

**RECOMMENDED MARKET CONVENTIONS  
FOR NOWA AND FALLBACK SOLUTIONS IN  
THE EVENT OF A CESSATION OF NIBOR**

WORKING GROUP ON ALTERNATIVE REFERENCE  
RATES FOR THE NORWEGIAN KRONE

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## 1. Introduction

At the beginning of 2018, Norges Bank, in consultation with the financial industry, established a working group for alternative reference rates (the ARR group) for contracts denominated in NOK. This working group consists of a number of representatives from the Norwegian financial industry.<sup>1</sup> In September 2019, the working group published its report<sup>2</sup> recommending a reformed version of the overnight rate Nowa as an alternative reference rate.

Since September 2019, the work has focused on how Nowa can be used as an alternative reference rate. This report contains the ARR group's recommendations related to market standards and fallback solutions.

The report has been prepared by a subgroup consisting of a broad group of representatives from the financial industry in Norway.<sup>3</sup>

## 2. Executive summary

*Reference rates play a critical role in the financial system. Large values are linked to these interest rates through various financial products and loan agreements. The most commonly used reference rate for contracts denominated in NOK is Nibor. Internationally, consultations have recently been published with proposed dates for the permanent cessation of Libor in the future, and the probability that Libor will not be published after 2021 (and June 2023 for some maturities of USD Libor) is high. The working group, on the other hand, has no indication that Nibor will cease. However, according to the EU Benchmark Regulation, entities under supervision shall produce and maintain robust written plans setting out the actions that they would take in the event that a benchmark materially changes or ceases to be provided. Where feasible and appropriate, such plans shall nominate one or several alternative benchmarks that could be referenced to substitute the benchmarks no longer provided.*

*In September 2019, the ARR-group recommended a reformed version of Nowa as the alternative NOK reference rate. The sub-working group for Market conventions for Nowa and fallback solutions for Nibor has subsequently worked on how Nowa can be used in financial contracts as well as to propose solutions in the event of a cessation of Nibor. This report describes the recommended solution for using Nowa in financial contracts as well as how to handle a transition from Nibor to Nowa. The solution is based on input from various market participants through two consultation reports<sup>4</sup> and relies largely on the work done in similar internationally working groups for other alternative reference rates.*

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<sup>1</sup> ARR consists of DNB Bank, Sparebanken Vest, Nordea Bank, Handelsbanken, Skandinaviska Enskilda Banken, Danske Bank, Swedbank, SpareBank 1 SMN, SpareBank 1 Nord-Norge, SpareBank 1 Østlandet, Sparebank 1 SR-Bank. Norges Bank and Finans Norge attend as observers.

<sup>2</sup> [https://www.norges-bank.no/globalassets/upload/markeder/arr/arr\\_report\\_reccommendation\\_alternative\\_reference\\_rate.pdf](https://www.norges-bank.no/globalassets/upload/markeder/arr/arr_report_reccommendation_alternative_reference_rate.pdf)

<sup>3</sup> The subgroup for market conventions and fallback solutions consists of SpareBank 1 Boligkreditt, DNB Markets, Handelsbanken, Kommunalbanken, Nordea, Nordea Investment Management, Nordic Trustee, NoRe, PWC, Schjødt, SEB, Danske Invest, SpareBank 1 SMN, Swedbank, Verdipapirsentralen (VPS). Norges Bank and Finance Norway attends as observers.

<sup>4</sup> Both the consultation reports and summary of responses can be found at the ARR group's internet page: <https://www.norges-bank.no/en/topics/liquidity-and-markets/working-group-arr/documents/>

The working group recommends the following market conventions for Nowa:

<b>Market conventions</b>	<b>The working group's recommendations</b>
Day count	Actual days divided by 365
Banking day convention	Modified following
Forward or backward looking	Backward looking
Compounded or simple average	Compounded average
Days shift	2 banking days
Method used	Shifted observation (delayed payment for interdealer market for Nowa-derivatives)
Precision	5 decimals
Margin over reference rate	Margin added without compounding

Table 1: Working groups recommendations

Based on the working group's assessments and proposals, the fallback clause can be formulated as follows:

*"In the event of a public statement from the Administrator, The Financial Supervisory Authority of Norway, the court or any entity with insolvency or resolution authority over the Administrator, that Nibor will cease to be published or that the Administrator will no longer provide Nibor, provided that, at the time of the latter statement there is no successor administrator that will continue to provide Nibor, the parties agree that Nibor will be replaced with the Replacement Rate from the date Nibor is no longer published, with effect from the first subsequent interest period.*

*If the Administrator announces that one or more Nibor tenor(s) will no longer be published, and the announcement means that from a certain point in time, at least one longer and one shorter Nibor tenor will not be published to interpolate between for a given tenor, the relevant tenor shall be replaced by the replacement rate from that point on.*

**'Administrator'** means the administrator of Nibor.

**'Replacement rate'** means the sum of term-adjusted Nowa and the spread-adjustment factor for the relevant Nibor tenor.

