6 for examples of the calculations that this assumption is based on.

Finally, it should be pointed out that the provision states that inspection *may* be carried out by means of statistical verification. The district heating company and the mandator may thus continue to inspect each individual meter, if this is deemed to be a better option.

Section 10 Decision rule related to measurement uncertainty

The content of the proposal for Section 10(1) is indirectly apparent from Sections 3 and 6 of STAFS 2007:2, Section 5 of Annex 2 and Section 3 of Annex 3 to STAFS 2007:2. The equivalent of the second paragraph of this provision is found in Sections 3 and 6 of STAFS 2007:2. We propose this provision in order to make the requirements clearer and more consistent with

[8] See, for example, the Swedish Board for Accreditation and Conformity Assessment's regulations on measuring systems for measuring transmitted electricity, STAFS 2022:9, the Swedish Board for Accreditation and Conformity Assessment's regulations on periodic inspection of measuring systems for liquids other than water, STAFS 2007:3, the Swedish Board for Accreditation and Conformity Assessment's regulations on periodic inspection of automatic weighing instruments, STAFS 2007:1

other regulations concerning inspection of measuring instruments.

The proposed decision rule refers to how the measurement value and the associated measurement uncertainty are to be handled when a decision is to be made as to whether or not the inspection produces an approved result. In the proposal, the decision rule is worded in such a way that both parties to the measurement (i.e. both the payer and the payee) may take on equal risk of the measured value's uncertainty falling outside the maximum permissible error limit. The principle of this decision rule is referred to as 'shared risk'.

Section 11 Resealing

Section 8 of STAFS 2007:2 states that sealing must be carried out before the meter is used for a further maximum service life. We want to make it clear that there is a requirement that a meter shall be resealed in all situations where the seal has been broken and the meter is to be used again. Furthermore, the provision in section 4 of Annex 1 to STAFS 2007:2 stipulates that it shall be the inspection body that carries out the sealing. However, it is also appropriate that a resealing can be carried out by the manufacturer of the meter. This also applies under other regulations concerning the inspection of measuring instruments. We therefore propose a provision according to which the inspection body or the manufacturer of the meter shall carry out the resealing if a seal has been broken.

With regard to the provisions in section 4 of Annex 1 to STAFS 2007:2 on how the sealing process shall be performed, we propose that reference be made to the content of an EU type-examination certificate or equivalent documentation. The documentation listed in the current regulation is thereby covered. We also propose that the provisions regarding sealing material in section 4 of Annex 1 to STAFS 2007:2 be removed, as the provisions in that section do not serve any particular purpose. An inspection body cannot choose the type of seal to be used on a meter, as this depends on how the manufacturer has designed the seal. It is sufficient that the sealing is carried out in accordance with the manufacturer's instructions as specified in the EU type-examination certificate or equivalent documentation. This documentation has been reviewed by the body that assessed the meter and it is thereby ensured that the seals used comply with the applicable requirements. Another reason why these provisions are unnecessary is that requirements relating to how a seal shall be applied are laid down in other regulations governing the manufacturer of the meter.

Section 12 The effect on approved and non-approved meter batches, respectively

We propose a new provision regulating what is permitted in terms of allowing meters to remain in service when they are subject to statistical verification. This makes clear how meters that have undergone such inspections may be handled. According to the current regulation, all meters must be taken down before the expiry of the maximum service life, regardless of whether the batch to which they belong is to be inspected by means of full inspection or statistical verification. Since they have been taken down, they must undergo inspection before they can be reinstalled, regardless of whether they were part of the statistical sample. Therefore, under the current regulation, there has been no need for a similar provision.

In contrast to the previously submitted proposal, the phrase ‘put back into service’ has been removed. This is to make it clear that a meter that has been decommissioned in accordance with Section 4 may only be put back into service if it has been inspected and found to meet the requirements of the regulations. This means that meters belonging to the sample referred to in Section 17, and thereby representing a batch subject to statistical verification, may only be put back into service if they have been approved against a single error limit, *table 1a* or *2a*. However, for the batch itself to be approved, it is sufficient that the meters pass the double error limit inspection, according to *table 1b* or *2b*.

For a batch that is rejected on the basis of statistical verification, we propose a sunset clause (one year) for when the meters in the batch must have been taken out of service at the latest. All meters must of course meet the requirements of the regulations at any given time. Therefore, a faulty meter must be dealt with promptly. The reason why a specific time limit should nevertheless be introduced is that a large number of meters may have to be removed if a large batch has been rejected and all meters therefore must be replaced at the same time. It is likely that this entails a larger undertaking and, therefore, there is reason for the replacement process to take some time.

We are also introducing a provision that allows, in individual cases where the circumstances are such that it is justified, some meters in a batch to remain in place even if the batch is rejected. The aim is to avoid a situation in which an entire batch must be taken down if at the same time it is obvious that only some meters account for the error indication that forms the basis for the batch rejection. This option should only be used if it is possible to reliably locate and isolate the faulty meters. The circumstances that could form the basis for such an assessment cannot be defined in advance, but must be determined on a case-by-case basis. Examples include manufacturers who can identify meters that have been found to have component faults, or district heating companies or mandators who are aware of problems in a certain part of a network. It will also be up to district heating companies and mandators respectively to document and justify their position vis-à-vis the supervisory authority in cases where they have made use of this provision.

During the consultation, it was pointed out that it can be difficult to replace an entire meter batch within just one year of batch rejection. However, we consider this to be justified, based on the consumers’ interest in billing being based on reliable meter readings. It is therefore justified to demand meter batches that have been found to have excessive measurement uncertainty be taken down as a matter of urgency. We also want to point out that the risk of requirement for meter batches to be swiftly taken down already exists, according to Section 5 STAFS 2007:2. The provision is not entirely clear, but Swedac has clarified in its application of Section 5, STAFS 2007:2 that it refers to the maximum service life for similar meters in service. Although not explicitly stated in the current provisions, the requirement for a reduced maximum service life means that similar meters, which may not necessarily have been included in the batch inspected, may already have exceeded their maximum service life when the inspection results are obtained, and the maximum service life for such meters must be reduced. Since the maximum service life under the current regulation is to be shortened by between one and five years, this can pose serious problems, especially for those meters that have an initial maximum service life of only five years. These cannot be in service at all and must be taken down immediately.

Section 13 Determining a meter's error indication

An inspection body must always take into account the coverage probability when dealing with measurement uncertainty. The accepted method for this is that the measurement uncertainty is determined with a coverage probability of at least 95 per cent. For other measuring instruments, the coverage probability with this percentage is prescribed. In order to ensure uniform regulation, we should therefore introduce a corresponding provision for thermal energy meters and water meters. Regulating the coverage probability is also appropriate in view of the assessment that the accreditation body is to make of the inspection body. On this basis, we propose that Section 13 contain a provision that clearly regulates the management of measurement uncertainty.

The provision in Section 13 is otherwise equivalent to parts of Section 6 of STAFS 2007:2 and section 3 of Annex 1 to STAFS 2007:2. However, we suggest clarifying that the proportion of 1/5, or any other proportion shown in the tables, for current maximum permissible errors specified for measurement uncertainty is the maximum uncertainty allowed. The current regulations state that the measurement uncertainty shall be 1/5 of the current error limit, unless otherwise stated.

2.4.1 Specific to Section 13 of the proposal concerning water meters, STAFS (202X:Y)

The wording 'unless otherwise specified in Section 6' is removed, since that point was deemed superfluous. The change is linguistic and does not entail any substantive change in relation to the previous proposal.

Section 14 Temperature range

The first paragraph of the proposed provision corresponds to parts of Sections 6 and 8, STAFS 2007:2. The amendments we propose concern only the requirement for inspection with water being changed to inspection with liquid, and that type-approval/approval is changed to EU type-examination certificate or equivalent documentation.

2.4.2 Specific to Section 14(2) of the proposal concerning thermal energy meters, STAFS (202X:X)

We are converting the remark in the last paragraph of section 3 of Annex 1 to STAFS 2007:2 into a provision in the second paragraph of the proposed provision. The provision that temperature sensors must be tested without thermowells is already formulated as a rule. With regard to the next part of the comment, we suggest that 'should' be replaced with 'shall' and that it thus becomes a requirement that individual temperature sensors in a sensor pair be tested in the same temperature bath at temperatures within each of the three specified temperature ranges. The same provision, as well as that relating to thermowells, is found in standard SS-EN 1434–5[9] and it is considered appropriate that this be followed. There is nothing to indicate that inspection bodies currently carry out testing in any other manner. However, if the provision becomes a rule, there will be better conditions for ensuring all inspection bodies

[9] SS-EN 1434–5:2022 Thermal energy meters – Part 5: Testing for conformity assessment and verification, section 6.3.1

act in the same way. With regard to the provision on calculation of error indication, an update of the version of the standard is being carried out.

Section 15 When meters are to be inspected

In Section 15, we propose a provision specifying the situations in which a meter must undergo inspection. The regulation we propose means that it will no longer be necessary to inspect meters that are to be scrapped or otherwise no longer used.

