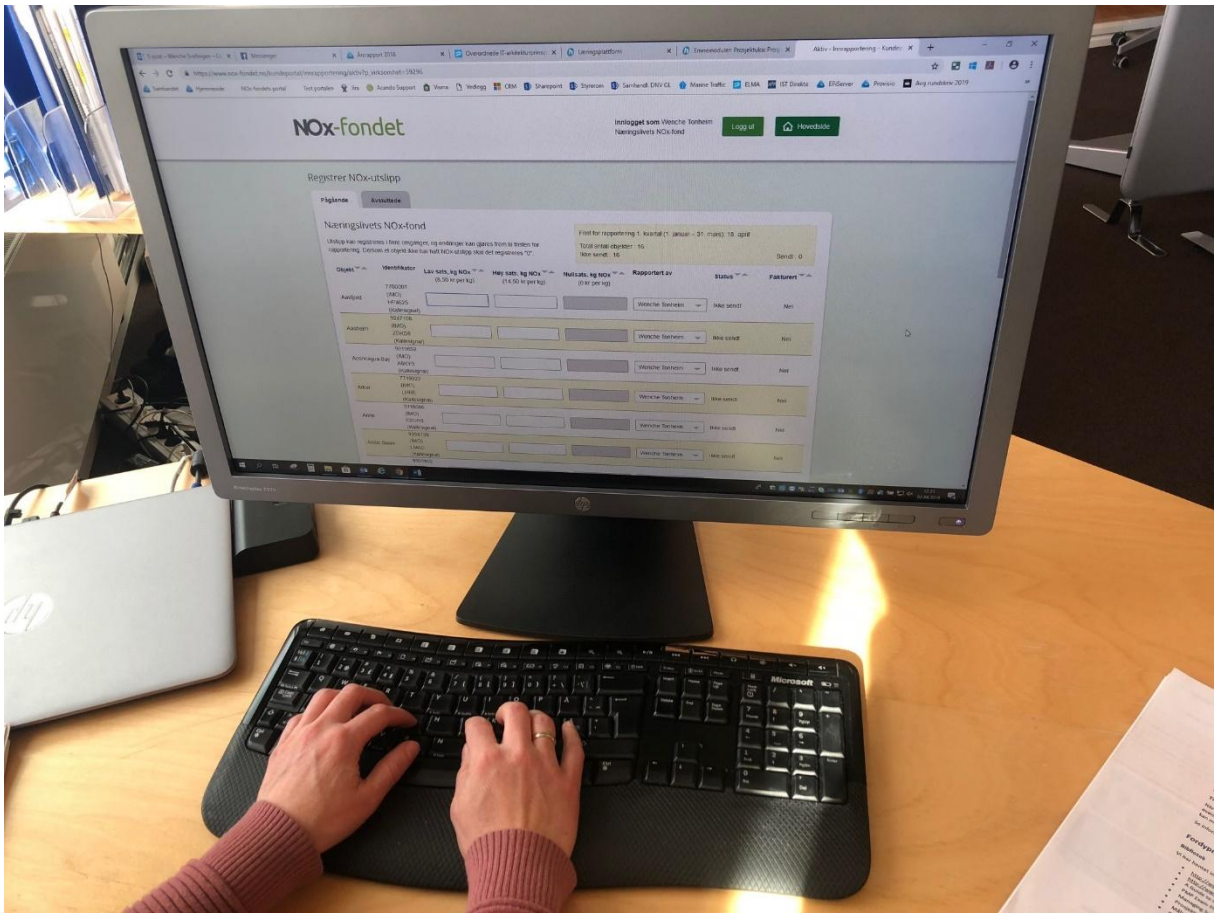
NOx-fondet

Guidance for reporting NOx emissions

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1 Reporting of NOx Emissions in General

1.1 About the General Tax Regulations

The Norwegian regulations for NOx tax are governed by the Act on Special Taxes and the Special Tax Regulations established by the Ministry of Finance. The Tax Directorate's circular duty on NOx emissions provides comments on the tax regulations. It is the companies' responsibility to ensure the correct interpretation, calculation, and reporting of NOx emissions according to the regulations set by the authorities. This document reflects the NOx Fund's understanding of selected parts of the regulations.