**"Term-adjusted Nowa"** means the daily compounded Nowa rate with a two-day observation shift multiplied by 360/365.

The **'spread-adjustment factor'** means the historical median difference between The Term Adjusted Nowa and the relevant Nibor tenor in the 5-year period up to and including the date no later than two banking days prior to the statement."

The subgroup for market conventions and fallback solutions will follow up the recommendations in this final report with the various players in the Norwegian financial market. The work ahead will focus on how to implement the recommended market conventions and fallback solutions in different contracts, in addition to following the work internationally and, if necessary, make adjustments to the Norwegian recommendations.

The mandate of the subgroup has been updated to reflect the phase of the work that one is now entering.

### 3. Background

The working group for alternative reference rates for contracts denominated in NOK (ARR) was established at the beginning of 2018. In September 2019, the ARR group recommended a reformed version of the overnight rate Nowa (Norwegian Overnight Weighted Average) as an alternative NOK reference rate.<sup>5</sup>

Since then, the work has concentrated on how Nowa can be used as a reference rate and recommend fallback solutions in the event of cessation of Nibor (Norwegian Interbank Offered Rate).

The most commonly used reference rate for contracts denominated in NOK is Nibor. Following the recommendation to use reformed Nowa as the alternative reference rate to Nibor, two subgroups were established that have worked on how Nowa can be used as a reference rate. One group has focused on market conventions for Nowa and fallback solutions in the event of a cessation of Nibor, and another group has looked at the development of a derivatives market with Nowa as the reference rate. In June 2020, two consultation reports were published; "Market conventions for financial products referencing Nowa" and "Establishing an OIS (Overnight Index Swap) market in NOK".<sup>6</sup>

Following the consultation report on market conventions, the work has concentrated on fallback solutions in the event of a cessation of Nibor. In September 2020, the working group published a consultation report on term and spread adjustment between Nibor and Nowa in the event of a cessation of Nibor with a recommendation for a fallback clause. The proposed market conventions for Nowa, with input from the consultation responses to the first consultation report, have been an input in this work.

In the following, the final recommendations from the working group for market conventions and fallback solutions are set out and the way forward is discussed.

The objectives for the work with market conventions and fallback solutions have been based on the following principles:

- as far as possible seek to recommend solutions that minimise value transfer in the event of a cessation of Nibor
- as far as possible seek to recommend the same conventions and fallback solutions across products denominated in Norwegian kroner, as well
- as far as possible seek to recommend the same conventions and fallback solutions across currencies.

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<sup>5</sup> See [Report with a recommendation for an alternative reference rate in NOK](#) from September 2019.

<sup>6</sup> See [Consultation: Market conventions for financial products referencing Nowa](#) and [Consultation report: Establishing an OIS market in NOK](#)

## 4. Market conventions for Nowa

### 4.1 Day Count Convention, actual/365

Nowa is quoted as an annualised rate with a day count convention of actual days divided by 365. The number of days in the interest period is calculated by including the first day in the interest period up to, but not including, the last day in the interest period.

The working group recommends interest payment with Nowa as the reference rate calculated with actual days in the interest period divided by 365 as the day count convention.

### 4.2 Modified following

If the interest payment date falls on a weekend or another legal holiday, then the actual payment date needs to be rolled forward or backward.

The working group recommends that contracts referencing Nowa uses modified following with adjusted interest accrual days as business day convention since this is the standard for contracts with Nibor as the reference rate.

### 4.3 Backward-looking interest rate calculation

A backward-looking interest rate calculation uses Nowa for each rate-fixing day (banking day<sup>7</sup>) in the given observation period. The method is meant to reflect the actual interest rate level in the money market since Nowa is based on actual transactions.<sup>8</sup>

Accrued interest for the entire interest rate period is not known until the last date for the Nowa fixing. Difficulties related to the settlement may be solved by using a set of conventions which will be further elaborated below.

Backward-looking calculation is also the convention used as the method for fallbacks in the derivatives market and for floating-rate bonds denominated in GBP, USD and EUR as well as bank loans with SONIA or SOFR as the reference rate. Furthermore, ISDA (International Swaps and Derivatives Association) bases its proposed fallback solution for derivatives with IBOR as the reference rate on a backward-looking interest rate calculation.

The working group recommends use of a backward-looking interest rate calculation.

### 4.4 Compounded average

NOWA is a daily rate, so by investing 1 today, you will receive 1 + interest tomorrow. If Nowa is used as the reference rate in contracts with for instance quarterly interest rate payments the interest will not be exchanged until the end of the interest rate period. It is hence considered appropriate to calculate a compounded average where accrued interest that has not been paid out as a part of the calculation.

