

# GUIDE FOR USING NOWA IN FINANCIAL CONTRACTS AND AS A FALLBACK SOLUTION

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 several representatives from the Norwegian financial industry.

In September 2019, the working group published its report recommending a reformed version of the overnight rate Nowa as an alternative reference rate.<sup>1</sup> 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.

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 minimize 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.

In December 2020 the ARR-working group published a report with the following recommended market conventions for the use of Nowa in financial contracts:<sup>2</sup>

Market conventions	The working group's recommendation
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 (delay payment for interdealer market for Nowa-derivatives)
Precision	5 decimals
Margin over reference rate	Margin added without compounding

The purpose of this report is to give the readers a guide for using Nowa in financial contracts and as a fallback solution. It's worth noting that for some products the market conventions deviate from the working group's recommendation in the December 2020-report. This is due to the fact that different standards have developed internationally and different practices across financial products. This Nowa user guide is based on what has been observed in the market so far. However, market practices are constantly evolving, and changes may occur over time. It will be up to the individual entity to assess the conventions and the impact it may have.

*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. The information and recommendations in the report are intended for general guidance and market participants are themselves responsible for their own calculations based on*

<sup>1</sup> See [Report with a recommendation for an alternative reference rate in NOK](#).

<sup>2</sup> See [Recommended market conventions for Nowa and fallback solutions in the event of a cessation of Nibor](#).

*proposed methodology, the use of the agreed clauses and any application of the recommendation in general.*

## 2 Description of Nowa

*Nowa is recommended as an alternative reference rate. Nowa is an overnight rate, which is published daily by Norges Bank. The transition from Nibor to Nowa as a reference rate means transitioning from a forward-looking to a backward-looking interest rate. This means that the interest amount you pay is only known at the end of the interest period. Various market conventions are recommended to ensure that the interest amount is known some time in advance.*

### 2.1 Nowa as an overnight rate

Nowa is the interest rate on unsecured NOK loans between banks that are active in the Norwegian overnight market. The interest rate is published daily on Norges Bank's website<sup>3</sup>. Norges Bank took over as administrator of Nowa in January 2020. At the same time, Norges Bank adopted new principles for calculating and publishing Nowa.<sup>4</sup>

Over time, Nowa has been very close to the key policy rate. Nowa is based on actual transactions reported on Norges Bank's RPD (money market data reporting) form. Since January 2020, the transaction volume has averaged about NOK 20 billion. The number of transactions normally satisfies the criteria for calculating Nowa using the standard calculation method. If the transaction volume is not sufficient or there are fewer than three banks that have lent or borrowed, Nowa is calculated using the contingency method. The interest calculation will then be supplemented with transactions from the previous reporting date. If there is insufficient transaction data over time to calculate Nowa, Nowa is set equal to the prevailing key policy rate.

### 2.2 Nibor vs. Nowa as a reference rate

There are several challenges associated with transitioning from a periodic rate to an overnight rate as a reference rate in financial contracts. Unlike the money market rate Nibor, with daily fixings of maturities up to 6 months, Nowa is an overnight rate. Therefore, accrued interest shall be exchanged daily. In contracts where daily exchange is not possible, and interest rates are exchanged monthly or quarterly, one must determine how to treat the accrued, but not exchanged interest amounts.

In calculating periodic rates for contracts referencing Nowa, the working group has recommended to use a backward-looking calculation. This is because it reflects the actual rate development in the interest rate period, rather than an expected rate. In addition, a forward-looking rate requires a well-functioning derivatives market with trading in the underlying rate, something that can be challenging in the Norwegian market. Backward-looking calculation is also the convention used by International Swaps and Derivatives Association (ISDA) in its fallback solution for derivatives contracts with Ibor-rates as a reference.

The usage of backward-looking rates is different from Nibor, which is a forward-looking rate, where the interest amount is known in the beginning of the period. With a backward-looking calculation, 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. To ease these

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<sup>3</sup> See [Nowa daily observations](#) on Norges Bank's webpage.

<sup>4</sup> See [Principles for calculating and publishing Nowa](#) on Norges Bank's webpage.

challenges, the interest rate should be known some time in advance. There are various conventions that can be used to solve this issue. The conventions are described in more detail in chapter 4, and chapter 5 describes how they can be used in different financial contracts.

### 3 Calculating a compounded average

*Working groups internationally and in Norway recommend the use of compounded interest rates in the calculation of average interest rates. Norges Bank's Nowa return index makes it easier for the market to calculate the compounded interest rate between two dates. It is worth noting that only the conventions "deferred payment" and "shifted observation period" can use the Nowa index in calculating the compounded average.*

As discussed above, there are some challenges associated with the use of overnight interest rates, which in principle must be exchanged daily. Daily exchange of interest is not practical, compared to e.g. Nibor with a 3-month maturity where interest is exchanged quarterly. To use an overnight rate in a financial product and pay interest periodically one can look at an average of all overnight fixes over the interest period and use the average as a term rate when calculating the interest payment. The recipient of interest in the product thus receives a delayed interest payment which ideally should have been exchanged every day during the interest period. To account for the delayed interest payments, it is important to calculate interest compensation on the accrued but not exchanged interest. The section below describes how this can be done.

Nowa is, as mentioned, a daily interest rate. By investing 1 NOK today, you get 1 NOK + interest back tomorrow. Tomorrow you invest 1 NOK + interest which earns interest until the next day. By using Nowa as a reference interest rate in contracts with e.g. quarterly interest payments, it is common to calculate interest on accrued but not exchanged interest. The Nowa average interest rate is then calculated as the compounded average of the Nowa observations during the interest period. The compounded average over an interest period of n days is calculated as follows:

$$R = \left[ \prod_{i=1}^n \left( 1 + r_i \cdot \frac{w_i}{365} \right) - 1 \right] \cdot \frac{365}{n}$$

Der

- R= Compounded average
- r= Daily Nowa-observation
- w= Day weight for Nowa-observation (E.g. the day weight from Monday to Tuesday is 1, while the day weight from Friday to Monday is 3)
- n= Number of calendar days in the interest period

Most working groups internationally, as well as the working group in Norway, recommend using a compounded average to calculate term rates in most products that use Nowa as reference rate. The method represents the most correct way to calculate the present value of money.

With the intention of making the calculation of period interest rates easier, Norges Bank publishes a Nowa compounded index (hereinafter referred to as the Nowa index)<sup>5</sup>. The index value is compounded with daily Nowa interest rates. Calculating the compounded average interest rate, R, between two dates is significantly easier by using the index instead of the formula above. The term

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<sup>5</sup> See Norges Bank's webpage for: [Compounded index for Nowa](#).

rate between start date t and end date T is found by reading the index value of t and T and using the following formula:

$$R = \left( \frac{Ind_T}{Ind_t} - 1 \right) \circ \frac{365}{T - t}$$

*Ind* stands for index. It is worth noting that only the conventions "deferred payment" and "shifted observation period" can use the Nowa index in calculating the compounded period interest rate. This is discussed in more detail in Chapter 4. Norges Bank also publishes compounded average interest rates for the most common maturities, namely 1,3 and 6 months<sup>6</sup>. This simplifies the use of Nowa in financial products. In line with the ARR Group's recommendation, Norges Bank uses a 2-days observation shift convention in calculating these compounded average rates.

