



Carbon accounting report 2016

NPRO

The aim of this report is to get an overview of the organisation's greenhouse gas (GHG) emissions, which is an integrated part of the company's climate strategy. The carbon accounting is a fundamental tool in order to identify concrete measures to reduce the energy consumption and corresponding GHG emissions. The annual report enables the organisation to benchmark performance indicators and evaluate progress over time.

This report comprises NPRO's 21 buildings, 1 marina, 2 datacenters and the energicentral for 2016. In 2015, 29 buildings were included, however 8 of these are sold and not included in 2016. Electricity, district heating, cooling, burning oil and gas has been reported for each building, in addition to business travel.

The input data is based on information from both internal and external data sources and then converted into tonnes CO₂-eq. The analysis is based on the international standard; A Corporate Accounting and Reporting Standard, developed by the Greenhouse Gas Protocol Initiative (GHG protocol). This is the most important standard for measuring greenhouse gas emissions and was the basis for the ISO standard 14064-1.

Overview of inclusions 2016

Buildings area (m2) 2014-2016
Bryggegata 7-9
Dokkbygget
Fondbygget
Kaibbygg 1
Kaibbygg 2
Terminalbygget
Tingvalla Onda
Verkstedhallene
Gjerdrumsvei 10 D
Gjerdrumsvei 14-16
Gjerdrumsvei 17
Gjerdrumsvei 8
Gullhaug Torg 3
Gullhaugveien 9-13
Nydalsveien 15
Nydalsveien 17
Sandakerveien 130
Badehusgaten 33-39
Maskinveien 32
Svanholmen 2
Drammensveien 60

Locations without area 2014-2016
Energisentral
Gatevarme Terminalbygget
Tingvalla båthavn
Tingvalla Marina
Gullhaugv 9-13 Datahall
Sandakerveien 130 Datahall

Sold buildings not included for 2016
Maridalsveien 323
Finnestadveien 44
Lysaker Torg
Stortingsgaten 6
Drammensveien 134 - Hus 6
Drammensveien 149
Verkstedveien 1
Verkstedveien 3

NPRO has collected energy data directly from the energy supplier for the Marina, Dokkbygget, Fondbygget, Kaibbygg I and II, Maskinveien 32, Støperiet, Svanholmen 2, Terminalbygget, Verkstedhallene and Verkstedveien 1, as well as district heating/cooling in Nydalen. For buildings not mentioned here, data has been collected from the buildings' own energy systems. 2015 was the first year with full production at the Energy Central at Aker Brygge. The central produces district heating from sea water. The central's consumption of electricity is reported as consumption by the Energy Central, while the supply of energy to the buildings connected to the central is measured in each buildings' energy monitoring system and reported for each building.

To be able to compare energy consumption and emissions per square meter (m²) in the strategy period from 2011 to 2015, and to measure the results of reduction activities in the properties, we have included sold buildings such as Verkstedveien 1, Lysaker Torg 35, Maridalsveien 323 and Finnestadveien 44 in 2015.

Comments

In 2016 Norwegian Property's carbon accounting report includes 2,973.8 metric tons CO₂-equivalents (tCO₂e). From 2015 to 2016 there is a reduction of 31.9 % or 1,393.2 tCO₂e. 99.6 % of the emissions in 2016 are in Scope 2 (Indirect emissions from energy purchases).

Norwegian Property owned 210,544 m² in 2016, compared to 263,072 m² in 2015, a reduction of 52,529 m² or 20 % from 2015 to 2016. NPRO's energy consumption in buildings was 64,928.7 MWh in 2015 and 51,850.5 MWh in 2016, a decrease by 20.1 %.

Buildings sold in 2015 are not included in 2016. These sold buildings reduce the total carbon accounting report with 1,398.9 tons CO₂e or 32 % from 2015 to 2016. Space (m²) decreased by 101,892 m². Energy consumption for the sold buildings was 22,131 MWh in 2015, and this resulted in a 34 % energy reduction from 2015 to 2016.

For buildings owned both in 2015 and 2016, owned space increased by 21.9 % or 37,790 m², from 172,754 m² in 2015 to 210,544 m² in 2016. Energy consumption for the same buildings, increased from 51,850.5 MWh in 2015 to 64,928.7 MWh in 2016, an increase of 9,241 MWh or 21.7 % from 2015 to 2016. Therefore, emissions from buildings have also increased by 531 tCO₂e or 12.2% from 2015 to 2016.