Another important difference from the current regulation is that a meter does not need to undergo inspection both before and after a modification, but only after a modification. The reason for the changes is that we consider that there are insufficient grounds for maintaining these requirements. The purpose of the current requirements is to check how reliable a meter's measurements have been during it's time in service. We do not consider that there is any particular need to be able to establish reliability backwards in time. It is also not entirely clear what the results of the pre-modification inspection are currently to be used for. As the purpose is not entirely clear, this may mean that it could be used to varying degrees and in different ways by district heating companies and mandators. In this way, the current regulations are difficult to apply in practice and have been a source of discussion for many years.

In the proposal for new regulations, a defined batch of meters is evaluated by means of a random sample taken from the same batch. If the meters included in the sample for inspection give a result that is acceptable for the batch, then the batch in question may remain in service. In this way, the proposed regulation provides greater clarity in the relationship between inspected meters and the consequences for the batch, compared with the current regulation.

As mentioned above, the proposed regulations aim to be forward-looking, rather than setting requirements based on how meters have performed historically. We believe it is more appropriate that inspections are made with a view to ensuring that a measuring instrument to be used again measures reliably in the future. As part of this, we consider that there is no reason to require meters that are no longer in service to undergo inspection. With the amendments we propose, the requirements will also be equivalent to the requirements that apply to other measuring instruments with a similar purpose.

The second paragraph clarifies that the requirement to inspect meters only applies on the condition that a meter shall be put back into service, or remain in service. It is stated in several parts of the proposed regulation that the requirements apply specifically to meters that are in use (see Sections 1, 4, 6, 7 and 9). In order to provide clarity when reading the regulatory framework, we consider that there is an advantage in specifying, in particular, in this provision that inspection requirements only apply when the meter is to be used again.

During the consultation, it was suggested that the requirement for periodic inspection gives a district heating company's or mandator's customers the opportunity to see whether meters have measured incorrectly in the past. This can form the basis for measures such as invoice corrections, or be used as evidence in disputes. In this context, we would like to point out that the current regulatory framework similarly does not require all individual meters to undergo periodic inspection. According to Section 6 of STAFS 2007:2, this inspection shall be carried out

either as a random check or as a full inspection, i.e. an inspection of all meters. Individual consumers therefore still have no guarantee that their particular meter will be inspected. In cases where an individual meter has measured incorrectly in the past, it is also not within Swedac's authority[10] to prescribe any adjustment to what has been charged. The right to have a meter inspected or to receive price adjustment is usually contained in the General Provisions for Water and Sewerage (ABVA) for the municipality, or in contracts between district heating companies and their customers. These agreements and provisions govern the customer's ability to request inspection and any price adjustment, which is to say that they fall outside our authorisation. District heating companies and mandators continue to have the option of inspecting all meters, if they deem this necessary.

With regard to the length of the maximum service life, a change is proposed whereby inspection must now be carried out no later than the ninth calendar year after the meter was put into service and thereafter every fourth calendar year.

The previously referred proposal was based on meters being inspected no later than the seventh calendar year after being put into service. During the consultation process, several stakeholders asked for a clearer justification for this, especially since the requirement for a full inspection before a new maximum service life is removed from the proposed new regulatory framework.

We have therefore reviewed the information available on how meters perform over time, including applications for extended maximum service life and data obtained during our inspections. Experience shows that there is reliable information about meters that have been in service for up to 12 years, but that there is a lack of documented data on the performance of meters after longer periods in service. Based on this, it is now proposed that the first inspection should take place no later than the ninth calendar year after the meter has been put into service. This makes it possible to utilise available statistics on the reliability of the meters within this range. At the same time, it is proposed that inspections thereafter shall be carried out every fourth calendar year. This more frequent monitoring after a long initial service period is intended to detect faults that may arise in ageing meters, without introducing recurring short inspection intervals throughout the meter's service life. This solution makes it possible both to use available knowledge and to follow up on how meters are functioning after longer service periods. This approach also gives Swedac the opportunity to follow up on experience over time, especially with respect to meters with service periods exceeding 13 years.

The adjustment of inspection intervals should also be viewed in light of the fact that error limits for statistical verification are simultaneously adjusted, see Section 6.

2.4.3 Specifically regarding the proposal on thermal energy meters, STAFS 202X:X

For thermal energy meters, the proposal means that the period will initially be extended, but will then be shortened slightly, from the current five years for flow meters with flows above 1.5 m^3/h. For flow sensors with flows below 1.5 m^3/h and for integrating units and temperature sensor pairs, the maximum service life is reduced from the current ten years. This

[10] Section 7 of the Ordinance (1994:99) on water meters and heat meters. See also Sections 2, 3 and 5.

means that the maximum service life is the same for all sub-assemblies and no distinction is made between flow sensors with different flows. The background to the proposal is that the technology has evolved since the current regulations were added. Mechanical flow sensors were previously common, but today, to a large extent only ultrasonic meters for all flow sizes are used. These are considered to be of such quality that the proposed maximum service life is appropriate. We also propose that there should be no difference in maximum service life depending on the proportion of faulty meters.

2.4.4 Specifically regarding the proposal on water meters, STAFS 202X:Y

For water meters, the proposal means that the period will initially be extended and then shortened slightly from the current five years for meters with flows above 2.5 m^3/h or a permanent flow above 4 m^3/h. For meters with flows below 2.5 m^3/h or alternatively a permanent flow below 4 m^3/h, the maximum service life is reduced from the current ten years. As a result, the maximum service life is the same for all meters.

The fact that the maximum service life is set initially at nine years, and thereafter four years, instead of the current ten years for multiple sub-assemblies and meters, means that district heating companies and mandators must plan for an adjusted inspection interval. However, according to Section 9, the inspection to be carried out before the end of the maximum service life may, in many cases, be carried out in the form of statistical verification. This form of inspection means that only a portion of the meters in each batch need to be taken down. In practice, many individual meters will be able to remain in place for a longer period of time before they are taken down for inspection. The change we propose should therefore, despite more frequent inspections, result in an overall reduction in workload for district heating companies and reduced costs for transport and inspection.

The content of paragraphs 3 and 4 of the proposed provision is new. According to this part of the provision, a meter shall be inspected if its metrological seal is broken or when it can be assumed, for some other reason, that the meter's metrological features have changed. There are corresponding rules regarding the inspection of other measuring instruments stipulated by Swedac, and it is reasonable for there to be a requirement for inspection to also be carried out in the situations specified so that a meter's reliability can be assessed if it is to be used again.

Furthermore, we propose that the general advice in Section 8 of STAFS 2007:2 be removed. The general advice states that, under certain conditions, inspections before and after meter modifying can be carried out in the same step. Since two inspections are no longer required, there is no longer any need for this general advice.

Section 16 Statistical verification

Firstly, we would like to mention that the concept of *full inspection* has been removed from the new regulations. In the current regulation, the term means that all meters in a batch are taken down and undergo inspection, even if the meters are not to be reinstalled. Our proposal for new regulations will only require that meters that are to be reinstalled undergo inspection. The meaning of the term *full inspection* is well established in the industry. There is therefore a certain risk of confusion if the same term were to be used in the currently proposed

regulation, but with a different meaning. In addition, it is not necessary to continue using the term, since the currently proposed regulation clearly states that statistical verifications may be carried out for certain types of inspection and that all other inspections shall be carried out by inspection of individual meters before installation.

In Section 6 of the current regulation it is stated that periodic inspection shall be carried out either as a random check of the meters that have been taken down or as a full inspection. As stated above, full inspection shall no longer be used in the proposed regulations. Instead, it is proposed that in many cases inspection could be carried out in the form of a statistical verification. In contrast to the current regulation, statistical verification in the proposed regulation will not require that all meters be taken down before a selection for sampling is made.

In the case of statistical verification, meters shall be divided into batches. In the current regulation, there is a definition of the term *batch* in Annex 1. Instead, in the new regulations, we propose that the meaning of the term be stated in the provision on statistical verification. The batch shall consist of a group of meters, or sub-assemblies in the case of thermal energy meters, which have been in service for a maximum of two years, and are covered by the same EU type-examination certificates or equivalent documentation. For water meters and for thermal energy flow meter batches, it also applies that they shall have the same nominal flow rate and have been in service within the same production network.

The conditions for what may constitute a batch have been developed on the basis of the guidance that is available in this area, OIML G 20:2017.[11] The proposed criteria for batch sample selection shall create homogeneous groups of meters or sub-assemblies sharing similar technical specifications, ages and service conditions. The aim is to provide representative and reliable results for statistical verification purposes.

- *The meters or sub-assemblies shall have been in service for a maximum of two years* The period of service is limited to two years so that the meters are exposed to similar environmental conditions and levels of wear.

- *The meters or sub-assemblies shall be covered by the same EU type-examination certificate or equivalent document*
  By only including meters with the same EU-type certificate or equivalent document, it is ensured that they comply with the same technical specifications and quality standards. This means that the *meters* are built according to the same requirements and have undergone the same approval process, which minimises any variation in performance due to variation in design or manufacturing process. This also means that the meters come from the same manufacturer and belong to the same model.

- *The meters or sub-assemblies shall have the same nominal flow and have been in service within the same production network*
  Meters that have the same nominal flow and have been in service in the same network have functioned under similar conditions and been exposed to similar loads and flow variations. This ensures that meters grouped together into a batch are comparable in

[11] OIML, Guide G 20: *Surveillance of utility meters in service on the basis of sampling inspections*, OIML Edition 2017 (E), International Organization of Legal Metrology, Paris, 2017

terms of wear and service conditions, which makes inspection more representative of the entire group.