1.2 Affiliation to the NOx Fund

To be eligible for exemption from the fiscal NOx tax, a company must be affiliated to the NOx Fund. The owner of the emission source is generally responsible for the tax and must be affiliated to the NOx Fund. However, there are certain exceptions:

- For mobile installations engaged in petroleum activities on the continental shelf, the operator must be affiliated to the NOx Fund. The owner is only responsible for registering emissions while the unit is moving as a "vessel."
- Foreign owners without a business location in Norway must be registered through a Norwegian representative which must be affiliated to the NOx Fund. The NOx Fund also encourages foreign companies to join the Fund. Emission from foreign owned companies shall be reported to the NOx Fund by the Norwegian representative.
- In ownership structures where the owner has minimal involvement in daily operations (e.g., under bareboat charters), the company responsible for the vessel's "management" can be affiliated.

The tax exemption takes effect from the date the company joins the Fund, and from the same date the company can report to the NOx Fund. Taxable NOx emissions prior to affiliation to the NOx Fund, if any, must be reported and paid directly to the Norwegian Tax Administration.

Companies with non-taxable NOx emissions (primarily land-based process industries) must also report these non-taxable emissions to the NOx Fund.

1.3 Registration of Objects and Reporting to the NOx Fund

NOx emissions must be reported to the NOx Fund quarterly. The reporting deadlines are:

- 1st quarter: April 18th
- 2nd quarter: July 18th
- 3rd quarter: October 18th
- 4th quarter: January 18th

Emission reports must be submitted per object (vessel, rig, platform, factory, etc.) through the NOx Fund's web-based reporting system. An object must be registered with the Fund no later than the reporting deadline (the 18th) to submit emissions reports for that quarter. Reporting cannot be made to the NOx Fund for an object before the company's date of affiliation.

Companies and objects not registered before the deadline for NOx reporting, must report and pay taxable NOx emissions to the Norwegian Tax Administration.

Emissions from fixed platforms and mobile installations related to oil and gas extraction must be reported at a high rate. Taxable NOx emissions from other companies (fishing vessels, shipping, aviation, rail, land-based industry, district heating, etc.**),** must report at a low rate. Non-taxable NOx emissions from land-based industries should be reported at a zero rate.

Companies will receive an invoice from the NOx Fund based on the reported emissions and applicable payment rates.

1.3.1 Incorrect Reporting

If errors are discovered in the reported emissions, please contact the NOx Fund at post@nox-fondet.no. Only the NOx Fund can make retroactive changes to reported NOx emissions. The company will receive a correction form, which must be filled out and returned to the NOx Fund. Emissions and the reason for the incorrect reporting must be specified per quarter. The same corrections made to the NOx Fund must also be recalculated to the Norwegian Tax Administration.

1.3.2 Refunds and Additional Payments

Companies, often with the help of the NOx Fund, may discover that they have reported higher or lower emissions than they should have done. In cases of over-reporting, the NOx Fund frequently receives requests for refunds for the excess emissions payments. The NOx Fund generally applies a three-year statute of limitations in such cases.

No refunds will be given when new (lower) NOx factors are established, such as transitioning from a default factor to a source-specific one. This only results in changes moving forward when the new factor is made known and used in the company's emission accounting. This applies unless the old factor is incorrect, in which case the three-year statute of limitations will be applied.

New, lower default factors for reporting NOx emissions under the Special Tax Regulations were introduced in 2015. In some cases, companies discover that they have been reporting using the old, higher default factors until now. The NOx Fund must determine to what extent this qualifies for a refund. Refunds for over-reporting will be granted retroactively for up to three years.

If under-reporting of emissions is discovered, an additional invoice will be issued based on the increase in emissions and the payment rate applicable to the period in which the change is made.

1.4 Non-Taxable NOx Emissions in Land-Based Industry

Companies that fall under the NACE codes in the 2018-2027 NOx Agreement and have non-taxable NOx emissions must report their NOx emissions quarterly to the NOx Fund at a zero payment rate. Companies with taxable and non-taxable emissions covered by the NOx Agreement must report to the NOx Fund under the low and zero payment rates, respectively.

1.5 Reporting to the Norwegian Tax Administration

Taxable NOx emissions must be reported electronically to the Norwegian Tax Administration via Elsær/Altinn, in addition to the NOx Fund. Exemption code 35 for the NOx Agreement should be used, and

the amount should be set to 0. There must be consistency between the taxable NOx emissions reported to the authorities and those reported to the NOx Fund.