Floating Rate Notes (FRN) issued in SONIA and €STR use compounded interest rates and this is also the recommended solution from ISDA on fallback solutions for the largest IBOR-rates. By choosing compounded Nowa one mitigates the risk of international liquidity fragmentation.

The working group recommends compounded NOWA average in contracts that reference NOWA.

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<sup>7</sup> Days where banks and the foreign exchange market are open in Norway.

<sup>8</sup> To construct an official forward-looking fixing, it is necessary to have a well-functioning derivatives market. This could be a challenge in the Norwegian market.

#### **4.5 Observation shift, with two-banking day backward shift**

When using a backward-looking calculation of the interest rate, the rate and interest rate payment will not be known until the last NOWA fix at the end of the period. This may lead to administrative challenges for settlements with short notice. It is therefore necessary to have market conventions that enables the opportunity to calculate the interest rate payment a certain amount of days in advance of the last Nowa fix at the end of the period. To be able to calculate the interest rate payment before the period has expired one needs to select a method or a convention that describes how this shall be done.

Internationally, several methods are used, including lock-out, look back, shifted observation period and delayed payment. Lock-out does not seem to be an option favoured by many, but the three other conventions are recommended and frequently used for different types of products. Each product typically uses the convention that suits best with the product's characteristics.

An example is the convention of delayed payment, which is considered as the standard option in the interbank market for OIS derivatives. Delayed payment implies that the interest rate is calculated based on all observations in the interest rate period. However, the interest rate payment is exchanged two bank days after the interest rate period has expired. For derivatives with Nowa as the reference rate it is recommended to use the international standard of delayed payment for transactions in the interbank market.

The method of shifted observation divides the calculation into two steps. First, the observation period for the interest rate is defined as a certain number of banking days before the start and end of the interest rate period. Second, the interest rates in the observation period is used to calculate the interest rate payments for the interest rate period. This implies that the observation period differs from the interest rate period. ISDA has chosen shifted observation in its fallback solution for derivatives given the cessation of IBOR-rates. Norges Bank will publish Nowa averages for one, three and six months based on shifted observation. The method will thus make it possible to use Norges Bank's Nowa compounded index for the calculation of the compounded rate for financial products for a given period with Nowa as the reference rate. At an international level, the FRN market has made use of shifted observation since the Nowa compounded index simplifies the interest rate calculation.

The method look-back is based on the interest rate period but uses the Nowa fixing a certain amount of bank days before each interest rate day in the calculation. For a period with no legal holiday, look-back and shifted observation will provide the same result. Should there be a legal holiday during the interest rate period, then the Nowa fixing will have different weights in the two methods. Both the ARRC (Alternative Reference Rates Committee for USD) and the RFRWG (The Working Group on Sterling Risk-Free Reference Rates) prefers look back for syndicated bank loans. The RFRWG and the LMA (Loan Markets Association) have stated that one may also use shifted observation. If a shifted observation period is used for loans with full or partially repayment of the principal during the interest rate period, then the interest payment should be made at the same time.

ISDA uses a two- days observation shift when calculating the interest rate payment in its fallback solution for derivatives. For FRNs denominated in GBP it has been common to use five banking days, look-back or five banking days, observation shift. In the USD market for SOFR FRNs both two and five banking days are common.

From the end of 2021 Q1, Norges Bank will publish backward-looking, compounded Nowa rates. These rates will be published with a two-day observation shift. Contracts that refer to these market conventions with a tenor equal to the periods published by Norges Bank may use these data directly when calculating interest rate payments.

The working group recommends using shifted observation period with a two banking day shift. An exception applies for Nowa OIS derivatives in the interbank market where it is recommended to use delayed payment in accordance with the international standard.

#### **4.6 Rounding to five decimal places**

A backward-looking compounded Nowa rate will end up having a large number of decimal places. To ensure high accuracy in the calculation of the interest rate payment it is desirable to use a large number of decimal places in the average interest rate. Some systems however limit the number of decimal places. The Federal Reserve Systems published rates for SOFR are rounded to five decimal places. It is also common to use five decimal places when interpolating between different Nibor tenors.

The working group recommends calculating the Nowa average rounded to five decimal places.

#### **4.7 No compounding of margin**

The working group recommends adding the margin to the compounded NOWA, ie there is no compounding of the margin. This is in line with how margin is treated in relation to the reference rate in agreements and harmonised with international recommendations.

#### **4.8 Different ways of implementing a possible interest rate floor when using Nowa as a reference rate**

The recommended market conventions for Nowa can handle negative rates, and the proposed Nowa return index from Norges Bank will include negative values of Nowa if they occur.

On the other hand, certain agreements include a minimum floor for the reference rate. Such an interest rate floor is often used in loan agreements for bank loans and bonds with floating rate. It is also present for interest rate derivatives used for loan agreements that has an interest rate floor.