2.4.5 Specifically regarding the proposal on thermal energy meters, STAFS 202X:X

Unlike the previously submitted proposal, the last point (3) has instead been formulated as a separate, second paragraph in the Section. This is for editorial reasons, and the change has no bearing on the application of the provision.

We propose that the last paragraph of the provision include a clarification that integrating units and temperature sensor pairs may belong to batches consisting of sub-assemblies from different district heating companies.

2.4.6 Specifically regarding the proposal on water meters, STAFS 202X:Y

Unlike the previously submitted proposal, the last point (3) has been divided and now consists of points 3 and 4 in the proposed regulation. This is for editorial reasons, and the change has no bearing on the application of the provision.

The starting point for the first inspection interval shall be determined as the middle of the period referred to in the first paragraph. This is to reflect the average exposure of the meters to service conditions over time, which should provide a balanced and representative assessment of their performance. In the new proposal, we have made a linguistic adjustment to clarify the time period referred to.

The design of a batch requires, as mentioned above, a number of common characteristics for the meters that are to be included in that batch. However, we would like to underline that this does not mean all meters that share these properties must be part of the same batch. The district heating company or mandator is free to divide the meters into smaller batches based on, for example, risk assessments and administrative planning, if this is deemed more appropriate. The batch sample selection made at a single inspection is not immutable either. The regulations do not prevent the meter composition in a batch from appearing differently at the next inspection, as long as the basic conditions for each selection are met.

Section 17 <u>The number of meters to be inspected</u>

During statistical verification, the number of meters that are to be inspected in one batch is shown in the Annex to the regulations. The Annex also specifies the maximum number of meters that may be rejected if the batch is to pass inspection. The Annex is designed to the ISO 2859–2 standard[12], which is an internationally recognised standard for inspection procedures.

Several consultation bodies have noted that the table indicates that 17 meters shall be inspected for batches containing 16 to 25 meters. We have noted that this formulation does appear in the standard, but also note that it is not possible to inspect 17 meters in a batch of

[12] ISO 2859-2:2020 Sampling procedures for inspection by attributes, Part 2: Sampling plans indexed by limiting quality (LQ) for isolated lot inspection

16 meters. We have therefore adjusted the table such that the minimum batch size is now 17 to 25 meters.

When selecting the inspection level for the statistical verification of water meters and thermal energy meters, we have chosen to use inspection level LQ8% according to ISO 2859–2. This choice is based on several factors, such as high reliability in the inspection process as well as keeping costs and resource use at a reasonable level. LQ8% means careful inspection of the quality of the meters without requiring excessively large sample sizes. Furthermore, LQ8% is recommended in situations where products have a moderate risk of quality deviations and where a certain number of defects can be accepted without affecting overall functionality. According to OIML G20:2017, LQ8% is intended for use in conjunction with testing according to ISO 2859–2, which corresponds to a consumer risk of 10%. This means that the method is balanced for managing quality control of measuring instruments used in the home, such as water meters and thermal energy meters.[13] By applying LQ8%, consumer risk is thus kept within acceptable limits. In this case, consumer risk refers to the risk that the person responsible for paying for water or heat energy consumption will be charged on the basis of incorrect meter readings. The same standard and inspection level are also used in Swedac's regulations on measurement systems for measuring transmitted electricity, STAFS 2022:9.

The meter sample shall be representative of the batch. This means that the meters selected for statistical verification should reflect characteristics and conditions that are common to the entire batch. The basic conditions required for meters to belong to the same batch are set out in Section 16. These criteria ensure that the chosen meters are homogeneous in a number of respects and represent the quality and performance of the batch in a fair manner. A representative sample shall thus provide a reliable indication of the overall state and functioning of the batch. We have not deemed it necessary or appropriate to regulate in detail how the selection should be made. District heating companies and mandators have different prerequisites and experiences that can inform how a representative sample shall be made within their specific operations. Leaving the responsibility for selection methodology to district heating companies and mandators themselves enables them to adapt the process to their individual systems, procedures and conditions. It also allows the industry, through collaboration, to develop new methods for representative sampling.

The proposed regulation makes it possible to increase the number of meters in a sample, creating the conditions for replacing meters later if necessary. Documentation is required from the first expansion, unlike the regulation for electricity, where documentation is only required from 15 % of the selection. This difference is due to historical factors linked to how inspections on electricity metering systems have been carried out in the past.

The documentation serves as a monitoring tool and as a means of demonstrating that the option of replacing meters is used correctly. It is therefore necessary as part of the supervisory authority's monitoring of district heating companies' and mandators' compliance with the regulations.

[13] OIML G 20 Edition 2017 (E), annex 2

Section 18 Conditions for replacing a meter in the sample

The current regulation lacks a provision on whether a meter in the statistical selection may be replaced if the metrological seal is damaged or if the meter has been damaged by external forces. However, Section 6 states that meters that have been taken down due to malfunction shall not be included in the statistics.

Since a meter that has a broken metrological seal or damage from external forces cannot be considered to be in operational condition, it is clearer and more appropriate to state that the meter in such circumstances *must* be replaced. It is important that meters are replaced when they are not in operational condition because the result of the batch inspection will then be more representative. We also propose that the provision be clarified by replacing reference to "damaged" metrological seals with "broken" metrological seals. A damaged seal cannot reasonably be regarded in any way other than as being broken.

In the second paragraph, we also introduce a provision stipulating that a meter *may* be replaced if it can no longer be located or it is not possible to access. In Swedac's supervision over compliance with the regulatory framework for periodic inspection of water and thermal energy meters, it has emerged that, in particular, mandators are often faced with the practical challenge of accessing water meters that need to be removed for batch inspection. This may involve, for example, meters being installed in properties that are only used for part of the year, or difficulties in contacting property owners. This leads to both time-consuming and resource-intensive measures to gain access to the meters. In the proposal for new regulations, it will be possible in the implementation of statistical verification to allow meters not belonging to the batch sample to remain in service while the batch inspection is in progress. We therefore consider it reasonable that district heating companies and mandators be given the option to replace individual meters in the sample in such cases where said meter cannot be located or accessed.

Finally, the last paragraph of the provision clarifies that the meter may not be replaced after an inspection measurement has begun (instead of 'inspection'). The purpose of the provision is to ensure that a meter is not replaced by reason of the inspection result.

2.5 Documentation – Section 19 of STAFS 202X:X and 202X:Y

(proposals relating to Section 9, and section 5 of Annex 1 to STAFS 2007:2)

We propose that the provisions on documentation be collected in a single section, instead of, as is currently the case, consisting of both a section and a list of supporting documents in the Annex to the regulation. As in the current regulations, there will be requirements for documentation to be stored in the form of the manufacturer's serial number or own identification number, the flow range for flow sensors and the temperature difference range for integrating units and temperature sensor pairs (regarding district heating meters).

Instead of the certificate number, the number of the EU-type examination certificate or equivalent document shall be reported. This is because an EU-type examination certificate is the accepted way of determining that the meter is approved in accordance with the Measuring Instruments Directive.

The current regulations require the storage of documentation regarding the geographical location of the meter. We propose that this be replaced by a new point, which is instead referred to as 'production network'. The change is not intended to entail any differences in working methods compared with the current practise of district heating companies and mandators, but is more consistent with what is shown in Section 16(3) of the provision.

The current requirements to keep documentation on the brand and type designation of the meter are removed. This is because we do not consider this information necessary for the supervisory authority.

As a result of changes to the provisions governing periodic inspections, test inspections and inspections following meter modifications, we are adjusting the documentation requirements in this regard. Instead, there is a requirement to be able to show documentation of the date on which the meter was put into service, the date on which the meter or sub-assembly was last inspected, or, in the case of statistical verifications, the date on which the meter or sub-assembly's batch was last inspected, together with the inspection report from the last actual inspection. 'Actual inspection' covers those meters actually taken out of service and inspected, which in the case of statistical verification will relate only to the individual meters that have been part of the sample and thereby have represented their batch. Furthermore, we introduce a requirement that there must be documentation of the reason for removal of meters. This is in the interest of being able to follow up on how equivalent meters have been handled in terms of inspection and, as part of being able to identify whether there is reason to believe that these meters should be inspected. This is also of interest to Swedac in the exercise of its duties as a supervisory authority.

Removal of the general guidelines in section 5 of the Annex to STAFS 2007:2 is also proposed. There it is stated that documentation may be stored electronically. We believe that this is a matter of course today and the general advice is therefore unnecessary.

Finally, we are reducing the time that documentation must be available for, from the current ten years to three years following the decommissioning of a meter. This is because it cannot be expected that meters will be subject to supervision so long after they have been taken out of service. This also relaxes the regulatory burden for district heating companies and mandators.

2.6 Inspection bodies – Sections 20 to 22 of STAFS 202X:X and 202X:Y

(proposals relating to Section 10 of STAFS 2007:2)

<u>Section 20 Inspections shall be carried out by accredited inspection bodies</u>

In the proposed provision, the term *modification* is used instead of 'service and repair'. According to the definition of modification, this includes both maintenance and repair. No change in substance is intended here. The term *installation* remains in use. The reason for this is that, according to ISO/IEC 17020:2012, statutory support is required for a person from a type C inspection body to have the right to carry out installation if they have also performed other measures such as service and maintenance (which is included in the concept of modifying in the proposed regulations) on the same object.