It is important that the exact same figures reported to the NOx Fund also be reported to the Norwegian Tax Administration. The authorities use the Tax Administration's figures for taxable NOx emissions to assess whether the obligations in the NOx Agreement have been fulfilled.

1.6 Reporting to the Norwegian Environment Agency

Land-based industries that self-report taxable and non-taxable NOx emissions to regulatory authorities must ensure consistency between the figures reported to the NOx Fund and those reported to the authorities. The authorities use the statistics from the Norwegian Environment Agency for non-taxable NOx emissions when evaluating whether the obligations in the NOx Agreement have been met.

1.7 Taxable Units

Reference is made to the Special Tax Regulations and the Tax Directorate's circular duty on emissions of NOx.

2. Regarding Vessels Specifically

2.1 Engine Size and Tax Liability

The tax applies to NOx emissions from energy production in propulsion machinery with a total installed capacity of more than 750 kW. Only the propulsion machinery's power determines whether an object is subject to the tax. However, if an object is taxable, the total emissions from all emission sources must be reported. For example, a taxable ship must report the total emissions from all propulsion machineries, auxiliary engines, and boilers, even if some have capacities below 750 kW.

2.1.1 Electric Motors and Electric Boilers

Electric motors and boilers are not included in determining whether an emission unit is subject to the NOx tax. The power of electric motors powered by batteries charged with shore power and electric boilers should be excluded when calculating the total capacity to determine if an emission unit (ship or factory) is subject to the NOx tax.

2.1.2 Vessels with Propeller Capacity Below 750 kW

Vessels with a total engine capacity greater than 750 kW, but a propeller capacity below 750 kW, must use the maximum propeller output to determine tax liability. Vessels with a maximum propeller output below 750 kW are not taxable for NOx.

2.2 Taxable Operations for Vessels

2.2.1 General

The NOx Fund refers to the Special Tax Regulations and the Tax Directorate's circular duty on emissions of NOx. Clarifications should be sought with the tax authorities. However, companies may also consult with the NOx Fund. Some clarifications are provided below.

2.2.2 Emissions from Domestic Operations

All emissions from domestic operations are subject to the tax. The nationality of the vessel is irrelevant to the tax liability. The tax applies to emissions from voyages between two Norwegian ports.

If a vessel arrives from a foreign port, stops at a Norwegian port, sails between two or more Norwegian ports, and then departs for a foreign port, it is taxable for emissions from departure from the first Norwegian port to departure from the last Norwegian port.

Voyages between a Norwegian port and special destinations, including Svalbard, Jan Mayen, and the Norwegian dependencies, are considered domestic voyages. However, note that voyages between special destinations, including between ports on Svalbard, are not taxable.

Voyages between a Norwegian port and an installation on the Norwegian continental shelf are considered domestic voyages. However, voyages between installations on the Norwegian continental shelf are not taxable.

2.2.3 Emissions from Vessels within Norwegian Territorial Waters, in Near and Distant Waters

All emissions within Norwegian territorial waters, i.e., within 12 nautical miles, are subject to the NOx tax, regardless of a vessel's nationality or activity. However, this does not apply to vessels on direct voyages between a Norwegian and a foreign port, as such voyages are entirely exempt from the NOx tax.

A foreign-registered ship that departs from a Norwegian port and then carries out activities beyond 12 nautical miles (within nearby waters) is taxable for the voyage and activities from the Norwegian port up to the 12-nautical-mile boundary, provided the next port is foreign. However, if the vessel continues its voyage to another Norwegian port after performing sea activities (e.g., seismic surveys), the entire journey is taxable, even if the ship is foreign-registered.

The tax applies to Norwegian-registered vessels in nearby waters, up to 250 nautical miles. Norway does not have the same taxation authority over foreign-registered ships as Norwegian registered ships, so the taxable area differs for Norwegian and foreign vessels.

Ships operating in near waters (up to 250 nautical miles) are not subject to the NOx tax for voyages to and from the operational area if the starting point and return port are foreign.

It is specified that emissions from Norwegian-registered vessels engaged in fishing and hunting in distant waters—i.e., voyages and fishing in areas where the distance from the Norwegian coast (baseline) is 250 nautical miles or more—are exempted from the NOx tax.