Should it be desirable to include a minimum level for Nowa there are several ways of doing so. The two most common solutions are an interest rate floor at a daily level or a floor on the compounded average Nowa level over the term. The first option is in line with Nowa as an overnight rate. The second option, where there is a floor on the compounded Nowa average over the term, is more consistent with the solution applied for contracts with Nibor as the reference rate today.

The Nowa compounded index and average for Nowa published by Norges Bank will also be possible to use in contracts if an interest rate floor for the entire interest rate period is included in the agreement. In market conventions for bank loans that has SOFR as the reference rate, the ARRC recommends a daily interest rate floor.<sup>9</sup> The RFRWG also recommends a daily interest floor due to the daily accruing of interest.<sup>10</sup>

The working group recommends that the parties in an agreement that desires an interest rate floor choose the method that best suits their preferences.

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<sup>9</sup> [ARRC SOFR Bilat Loan Conventions.pdf \(newyorkfed.org\).](#)

<sup>10</sup> [Statement on behalf of the Working Group on Sterling Risk-Free Reference Rates – Recommendations for SONIA Loan Market Conventions \(bankofengland.co.uk\).](#)

## 5. Legal background

Amendments to the Reference Interest Rate Act entered into force on 20 December 2019. The Act changed the title to the Financial Benchmarks Act and transposed the EU Benchmark Regulation (2016/1011)<sup>11</sup> into Norwegian law.

Pursuant to Article 28(2) of the Regulation, supervised entities other than an administrator that use a benchmark shall produce and maintain robust written plans setting out the actions that they would take in the event that a benchmark materially changes or ceases to be provided. Where feasible and appropriate, such plans shall nominate one or several alternative benchmarks that could be referenced to substitute the benchmarks no longer provided, indicating why such benchmarks would be suitable alternatives. The supervised entities shall, upon request, provide the relevant competent authority with those plans and any updates and shall reflect them in the contractual relationship with clients.

Pursuant to Article 3(7) of the Regulation, “use of a benchmark” means;

- a) issuance of a financial instrument which references an index or a combination of indices;
- b) determination of the amount payable under a financial instrument or a financial contract by referencing an index or a combination of indices;
- c) being a party to a financial contract which references an index or a combination of indices;
- d) providing a borrowing rate as defined in point (j) of Article 3 of Directive 2008/48/EC calculated as a spread or mark-up over an index or a combination of indices and that is solely used as a reference in a financial contract to which the creditor is a party;
- e) measuring the performance of an investment fund through an index or a combination of indices for the purpose of tracking the return of such index or combination of indices, of defining the asset allocation of a portfolio, or of computing the performance fees.

“Financial contract” is in the Regulation defined as any credit agreement as defined in point (c) of Article 3 of Directive 2008/48/EC (Consumer Credit Directive) and any credit agreement as defined in point (3) of Article 4 of Directive 2014/17/EU (Mortgage Credit Directive). The regulation thus does not apply to credit agreements that are not entered into with consumers, which in the regulation is defined as a “natural person who, in financial contracts covered by this Regulation, is acting for purposes which are outside his or her trade, business or profession”.

“Financial instrument” is in the Regulation defined as any of the instruments listed in Section C of Annex I to Directive 2014/65/EU (“MiFID II”) for which a request for admission to trading on a trading venue, as defined in point (24) of Article 4(1) of MiFID II, has been made or which is traded on a trading venue as defined in point (24) of Article 4(1) of MiFID II or via a systematic internaliser as defined in point (20) of Article 4(1) of the said Directive.

## 6. Trigger events

The basis for the fallback solution proposed by the working group are the solutions proposed by ISDA, the ARRC etc, (cf Appendix B to Consultation Report No. 2), and adapted and localised to the Norwegian legal system and market situation. One important aspect has been to define the trigger events that will lead to Nibor being replaced by the Nowa-based replacement rate (fallback clause).

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<sup>11</sup> [Regulation \(EU\) 2016/1011 of the European Parliament and the Council of 8 June 2016](#)

The respondents have mainly given their approval to the working group's proposals for trigger events.<sup>12</sup>

The clause recommended by the working group is intended to trigger a transition to the replacement rate similarly to the equivalent clauses proposed by ISDA. It is assumed that the clause will mainly be relevant in contracts governed by Norwegian law, and although the trigger events haven't been expanded and exemplified to the same extent as in ISDA's proposal the same trigger event will also be covered by the working group's proposals.. With regard to the fallback clause for Nibor in ISDA agreements, which are not governed by Norwegian law, the clause will be formulated by ISDA in accordance with ISDA's preferred language. The working group will assist ISDA in this work (see Chapter 9).

Internationally, trigger events are separated into two categories: cessation triggers and pre-cessation triggers. Cessation triggers are related to a public announcement to the effect that the relevant benchmark will cease to be published. A pre-cessation trigger relates to an event which will happen prior to cessation, and will trigger the fallback clause without a public announcement of the cessation of the benchmark. An example of the latter is an announcement by a competent authority stating that the relevant benchmark no longer reflects the economic reality that it intends to measure.