Section 21 Notification obligation for foreign inspection bodies

A provision is being proposed under which an inspection body, which is accredited by an accreditation body other than Swedac and which intends to carry out inspections, shall inform Swedac of this and send its accreditation decision to Swedac. In addition, the inspection body shall notify Swedac immediately if the accreditation decision is changed or withdrawn. The purpose of these requirements is for Swedac to have information about the inspection bodies that are operating on the Swedish market and are obliged therefore to comply with the regulations. All information pursuant to this provision shall be communicated to the part of Swedac responsible for the supervision of regulated metrology, currently the Department of Legal Metrology.

Section 22 Participation in meetings for the exchange of experience and comparative measurements

The requirement to participate in meetings for the exchange of experiences is found in STAFS 2020:1 and needs to be transferred over to the proposed regulation. The standard applied to inspection bodies requires that they compare their results with the results from other inspection bodies.[14] This task shall be carried out by the inspection body itself in cooperation with others. However, it is considered more appropriate that Swedac, which lays down stipulations about inspection, designates the measurements or investigations and determines their form. Swedac can thus also determine the frequency with which they should be carried out and initiate measurements or investigations if there is reason to believe that the inspection bodies' methods differ and thus produce different results. We therefore propose a provision under which the inspection body shall participate in comparative measurements or investigations designated by Swedac. This does not, of course, prevent the inspection body itself from initiating measurements or studies.

It is proposed that the provision be formulated in the same way as in other recently adopted regulations in the field of legal metrology, in order to ensure a uniform regulation.

2.7 Exemption provision – Section 23 of STAFS 202X:X and 202X:Y

(proposals relating to Section 11 of STAFS 2007:2)

Except for removal of the general advice, we leave this provision unchanged. We do not consider it appropriate to exemplify in a general recommendation the way in which consent for an exemption can be applied. The conditions for an exemption may instead be set out in the decision for the individual case at hand.

2.8 Removal of annexes

(proposals relating to Annexes 2 and 3 to STAFS 2007:2)

Annexes 2 and 3 contain requirements for accredited operations, and equivalent requirements

[14] See also ILAC *Guidance on measurements performed as part of an inspection process (ILAC-G27:07/2019)*, International Laboratory Accreditation Cooperation, 2019, p. 8 ff

cannot be found in any other Swedac regulations on legal metrology. Part of the review of regulations that is ongoing at the authority is to make the regulations as similar as possible. We therefore propose that Annexes 2 and 3 be removed in the new regulations.

The proposed regulations also aim to simplify the regulatory burden by avoiding detailed regulation where this is not essential. In cases where there is no detailed description with content corresponding to the current Annexes, it is up to the accredited inspection body to develop an inspection method. This will mean that inspection bodies will be allowed to develop new solutions, as long as they can at the same time demonstrate that they meet the requirements for competence in order to be accredited.

It can also be noted that the part of the annexes that relates to the content of inspection reports can be found in ISO/IEC 17020 to the extent deemed necessary. We do not consider that the other information to be reported in accordance with the Annex to STAFS 2007:2 must be regulated in the new regulations. By removing these requirements, we simplify the regulatory framework to contain only relevant and necessary requirements.

During the consultation, the view was expressed that removing the annexes could potentially make it more difficult for district heating companies or mandators to set requirements when procuring inspection bodies. However, accredited inspection bodies have already demonstrated through their accreditation that they have the necessary competence to carry out the prescribed inspections in a reliable manner. Accreditation also involves Swedac continuously monitoring and ensuring that inspection bodies maintain their competence over time. Therefore, no additional requirements regarding the competence of inspection bodies to develop and use inspection methods should be necessary in the procurement process.

2.9 Information

(proposal relating to Sections 1 and 10 of STAFS 2007:2)

We propose the removal of provisions containing detailed information as they are not deemed to fulfil any particular function. This applies to Section 1(3) which provides information about Swedac's regulations and general guidelines STAFS 2006:5 on water meters and Swedac's regulations and general guidelines STAFS 2006:8 on heat meters, as well as Section 10(4) which provides information about the provisions on accreditation in the Act (2011:791) on Accreditation.

2.10 New basic regulations and amendments to structure and language

As stated in the introduction, STAFS 2007:2 is to be converted into two separate regulatory frameworks as there are significant differences between water meters and thermal energy meters. It is more natural that there is a regulatory framework for each of the two different measuring instruments. There are also two completely separate stakeholder collectives that will be affected by the regulations. A division into two sets of regulations therefore provides a clearer set of rules for each collective to adhere to. Nevertheless, it should be noted that we propose that the regulations, as far as possible, have a similar design in terms of both language and structure. This is because, in part, the purpose of the review into the authority's regulations within legal metrology is to make it easier to maintain legislative oversight by

creating a similar structure in regulations of a similar nature.

3. Description of alternative solutions for what is to be achieved and what the impact will be if no regulation comes into being

We assess that there are no alternative solutions other than amending the regulations in order to achieve the objectives set out above. The area is currently regulated through regulations and the problems identified in the regulations are best resolved by amendments to these regulations. There are deemed to be no suitable alternative proposals for the structure of the regulation.

Alternative proposals regarding structure have been considered or put forward during the consultations that have been held, particularly for the following parts of the proposed provisions. However, for the reasons set out below, these proposals are not deemed to constitute suitable alternatives to new regulation.

3.1 A regulation with less detailed rules?

One option we have considered is to allow the regulations to contain far fewer specified requirements on how the inspection of thermal energy meters and water meters respectively shall be carried out. The practical aspects of the inspection could have been governed to a greater extent by district heating companies and mandators. They would then be able to determine for themselves the type of inspection and approach that is appropriate for the purpose of ensuring reliable measurement values. In that case, it could have been left to interest groups or industry organisations to develop guidance and best practice in this area. The consequences of such a move are difficult to foresee. We therefore do not consider this option to be appropriate at this time.

During the preparation of the regulations, inspection bodies have strongly signalled their wish to have a detailed regulatory framework in order to ensure clarity and simplify compliance. At the same time, Swedac, as the regulatory authority, has strived to keep the regulations technology-neutral and avoid unnecessarily detailed regulation. In order to balance these interests, we have specified those requirements that are necessary to maintain sufficient reliability in measurements, while at the same time have avoided locking the industry into specific approaches unnecessarily. Finally, we have also worked to keep the provisions consistent with other regulations concerning the periodic inspection of measuring instruments.

3.2 Scope

3.2.1 Specifically regarding the proposal on thermal energy meters, STAFS 202X:X

One option we have considered is to extend the scope to all end customers, i.e. a scope of application that reflects what is found in 2022:5. As stated in section 2.1.1 above, we do not consider it appropriate to include meters for individual metering. Furthermore, this alternative

would mean that measurements that do not concern household consumption would also be covered by the regulations. In consultation with the industry, it has been established that there are currently no significant problems associated with thermal energy metering in buildings used for commercial activities or in industry. The industrial sector has generally proven to be self-regulating and maintains high standards in its measurements. In addition, operators receiving deliveries in the industrial sector have good prerequisites and resources to ensure the accuracy of measurement values themselves. Given these circumstances, we consider that it is not necessary to include these sectors within the scope of the regulation.

3.2.2 Specifically regarding the proposal on water meters, STAFS 202X:Y

Several alternative formulations have been considered.

- The provision could have the same wording as the current wording regarding water meters in STAFS 2007:2
- Instead of referring to the Public Water Services Act (2006:412), the provision could have referred to the Ordinance (1994:99) on water and heat meters
- The scope could have been formulated in a similar way to Swedac's regulations on supervision fees for water and thermal energy meters[15]

We have rejected all of these alternative formulations primarily for two reasons. The main reason is that none of the options provide an equally clear actor to link the provisions of the regulation to. The Ordinance (1994:99) on water and heat meters undoubtedly contains the concepts of 'supplier' and 'meter user', but these do not have a clear definition. The second reason why the alternative formulations were rejected is that they all relate to both cold water and domestic hot water. As explained above, the considerations regarding the scope have resulted in the exclusion of meters for domestic hot water.

3.3 Decision rule related to measurement uncertainty

When deciding whether an instrument is deemed to meet the requirements for maximum permissible errors, inspection bodies need to take a position on how the measurement uncertainty always present in measurements is to be managed. The proposed decision rule in Section 10 is based on a 'shared risk', in which both parties share the risk of any error margins associated with measurement uncertainty. This principle is the common decision rule in the field of regulated metrology with regard to measured values and is already used for both thermal energy meters and water meters.

An alternative to the proposed decision rule would be to allow one of the parties to take full responsibility for measurement errors. This would mean that the measured value, including the measurement uncertainty, must be within the maximum permissible error margin. This would be a stricter requirement and would depart from current practice. A more detailed description of the options can be found in a guide published by Welmec, the European Cooperation in Legal Metrology.[16]

[15] The Swedish Board for Accreditation and Conformity Assessment's regulations on supervision fees for water and thermal energy meters, STAFS 2023:9

3.4 Random sampling of meter batches and requirements for how long a meter should last

During the consultation, requests were made to introduce requirements for random checks of meter batches before meters are put into service. The aim of such a requirement would be to reduce the risk of incorrect measurement for those customers who are charged based on metering results. An inspection body has expressed concern that the type approval of the meters is not always sufficient.