**Example of using the Nowa index:** We will calculate the compounded average from 8 September 2021 to 8 December 2021. From Norges Bank's statistics, we find that the index values for 8 September and 8 December were respectively 100,35117824 and 100,40274142. The number of days in the period is 92. The Nowa compounded average for the period is therefore:

$$R = \left( \frac{Ind_T}{Ind_t} - 1 \right) \circ \frac{365}{T-t} = \left( \frac{100,40274142}{100,35117824} - 1 \right) \circ \frac{365}{91} = 0,20610\%$$

Note that the index is published with 8 decimal places, but it is recommended to round the calculated compounded average interest rate to 5 decimal places.

## 4 Conventions for calculating compounded average

*The Nowa working group has recommended a 2-days observation shift for all products (except interbank derivatives). Internationally, different practices have been established for different financial products and currencies. For example, the market practice for syndicated bank loans is a 5-day lookback (without a change in observation), while for floating rate noted (FRNs), several different conventions have been observed.*

The compounded average is calculated by observing the daily Nowa fixing for each banking day in the interest period. The interest period is defined from and including the first day of the interest period, and up to (but not up to and including) the last day of the interest period. The interest rate fixing for day T-1 is published on day T at 09:00 AM with a possibility for the administrator to make changes until 11:00 AM if errors are detected. In other words, it will not be possible to calculate the period interest rate before 11:00 AM the same day as the interest amount is to be paid.

There are administrative challenges associated with the transfer of interest for such a short notice. To alleviate the administrative challenges, the interest amount should be known a few days before the settlement date. Many methods have been proposed and used to calculate the compounded average a few days before the settlement date. The most used conventions are discussed below.

### 4.1 Lockout

A given number of days before the end of the interest period, the last Nowa fixing will serve as a fixed interest rate for the last days in the interest period. The interest amount will therefore be known the given number of days before the interest payment date. Some FRNs based on the SOFR

<sup>6</sup> See Norges Bank's webpage for: [Compounded Nowa averages](#)

(Secured Overnight Financing Rate) reference rate use this convention alone or in combination with the "delayed payment" convention. If the Nowa fix is abnormally high or low on the day the lockout occurs, the last fix will affect the level of the period interest disproportionately. The market rate for the lockout days will not be used in the interest calculation for the product. Thus, the interest payment will not fully represent the market rate for a product where the lockout-convention is used. The Nowa index cannot be used to calculate the compounded average rate if the lockout-convention is used.

The following is an example using the lockout convention:

<b>Interest period start</b>	<b>20 March 2020</b>						
<b>Interest period end</b>	<b>20 April 2020</b>						
<b>Days in interest period</b>	<b>31</b>						
<b>Days in observation period</b>	<b>31</b>						
<b>Lockout days</b>	<b>2</b>						
<b>Notional</b>	<b>100,000,000</b>						

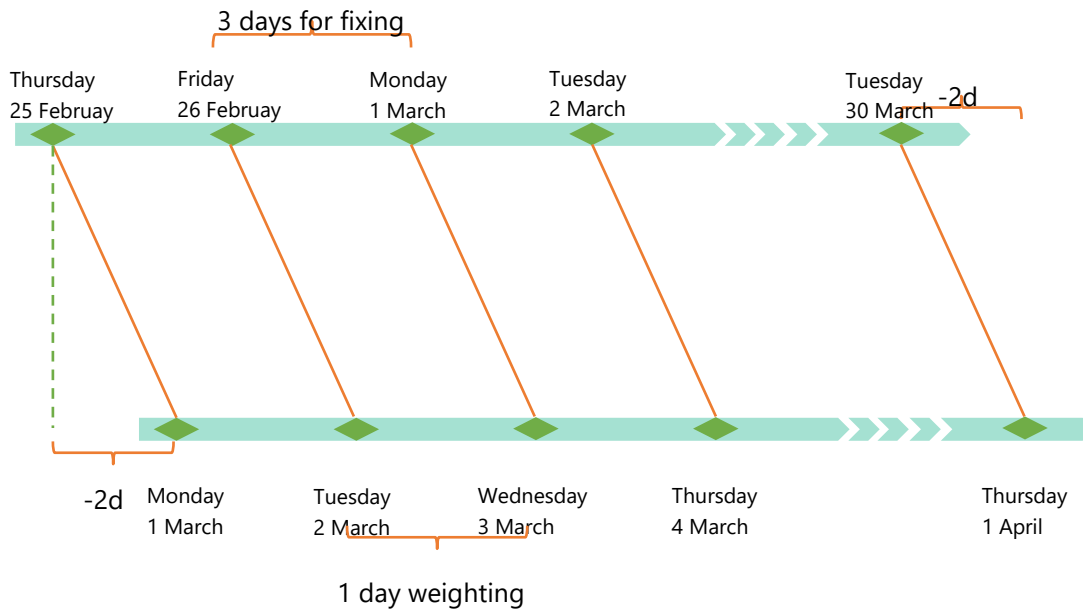
Interest period	Observation period	Nowa observations	Days	Compound factor	Compounded average	Accrued interest	Daily accrual
20 March 2020	20 March 2020	0.99	3	1.000000000			
23 March 2020	23 March 2020	0.24	1	1.000081370	0.99000%	8,136.99	8,136.99
24 March 2020	24 March 2020	0.24	1	1.000087946	0.80250%	8,794.57	657.59
25 March 2020	25 March 2020	0.24	1	1.000094522	0.69001%	9,452.17	657.59
26 March 2020	26 March 2020	0.24	1	1.000101098	0.61501%	10,109.76	657.60
27 March 2020	27 March 2020	0.24	3	1.000107674	0.56144%	10,767.36	657.60
30 March 2020	30 March 2020	0.24	1	1.000127402	0.46502%	12,740.18	1,972.82
31 March 2020	31 March 2020	0.24	1	1.000133978	0.44456%	13,397.80	657.62
01 April 2020	01 April 2020	0.25	1	1.000140554	0.42752%	14,055.42	657.62
02 April 2020	02 April 2020	0.25	1	1.000147404	0.41387%	14,740.45	685.03
03 April 2020	03 April 2020	0.25	3	1.000154255	0.40216%	15,425.48	685.03
06 April 2020	06 April 2020	0.24	1	1.000174806	0.37532%	17,480.59	2,055.11
07 April 2020	07 April 2020	0.25	1	1.000181382	0.36780%	18,138.24	657.65
08 April 2020	08 April 2020	0.25	6	1.000188233	0.36161%	18,823.30	685.06
14 April 2020	14 April 2020	0.24	1	1.000229337	0.33483%	22,933.66	4,110.36
15 April 2020	15 April 2020	0.24	1	1.000235913	0.33119%	23,591.34	657.69
16 April 2020	15 April 2020	0.24	1	1.00024249	0.32781%	24,249.03	657.69
17 April 2020	15 April 2020	0.24	3	1.000249067	0.32468%	24,906.73	657.69
20 April 2020				1.000268798	0.31649%	26,879.82	1,973.09
<b>Compounded rate</b>					<b>0.31649%</b>	<b>Sum</b>	<b>26,879.82</b>

**4.2 Delayed payment**

In the delayed payment convention, all daily Nowa fixings during the interest period will be included in the calculation of the compounded average. The method has two main benefits. First, the compounded average represents the actual interest rate during the interest period. Secondly, each Nowa fixing is weighted by the correct number of calendar days. The last fix for the interest period will be published on the last day of the interest period, so practical implementation of the payment can be problematic. The convention therefore states that the interest payment must be made a given number of banking days after the end of the interest period. The interest receiver will not be compensated for "lost" interest during the deferral period. If this convention is used for products with exchange of principal, the instalments / principal exchange will be paid before the interest payment. This convention is therefore best suited for products without principal exchange. Delayed payment can use the Nowa index in the calculation of compounded average interest rates.