3. About Mobile Installations (Rigs) Specifically

3.1 Emissions Accounting

To ensure accurate NOx reporting for each rig, the quantification of fuel consumption and associated NOx emissions must, at a minimum, be divided as follows:

1. NOx-taxable production/drilling
    - This needs to be separated for further reporting to the operator and the NOx Fund.
2. NOx-taxable movement
    - Separation is needed to differentiate what the operator and the rig owner should report.
3. Non-NOx-taxable movement
    - Separation is needed to avoid (over-)reporting of non-taxable emissions.

3.2 Clarification of Taxable Activity

According to the Special Tax Regulation and the corresponding circular on duty on emissions of NOx, mobile installations are subject to NOx tax when:

- They are drilling for oil on the Norwegian continental shelf (NCS).
- They are producing oil on the NCS.
- They are docked in a Norwegian port.
- They travel under their power from a Norwegian port to a field on the NCS.
- They travel under their power from a field on the NCS to a Norwegian port.

Mobile installations are *not* subject to NOx tax when:

- They travel under their power from a foreign port to a field on the NCS.
- They travel under their power from a field on the NCS to a foreign port.
- They travel under their power between positions on the NCS.
- They travel from a Norwegian port to a foreign port or vice versa.

3.3 Reporting Responsibility for Rigs

The operator is the tax-liable entity for NOx emissions from production or drilling and should report these emissions. Exceptions must be clarified with the Norwegian Tax Administration and the NOx Fund.

The rig owner is generally the tax-liable entity for NOx emissions from docking in Norway and taxable movements. However, the operator may report associated NOx emissions if the rig is moved while under contract with the operator.

3.4 Reporting Rates

Emissions related to oil and gas extraction should be reported at a high rate. As of January 1st, 2018, all emissions from mobile offshore rigs must be reported at a high rate (previously reported at a low rate).

Emissions related to drilling for reservoirs for CO2 storage should be reported at a low rate.

4. Calculation of NOx Emissions

4.1 General

The calculation and reporting of taxable NOx emissions to the Business Sector's NOx Fund must follow the guidelines provided by the Special Tax Regulation and the relevant regulatory authority.

The calculation and reporting of non-taxable NOx emissions from land-based industries that fall under the NOx Agreement 2018-2027 should be reported by the guidelines provided by the relevant regulatory authority.

There are many ways to calculate NOx emissions. The most advanced methods involve continuous measurement of emission concentrations and exhaust gas flows, allowing for real-time registration of actual emissions. However, most methods rely on an energy flow (tons of fuel) multiplied by a NOx factor (kg NOx per ton). This particularly applies to ships and rigs.

> NOx factor (kg NOx/ton of fuel) =
> (Specific NOx emission (g/kWh) * 1000) / (Specific fuel consumption (g/kWh))
>
> NOx emissions (kg NOx) =
> NOx factor * fuel consumption (tons)

The following guidance focuses on cases where NOx emissions are calculated based on fuel consumption multiplied by the NOx factor.

Note that the Norwegian Maritime Authority has prepared a helpful guide to NOx tax for ships, which also includes several good calculation examples and is also well-suited for rigs.

4.1.1 Conversion from Liters to Kilograms

Remember that if the fuel consumption is given in litres, it must be converted to kilograms:
Consumed fuel (litres) * density (kg/l) = consumed fuel (kg)
Density of MGO = 0.85 kg/l

A somewhat different conversion factor may be used depending on the fuel type (MGO, MDO, HFO), but generally, 0.85 can be used as the conversion factor. For example:
163,500 litres of fuel * 0.85 (kg fuel per liter of fuel) = 138,975 kg of fuel

The amount of fuel (kg) should then be multiplied by the NOx factor (g/kg).
In the example below, a NOx factor of 48.6 g/kg is used:
138,975 kg of fuel * 48.6 g NOx per kg of fuel = 6,754,000 g NOx = 6,754 kg NOx

4.2 Determination of NOx Factor

Emissions should be calculated based on:

1. **Measured Factor**
   When continuous measurements are taken, the calculated accumulated results from the continuous measurements should be used.

The NOx factor can also be determined based on a single emission measurement from the actual emission source on the specific object. The measurement must be conducted by a company accredited by the Norwegian Maritime Authority or the Norwegian Environment Agency.

➢ Note that the NOx Fund provides financial support for measuring NOx emissions on ships and rigs. See our application guide for more information.