Proposals have also been made to introduce provisions laying down requirements on the minimum length of time a meter shall last and that all meters shall be able to be refurbished.

However, we will not be introducing any such provisions in the proposed regulations. The requirements for thermal energy meters and water meters are already contained in the instrument-specific regulations[17] for each type of meter and the requirements for economic operators are expressed in STAFS 2016:1. It is also not possible for Swedac, through regulations, to impose stricter requirements than those laid down in the Measuring Instruments Directive. We consider these regulations to be sufficient at present, despite the views that have been expressed.

Information indicating that the type-approval of meters is not sufficient to ensure compliance with the requirements of the Measuring Instruments Directive is also a matter for the market surveillance authority and for follow-up by notified bodies in this area. Introducing requirements for random checks before meters are put into service would entail an additional administrative burden for district heating companies and mandators. It would also undermine the principles of type approval and conformity assessment under the Measuring Instruments Directive.

Finally, we wish to point out that there is no obstacle to individual district heating companies or mandators themselves implementing early sample selection procedures, if they deem it necessary.

3.5 If no regulation is put in place

If the proposed regulation is not implemented, the existing problems with the current regulations would remain. In addition, the regulatory frameworks would risk becoming more difficult to comprehend and less uniform over time if only essential amendments were to be introduced piecemeal, without a holistic adjustment of the regulatory framework.

4. Who will be affected by the regulation

The regulations we propose will affect district heating companies that use thermal energy meters for the measurement of delivered thermal energy to buildings with one or more

[16] WELMEC *Guide 4.2: Elements for deciding the appropriate level of confidence in regulated measurements*. WELMEC Secretariat, Federal Office of Metrology and Surveying (BEV), Vienna, June 2006
[17] STAFS 2022:4 and STAFS 2022:5

dwelling and where there is a metering obligation according to the District Heating Act (2008:263). They also apply to mandators who use water meters to determine water consumption in accordance with the Public Water Services Act (2006:412), in buildings where there is one or more dwelling. These actors are affected in that they shall ensure that their meters comply with the requirements and undergo such inspection as required by the regulations.

The regulations also affect inspection bodies accredited to carry out inspections of thermal energy meters and water meters, respectively.

Finally, the regulations also affect the accreditation department at Swedac, which will be responsible for ensuring that inspection bodies in this area maintain their competence and thereby remain accredited.

5. The authorisations on which Swedac's decision-making power is based

The authorisation to issue regulations on requirements for and inspection of measuring instruments is found in Section 4 of the Ordinance (1993:1066) on quantity units, measurements and measuring devices and in Section 7 of the Ordinance (1994:99) on water meters and heat meters. The specific regulations on accreditation necessary for inspections may be issued by virtue of Section 3(2) of the Ordinance (2011:811) on accreditation and conformity assessment.

6. Cost-related and other impacts of the regulation

Through Swedac's supervisory role, the authority has the following information on thermal energy meters and water meters, respectively.

The total number of thermal energy meters in service for measuring household consumption amounts to 370 000 meters, spread across 173 district heating companies under Swedac's supervision. The largest district heating company has approximately 18 000 thermal energy meters in service, while the smallest has 1 meter in service. See the table below for an overview of how the meter stock is distributed.

Number of thermal energy meters in service	Number of district heating companies
0-200	32
201-400	22
401-600	18
601-800	13
801-1000	10
1000+	78

In 2022, around 40 000 meters were taken down. The majority of the companies chose to carry out a comprehensive inspection of their meters, but most chose not to modify their thermal energy meters to reinstall them. Currently, there are five accredited inspection bodies in Sweden that have the competence to conduct periodic inspections and post-modification inspections.

The total number of water meters in service for measuring household consumption amounts to 1.75 million, spread across 280 mandators for which Swedac has supervisory responsibility. The largest mandator has approximately 70 000 water meters in service, while the smallest has 25 water meters in service. See the table below for an overview of how the meter stock is distributed. Of these meters, 40 % are digital and 60 % mechanical, i.e. ultrasonic meters.

Number of water meters in service	**Number of water and sewerage mandators**
0-5 000	161
5 001-10 000	74
10 001-15 000	22
15 001-20 000	13
20 001+	8

In 2022, around 160 000 water meters were taken down. The majority of mandators carried out a comprehensive inspection of their meters, but most chose not to modify their water meters to reinstall them. Many companies reported that they did not modify any meters at all, while a few of them reported higher figures, with over a hundred units modified. This indicates a diversity in levels of meter modifying, with some actors being significantly more active than others.

A significant proportion of the ultrasonic meters that were taken down during the year were not modified due to physical damage, such as freezing, damage in transit, or battery-related problems. Several actors have chosen not to modify ultrasonic meters at all, either because they do not use such meters or because they indicate that the meters are difficult to modify because they are closed.

Currently, there are five accredited inspection bodies in Sweden that have the competence to conduct periodic inspections and post-modification inspections.

In order to be able to assess the cost-related effects of the proposed regulations, we have asked for information from the industry as part of the consultation. Some responses have been received, but not in sufficient quantities to conduct a comprehensive analysis. Therefore, the report below is based on the responses provided as well as on assumptions made on the basis of the limited information available. We are also aware that the conditions for the various operators may differ to a large extent. For example, there can be large differences in terms of access to internal or external staff and how costs for this are distributed.

Several of the effects of the proposed regulations relate to a potential need for existing IT systems to be developed to better adapt to new working methods. In order to obtain documentation regarding these development costs, we have asked for statistics from Statistics Sweden, SCB, showing hourly costs for IT development. However, Statistics Sweden has responded that it does not have any such data.

Despite the limited material available, we strive to ensure that the report provides as accurate a picture as possible within these constraints.

In general, the cost per working hour has been estimated at SEK 1 000 for internal staff and SEK 2 000 for external staff, where applicable.

6.1 District heating companies and mandators

6.1.1 Costs in terms of administration and time spent on implementing the regulations

District heating companies and mandators will initially need to adapt their system support to meet the new criteria proposed for meter and sub-assembly batch sample selection.

Once system adaptation for batch sample selection has been implemented, a logic is needed for the selection of units to be inspected. The system must also be able to handle information regarding approved or rejected batches. Internal staff need to specify criteria for the selection. Based on these specifications, a function can be developed for logical testing that performs the selection and ensures that the system can receive and process the inspection results.

Work tools for meter replacement in the field may need to be adapted to comply with the new regulations. The integration between work tools and collection systems also needs to be updated and verified.

Working methods and procedures need to be updated, reviewed to ensure compliance with the regulations, and established in the operations. The regulatory changes and their consequences for different parts of the operations also need to be presented and reviewed internally. Long-term planning and budgeting for meter stocks need to be adapted to the new requirements.

Overall, these costs have been estimated to amount to approximately SEK 160 000 in time spent, subject to increased costs in cases where services must be purchased externally.

6.1.2 Potential investments, in the short and long term

We have no examples of the proposed regulations requiring any need for investment in the short term. It has been suggested that there may be a need for increased storage capacity if demand for meter replacement becomes more difficult to predict.

It has also been argued that the proposed regulation on thermal energy meters will, in the long term, provide incentives for district heating companies to invest in improving water quality in the network.

6.1.3 Costs for meter inspection – examples

In order to compare the costs of the current regulations with those of our proposed regulations, we have made an example calculation for the current cost of removing, inspecting and replacing meters. The data that forms the basis for the calculation are only examples to show the differences between the current and the proposed regulation. The costs and data that form the basis of the calculations may differ from the specific conditions for individual district heating companies or mandators, as their geographical location may impact both the spread of meter stocks and local salary levels. There is also varying information on how many meters a technician can practically replace per day. The number of replacements may vary, for example, depending on whether the company's own technicians, who also perform other tasks, are responsible, or whether meter replacement is carried out by a contractor with a specific focus on replacing a large number of meters within one project. As a result, we have chosen to make calculations based on the estimates previously used.

The calculation is based on one employee who shall perform 500 thermal energy meter replacements *or* 1 500 water meter replacements per year. The calculations include salary costs, vehicle and fuel costs, the costs for new meters and inspection of old meters. The amounts are rounded to whole SEK.

Table 1

Labour costs	
	Annual cost per employee (SEK)
Salaries including employers' contribution	504 648
Vehicle expenses - leasing	72 000
Fuel costs	60 000
Sum of annual labour costs	636 648
Labour cost per meter replacement, thermal energy meters 500 units per year	1 273
Labour cost per meter replacement, water meters 1 500 units per year	424

According to the above calculation, labour costs per meter replacement amount to SEK 1 273 for a thermal energy meter and SEK 424 for a water meter.

Below, the estimated cost of purchase and periodic inspection is reported for each meter type.