### 4.3 Lookback (without observation shift)

The Nowa fixing used for each banking day in the interest period is the Nowa fixing a given number of banking days earlier than the relevant day in the interest period. The interest rate used from banking day T to banking day T + 1 during the interest period is read T-2 if the number of lookback days is 2 banking days. The interest rate read T-2 is then weighted by the number of calendar days between T and T + 1 in the calculation of the period interest rate. In this way, you can calculate the compounded average when the Nowa fix for the last interest day is published (2 banking days before the interest payment).



The lookback convention is intuitive, simple and is widely used for syndicated bank loans, including USD and GBP, on the recommendation of their respective working groups. With this method, however, not every Nowa fixing will be weighted using the "correct" day weight. In most cases, this is a minimal problem. It is only in interest periods with major interest rate changes, in combination with public holidays, that "incorrect" day weighting will give an average interest rate that is significantly different from an average interest rate that is calculated with "correct" day weighting.

The following is an example using the lookback convention:



<b>Interest period start</b>	<b>20 March 2020</b>						
<b>Interest period end</b>	<b>20 April 2020</b>						
<b>Days in interest period</b>	<b>31</b>						
<b>Days in observation period</b>	<b>31</b>						
<b>Lookback days</b>	<b>2</b>						
<b>Notional</b>	<b>100.000.000</b>						

Interest period	Observation period	Nowa observations	Days	Compound factor	Compounded average	Accrued interest	Daily accrual
20 March 2020	18 March 2020	0,99	3	1,000000000			
23 March 2020	19 March 2020	0,99	1	1,000081370	0,99000%	8.136,99	8.136,99
24 March 2020	20 March 2020	0,99	1	1,000108495	0,99002%	10.849,54	2.712,55
25 March 2020	23 March 2020	0,24	1	1,000135622	0,99004%	13.562,16	2.712,62
26 March 2020	24 March 2020	0,24	1	1,000142198	0,86504%	14.219,78	657,62
27 March 2020	25 March 2020	0,24	3	1,000148774	0,77575%	14.877,41	657,63
30 March 2020	26 March 2020	0,24	1	1,000168503	0,61504%	16.850,31	1.972,90
31 March 2020	27 March 2020	0,24	1	1,00017508	0,58095%	17.507,95	657,65
01 April 2020	30 March 2020	0,24	1	1,000181656	0,55254%	18.165,60	657,65
02 April 2020	31 March 2020	0,24	1	1,000188233	0,52850%	18.823,25	657,65
03 April 2020	01 April 2020	0,25	3	1,000194809	0,50790%	19.480,91	657,66
06 April 2020	02 April 2020	0,25	1	1,000215361	0,46239%	21.536,11	2.055,19
07 April 2020	03 April 2020	0,25	1	1,000222212	0,45060%	22.221,19	685,08
08 April 2020	06 April 2020	0,24	6	1,000229063	0,44004%	22.906,27	685,08
14 April 2020	07 April 2020	0,25	1	1,000268524	0,39204%	26.852,38	3.946,11
15 April 2020	08 April 2020	0,25	1	1,000275375	0,38658%	27.537,49	685,12
16 April 2020	14 April 2020	0,24	1	1,000282226	0,38153%	28.222,61	685,12
17 April 2020	15 April 2020	0,24	3	1,000288803	0,37648%	28.880,33	657,72
20 April 2020				1,000308535	0,36328%	30.853,51	1.973,17
<b>Compounded rate</b>					<b>0,36328%</b>	<b>Sum</b>	<b>30.853,51</b>

#### 4.4 Shifted observation period

The convention shifted observation period combines lookback (where you use an interest rate from a given number of interest days before), with a correct day weighting. A rate fix for Friday will therefore in most cases have a weighting of 3 days and a rate fix for Monday will in most cases have a day weighting of 1 day. This convention is ISDA's fallback solution for derivatives in the event of a discontinuation of Ibor rates.

The working group for €STR (Euro Short-Term Rate) recommends this convention for bank loans in euros. Similarly, the working group for SONIA (Sterling Overnight Index Average) has stated that the shifted observation period convention is a solution in line with lookback (without observation shift). The Nowa working group has recommended this convention for all products, except interbank derivatives which follows the international standard delayed payment convention, see section 5.1.1 below.

Shifted observation period and delayed payment are the only conventions that can use Norges Bank's Nowa index in the calculation of compounded averages.

The figure below illustrates how the observation period is defined for calculating the compounded average. In the figure, the observation period is defined 2 banking days before the start and end of the interest period. The number of calendar days in the observation period may differ from the number of calendar days in the interest period. As a rule, the observation period is used to calculate the compounded average, and the days in the interest period to calculate the interest payment.



The table below shows an example of how to calculate the compounded average and interest payment for a loan of NOK 100,000,000 with a 1-month interest period and 2-days shift. Note that the number of days in the observation period differs from the number of days in the interest period. When the Nowa fix for April 15 is published at 09:00 AM on 16 April, then you can calculate the compounded average and the interest amount. Then you have 2 working days to notify the borrower of interest payments. The borrower, on the other hand, gets about 2 days to complete the payment.

The daily, accrued interest rates can in some cases be negative with this convention where you get a large drop in the average interest rate calculated on a given day in the interest period.

Interest period start	20 March 2020						
Interest period end	20 April 2020						
Days in interest period	31						
Days in observation period	29						
Number of shifted days	2						
Notional	100.000.000						
Interest period	Observation period	Nowa observations	Days	Compound factor	Compounded average	Accrued interest	Daily accrual
20 March 2020	18 March 2020	0,99	1	1,000000000			
23 March 2020	19 March 2020	0,99	1	1,000027123	0,99000%	8.136,99	8.136,99
24 March 2020	20 March 2020	0,99	3	1,000054247	0,99001%	10.849,46	2.712,48
25 March 2020	23 March 2020	0,24	1	1,000135622	0,99004%	13.562,16	2.712,70
26 March 2020	24 March 2020	0,24	1	1,000142198	0,86504%	14.219,78	657,62
27 March 2020	25 March 2020	0,24	1	1,000148774	0,77575%	14.877,41	657,63
30 March 2020	26 March 2020	0,24	1	1,000155350	0,70879%	19.418,80	4.541,39
31 March 2020	27 March 2020	0,24	3	1,000161927	0,65670%	19.791,05	372,25
01 April 2020	30 March 2020	0,24	1	1,000181656	0,55254%	18.165,60	(1.625,45)
02 April 2020	31 March 2020	0,24	1	1,000188233	0,52850%	18.823,25	657,65
03 April 2020	01 April 2020	0,25	1	1,000194809	0,50790%	19.480,91	657,66
06 April 2020	02 April 2020	0,25	1	1,000201660	0,49071%	22.854,77	3.373,86
07 April 2020	03 April 2020	0,25	3	1,000208510	0,47566%	23.457,43	602,65
08 April 2020	06 April 2020	0,24	1	1,000229063	0,44004%	22.906,27	(551,16)
14 April 2020	07 April 2020	0,25	1	1,000235640	0,43004%	29.454,94	6.548,67
15 April 2020	08 April 2020	0,25	6	1,000242490	0,42147%	30.022,63	567,69
16 April 2020	14 April 2020	0,24	1	1,000283596	0,38338%	28.359,63	(1.663,00)
17 April 2020	15 April 2020	0,24	1	1,000290174	0,37826%	29.017,35	657,72
20 April 2020	16 April 2020			1,000296751	0,37350%	31.721,64	2.704,28
<b>Compounded rate</b>					<b>0,37350%</b>	<b>Sum</b>	<b>31.721,64</b>

#### 4.5 How accurately can the interest payment be estimated before the end of the period?

By using a backward-looking interest calculation, the exact interest amount is unknown before the end of the interest period. Different market conventions have been proposed to increase the number of days from the period interest rate is known until the payment is made.