The properties connected with the Energy Central (Bryggegata 7-9, Terminalbygget and Verkstedhallene) have increased their consumption of district heating. From 27% in 2015 to 33% in 2016. This reduces emissions by about 100 tCO₂e. This reduction activity reduces the total emissions by about 2% from 2015 to 2016. In 2015, the Energy Central accounted for 11% of the total energy consumption of NPRO, while in 2016 it accounts for 12%.

Emission factors for electricity, district heating, air travel and mileage allowance changes annually. The total change from 2015 to 2016 was, resulting from emission factor changes, 369.4 tons CO₂e or 8.5 %. (Emission factor for electricity nordic mix is reduced by 12.5 % from 2015 to 2016, which reduce total emission by 361.5 tons CO₂e).

Scope 1

Reduced consumption of burning oil causes a reduction of emissions by 2.3 tCO₂e from 2015 to 2016. Now, only one building uses burning oil (Gullhaugveien 9-13).

Scope 2

Emissions included in Scope 2 are district heating/cooling and electricity. Energy consumption was reduced from 74,560 MWh to 61,798 MWh, a reduction of 17 % or 12,762 MWh from 2015 to 2016. 8 buildings are sold, which reduces energy consumption with 22,131 MWh or 29.7 %, and reduces space by 32 % or 101,892 m². Additionally, space in buildings owned in both 2015 and 2016, has increased by 21.9 % or 37,790 m², due to lower space vacancies. Therefore, energy consumption increased by 9,241 MWh or 21.7 %, and emissions from energy consumption decreased by 31.8 % or 1,382.2 tCO₂e from 2015 to 2016.

Electricity: Emissions from electricity is calculated with a location-based emission factor called Nordic mix. The Nordic mix emission factor has been reduced by 13 % from 2015 to 2016. Which means that electricity in the Nordic region is more renewable now than last year (example: hydro power increases, while coal/fossil fuel power decreases in the production of electricity). Emissions from electricity decreased by 27 % or 1,071.7 tCO₂e from 2015 to 2016.

* Electricity with a market-based emission factor (REC's and residual mix) marked with a star at the bottom of the tables. Since NPRO has not purchased electricity with Guarantees of Origin or Renewable energy certificates the methodology used is Nordic electricity residual mix emission factor (Ref. RE-DISS, 2016). Furthermore, emissions from Market-based electricity decreased by 17.8 % or 3,221.5 tCO₂e. This new practice was introduced to the GHG Protocol in 2015, and is explained further in this report under Methodology and Sources below.

District heating/cooling: Emissions are reduced by 81.6 % or 310.5 tCO₂e from 2015 to 2016. Emission factor changes introduced are:

- District heating Lysaker: -48.7 %
- District heating Nydalen: +9.7 %
- District heating Oslo: -25.0 %
- District heating Stavanger: +22.0 %

Space (m²) included in the carbon accounting report is reduced by 20 % from 2015 to 2016. Due to these changes, it is interesting to look at energy consumption per occupied m² (Scope 2 + stationary combustion) to get the most accurate picture of the actual reduction in emissions and energy consumption annually. From 2015 to 2016, Norwegian Property reduced its emissions from 14.3 kg CO₂e/m² to 11,5 kg CO₂e/m², a total reduction of 19 %. Also, the number of kWh per square meter had a reduction of 0.2 %, from 246.8 kWh / m² in 2015 to 246.3 kWh / m² in 2016.

Scope 3

Air Travel: Emissions decreased by 8.5 tCO₂e or 47 % from 2015 to 2016. Emission factor here decreased by an average of 2.8 % from 2015 to 2016.

Hotel Accomodation: Emissions have been stable the last three years and accounts for only 0.1 tCO₂e.

Mileage Allowance: Emissions decreased by 1 tCO₂e or 56 % from 2015 to 2016. Emission factor has been reduced by 2 % from 2015 to 2016, because of a more fuel-efficient car park.