Table 2

Meter cost for thermal energy meters		
Cost of purchasing a new meter (SEK)	**Cost of periodic inspection (SEK)**	**Total cost per meter (SEK)**
2 800	600	3 400

In previous calculations, we have assumed a cost of SEK 1 500 per thermal energy meter. This information has now been adjusted as the price situation has changed compared to our previous understanding. Today, the cost of a meter is approximately SEK 1 600 to 1 900, excluding communication module. The communication module, which in practice is often purchased together with a new meter, costs approximately SEK 1 000. To ensure the calculation examples provide as accurate a picture as possible, we have chosen to include the cost of the communication module. The total cost of purchasing a new meter is thus estimated at SEK 2 800.

Table 3

Meter cost for water meters			
	Cost of purchasing a new meter (SEK)	**Cost of periodic inspection (SEK)**	**Total cost per meter (SEK)**
Mechanical meters	500	100	600
Digital meters	1 000	100	1 100

Table 4

Total cost per meter			
	Labour cost per replacement (SEK)	**Meter cost per replacement (SEK)**	**Total cost per replacement (SEK)**
Thermal energy meters	1 273	3 400	4 673
Mechanical water meters	424	600	1 024
Digital water meters	424	1 100	1 524

It can be deduced from the tables above that the total cost for replacing a thermal energy meter is SEK 4 673. For a mechanical water meter, the cost is SEK 1 024, and for a digital water meter, the cost is SEK 1 524.

In order to compare the cost of periodic inspections according to STAFS 2007:2 and the alternative in the proposed regulations involving statistical verification, we have made the following calculations. The calculations are based on costs over a period of 23 years, so as to include multiple inspections. This means that the calculations showing the current regulatory framework will include *two* inspections (10 years + 10 years = 20 years), while the calculations

for the proposed regulations will include *four* inspections (9 years + 4 years + 4 years + 4 years = 21 years) provided the batch passes inspection. If the batch fails any inspection, a maximum of *three* inspections may be carried out within the same period, as the batch will then need to be replaced and a new initial period of 9 years will apply to the new meters (9 years + 4 years (+1 year for de-installation) + 9 years = 23 years). It is possible that a meter may be in service for a shorter or longer period than 23 years. The example has been chosen to provide a concrete and comparable basis for cost comparison between the inspection methods over a longer period of time, without the calculations becoming too speculative. The aim is not to specify a recommended or expected service life, but to illustrate differences in total cost for different inspection strategies.

With regard to thermal energy meters, the calculations are based on batches of 500 meters and 50 meters respectively. For water meters, the calculations are instead based on batches consisting of 1 000 and 100 meters respectively (mechanical meters, Q3:4 or less). This is to report calculations that are probable based on the respective meter type.

In order for the report to be as clear as possible, we will now give a breakdown of the calculations for each type of meter. First, the costs for thermal energy meters are reported, followed by the costs for water meters.

Thermal energy meter

The first calculation is based on the assumption that the batches inspected pass each inspection.

Table 5

Comparison of thermal energy meter batch inspections, approved result				
	STAFS 2007:2		**STAFS 202X:X**	
Number of meters	500	50	500	50
Inspection frequency	Every ten years	Every ten years	Year nine, then every four years	Year nine, then every four years
Total number of inspections over 23 years	2	2	4	4
Number of meters taken down per inspection	500	50	32*	22*
Total number of meters taken down over 23 years	1 000	100	128	88
Cost of inspection and replacement, per meter (SEK)	4 673	4 673	4 673	4 673
Total cost of a batch inspection (SEK)	2 336 500	233 650	149 536	102 806
Total cost of meter inspection over 23	4 673 000	467 300	598 144	411 224

years (SEK)				
** see STAFS 202X:X Annex*				

As the table shows, statistical verification according to the proposed regulations means a significant reduction in the number of inspections and thus fewer meters needing to be taken down during the period. This reduction is particularly noticeable for larger batches. Based on these results, cost calculations have been made in the following tables. The example assumes that each meter taken down is replaced with a new one.

Table 6

Summary of changes to thermal energy meters, batches with an approved result				
		STAFS 2007:2	**STAFS 202X:X**	**Difference**
Batch of 500 meters, 23 years	**Number of meters to be taken down**	1 000	128	- 872 st
	Cost (SEK)	4 673 000	598 144	- 4 074 856
Batch of 50 meters, 23 years	**Number of meters to be taken down**	100	88	- 12 st
	Cost (SEK)	467 300	411 224	- 56 076

By using the option of statistical verification offered by the proposed regulation, the district heating company can save up to SEK 4 074 856 over a 23-year period on a batch of 500 meters and reduce the number of meters taken down for inspection by 872. This equates to significant savings in both labour and material costs as well as in handling and administration.

Below is a cost comparison between STAFS 2007:2 and the proposed regulation's statistical verification option, in the event that a batch passes the first inspection, fails the second and passes the third inspection over a period of 23 years. In the event of a negative result, all meters must be removed within one year, according to Section 12 of the proposed regulation.

Table 7

Comparison of thermal energy meter batch inspections, pass/fail/pass results				
	STAFS 2007:2		**STAFS 202X:X**	
Number of meters	500	50	500	50
Inspection frequency	Every ten years	Every ten years	Year nine, then year four, then year nine	Year nine, then year four, then year nine
Total number of inspections over 23 years	2	2	3	3
Number of meters taken down per inspection	500	50	32	22
Total number of meters	1 000	100	564*	94*

taken down over 23 years				
Cost of inspection and replacement, per meter (SEK)	4 673	4 673	4 673	4 673
Total cost interval 1 (SEK)	2 336 500	233 650	149 536	102 806
Cost of inspection interval 2 (SEK)	-	-	149 536	102 806
Cost of replacement (labour cost and new meter, not including inspection) of remaining meters in the batch, interval 2 (SEK)	-	-	1 906 164	114 044
Total cost interval 2 (SEK)	2 336 500	233 650	2 055 700	216 850
Total cost interval 3 (SEK)	-	-	149 536	102 806
Total cost over 23 years (SEK)	4 673 000	467 300	2 354 772	422 462
**Includes all meters being taken down due to negative result at the second inspection*				

Table 8

Summary of changes to thermal energy meters, batches with pass/fail/pass results				
		STAFS 2007:2	**STAFS 202X:X**	**Difference**
Batch of 500 meters, 23 years	**Number of meters to be taken down**	1 000	564	- 464 units
	Cost (SEK)	4 673 000	2 354 772	- 2 318 228
Batch of 50 meters, 23 years	**Number of meters to be taken down**	100	94	- 6 units
	Cost (SEK)	467 300	422 462	- 44 838

Using the option of statistical verification provided in the proposed regulation, district heating companies can, for batches of 500 meters, in the event that a batch fails its second inspection, according to the calculation above, save approximately SEK 2 300 000 over a 23-year period and reduce the number of meters taken down for inspection by 464 meters. This also means significant savings in both labour and material costs, as well as in handling and administration. For smaller batches, savings will be less significant.

Finally, a cost comparison is given between STAFS 2007:2 and the regulatory agency's ability to perform statistical verifications in the event that a batch is rejected.

In the event that a batch is rejected during statistical verification, the batch must, as a general rule, be taken down within one year; see Section 12(2) of the proposed regulation. A batch of

500 meters that fails two consecutive inspections therefore results in the same number of meters requiring removal as under the current regulations in STAFS 2007:2.

Table 9

Comparison of thermal energy meter batch inspections, failed result				
	STAFS 2007:2		STAFS 202X:X	
Number of meters	500	50	500	50
Inspection frequency	Every ten years	Every ten years	Year nine, thereafter year nine	Year nine, thereafter year nine
Total number of inspections over 23 years	2	2	2	2
Number of meters per inspection	500	50	32	22
Total number of meters taken down over 23 years	1 000	100	1 000	100
Cost of inspection and replacement, per meter (SEK)	4 673	4 673	4 673	4 673
Cost of inspection (SEK)	-	-	149 536	102 806
Cost of replacement (labour and new meter, not including inspection) of remaining meters in the batch (SEK)	-	-	1 906 164	114 044
Total cost per interval per (SEK)	2 336 500	233 650	2 055 700	216 850
Total cost over 23 years (SEK)	4 673 000	467 300	4 111 400	433 700

Table 10

Summary of changes to thermal energy meters, batches with failed results				
		STAFS 2007:2	STAFS 202X:X	Difference
Batch of 500 meters, 23 years	**Number of meters to be taken down**	1 000	1 000	± 0
	Cost (SEK)	4 673 000	4 111 400	- 561 600
Batch of 50 meters, 23 years	**Number of meters to be taken down**	100	100	± 0
	Cost (SEK)	467 300	433 700	- 33 600

By using the statistical verification option in the proposed regulation, where the batch does

not pass inspection, district heating companies can save approximately SEK 561 600 over a 23-year period for a batch of 500 meters, despite the number of meters requiring removal remaining the same. For smaller batches, savings will be less significant. In this context, it should also be pointed out that the above example does not take into account the current requirement in Section 5 of STAFS 2007:2 on reducing the maximum service life for similar meters. As a result of this provision, the inspection interval for a batch may already be considerably more frequent than the ten years specified as a general rule in STAFS 2007:2. However, it is very difficult to make calculations for all potential scenarios that could arise as a result of this rule.

Water meters

The first calculation is based on the assumption that the batches inspected pass each inspection.