The recommended market convention from the working group is a 2-day observation shift. That implies that the interest amount is known 2 banking days before the payment is made (i.e. at 09:00 AM on Wednesday the exact amount for the interest payment on Friday is known, given a normal week without holidays).

In the following we assume a compounded 3-month average for Nowa.

Although the period interest rate is known only 2 banking days before payment, it is possible to predict what the rate will be at different times during the 3-month period with varying degrees of precision. At the start of the interest rate period, the uncertainty is of course much greater than when there are only a few days left.

Using historical Nowa and assuming that  $Nowa_{T+1} = Nowa_T$ , one can observe how often the predicted period interest rate equals the actual period interest rate, as well as how much the predicted rate differed from the actual rate. The observation data is from 3<sup>rd</sup> of November 2011 – 12<sup>th</sup> for May 2021 (almost 10 years of data).

The results are summarized in the following table:

Difference to actual Nowa 3M (rounded to 2 decimals)	Bank days before end of interest period												
	Start of period	20	15	10	9	8	7	6	5	4	3	2	1
+150bps	100,0 %												
+100bps	99,5 %												
+50bps	98,2 %												
+30bps	96,6 %	100,0 %											
+20bps	91,2 %	99,8 %											
+15bps	85,2 %	99,4 %											
+10bps	79,7 %	98,9 %	100,0 %	100,0 %	100,0 %	100,0 %							
+5bps	74,5 %	96,7 %	99,1 %	99,8 %	99,7 %	99,9 %	100,0 %	100,0 %	100,0 %				
+3bps	72,4 %	93,7 %	97,1 %	99,2 %	99,4 %	99,6 %	99,8 %	99,8 %	99,9 %	100,0 %	100,0 %	100,0 %	100,0 %
+1bps	59,2 %	91,0 %	88,0 %	92,4 %	93,0 %	94,0 %	95,1 %	96,2 %	96,6 %	97,5 %	98,3 %	98,9 %	99,6 %
Eksakt	30,7 %	67,7 %	78,4 %	84,7 %	87,1 %	88,6 %	90,7 %	92,1 %	92,9 %	94,6 %	96,1 %	97,3 %	99,1 %
Min difference	-1,25 %	-0,26 %	-0,23 %	-0,14 %	-0,10 %	-0,08 %	-0,06 %	-0,06 %	-0,06 %	-0,04 %	-0,02 %	-0,01 %	-0,01 %
Max difference	0,25 %	0,08 %	0,06 %	0,04 %	0,04 %	0,04 %	0,03 %	0,03 %	0,02 %	0,02 %	-0,02 %	0,02 %	0,02 %
95% confidence level +/-		0,3 %	0,04 %	0,02 %	0,02 %	0,02 %	0,02 %	0,01 %	0,01 %	0,01 %	0,01 %	0,00 %	0,00 %

The table shows that for approx. 31% the predicted rate equaled the actual rate by assuming that Nowa does not change during the 3-month period. On the other hand, the maximum difference observed was about 125 basis points. In 95% of the cases the difference was within +-30 basis points. Closer to the end of the interest period, the prediction becomes more accurate. 15 banking days before the end of the interest period, the predicted rate equaled the actual rate in 78% of the cases and in 95% of the cases the difference was within +-2 basis points. 99% of the cases the difference was within +- 3 basis points.

The analysis illustrates that it is possible to predict the actual compounded average several banking days before the end of the interest period, with a high degree of accuracy. This can be utilized when estimating what the period interest rate will be some days in advance and can subsequently be used for customer dialogue, liquidity management, coverage control, etc.

Below is a concrete example of a loan with a principal of NOK 100,000,000 and an interest rate of 1% p.a. The interest amount for the 92-day interest period will then be NOK 252,055 kroner. The table shows the deviation at different banking days before the end of the interest period using a 95%

confidence level:

Notional	100.000.000	Start of period	Bank days before end of interest period												
			20	15	10	9	8	7	6	5	4	3	2	1	
Interest level	Interest amount	At 95% conf, +-	75.616	10.082	5.041	5.041	5.041	5.041	2.521	2.521	2.521	2.521	0	0	0
1%	252.055		252.055	252.055	252.055	252.055	252.055	252.055	252.055	252.055	252.055	252.055	252.055	252.055	252.055
		At 95% conf, +	75.616	10.082	5.041	5.041	5.041	5.041	2.521	2.521	2.521	2.521	0	0	0
		At 95% conf, -	-75.616	-10.082	-5.041	-5.041	-5.041	-5.041	-2.521	-2.521	-2.521	-2.521	0	0	0

## 5 Use in various financial contracts

The subchapters below explain the use of market conventions in various financial contracts. The table below gives a short summary of the characteristics of the different conventions and their application in today's market internationally.

Convention (number of days shift/lookback/delayed payment > 0)	Observation shift	Lookback	Lockout	Delayed payment
Correct day weighting	✓	✗	✓	✓
Use of Norges Bank Nowa-index	✓	✗	✗	✓
Positive accrued interest throughout the period when interest rates > 0	✗	✓	✓	✓
Settlement of notional and interest at the same time	✓	✓	✓	✗
Used / recommended internationally				
-Bank loans SME	✓	✓	✗	✗
-Syndicated loans / multi currency facilities	✓	✓	✗	✗
-Derivatives	✗	✗	✗	✓
-Floating rate bonds	✓	✓	✓	✗
-ISDA fallback	✓	✗	✗	✗

### 5.1 Derivatives

*Derivatives is a comprehensive group of instruments. In practice, market conventions may differ from the ones recommended by the ARR group. Interest rate swaps with Nowa (interbank) is an example of a deviation, where 2-days delayed payment typically is used. Derivatives can be tailored to almost all payment conventions for loans or bonds. How the user sets the structure for the derivative depend on the participants' need and desire. For direct trades with derivatives it may be appropriate to use the market conventions recommended by the working group.*

A sub-group of the ARR group has over the last couple of years been working on establishing an OIS (Overnight Index Swap) market in Norwegian kroner (NOK). This subgroup has published multiple reports on the derivatives market in more detail.<sup>7</sup>

Derivatives may be used to reduce or increase the exposure against an underlying asset. The objectives for using derivatives are varied and there could be good reasons for why a specific derivative does not follow the established general market standards. For example, if one wishes to cover the interest rate risk in a floating rate bank loan it would presumably be more important to match the interest rate conventions of the derivative with those of the bank loan, and not the conventions used in the interbank market.