Energy and GHG emissions

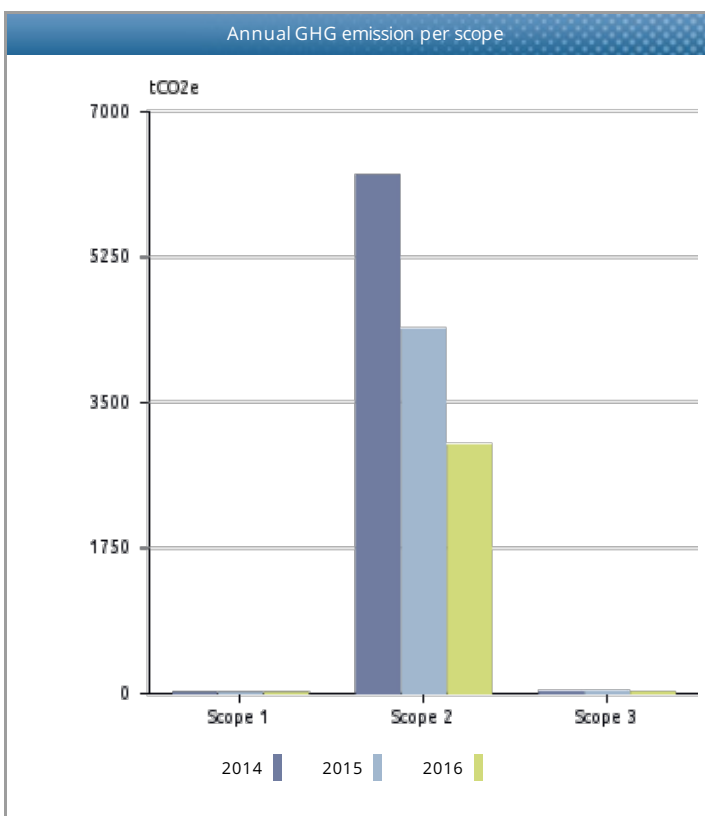
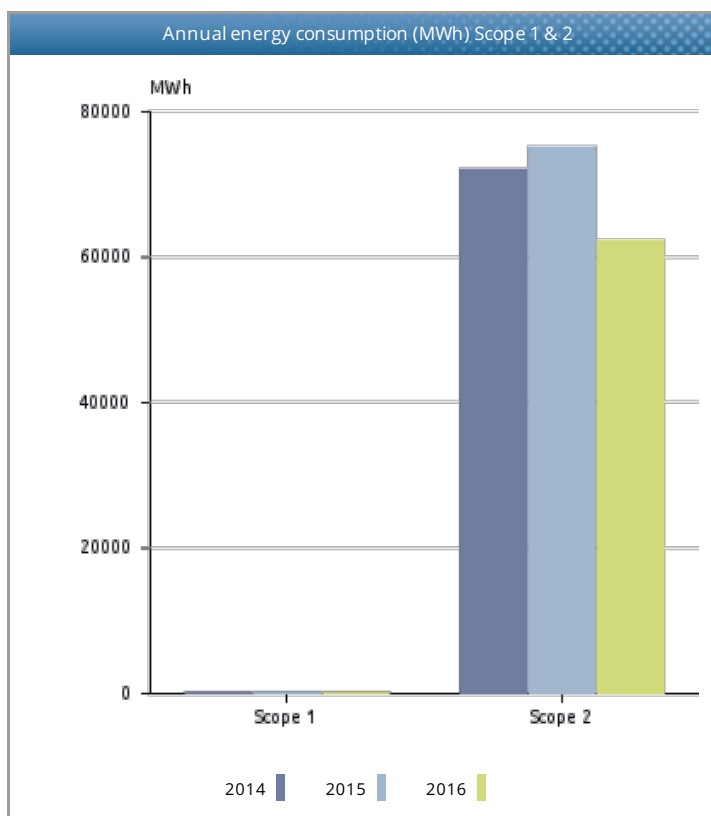
Category	Description	Consumption	Unit	Energy (MWh eqv)	Emissions (tCO ₂ e)	Emissions (distribution)
<i>Transportation</i>				-	-	-
Diesel (B5)		-	liters	-	-	-
<i>Stationary combustion</i>				3.1	0.8	-
Burning oil		3 100.0	kWh	3.1	0.8	-
Scope 1 total				3.1	0.8	-
<i>Electricity*</i>				51 647.5	2 892.3	97.3%
Electricity Nordic mix		43 044 264.0	kWh	43 044.3	2 410.5	81.1%
Electricity Nordic mix	Datacenter	6 254 562.0	kWh	6 254.6	350.3	11.8%
Electricity Nordic mix	Energisentral-consumption	2 348 647.0	kWh	2 348.6	131.5	4.4%
<i>DH Nordic locations</i>				3 590.2	70.2	2.4%
District heating NO/Oslo		2 172 371.0	kWh	2 172.4	32.6	1.1%
District heating NO/Oslo	Energisentral-consumption	278 653.0	kWh	278.7	4.2	0.1%
District heating NO/Stavanger		711 489.0	kWh	711.5	7.1	0.2%
District cooling NO/Stavanger		73 658.0	kWh	73.7	8.2	0.3%
District cooling NO/Oslo		336 433.0	kWh	336.4	14.8	0.5%
District heating NO/Nydalen		104 290.0	kWh	104.3	4.2	0.1%
<i>District heating general</i>				6 560.7	-	-
District heating Renewable	Energisentral-production	3 262 639.0	kWh	3 262.6	-	-
District cooling Seawater	Energisentral-production	3 298 105.0	kWh	3 298.1	-	-
Scope 2 total				61 798.4	2 962.5	99.6%
<i>Air travel</i>				-	9.7	0.3%
Continental		2 457.0	pkm	-	0.2	-
Intercontinental		30 519.0	pkm	-	3.1	0.1%
Domestic		41 641.0	pkm	-	6.1	0.2%
Nordic		1 546.0	pkm	-	0.2	-
<i>Business travel</i>				-	0.9	-
Hotel accomodation(Nordic)		12.0	nights	-	0.1	-
Mileage allowance car (NO)		5 343.0	km	-	0.8	-
Scope 3 total				-	10.5	0.4%
Total				61 801.5	2 973.8	100.0%
<i>*Alternative Electricity emissions-Market based method (RECs, GoO)</i>					14 926.1	