The working group does not recommend pre-cessation triggers. It is difficult to imagine situations in Norway where a pre-cessation trigger will be relevant. If a situation arises where Nibor's representativeness can be questioned, this will trigger a duty of action for the administrator of Nibor, which is Norske Finansielle Referanser AS (NoRe) in accordance with The Nibor Framework.

As NoRe is subject to public authorisation to publish Nibor, it must further be assumed that a decision by the supervisory authorities that Nibor is no longer representative of what Nibor is intended to reflect will not be published without at the same time announcing that the publication of Nibor as benchmark shall cease. The working group has also emphasised that ISDA has only proposed pre-cessation triggers, based on loss of representativeness, for Libor-based derivatives subject to the supervision of the UK Financial Conduct Authority (FCA) and based on an announcement from the FCA. The FCA has, as the only supervisory authority so far, taken an active role and has published statements describing both how such an announcement will be made, on what basis and with what content.

The working group's recommendation, which is in line with the proposals put forward by ISDA and the ARRC, is that the fallback clause for Nibor is first triggered as a result of a public announcement from NoRe, Finanstilsynet, the court or any entity with insolvency or resolution authority over NoRe stating that Nibor will cease to be published. Nibor will be replaced with the replacement rate based on Nowa from the date Nibor is no longer published, with effect from the first subsequent interest period.

The fallback clause will only be triggered where a new administrator is not ready to take over as the administrator for Nibor at the time of the announcement. Should a new administrator be ready to take over at this point in time the transition to this entity will follow NoRe's Nibor Transition Policy, i.e. this will not be deemed as a trigger event. The working group assumes that NoRe is well prepared for the event mentioned above. This would reduce the risk of having a situation where a

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<sup>12</sup> <https://static.norges-bank.no/contentassets/74ba575d56d844d2b48f48b1607bfe2a/summary-of-responses-to-the-consultation-report---fallback-solutions-and-term--and-spreadadjustment-between-nibor-and-nowa-in-th.pdf?v=12/15/2020130100&ft=.pdf>

new administrator is not ready at the time of the announcement of NoRe no longer being the administrator for Nibor.

With regard to a situation where one or more of the Nibor tenors cease to exist, it's the working group's opinion that such an event is primarily resolved through The Nibor Framework.

However, the working group sees a need to specify that the cessation of one or more tenors may result in a trigger event should the result of the cessation be that there will no longer be published at least one longer and one shorter Nibor tenor to interpolate between, as a replacement for the ceased tenor. In line with what has been proposed internationally by ISDA, and as stated in the "ISDA 2020 IBOR Fallbacks Protocol FAQs", the cessation of one or more tenors will only result in a trigger event under the fallback clause in cases where an announcement from NoRe results in that - from a specified time - there will no longer be published at least one longer and one shorter Nibor tenor to interpolate between.

The working group has also assessed the need for a trigger that reflects a situation where Nibor is not published for eg five consecutive banking days. Given that such a trigger would deviate from the recommendations by ISDA and ARRC, the working group decided not to recommend this. It is also difficult to foresee all possible situations where Nibor is not being published and thereby assessing whether a certain situation should be regarded as a trigger event or not. Should Nibor again be published after some banking days of cessation it might be the case that some want to change back to Nibor. This could create bilateral conflicts between the parties to a contract.

The ARRC and ISDA have in their proposals a definition of the conversion date, which for cessation triggers will be the day where an IBOR no longer is published due to a trigger event. The working group has not included a definition of the conversion date in its recommendation but suggests that the conversion date is specified in the fallback clause. The replacement rate based on Nowa should apply from the date Nibor is no longer published, with effect from the first subsequent interest period. The working group considers the difference to be that of contractual wording, where in practice - the conversion date - will be the same as in corresponding clauses proposed by ISDA and the ARRC.

The working group's recommended fallback clause is based on a single methodology for determining and calculating the replacement rate instead of a waterfall methodology. A single methodology seems to be best suited to meet the objective of a predictable fallback clause that, as far as possible, seeks to minimise conflict and the risk of value transfer during a transition from Nibor to Nowa. Reference is otherwise made to the assessment in Consultation Report No. 2.

The recommended fallback clause is an adaptation of the fallback clauses recommended by ISDA on derivatives and the ARRC for the reference rate USD Libor and should, in the opinion of the working group, be applied across different markets and products.

## **7. Spread and term adjustments for the cessation of Nibor**

### **7.1 Introduction**

Nibor is a set of interest rates with tenors from seven days to six months. The difference between Nibor and Norges Bank's key policy rate can be seen as an average credit premium on the banks that quote Nibor interest rates. Nowa is a one-day overnight rate and consequently has a smaller credit premium than Nibor. In existing contracts with Nibor as a reference rate, the credit premium is an

important component in the valuation of the product, hence the difference between Nibor and Nowa must be adjusted for when replacing Nibor with Nowa as a reference rate to minimise the value transfer between counterparties.