For direct trades with derivatives, it might be beneficial to apply standardized market conventions as this makes it easier to compare prices between providers or the prices of alternative derivatives. Trading platforms such as Bloomberg and Eikon provide prices for various types of derivatives with different tenors. A non-financial customer may often make a deal for a non-standardized derivative with a bank through a bilateral agreement. The bank will cover most of its risk in the interbank market where the conventions are more standardized.

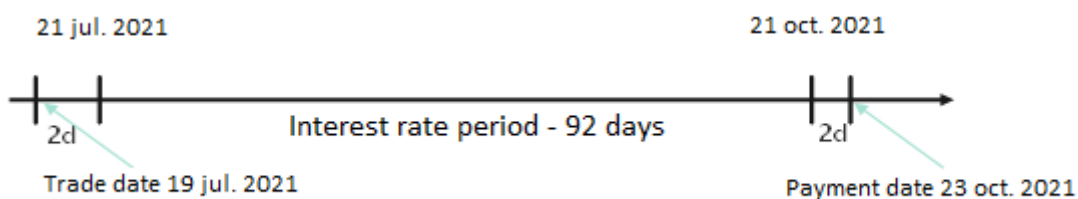
<sup>7</sup> The reports are available at the [ARR web page](#).

Derivatives is a comprehensive group of instruments. The subsections below only consider the most common types.

### 5.1.1 Interest rate swaps (IRS)

The market for interest rate swaps (IRS) based on Nowa started during the fall of 2021 as an interbank market. Participating banks are obliged to quote prices for a selection of tenors and for given amounts. The market conventions for Nowa interbank interest rate swaps deviates from the recommended market conventions. The interbank market for OIS interest rate swaps has for a long time been using 2-days delayed payment as the standard. This solution gives shorter deadlines, but this is possible in an interbank market which is standardized and automated. So far, only a handful of Nowa interbank interest rate swap agreements have been concluded.

The illustration below shows the convention for a 3-month IRS with Nowa in the interbank market.



For Nibor based interest rate swaps one usually has 3 or 6-month Nibor as the underlying floating rate and an agreed fixed rate over a period of 1 year or more. Given that Nowa is an overnight rate one may use a much shorter tenor for the fixed rate period (down to one week). In the interbank market one exchanges the agreed fixed rate for the compounded average Nowa rate annually, whereas for shorter tenors one exchanges the interest rate differential at the end of the agreed interest rate period. The tenor for Nowa interest rate swaps may be up to 30 years or even longer.

Derivatives can be tailored to almost all payment conventions for loans or bonds. How the user sets the structure for the derivative depend on the participants' need and desire. It might be appropriate for a large player to use the interbank standard to achieve a better price. However, smaller players could find it more useful to structure the interest rate swap-agreement so that it matches the characteristics of the underlying asset. The recommendation from the ARR group corresponds with the recommendation from ISDA regarding a replacement rate for Nibor. If Nibor were to cease being published, then one would presumably end up with several outstanding interest rate swaps where Nibor references are replaced with Nowa in accordance with ISDA interest rate conventions. To reduce risk there might be a need to trade new interest rate swaps with the same conventions.

### 5.1.2 Cross-currency basis swaps

Like interest rate swaps, cross-currency basis swaps may include everything from standardized agreements to agreements with a high level of individual customization dependent on the underlying instrument. As of today, there has been little interest in or plans to trade Nowa-rates on the NOK-part of the cross-currency basis swap. This might change over time. For the USD, GBP, CHF and JPY-part of the cross-currency basis swap, the interbank market has already moved over to trading new overnight rates as the standard underlying reference.

### 5.1.3 Forward Rate Agreements (FRA)

Today, market players are not quoting prices on Nowa FRA contracts. As the Nowa rate typically is close to the central bank's key policy rate one may assume that it is more appropriate to trade Nowa FRA in the periods between key policy rate decisions rather than 3-months periods on the regular IMM dates as it is for Nibor FRAs today. These contracts have for a long time been common in markets in other countries such as Sweden.

### 5.1.4 Nibor-Nowa basis swaps

Prices are already being quoted for Nibor-Nowa basis swaps where one exchanges a floating cash flow based on Nibor-rates against compounded Nowa rates. These contracts are quoted for the same periods as Nibor FRAs as well as for tenors from 1 month to 10 years. In addition to the use for speculative purposes on the Nibor spread these kinds of swaps may be useful in a period before a planned cessation of Nibor where one for instance might want to move the exposure in an interest rate swap from Nibor to Nowa.

## 5.2 Bank loans with Nowa as the reference rate

*The ARR group has recommended a 2-day observation shift as the market standard. This makes it possible to use the Nowa index from Norges Bank to calculate the compounded average for a given period. However, the market practice in the international market for syndicated loans seems to be 5-days lookback without observation shift.*

The largest share of loans to customers in NOK is mortgages with a floating rate set by the lender. Nibor is rarely used as the reference rate in a mortgage loan. However, Nibor-based bank loans are common in the market for loans to corporates, especially for SMEs. It is possible that banks will start offering corporate loans with Nowa as the reference rate. Either because such a market is developed in parallel to today's Nibor-based market or because Nibor could cease to exist sometimes in the future. The ARR group recommendation is to use a 2-days observation shift as the market standard. This will ensure a more harmonised approach across the different products and markets and make it possible to use the Nowa index from Norges Bank.

Bank loans with Nowa as the reference rate is probably most relevant for the larger borrowers. Even though Norwegian borrowers often will be offered loans from banks based in Norway there could be competition from international banks.

In the international loan market, a different market standard has developed, i.e. internationally the market has chosen a different approach than the one recommended by the ARR group, particularly for syndicated loans. This includes amongst other things the number of days (5 not 2 days lookback days) in the lookback approach as well as not using an observation shift. See more information below.

For bilateral loan agreements in NOK, the counterparties are of course allowed to agree on the specific conventions that are most convenient. Nevertheless, the ARR group suggests using its recommended conventions.

### **5.2.1 Number of days in the lookback approach**

As mentioned above, it seems to be market practice<sup>8</sup> to use 5-days lookback without observation shift in the international loan market, especially for syndicated loans which often includes multiple counterparties. The main reason (similar to that of FRNs) seems to be that 2-days lookback is impractical in terms of having enough time to conclude settlement for some issuer types (e.g. high yield). Also, only two days' notice is a rather large transition from today's system where the Nibor rate is known at the start of each interest rate period. The draft text on FRN from Nordic Trustee on Nowa as reference rate is also based on 5-days lookback (see chapter 5.3 for more information). Even though the ARR group would prefer a harmonised approach across products and markets it is assumed that the market for syndicated bank loans and multi-currency credit will use 5-days lookback without observation shift. This will thus imply a deviation from the recommended 2-days shifted observation period.

### **5.2.2 With or without observation shift**

The LMA has created templates for both lookback without observation shift and shifted observation period. It seems that most loans in the syndicated loan market in USD and GBP are based on the former. This means that the weights given to each interest day for the calculated interest rate period deviates from the weights in the observation period (see chapter 4.3. for more information). If deemed appropriate, it is recommended that the Norwegian counterparties use shifted observation period for NOK loans. This will enable the use of the Nowa index from Norges Bank to calculate the compounded average for a given period. Furthermore, it will lead to a higher degree of harmonization across products in the Norwegian market.