2. Calculated Factor
   If the measured emissions are unknown, the engine's NOx factor should be calculated based on the engine certificate (EIAPP) and the associated NOx Technical File.

   ➢ Note that the NOx Fund can assist in preparing such NOx factors for companies which need help. Please contact us for assistance.

   ➢ Established NOx factors with the corresponding calculation basis should be submitted to the Norwegian Maritime Authority for verification. The NOx Fund can also assist with this process.

3. Standard value
   A standard value should be used if neither the actual emissions nor the source-specific factor is known. The Special Tax Regulation provides standard values for taxable NOx emissions.

   Standard values for non-taxable NOx emissions are usually taken from guidelines issued by the Norwegian Environment Agency.

For most emission sources, measured and calculated factors provide a more accurate and lower NOx factor than those established using standard values. This is beneficial for businesses, authorities, and the NOx Agreement. Therefore, the NOx Fund encourages businesses to obtain measured or calculated NOx factors and use these as the basis for reporting NOx emissions.

4.3 NOx Factor for Ships and Rigs with Multiple Engines

In cases where ships and rigs have multiple identical engines, it is only necessary to measure/calculate the emission factor for one engine. The other engines will then receive the same factor, which can also be used as the vessel's emission factor.

For multiple different engines (or boilers), a specific NOx factor must be obtained for each type of combustion unit. The vessel's NOx factor is then calculated as the average of the NOx factors weighted by installed power or, if applicable, stable fuel consumption distribution.

Some vessels measure fuel consumption per engine and boiler and have NOx factors for each of them. In such cases, there is no need to develop a vessel-specific NOx factor.

5. Calculation of Emissions with Measures Affecting the NOx Factor

If NOx-reducing measures have been implemented on the object that has changed the NOx factor, the NOx factor after the measures should be used to calculate NOx emissions. Many such measures involve NOx reduction systems, including dosing a reducing agent in the exhaust, such as urea or ammonia, in an SCR system. In such cases, the calculation of NOx emissions must reflect periods when the reducing agent is not dosed, and the NOx-reducing effect does not occur. The NOx Fund is available to review the companies' setups for calculating NOx emissions and provides suggestions for improvements. Please contact us if needed.

5.1 NOx Reduction with Reducing Agents

When calculating NOx emissions with a reducing agent (e.g., urea, ammonia and water), the NOx Fund recommends one of the following two calculation models:

1. NOx emissions = (Fuel consumption with dosing x NOx factor with NOx reduction) + (Fuel consumption without dosing x NOx factor without NOx reduction)
2. NOx emissions = (Fuel consumption x NOx factor without NOx reduction) – (consumption of reducing agent / amount of reducing agent per amount of NOx reduced)

Model 1 assumes that systems are in place to allocate fuel consumption according to periods and to determine when the reducing agent's dosing is on and off.

Using Model 2 assumes that there are systems to measure the consumption of the reducing agent and that the NOx reduction per amount of reducing agent is well documented.

5.2 Vessels with SCR Systems

Vessels equipped with SCR systems are the most common example of NOx reduction using a reducing agent (urea). According to model 2, NOx emissions can be calculated using the urea consumed during the reporting period. A well-functioning SCR system has a consumption rate of 1.5 litres of urea per kg of NOx reduced (stoichiometrically calculated reduction factor). A further specification of model 2 is as follows: **NOx emissions = Fuel consumption x NOx factor without SCR – (Urea consumption / urea factor)** where:

- **NOx emissions are given in kg for the reporting period.**
- **Fuel consumption is given in tons for the reporting period.**
- **NOx factor without SCR is given in kg/ton of fuel.** The value without or before the SCR system is taken from measurement reports and/or any established vessel-specific NOx factor without NOx reduction.
- **Urea consumption is given in litres for the reporting period.** When converting from kg of urea to litres of urea, the specific weight of urea is used as 1.1 kg/litre (for a urea solution of 40% urea and 60% water).
- **Urea factor = 1.5, given in litres of urea/kg of NOx reduced.** This is the theoretically highest NOx reduction that can be achieved with this technology.

The formula above clearly shows that the measured emission factor with SCR (or after SCR) is not included in the emissions calculation. Many wonder why such a measurement is required. The explanation is that this measured value can be used if model 1 is adopted for calculating emissions.

Additionally, this value is used to ensure that urea is not overdosed to achieve a higher purification rate than the system is designed for.