Table 11

Comparison of water meter batch inspections, approved result				
	STAFS 2007:2		**STAFS 202X:Y**	
Number of meters	1 000	100	1 000	100
Inspection frequency	Every ten years	Every ten years	Year nine, then every four years	Year nine, then every four years
Total number of inspections over 23 years	2	2	4	4
Number of meters per inspection	1 000	100	50*	26*
Total number of meters taken down over 23 years	2 000	200	200	104
Cost of inspection and replacement, per mechanical meter (SEK)	1 024	1 024	1 024	1 024
Total cost of a batch inspection (SEK)	1 024 000	102 400	51 200	26 624
Total cost of meter inspection over 23 years (SEK)	2 048 000	204 800	204 800	106 496
* *see STAFS 202X:Y Annex*				

As shown in the table, statistical verification under the proposed regulations will mean a significant reduction in the number of inspections and thus the number of meters requiring removal during the period. The difference is greater for larger batches. Based on this result, we have made a number of cost calculations in the tables below. As mentioned above, Swedac's inspection statistics show that the majority of mandators choose not to modify meters and reinstall them. For this reason, the example below assumes that each meter taken down is replaced with a new meter.

Table 12

Summary of changes to water meters, batches that pass inspection				
		STAFS 2007:2	**STAFS 202X:Y**	**Difference**
Batch of 1 000 meters, 23 years	**Number of meters to be taken down**	2 000	200	- 1 800 units
	Cost (SEK)	2 048 000	204 800	- 1 843 200
Batch of 100 meters, 23 years	**Number of meters to be taken down**	200	104	- 96 units
	Cost (SEK)	204 800	106 496	- 98 304

By utilising the statistical verification option in the proposed regulation, the mandator can save up to SEK 1 843 000 over a 23-year period and reduce the number of meters taken down for inspection by 1 800 meters. This equates to significant savings in both labour and material costs as well as in handling and administration. The calculation has been made based solely on mechanical meters, i.e. a type of meter with a lower cost.

Below is a cost comparison between STAFS 2007:2 and the proposed regulation's statistical verification option, in the event that a batch passes the first inspection, fails the second and passes the third inspection over a period of 23 years.

Table 13

Comparison of water meter batch inspections, pass/fail/pass results				
	STAFS 2007:2		**STAFS 202X:Y**	
Number of meters	1 000	100	1 000	100
Inspection frequency	Every ten years	Every ten years	Year nine, then year four, then year nine	Year nine, then year four, then year nine
Total number of inspections over 23 years	2	2	3	3
Number of meters per inspection	1 000	100	50	26
Total number of meters taken down over 23 years	2 000	200	1 100*	152*
Cost of inspection and replacement, per	1 024	1 024	1 024	1 024

mechanical meter (SEK)				
Total cost interval 1 (SEK)	1 024 000	102 400	51 200	26 624
Cost of inspection interval 2 (SEK)	-	-	51 200	26 624
Cost of replacement (labour and new meter, not including inspection) of remaining meters in the batch (SEK)	-	-	877 800	68 376
Total cost interval 2 (SEK)	1 024 000	102 400	929 000	95 000
Total cost interval 3 (SEK)	-	-	51 200	26 624
Total cost over 23 years (SEK)	2 048 000	204 800	1 031 400	148 248
**Includes all meters being taken down due to negative result at the second inspection*				

Table 14

Summary of changes to water meters, batches with pass/fail/pass results				
		STAFS 2007:2	**STAFS 202X:Y**	**Difference**
Batch of 1 000 meters, 23 years	**Number of meters to be taken down**	2 000	1 100	- 900 units
	Cost (SEK)	2 048 000	1 031 400	- 1 016 600
Batch of 100 meters, 23 years	**Number of meters to be taken down**	200	152	- 48 units
	Cost (SEK)	204 800	148 248	- 56 552

By utilising the statistical verification option in the proposed regulation, the mandator can, for batches of 1 000 meters, in the event that a batch fails its second inspection, save approximately SEK 1 016 000 over a 23-year period and reduce the number of meters taken down for inspection by 900 meters, according to the above calculation. This also means significant savings in both labour and material costs, as well as in handling and administration. Naturally, savings are not as large in the case of smaller batches.

Finally, a cost comparison is given between STAFS 2007:2 and the regulatory agency's ability to perform statistical verifications in the event that a batch is rejected.

In the event that a batch is rejected during statistical verification, the batch must, as a general rule, be taken down within one year; see Section 12(2) of the proposed regulation. A batch of 1 000 meters that fails two consecutive inspections therefore results in the same number of meters requiring removal as under the current regulations in STAFS 2007:2.

Table 15

Comparison of batch inspection, failed result				
	STAFS 2007:2		STAFS 2024:Y	
Number of meters	1 000	100	1 000	100
Inspection frequency	Every ten years	Every ten years	Year nine, thereafter year nine	Year nine, thereafter year nine
Total number of inspections over 23 years	2	2	2	2
Number of meters per inspection	1 000	100	50	26
Total number of meters taken down over 23 years	2 000	200	2 000	200
Cost of inspection and replacement, per mechanical meter (SEK)	1 024	1 024	1 024	1 024
Cost of inspection (SEK)	-	-	51 200	26 624
Cost of replacing (not including inspection) the remaining meters in the batch (SEK)	-	-	877 800	68 376
Total cost per interval per (SEK)	1 024 000	102 400	929 000	95 000
Total cost over 23 years (SEK)	2 048 000	204 800	1 858 000	190 000

Table 16

Summary of changes to water meters, batches with failed results				
		STAFS 2007:2	**STAFS 202X:Y**	**Difference**
Batch of 1 000 meters, 23 years	**Number of meters to be taken down**	2 000	2 000	± 0
	Cost (SEK)	2 048 000	1 858 000	- 190 000
Batch of 100 meters, 23 years	**Number of meters to be taken down**	200	200	± 0
	Cost (SEK)	204 800	190 000	- 14 800

By utilising the proposed regulation's statistical verification option, where the batch does not pass inspection, the mandator can, for a batch of 1 000 meters, achieve a saving of SEK 190 000 over a 23-year period, even though the number of meters to be taken down remains the same. For smaller batches, savings will be less significant. In this context, however, it should be pointed out that the above example does not take into account the current requirement in Section 5 of STAFS 2007:2 on reducing the maximum service life for similar meters. As a result of this provision, the inspection interval for a batch may already be

considerably more frequent than the 10 years specified as a general rule in STAFS 2007:2. However, it is very difficult to make calculations for all potential scenarios that could arise as a result of this rule.

The consultation responses received from district heating companies and mandators indicate that they foresee cost savings as a result of the longer maximum service life for large meters, reduced costs for purchasing meters, and that switching to a statistical verification procedure would be a significant improvement in terms of reduced workload.

6.1.4 Administrative and labour costs

As stated above, it is primarily administrative costs that will increase upon the introduction of the regulations. After the initial period, the time needed for administration and the labour costs associated with meter replacement can be expected to be at the current level and, possibly, to decrease in the long term, as the number of meter replacements decreases.

6.1.5 Human resource planning

The number of meter replacements is likely to be reduced for those district heating companies and mandators who choose to utilise the statistical verification option in the proposed regulation. Concerns have been raised in the consultation that human resource planning may become more difficult, as an entire batch may need to be taken down within one year if the batch fails inspection. This may affect both internal human resource planning and the procurement of external resources. We would like to point out that the risk of having to quickly remove meter batches is even greater currently, as inspection results in accordance with Section 5 of STAFS 2007:2 have the consequence that similar meters in service must have their maximum service life reduced by between 1 and 5 years. The current regulation is unpredictable in that meters similar to those that have undergone inspection may, as a consequence of inspection results, have already exceeded their maximum service life and must be removed immediately. Statistical verification is an option for those district heating companies and mandators who find this inspection procedure to be appropriate. The proposed regulation does not prevent the possibility of continuing to inspect each individual meter if this is deemed a better option.

6.1.6 Impact on competitive conditions

The proposed regulations are not expected to have any significant impact on the conditions of competition for district heating companies or mandators.

6.2 Inspection bodies

6.2.1 Costs in terms of administration and time spent on implementing the regulations

Since the inspection procedure and to some extent the documentation requirements are changed, inspection bodies will need to rework their templates for inspection reports. They will also need to review existing methods and procedures to ensure that these are updated in relation to the new regulations, as well as provide internal information on the amended regulations. A time consumption estimate for this gives an approximate cost of SEK 45 000.

6.2.2 Potential investments, in the short and long term

In the short term, the regulations will not entail the inspection bodies undertaking any direct investments, as the regulations are not being amended in such a way as to affect already purchased testing equipment.

In the long term, inspection bodies have indicated that it may become more difficult to obtain internal approval for investments, as fewer tests may lead to reduced revenue and thus have a negative impact on profitability. Maintenance and re-investments in existing equipment may be kept down, which may entail a risk of preventive maintenance disappearing.

6.2.3 Impact on competitive conditions

The proposed regulations entail major changes to the requirements governing when meters must be inspected. The proposed regulation means that a meter does not need to undergo inspection both before and after a modification, but only after a modification. There is no longer a requirement to inspect meters that are to be scrapped or otherwise no longer used. The option of using the statistical verification that we propose means that the amount of inspections carried out potentially could be drastically reduced. Volumes could become so low that the market cannot sustain multiple operators, leading to higher prices and longer delivery times. Virtually all inspection bodies have pointed out that, as a result of this, they expect competition between different inspection bodies to be tougher. It is difficult to assess what the market for inspection bodies will look like in the longer term.