By replacing Nibor with a fallback rate based on Nowa in a contract, the objective is to make the use of Nowa as similar as possible to the use of Nibor in the same contract. Therefore, the fallback rate for Nibor must both be converted to an interest rate with the same payment structure as the Nibor period and compensate the receiver of Nibor for the difference between Nowa and Nibor. The recommended term and spread adjustment of Nowa is based on similar processes in other countries, including ISDA and Bloomberg's rulebook for Libor Fallbacks.<sup>13</sup>

## 7.2 Definition of a replacement rate for Nibor

If Nibor ceases to exist, the working group recommends using the fallback rate calculated as Nowa compounded in arrears over the original Nibor tenor plus a spread adjustment to compensate for the expected difference between Nibor and Nowa. The fallback rate can be formulated as:

$$FR_{f,t} = ARR_{f,t} + SA_{f,t}$$

Where

$FR_{f,t}$  is the fallback rate for tenor  $f$  on fixing day  $t$

$ARR_{f,t}$  is the average compounded Nowa in arrears for tenor  $f$  on fixing day  $t$

$SA_{f,t}$  is the spread adjustment for tenor  $f$  on fixing day  $t$

## 7.3 Term-adjusted Nowa

Nowa uses an act/365-day count convention, whereas Nibor uses ACT/360. To calculate the compounded Nowa average ( $ARR_{f,t}$ ) as the same basis as Nibor the working group recommends the following formula:

$$ARR_{f,t} = \frac{360}{365} \times \frac{1}{\delta_{S_{f,t}E_{f,t}}} \times \left[ \prod_{u \in AP_{f,t}} (1 + \delta_{u,u+1} \times Nowa_u) - 1 \right]$$

Where

$S_{f,t}$  is the start date in the interest period for tenor  $f$  on fixing day  $t$

$E_{f,t}$  is the end date in the interest period for tenor  $f$  on fixing day  $t$

$\delta_{x,y}$  is the coverage factor from and including day  $x$  until but not including, day  $y$

$$\delta_{x,y} = \frac{\text{number of days between } x \text{ and } y}{365}$$

$AP_{f,t}$  all business days in the interest period for tenor  $f$  on fixing day  $t$

<sup>13</sup> See «[libor fallback rate adjustments rule book](#)».

$u$  is a business day

$u + 1$  is the following business day after  $u$

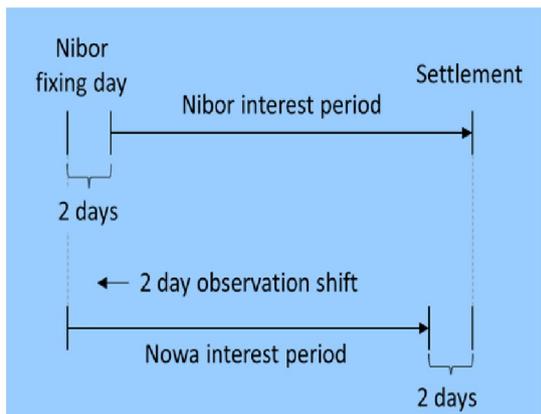
$Nowa_u$  is the Nowa fixing on business day  $u$

#### 7.4 Definition of interest rate days in the calculation

The interest period is the same as for the Nibor interest period with a maturity  $f$  on fixing day  $t$  but the start date and the end date are shifted two business days. Since Nibor reflects the interest rate for a loan that starts two days after the fixing date, the interest period for calculating the compounded Nowa average rate will usually start on day  $t$ . See Chart 1 and the examples below.

Nibor is meant to reflect the interest rate for a loan that starts two bank days after the fixing date  $t$ . The interest rate period for a Nibor rate with tenor  $f$  on fixing day  $t$  hence starts at  $t+2$ . The interest rate period  $AP_{f,t}$  in the calculation of the term adjusted Nowa is the same as for the Nibor rate with tenor  $f$  on fixing day  $t$  but shifted back two bank days. This is in line with the method described in section 3.5 above and chart 1 below.<sup>14</sup>

Chart 1: Interest period for calculating compounded Nowa-rates are shifted two business days relative to the Nibor interest period



#### 7.5 Calculation of the spread adjustment between Nibor and Nowa

The working group recommends that the spread adjustment factor is set equal to the five-year median difference between Nibor and the term adjusted Nowa for each tenor  $f$ . From the time of announcement,  $T$ , the spread adjustment is fixed at all times, i.e. that  $SA_{f,t} = SA_{f,T}$  for  $t > T$ .

To calculate the term adjusted Nowa one needs historical Nowa data for the entire tenor period. The exact days with Nibor and Nowa rates that are part of the calculation of the five-year median difference will depend on the tenor  $f$  (see formula below).