### **5.2.3 Settlement/interest payment**

Regardless of whether lookback without observation shift or shifted observation period is used the interest amount will be unknown at the start of the interest period. How many days before the payment date this is known depends on the number of days of lookback that has been agreed upon between the parties. For example, the borrower receives payment information from the bank on a Wednesday on what should be paid on a Friday in a normal week without a bank holiday and 2-days lookback. The borrower must ensure that it has sufficient funds in the relevant account before the payment is debited by the settlement bank. See chapter 4.5 for more information on the uncertainty of the size of interest rate payments.

### **5.2.4 Consequences of using different market conventions**

There are some consequences that should be taken into consideration when choosing market conventions. Increasing the number of lookback days from 2 to 5 will give the parties to the contract more time for settlement. Many apparently also find it easier to use lookback without observation shift. On the other hand, increasing the number of days in the lookback approach gives a larger deviation between the observation period and the interest period (see example in chapter 4.3). Having observation shift or not has implications for the weighting of days in each time period.

If the market participant uses derivatives for interest rate hedging or similar it should be made aware that 5-days lookback (without observation shift) differs from the fallback conventions used by ISDA for derivatives (2-days shifted observation period), which in turn can lead to increased risk. It is also worth mentioning that it is not possible to use the Nowa compounded index from Norges Bank without using observation shift.

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<sup>8</sup> This is based on information from LMA. LMA is an international organisation which creates loan documentation templates and contributes to market standards and guidelines.

The ARR group has created a draft text on a Nowa clause for bank loans. The draft is available in the appendix in chapter 9. Since LMA has its own clauses as part of its agreements the draft proposal is targeted towards those not using LMA documentation. For this part of the market, the standard agreements developed by Finance Norway are important. The proposed Nowa clause has been adapted to the wording in the templates developed by Finance Norway.

### 5.3 Bonds with Nowa as the reference rate

*The ARR group has recommended to use 2-days shifted observation period as the market standard. This enables the use of the Nowa index from Norges Bank to calculate the compounded rate for a given period. In the proposal from Nordic Trustee, users must decide how many days in the lookback period (with 5 as the default) and whether to use observation shift or not. To use the compounded Nowa averages from Norges Bank the convention must be 2-days shifted observation period.*

#### 5.3.1 Loan documentation

Loan documentation used in the bond market is based on standard templates managed by Nordic Trustee<sup>9</sup> in collaboration with market participants. The standard templates are regulated under Norwegian legislation. There are separate templates for the various market segments. Financial institutions and municipalities use a template often referred to as the IG-template (investment grade). Corporations either use the IG template or a different template developed for the high yield segment. Both templates include the same principles for determining the interest rates, terms of issuance, the role of the trustee, the bondholder community, how to adjust the agreement etc. The common rules are rarely changed for each bond issuance, enabling market participants to focus on the commercial terms as the interest rates and covenants both in the primary and secondary markets.

#### 5.3.2 The Norwegian bond market: Euronext VPS and paying agent

Bonds with NO ISIN are registered in the central securities depository Euronext VPS. Paying agents are familiar with entering information on financial instruments in VPS. A paying agent is a bank, fund manager, broker or other type of investment firm. The paying agent also performs the payment of bond interest to the bond owners registered in the VPS system. The paying agent hence creates a link between VPS and the bond owners or between VPS and the issuer.

#### 5.3.3 Bond interest and interest adjustments

For bonds with floating rate (FRN) the bond interest comprises of a reference rate for a given tenor and an agreed margin. The bond interest rate is adjusted for each interest rate period on given dates established in the bond agreement. The interest rate set for a given period is fixed until the next date where it can be adjusted.

For bonds that have Nibor as the reference rate, the date when adjustments can be made is set to 2 bank days before the start of the interest rate period. Whereas for bonds with compounded Nowa as the reference rate, the interest rate is determined in arrears. To allow for operational factors there might be need for a few more days between the date where adjustments in the rate can be made and the settlement date. For instance, 5 bank days before the end of the interest period. A transition from Nibor to Nowa may thus entail a substantial change in how the bond rate is handled.

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<sup>9</sup> [Nordic Trustee](#) (formerly «Norsk Tillitsmann AS») is the leading and most experienced provider of bond trustee and loan agency services in the Nordic region.



Payment of the bond interest for bonds registered in the VPS system is done via the Nets payment system. The paying agent manages the payments and ensures that the issuer has made available the interest amount before the deadline. Should there be insufficient funds at the deadline the payment is stopped, and the interest payment is considered defaulted. In today's Nibor-based system, the paying agent typically sends a notice on the interest payment to the issuer 10 banking days before the actual interest rate payment date. The funds need to be available on the morning before the interest payment shall be conducted. Details on what is meant by "available" depends on the issuer's agreement with the paying agent (see more information below).

#### **5.3.4 The transition from Nibor to compounded Nowa**

For bonds with compounded Nowa as the reference rate a fundamental question is how long it should take between adjustments in the interest rate and the interest payments. Between these two dates the following actions needs to be completed:

- (i) The coupon is determined, for instance by Nordic Trustee (NT)
- (ii) Notice of the new coupon is sent to the paying agent
- (iii) Potential errors are corrected
- (iv) VPS calculates the total coupon and the amount that each bond owner shall receive
- (v) A payment notice is sent to the issuer including the interest amount and payment information
- (vi) VPS produces the basis for the payment to Nets. It shall be approved by the paying agent in Nets at 12:00 PM the day before the payment at the latest.
- (vii) The interest amount is made available for the paying agent's account
- (viii) The interest amount is transferred to the bond owner

The interest rate adjustments can be done by Nordic Trustee as soon as Nowa has been published on the day after the end date for the calculation period. All relevant parties can be notified electronically more or less at the same time as the interest rate has been determined. An important question is how much time the issuer needs to make the interest amount available for the paying agent. This would depend on circumstances regarding the issuer etc.

Some issuers have specific arrangements with their paying agent (which also is their bank) that includes credit facilities. This allows for the possibility of reserving the interest amount on the day before the interest payment date and debiting the account on the payment date. Such an arrangement is possible for certain Norwegian financial institutions, municipalities as well as some larger corporates.

For other types of issuers, particularly in the non-financial corporate sector, the issuer has to manually transfer sufficient funds to the paying agent on the day before the interest payment shall be made. This is based on the payment notice from the paying agent (i.e. (v) above) which again stems from the bond interest rate set by Nordic Trustee for the given time period (i.e. (i) above).

From a practical point of view, a system where the determination of the interest happens shortly before the payment is made would be possible for most financial and public issuers. However, for corporates and perhaps especially for foreign corporates a 2-day notice period seems to be a too short timeframe. It is possible that extending to 5 days would be adequate, but this would be up to the involved parties to decide.

### 5.3.5 Draft terms for bonds with Nowa as the reference rate

In connection with the work done by the ARR group, Nordic Trustee has created draft terms on a loan agreement for the Norwegian bond market based on Nowa as the reference rate (“Nowa draft”).<sup>10</sup>

The proposed fallback mechanism is more or less directly based on the recommendation from the ARR group which again is based on the work done by ISDA. The wording is adjusted to be more in line with the standard Norwegian format for such agreements.