In our work developing proposals for new regulations, we have reviewed the regulatory framework in a number of other European countries. Inspection requirements differ to a large extent. Some countries require regular inspection of all meters and do not allow statistical verification. The inspection intervals range from every two to every ten years. Other countries have no requirements for periodic inspection at all. We assess that there may be both historical and risk-based reasons for different countries' choice of regulation.

In this context, one example of particular interest is Denmark, which abolished the requirement for periodic inspection of thermal energy meters in 2017. Previously, periodic inspections of such meters were mandatory in order to ensure their accuracy. Following the deregulation, the responsibility was transferred to the meter owners and energy suppliers, who themselves must ensure that the meters function correctly and are replaced when necessary. Despite this, there are still inspection bodies operating on the Danish market.

6.2.4 Costs attributable to accreditation decisions

The accreditation department at Swedac has conducted a preliminary analysis of the impact of the regulations on existing accreditation decisions. It is assessed that only a document review of the inspection bodies' inspection methods and associated instructions will be necessary, i.e. documentation showing that the inspection body has adapted its methods, instructions and inspection reports to the new regulations. This is associated with a cost under Swedac's fee regulations.[18] The estimated time required for this work for each inspection body is approximately 4 hours for a qualified lead assessor.

At present, accreditation decisions are often formulated in such a way that the scope of accreditation is described in terms of 'applicable regulations from [*regulatory authority*]'. In these cases, no application for amendment of accreditation is required. To the extent that there are inspection bodies whose accreditation decisions instead refer to STAFS 2007:2 for the scope of the accreditation, these bodies will have to apply for an amendment. Applications for amendment to accreditation are subject to a fee in accordance with Swedac's fee regulations.

6.3 Swedac, department for accreditation

Swedac's accreditation department is affected because changes to the accreditation of inspection bodies must be managed. Of particular note here is the removal of Annexes 2 and 3 (see Section 2.8), which may mean inspection bodies must develop new inspection methods. This will affect accreditation activities in such a way that possible new approaches will need to be assessed. Furthermore, the accreditation department is affected in the manner described in Section 6.2.4 above, regarding the need to conduct document reviews on how inspection bodies have implemented the amended regulations.

6.4 Measures to minimise costs and restrictions

In order to ensure that the proposed changes do not entail more far-reaching costs or restrictions than are necessary in achieving the aims of the regulation, we have taken several measures. We have formulated the provisions wherever possible in a way which is technologically neutral, to allow room for flexible solutions and new working methods. No new technical requirements are introduced that would force companies to make investments in equipment or technology. The costs associated with batch sample selection described in Section 6.1 are not considered to be excessive in this context. Finally, transitional provisions have been proposed to ensure that meter batches already in service are not subject to an excessive reduction in their maximum service life, thereby limiting the financial and administrative burden associated with the introduction of the regulations.

[18] The Swedish Board for Accreditation and Conformity Assessment's regulations on fees for accredited bodies, etc., STAFS 2022:14

7. Uncertainties

This section deals with the uncertainties and variable parameters that affect our impact assessment.

7.1 Competition and access to inspection bodies

As stated in Section 6, it has been argued in the consultation that competition between inspection bodies and the continued volume of their activities will be affected by the proposed regulation. If external inspection bodies can no longer conduct operations, there is the possibility of municipalities forming their own inspection bodies, which is permitted under Section 20 of the proposal. This entails both financial costs and administrative challenges, but can also offer advantages in the form of increased control and flexibility. Such a development is not something that can be predicted and it is difficult to estimate how likely it is.

7.2 Cost increases for meter inspections

Financial conditions for inspection bodies will be affected if many district heating companies and mandators choose to use the option of statistical verification. This may result in the inspection price on which our calculations in Section 6 are based also being altered, probably in the form of price increases. It is highly uncertain what the pricing situation will be, and we have therefore chosen not to report any calculations with increased prices.

8. Evaluation

The consequences of the new regulations will need to be evaluated. An initial evaluation could be carried out five years after the entry into force, with the results compiled into a report made available on Swedac's website. Below are suggestions for what such an evaluation might include.

8.1 Economic impact

Monitoring of the economic effects for district heating companies, mandators and inspection bodies. Monitoring may include an analysis of changes in costs and revenues for these operators.

8.2 Administrative burden

Monitoring of the impact on administrative burden for district heating companies, mandators and inspection bodies. This may include an examination of the time and resources spent on meeting the new requirements, as well as an assessment of how resource planning has been affected.

8.3 Environmental impacts

The environmental impact of the new regulations can be evaluated with particular focus on whether they have resulted in a decrease in resource consumption. The hope is that the regulations will contribute to this by reducing the number of meters that must be taken down and replaced, allowing extended use of each individual meter. We also expect a reduced environmental impact as the number of journeys and transports required in replacing meters will be reduced. Such an evaluation may include a comparison with previous years' data on the number of meter replacements and the associated journeys and transports, as well as data from district heating companies and mandators on the numbers of discarded and newly purchased meters.

8.4 Compliance

Compliance with the new provisions will naturally be monitored through ongoing supervisory activities, but may also occur as part of a special evaluation. The follow-up may include an inspection of the number of meters that do not comply with the requirements for prescribed inspection and the number of meters that do not have sufficient measurement accuracy upon inspection. In this area, consideration of the choice of LQ8% as an inspection level can be followed up. It may also include an assessment of whether the maximum service life should be adjusted. Furthermore, it may include measures taken by Swedac as well as any practical and legal challenges that have arisen for the actors targeted by the regulations, as well as for Swedac as a supervisory authority and accreditation authority.

9. Assessment of whether the regulations comply with or exceed the obligations arising from Sweden's accession to the European Union

We consider that the proposed provisions comply with Sweden's obligations arising from its EU membership. The provisions are covered by a national initiative.

The proposed provision for inspection bodies accredited by an accreditation body other than Swedac applies to both Swedish and foreign inspection bodies but will, in particular, affect accredited inspection bodies that do not have their registered office in Sweden. Swedac needs to have information about the inspection bodies operating on the Swedish market in order to be able to check compliance with the regulations. Compliance with the regulatory framework is ultimately of importance for ensuring measurement accuracy, which is a prerequisite for protecting consumers. We consider that the provision is proportionate to the purpose. It constitutes merely an obligation to provide information and does not prevent an operator from carrying out activities in Sweden.

Neither do the other provisions we propose impose any restrictions on the free movement within the EU. We consider that they are compatible in all other aspects with the principles of EU law.

10. Assessment as to whether special consideration must be given to the date of entry into force and whether special information initiatives are required

The regulations are expected to enter into force no earlier than 1 April 2026.

A transition period is deemed necessary to allow the actors concerned to adapt their operations to the new regulations.

Inspection bodies require time to adjust their accreditations and make the necessary organisational and technical adjustments. The same applies to district heating companies and mandators, who must update databases and procedures for, among other things, batch sample selection and sampling points. This adjustment is expected to take place within one year, which is why STAFS 2007:2 may be applied in parallel for one year, according to the proposal, until 31 March 2027.

Unlike the previously referred proposal, we no longer consider it necessary to continue applying the special provisions on maximum service life in STAFS 2007:2. Since STAFS 2007:2 may be applied in parallel until 31 March 2027, district heating companies and mandators may in practice still use the previous maximum service life of up to ten years during this period. When the new time limit of nine years thereafter becomes fully applicable, the difference to the previous policy is not considered to affect their planning to any great extent.

We do not consider that there is a need for a longer transitional period for any other provisions.

Decisions on extended maximum service life issued under older regulations continue to apply after entry into force of the new regulations. Such a decision is usually formulated in one of the following ways:

- meters may be in service for a certain total period of time (e.g. no more than twelve years), or
- meters may be granted an extension of their maximum service life by a certain number of years beyond the regular period in accordance with the provision that applied when the decision was made.

In both cases, the transitional provision means that the extension that has been granted continues to apply in the same way as before. In order for these decisions to continue to apply, the district heating company or mandator must comply with the conditions set out in the decision, including the annual reporting to Swedac.

Before STAFS 202X:X and 202X:Y are adopted, a period of approximately six months must be given to apply for these according to the Ordinance (2009:1078) on services in the internal market.[19] The earliest date on which it is therefore deemed possible for the new basic statutes to enter into force is 1 April 2026. The regulations and information about entry into force will be available on Swedac's website. We do not consider there to be any need for further information initiatives.

[19] See Article 15(7) and 39(5), Directive 2006/123/EC of the European Parliament and of the Council of 12 December 2006 on services in the internal market

11. Changes with significant impact on companies' working conditions, competitiveness, or other factors

We have not identified any other effects beyond those reported in section 6.

12. Impact on municipalities and regions

We have not identified any other effects beyond those reported in sections 6 and 7. We also do not consider that the proposal restricts municipal autonomy.

13. Obtaining an opinion from the Swedish Better Regulation Council and the Government's consent

We will obtain an opinion from the Swedish Better Regulation Council in connection with the proposal being sent for consultation. We do not consider that the proposal has such an impact that the Government's consent is required under Section 14 of the Ordinance (2024:183) on impact assessments.

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