The Nowa rate in its current definition and calibration has only existed since 2 January 2020. The previous framework results in large deviations compared to the current system when calculating especially the rate at the end of a quarter or year. To bring about a consistent framework for the spread adjustment between Nowa and Nibor the working group recommends, if applicable, to use

<sup>14</sup> See the working group's report for examples: [Consultation: Fallback solutions and term- and spread adjustment between Nibor and Nowa in the event of a cessation of Nibor.](#)

Norges Bank’s estimated reformed Nowa rate for the time period before 2020.<sup>15</sup> The working group recommends using the following formula to calculate the spread adjustment factor:

$$SA_{f,t} = \text{median}_{x \in MP_{f,t}} \{ \text{Nibor}_{f,x} - \text{ARR}_{f,x}^* \}$$

Where

$MP_{f,t}$  is the median period for tenor  $f$  and fixing day  $t$ . The last day of the median period is the first day of the interest rate period for Nibor with tenor  $f$  that ends 2 fixing days before  $t$ . The first day of the median period is the fixing day 5 years before the last day of the median period.

$x$  are all fixing days as of the first day until even the last day in the median period.

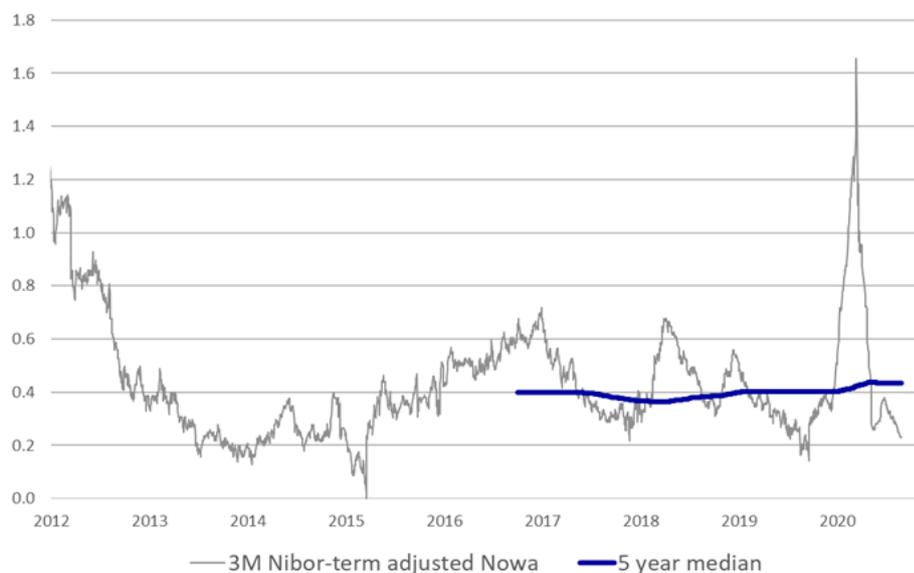
$\text{ARR}_{f,x}^*$  is the ARR in section 6.3 but where  $\text{Nowa}_u = \begin{cases} \text{Nowa}_u^r, & \text{for } u \geq 2.\text{January } 2020 \\ \text{Nowa}_u^*, & \text{for } u < 2.\text{January } 2020 \end{cases}$

$\text{Nowa}_u^r$  is the reformed Nowa

$\text{Nowa}_u^*$  is the estimated reformed Nowa from Norges Bank

It follows from the formula above that the spread adjustment factor will change over time  $t$  and with different tenors  $f$ . At 27 November 2020 the spread adjustment is 28bp for 1M Nibor, 43bp for 3M Nibor and 54bp for 6M Nibor. In Chart 2 below, developments in the spread between 3M Nibor and 3M ARR\* as well as the five-year median difference are shown. Data for estimated reformed Nowa go back to September 2011.

**Chart 2: 3M Nibor – term adjusted Nowa\* and 5-year median difference**



Sources: Norges Bank, Bloomberg and the working group’s own calculations.

<sup>15</sup> [Norges Bank Papers: “New principles for Nowa – possible implications”](#).

## 8. The working group's recommended fallback clause

Based on the assessments in the chapters above, the working group's proposal is that the fallback clause only enter into force when it is official that for various reasons, Nibor will cease to be published. The replacement rate will thus apply from the time the publication of Nibor ceases and with effect from the first subsequent interest period.

As stated in Section 6.5 above, the working group recommends adding a five-year historical median difference between Nibor and compounded Nowa in the Nowa-based replacement rate. In formulating the fallback clause, the working group sees a need for a more precise specification of the spread adjustment fixing dates for this historical median difference. The "ISDA 2020 IBOR Fallbacks Protocol FAQs" states that the spread component of each fallback will be the spread published by Bloomberg on the date of the first public statement or publication of information which constitutes a permanent "Index Cessation Event". Furthermore, this spread will be based on data for the historical period that includes risk-free rate data published up to and including the date no later than two business days prior to the date of the relevant statement or publication. Based on this, the working group recommends that the spread adjustment factor should mean a five-year historical median difference between the compounded Nowa interest rate with a two-day observation shift, and Nibor, where the end date for the calculation is set to two banking days prior to the date of the relevant statement.