As outlined above an important question is how many days the observation shift should last in a situation with a transition to a replacement rate. Based on conversations with paying agents etc. the default in the Nowa draft is set to a [5] day observation shift. The brackets around the number 5 reflect that it is not the common standard in the Norwegian bond market as of today. The draft text is not incorporated in any common agreements so far. It seems likely that the market participants need some time to assess the draft terms before the clause can be implemented.

## 6 Negative interest rates and the use of an interest rate floor

*The working group has not recommended that a negative interest rate floor must be implemented in financial contracts. The working group considers the use of an interest rate floor to be a commercial decision between parties to the agreement, as well as how such a floor should be implemented*

History shows that interest rates can become negative, both daily quotations and whole interest rate periods. This also applies to Nowa. Negative interest rates pose some challenges in some products, while other products are not affected to the same degree. Bank loans and floating rate bonds (FRN) are examples of products where negative interest rates could be problematic from an operational standpoint. In products where negative interest rates are challenging, it is possible to introduce a floor for how low the interest rate can become.

An interest rate floor can be implemented in different ways. Below are the most common ways of implementing an interest rate floor.

1. A floor on the daily Nowa-quotations
2. A floor for the compounded Nowa interest rate

The working groups in USD and GBP have recommended a floor for the daily quotations of the alternative reference rate, while the working groups in EUR and CHF have recommended a floor for the compounded period interest rate. In a fallback-situation for Ibor the 4 beforementioned working groups have all recommended a floor for the compounded rate.

Furthermore, it must also be defined at what level the interest rate floor should be applied. The 2 most common ways are:

1. The reference rate is floored to zero
2. The reference rate plus the spread adjustment is floored to zero

In new loans where a spread adjustment is not always specified, an interest rate floor of 0 will be most common, but in fallbacks to Ibor, an interest rate floor for the reference rate plus spread adjustment will be most similar to a floor for Ibor.

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<sup>10</sup> [The Nowa draft](#) can be found on Nordic Trustee’s webpage.

The working group has not a clear recommendation to which variant of interest rate floor is considered the best and considers this to be a commercial decision between the parties to the agreement.

However, the design of an interest rate floor for Nowa in a multi-currency loan facility should be harmonized as much as possible across currencies. It is worth mentioning that the market conventions recommended by the working group, as well as the Nowa index published by Norges Bank, handles negative interest rates.

## 7 Fallback to Nibor / Nowa

*The working group's proposal in the report from December 2020 was that the fallback clause will first be triggered when it is official that Nibor for various reasons will no longer be published. The replacement interest rate will thus apply from the time the publication of Nibor ceases, and with effect from the first subsequent interest period. The working group's proposal was based on the fallback solutions proposed internationally. These form the basis for the fallback clauses that have been proposed or included in the financial contracts in the Norwegian market that are discussed in this chapter.*

In December 2020, the working group on alternative reference rates in Norwegian kroner published a report with recommended market conventions for Nowa and fallback solutions in the event of a cessation of Nibor<sup>11</sup>. This report explains the legal background for reference rates and the need for a fallback clause.

### 7.1 Legal background

Since the report in 2020, EU has published a regulation which amends the Benchmarks Regulation. The amending regulation entered into force in the EU on 13 February 2021<sup>12</sup> and provides the EU Commission and national authorities implementing powers to designate a replacement for a benchmark, if certain critical reference rates should cease or is no longer representative of the underlying market and economic reality<sup>13</sup>.

The amendment is partly due to the fact that several of the widely used reference rates Libor from 1 January 2022 will cease to be provided. If the contracting parties themselves do not agree on an alternative reference rate, the authorities may, in accordance with the amending regulation, facilitate the use of suitable alternative reference rates. The amending regulation is EEA-relevant and must be incorporated into the EEA agreement, after which it must be implemented in national law «as such».

The European Commission has identified Nibor as a critical reference rate, and the amending regulation may thus be relevant for any determination of fallback interest rates for Nibor, should Nibor cease or is no longer representative of the underlying market and economic reality.

On 14 December 2021, the Ministry of Finance implemented the amending regulation by reference to the financial benchmarks regulations. The changes will take effect on 1 January 2022. The

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<sup>11</sup> See the report [Recommended market conventions for Nowa and fallback solutions in the event of a cessation of Nibor](#).

<sup>12</sup> Regulation (EU) 2021/168 of the European Parliament and of the Council of 10 February 2021.

<sup>13</sup> This also applies to reference rates from third countries where a cessation would pose a threat to financial stability in the EU.

competence to implement such commission regulations in Norwegian law has been delegated to The Financial Supervisory Authority (Finanstilsynet).

The work done to incorporate fallback interest rates into the agreements for various financial contracts is described in more detail below.

## **7.2 Fallback interest rate for the bank loans**

The main task of Finance Norway's "Dokumentutvalget" is to develop and maintain model agreements for the banks' credit and guarantee activities and collateral in line with the regulations in force in the area at any given time.

"Dokumentutvalget" has begun work on revising the model agreements in line with the benchmark regulation, including the implementation of Nowa as an alternative reference rate in Norwegian kroner. The work is based on the recommended fallback clause from the working group. Revision of the model agreements will also include necessary amendments because of the new Financial Contracts Act and will be published together when all necessary amendments have been finalized.

The working group has recommended that "Dokumentutvalget" also prepare a model agreement with Nowa as a reference rate, as well as fallback mechanisms if Nowa is no longer published. In this connection, the aim is to establish a joint working group with members from the "Dokumentutvalget" and the working subgroup «market conventions and fallback solutions» to ensure common understanding, as well as benefit from each other's experiences in the further work.

The working group has prepared a draft of provisions for loans with Nowa as a reference rate. This can be found in the appendix to this report.

## **7.3 Fallback interest rates for derivatives**

On 16 December 2021, ISDA published a supplement with fallback for derivatives with *inter alia* Nibor as the reference rate<sup>14</sup>. Bloomberg has already started to publish the fallback-rates and spread adjustment for Nibor<sup>15</sup>. The last five observations will be available for free download at Bloomberg's webpage.

In the supplement fallback mechanisms are provided in the event that Nibor is no longer published. ISDA's fallback will be a compounded average based on Nowa, as well as an adjustment for credit spreads (spread adjustment). The supplement also includes discontinued rates maturities provisions, which contemplate interpolation if one or more tenors of a reference rate option are withdrawn. Fallback mechanisms are also included for situations where Nowa is not published, and that in such a case the «NOK Recommended Rate», as further defined in the «Benchmark Module», will be used as an alternative reference rate.

At the same time, ISDA also published a separate protocol that enables the contracting parties to include fallback mechanisms for ongoing derivative transactions from the time both parties adhere to the protocol<sup>16</sup>.

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<sup>14</sup> This is referred to as "BKBM / Nibor / MIFOR / PHIREF / KLibor / STIBOR / SIOR Benchmark Module" and constitute a "Benchmark Module" under ISDA 2021 Fallbacks Protocol, together with Supplement 90 to 2006 Definitions (Version 4.0 of the 2021 Definitions). The Supplement / Version 4.0 updates the reference interest rate options stated in the 2006 ISDA definitions and the 2021 definitions, depending on what is applicable, for certain ibor interest rates, to include new triggers and fallbacks in the event of permanent cessation of these ibor interest rates.

<sup>15</sup> For more information see [Bloomberg's web page](#).