Yearly report – GHG emissions (tCO₂e)

Category	Description	2014	2015	2016	% change from previous year
<i>Stationary combustion</i>					-
Burning oil		0.8	2.3	0.8	-67.4%
<i>Transportation</i>					-
Diesel (B5)		2.5	-	-	-
Scope 1 Emissions		3.3	2.3	0.8	-67.4%
<i>DH Nordic locations</i>					-
District cooling NO/Oslo		47.9	39.6	14.8	-62.6%
District cooling NO/Stavanger		10.1	12.0	8.2	-31.7%
District heating NO/Lysaker		30.0	31.2		-100.0%
District heating NO/Nydalen		7.0	3.4	4.2	26.4%
District heating NO/Oslo		105.8	77.0	32.6	-57.7%
District heating NO/Oslo	Energisentral-consumption		5.3	4.2	-21.8%
District heating NO/Stavanger		5.0	4.9	6.2	28.1%
<i>District heating general</i>					-
District cooling Seawater	Energisentral-production		-	-	-
District heating Renewable	Energisentral-production	-	-	-	-
<i>Electricity*</i>					-
Electricity Nordic mix	Energisentral-consumption	98.0	109.3	131.5	20.3%
Electricity Nordic mix		5 452.9	3 431.5	2 410.5	-29.8%
Electricity Nordic mix	Datacenter		423.2	350.3	-17.2%
<i>Heat fuel specific</i>					-
Heat-natural gas		145.1	207.4		-100.0%
Scope 2 Emissions		5 901.8	4 344.7	2 962.5	-31.8%
<i>Air travel</i>					-
Continental		3.4	5.1	0.2	-95.7%
Domestic		10.8	13.0	6.1	-52.8%
Intercontinental				3.1	
Nordic				0.2	
<i>Business travel</i>					-
Hotel acc.(Europe)		-	-		-
Hotel acc.(Nordic)		0.1	0.1	0.1	1.7%
Mileage all. car (NO)		1.2	1.8	0.8	-56.0%
Scope 3 Emissions		15.5	20.0	10.5	-47.3%
Total		5 920.6	4 367.0	2 973.8	-31.9%
<i>Percentage change</i>			-26.2%	-31.9%	
<i>*Alternative Electricity emissions-Market based method (RECs, GoO)</i>			18 147.6	14 926.1	
<i>Percentage change</i>			-	-17.8%	