Based on the working group's assessments and proposals, the fallback clause can be formulated as follows:

*"In the event of a public statement from the Administrator, The Financial Supervisory Authority of Norway, the court or any entity with insolvency or resolution authority over the Administrator, that Nibor will cease to be published or that the Administrator will no longer provide Nibor, provided that, at the time of the latter statement there is no successor administrator that will continue to provide Nibor, the parties agree that Nibor will be replaced with the Replacement Rate from the date Nibor is no longer published, with effect from the first subsequent interest period.*

*If the Administrator announces that one or more Nibor tenor(s) will no longer be published, and the announcement means that from a certain point in time, at least one longer and one shorter Nibor tenor will not be published to interpolate between for a given tenor, the relevant tenor shall be replaced by The Replacement Rate from that point on.*

**'Administrator'** means the administrator of Nibor.

**'Replacement rate'** means the sum of The Term Adjusted Nowa and The Spread Adjustment Factor for the relevant Nibor tenor.

**'Term-adjusted Nowa'** means the daily compounded Nowa rate with a two-day observation shift multiplied by 360/365.

*«The "**spread -adjustment factor**" means the historical median difference between The Term Adjusted Nowa and the relevant Nibor tenor in the 5-year period up to and including the date no later than two banking days prior to the statement.»*

As set out in Section 6, the working group's proposals are generally modelled in accordance with both ISDA's and the ARRC's final proposals for termination triggers, and ISDA's final proposals for spread and term adjustments for inter alia USD Libor, GBP Libor, EUR Libor, CHF Libor in the IBOR

Fallbacks Supplement (the “Supplement”)<sup>16</sup> and ISDA 2020 IBOR Fallbacks Protocol (the “Protocol”)<sup>17</sup>. The working group is in dialogue with ISDA about the proposed fallback solutions for NOK derivatives and implementation of such solutions in ISDA standard documentation. Such a fallback clause must be written in English and be based on ISDA standardised terminology and definitions as they appear in the Supplement and the Protocol, for example ISDA’s definition of Index Cessation Events. The precondition is that the working group's proposal for a fallback clause is in accordance with the fallback solutions of other currencies as they appear in the Supplement and the Protocol. It is the working group's assessment that the recommendation for a fallback clause meets this condition by being consistent and harmonised with ISDA's terminology and therefore well suited for practical implementation with ISDA's standard documentation.

## 9. Summary and the way forward

In September 2019, the working group recommended a reformed version of Nowa as the alternative NOK reference rate. Norges Bank took over as administrator of Nowa from 1 January 2020, and has since published a reformed version of Nowa. Following this, the subgroup Market conventions and fallback solutions was established.

In this document, the ARR group offers recommendations on how the market can use Nowa in financial contracts, as well as proposed a fallback clause that can be incorporated in contracts with Nibor as a reference. However, the work does not end with this. Going forward, there will be a need for the subgroup Market Conventions and fallback solutions to be maintained to look at the practical implementation of the recommendations in the market.

It is important to note that the ARR group has no indication that Nibor will cease, so it is likely that Nowa and Nibor will be used in parallel as reference rates in the market. By using Nibor as a reference, including the proposed fallback clause in contracts may result in a robust fallback in the event of a cessation of Nibor in the future.

The mandate of the working group will be updated to reflect the phase of the work that it is now entering.

The working group has already held meetings with ISDA to look at the possibility of incorporating a fallback clause for Nibor in ISDA's standard documentation for derivatives. In addition, the working group has held meetings with Bloomberg to look at the possibility that Bloomberg (or another independent) player can calculate and publish the fallback rate between Nowa and the relevant Nibor tenor, so that this can be referred directly as the fallback rate in contracts with Nibor as a reference. The working group will have a coordinating role in this work in the future.

The working group will follow up the recommendations in this final report with the market participants in the Norwegian financial market on how to operational implement the recommendations, in addition to follow the work internationally and, if necessary, make adjustments to the recommendations found in this report.

Updated mandate can be found [here](#).

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<sup>16</sup> [Amendments to the 2006 ISDA Definitions to include new IBOR fallbacks.](#)

<sup>17</sup> [ISDA 2020 IBOR FALLBACKS PROTOCOL.](#)

**Disclaimer**

Tables, charts and calculations included in this final report have been prepared according to the working group's best judgement and are based on sources the working groups finds reliable. However, neither the working group nor Norges Bank are liable for any calculation or data errors appearing in the report. Market participants bear sole responsibility for their own calculations based on the proposed set of formulas.