<sup>16</sup> See [Protocol](#) on ISDA's webpage.

#### **7.4 Fallback interest rates for bonds**

The purpose of a fallback provision is to regulate situations where an agreed reference rate is not available at a time provided for in the agreement. Such regulation is not new and has been in use for a long time. In the Norwegian bond market, the trustee has typically been given the authority to set a replacement interest rate in situations where this is not available on the agreed medium, typically a defined Reuters page. The conditions for determining the actual interest rate have developed from being closely linked to interest rate formation in the banking market to more flexible solutions where emphasis is placed on what will be a generally accepted interest rate in the market. As parentheses, it is noted that it regularly happens that a reference rate is not available for current maturities (for example 1.5 months) and that these cases are resolved by interpolating reference rates with nearby tenors. These situations fall outside the scope of this user guide.

In response to the work of the ARR group, Nordic Trustee has prepared a proposal for an updated fallback mechanism for Nibor (the "Fallback Draft")<sup>17</sup>. The proposed fallback mechanism is more or less directly based on the ARR group's recommendation, which in turn is based on ISDA's general method for dealing with the loss of Ibor interest rates. The wording is abbreviated for adaptation to the Norwegian agreement format. The draft is a locked regulation (referred to as "hardwired") and differs somewhat from today's more flexible format. See also remarks on the number of days of observation shift above.

Norges Bank has developed procedures for situations where Nowa is temporarily unavailable as well as for the cessation of Nowa. For both the Nowa Draft and the Fallback Draft, it is assumed that Norges Bank's procedures can be used as a fallback solution for Nowa. The regulation for this is therefore brief and means in practice that Nowa in the event of a cessation will be replaced by Norges Bank's key policy rate unless Norges Bank recommends that Nowa be replaced by another interest rate. Links to the procedures can be found on Norges Bank's website.

## **8 Summary and the way forward**

The work on alternative reference rates in Norwegian kroner has come a long way since the beginning. Following the recommendation to use a reformed version of Nowa as the alternative reference rate in kroner, the subgroups «Market standards and fallback solutions» and «Establishment of an OIS market in kroner» have published their final reports with recommendations for the market. An OIS-derivative market is starting to develop. Regarding market conventions, the working group observes that there are several different conventions that are used internationally. Whether the Norwegian market will use the same convention with a 2-day observation shift across products remains to be seen. With regards to fallback to Nibor, the publication of ISDA's supplement and protocol with the corresponding fallback rate calculated by Bloomberg an important milestones in this work.

Work on market conventions and fallback solutions will continue, and this practical user guide for Nowa will be a "live" document that is updated regularly.

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<sup>17</sup> [The fallback draft](#) is available on Nordic Trustee's webpage.

## 9 Appendix

### DRAFT PROVISIONS FOR LOANS REFERENCING NOWA

If Nowa has been agreed as a reference interest rate, the following applies:

- a) [ALT. 1: Nowa (Norwegian Overnight Weighted Average) is a day-to-day market interest rate that reflects the interest rate on unsecured overnight loans in Norwegian kroner between banks that are active in the Norwegian overnight market. The interest rate is administered by Norges Bank and is published approx. at 09:00 local time the next day. NOWA is capitalized daily. The daily NOWA determination is based on NOWA read [2 - two / 5 - five -] banking days back in time.<sup>18]</sup>

[Alt. A: lookback without observation shift]: The current day weighting in the interest period is added to each Nowa reading (lookback without observation shift).

[Alt. B: lookback with observation shift]: The calculation uses day weighting for the reading day (lookback with observation shift).

[Alt. 2 (Nowai): Nowai are annualized capitalized average interest rates that express the geometric return on an investment that bears interest on the overnight interest rate Nowa (Norwegian Overnight Weighted Average) for the period stipulated in the supplementary part of the credit agreement (1 month, 3 months or 6 months), which published on Norges Bank's website approx. at 9:00 two working days before the start of the interest period. In this context, working days are days when Norges Bank's Settlement System (NBO) is open.]

- b) If Norges Bank's website is not in operation or does not show Nowa, Nowa shall be considered to be the last published Nowa interest rate<sup>19</sup>.
- c) Changes in the reference rate have immediate effect on the credit, without notice to the credit customer.
- d) The interest period is three months unless the credit customer has chosen another period. At the end of the interest period, the credit customer may unilaterally change the interest period, within the alternative interest periods described in the credit agreement, with two banking days' notice to the creditor.
- e) Accrued interest is charged in arrears at the end of the interest period (calendar day before the interest rate adjustment date) and is due for payment then. If an interest period other than three months has been agreed, interest will be charged and due for payment at the end of the agreed interest period. The interest rate is calculated on the basis of the actual number of days divided by 365.

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<sup>18</sup> The working group recommends a 2-day lookback with an observation shift. However, established market practices in loan markets for GBP and USD are 5 days lookback with no observation shift. Lookback with and without observation shift will give the same result in interest periods without public holidays (but will correspondingly give different results in interest periods with public holidays).

<sup>19</sup> As the working group understand it, Evry's solution uses the recently published Nowa. At the same time, there is already a mechanism "embedded" in Nowa in that if you do not have transaction data for the current day, Nowa will be based on the key policy rate, but will still be expressed / published as Nowa.

- f) Subsequent written information about the changes in credit costs and the possible significance of the changes for installment and interest terms up to the last installment will be provided to the credit customer at regular intervals.
- g) If an interest period ends on a calendar day that is not a banking day, the interest period is extended so that it expires on the first banking day after. If it adjusted banking day is in a new month, should instead be the last banking day prior to the end of the interest period is used.
- h) The agreement on Nowa as a reference interest rate can be changed unilaterally by the lender if the lender is not able to make borrowings in NOK based on Nowa. Such change must be made with at least 14 days written notice. In such cases, the lender and credit customer will discuss new interest rate models.
- i) If there is an announcement as described in section [\*\*] that Nowa will no longer be published, a replacement interest rate will take the place of Nowa from the time described in the same place.

#### Alternative reference rate for NOWA

- (a) In the event of a public statement from the Norges Bank, The Financial Supervisory Authority of Norway, the court or any entity with insolvency or resolution authority over the administrator of Nowa, that Nowa will cease to be published or that the administrator will no longer be responsible for Nowa, provided that, at the time of the latter statement there is no successor administrator that will continue to provide Nowa, Nowa shall be replaced with the recommended krone interest rate, as described in (b) from the date Nowa is no longer published [with effect from the first subsequent interest period].
- (b) Recommended krone interest rate is the interest rate (including spread or other adjustment factors) recommended as a replacement for Nowa by Norges Bank (or the person who has replaced Norges Bank as administrator for Nowa), or by a committee appointed or approved by Norges Bank (or the person who has replaced Norges Bank as administrator for Nowa) for the purpose of recommending a replacement interest rate for Nowa (which can be determined by Norges Bank or another administrator) and which is either offered by the administrator or an approved distributor for the relevant day.
- (c) If there is no alternative interest rate in Norwegian kroner by the end of the first banking day<sup>20</sup> after the termination date for Nowa, or the recommended krone interest rate ceases, the interest rate for the current interest rate setting date that falls on or after the termination date for Nowa or the recommended krone interest rate is Norges Bank's key policy rate.

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<sup>20</sup> ISDA: Oslo Business Day.