Key energy and climate performance indicators

Name	Unit	2014	2015	2016	% change from previous year
Sum locations KWh/m2		268.6	283.4	293.5	3.6%
Sum square meters (m2)		254 555.0	263 072.0	210 544.0	-20.0%
tCO2e/FTE (S1+2)		103.6	73.7	54.9	-25.5%
tCO2e/FTE (S1+2+3)		103.9	74.0	55.1	-25.6%
tCO2e/Revenue mill. NOK (S1+2)	MNOK	8.0	5.1	3.3	-35.0%
tCO2e/Revenue mill. NOK (S1+2+3)	MNOK	8.0	5.1	3.3	-35.1%
FTE		57.0	59.0	54.0	-8.5%



Methodology and sources

The Greenhouse Gas Protocol Initiative (GHG protocol) is developed by the World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD). This analysis is according to A Corporate Accounting and Reporting Standard Revised edition, currently one of four GHG Protocol accounting standards explaining how to calculate and report GHG emissions. The reporting considers the following greenhouse gases, all converted into CO₂ equivalents: CO₂, CH₄ (methane), N₂O (laughing gas), SF₆, HFCs and PFCs.

This analysis is based on the operational control aspect that defines what should be included in the carbon inventory, as well as in the different scopes. When using the control approach to consolidate GHG emissions, companies shall choose between either the operational control or financial control criteria. Under the control approach, a company accounts for the GHG emissions from operations over which it has control. It does not account for GHG emissions from operations in which it owns an interest but has no control.

The carbon inventory is divided into three main scopes of direct and indirect emissions.

Scope 1 Mandatory reporting includes all direct emission sources where the organisation has operational control. This includes all use of fossil fuels for stationary combustion or transportation, in owned, leased or rented assets. It also includes any process emissions, from e.g. chemical processes, industrial gases, direct methane emissions etc.

Scope 2 Mandatory reporting includes indirect emissions related to purchased energy; electricity or heating/cooling where the organisation has operational control. The electricity emissions factors used in CEMAsys is based on national gross electricity production mixes on a 3 years rolling average (IEA Stat). The Nordic electricity mix covers the weighted production in Sweden, Norway, Finland and Denmark, which reflects the common Nord Pool market area. Emission factors per fuel type are based on assumption in the IEA methodological framework. Factors for district heating/cooling are either based on actual (local) production mixes, or average IEA stat.

In January 2015, the GHG Protocol published new guidelines for calculating emissions from electricity consumption.

Primarily two methods are used to “allocate” the GHG emissions created by electricity generation to the end consumers of a given grid. These are the *location-based* and the *market-based* method. The location-based method reflects the average emissions intensity of grids on which energy consumption occurs, while the market-based method reflects emissions from electricity that companies have purposefully chosen (or their lack of choice).

Businesses who report on their GHG emissions will now have to disclose both location-based emissions from the production of electricity and the market-based emissions related to the potential purchase of Guaranties of Origin (GoO).

The purpose of this amendment in the reporting method is on one hand to show the impact of energy efficiency and saving measures, and on the other hand to display how the acquisition of GoOs affect the GHG-emissions. Using both methods in the emission reporting highlights the effect of all measures regarding electricity consumption.

The location-based method: The location-based method is based on statistical emissions information and electricity output aggregated and averaged within a defined geographic boundary and during a defined time period. Within this boundary, the different energy producers utilize a mix of energy resources, where the use of fossil fuels (coal, oil and gas) result in direct GHG-emissions. These emissions are reflected in the location-based emission factor.

The market-based method: The choice of emission factor using this method is determined by whether the business acquires GoOs or not. When selling GoOs, the supplier certify that the electricity is produced by only renewable sources, which has an emission factor of 0 grams of CO₂e per kWh. However, for electricity without the guarantee of origin, the emission factor is based on the remaining electricity production after all GoOs for renewable energy are sold. This is called a *residual mix*, which is normally substantially higher than the location-based factor. As an example, the market-based Norwegian residual mix factor is approximately 7 times higher than the location-based Nordic mix factor. The reason for this high factor is due to Norway's large export of GoOs to foreign consumers. In a market perspective, this implies that Norwegian hydropower is largely substituted with an electricity mix including fossil fuels.

Scope 3 Voluntary reporting of indirect emissions from purchased products or services in the value chain. The scope 3 emissions are a result of the company's different activities, which are not controlled by the company, i.e. they're indirect. Examples are business travel, goods transportation, waste handling, consumption of products etc. In general, the GHG report

should include information that users, both internal and external to the company need for their decision making. An important aspect of relevance is the selection of an appropriate inventory boundary that reflects the substance and economic reality of the company's business relationships.

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